Luiz Ricardo Vieira Gonzaga
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Handbook of Stress and Academic Anxiety

Psychological Processes and Interventions with Students and Teachers

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Foreword

As the importance of evaluation has grown in education, so too does the need to understand facilitating and inhibiting factors of academic performance. Across the globe, governments and educational authorities have relied on standardized tests to make important and high-stakes decisions on the effectiveness of schools and teachers, and understand individual student needs. However, we have long known the deleterious role of anxiety connected to student performance across academic tasks. As a mental health researcher and former school psychologist, I have worked with many students who have struggled with anxiety and other internalizing behavior concerns. A common concern reported by students included "my mind just went blank!" and "these tests always stress me out!" More recently, educators have reported similar reactions to the increased focus on test-based evaluation policies and procedures.

Our understanding of test anxiety has significantly advanced since the pioneering work of Sarason and colleagues in the 1960s, yet so much work remains. After researching test and academic anxieties for over a decade, I have witnessed the evolution in modern theory leading to exciting developments in assessment and intervention. This important book by Gonzaga, Dellazzana-Zanon, and da Silva represents a collection of the most forward-thinking and critical advancements in stress and academic anxiety. Having personally collaborated with a number of chapter authors, I can attest to the significant contributions of this text.

Part I offers a comprehensive overview of new advancements in understanding the causes and consequences of academic anxiety, in addition to relationships with motivation and other emotional variables, that sets a solid foundation on which to build innovative assessments and interventions. Part II includes a number of evidence-based interventions for academic anxiety. This includes an impressive variety of approaches from various psychological underpinnings such as cognitive behavioral, cognitive processes, behavioral training, and third-wave therapies. These interventions are innovative, based in empirical data, and connected to progressive models of service delivery within schools and related settings. The book editors establish important connections to prevention science, use of technology-facilitated treatment, and intervention application across diverse populations. Lastly,

Part III connects the treatment of academic anxieties with the role of teachers in promoting facilitative learning environments. As such, I strongly believe this comprehensive book will offer an important and lasting contribution to how we support students, teachers, and schools in understanding the psychological processes of academic anxiety with interventions to show the path forward.

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Nathaniel von der Embse

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Introduction: Theories About Anxiety in School Scenery and Overview of the Chapters

Luiz Ricardo Vieira Gonzaga, Andressa Melina Becker da Silva, and Letícia Lovato Dellazzana-Zanon

This introductory chapter explains the origin of this *Handbook* and provides an *overview of* the chapters in Parts I, II, and III. The work aims to inform about strategies that help promote more adaptive behaviors in the school and academic area for the assessment context, as well as discuss other variables (e.g., bullying) that influence test anxiety, a typical stressor of the school and academic environment. These stressors can impair the student's sociocognitive development, compromising his/her mental health, which, in turn, impairs his/her ability to study. This occurs because academic demands involve a high performance and a concentration of efforts aimed at a constant and increasing academic routine, which can generate an intermittent source of stressful stimuli (Aafreen et al., 2018; Anniko et al., 2019; Kim, 2020; Mclntyre et al., 2018).

Considering that students are a susceptible and influential population to external psychosocial stimuli, such as conflicts with parents, adaptation to peers, and management of romantic relationships, knowing how these stressors manifest in this group is an important research focus. How these stressors manifest is also essential for future development of effective coping strategies with a focus on prevention (Anniko et al., 2019; Skinner & Saxton, 2019). Academic stressors end up demanding a high level of psychological resource from these students, leaving them susceptible to developing mental health problems. It highlights the importance of research and interventions that can help children and adolescents develop the ability to cope

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with stressors, such as academic problems (Mclntyre et al., 2018; Pitzer & Skinner, 2016; Skinner & Saxton, 2019).

In this sense, this book provides different approaches (e.g., Cognitive-Behavioral Therapy, Acceptance and Commitment Therapy, Analytic Behavioral Therapy, Dialectical Behavioral Therapy) and some technical resources such as Mindfulness, which aim to promote adaptive coping strategies to prevent the development of susceptible psychopathologies in this phase, as well as reduce the impacts on school performance of these problems. This book is organized in three parts totaling 26 chapters. Part I consists of 9 chapters and discusses variables and processes associated with academic anxiety, such as test anxiety and social influence, academic motivation, bullying, and procrastination. Part II, composed of 13 chapters, addresses interventions with students in academic anxiety. Last but not least, Part III presents 3 chapters on the possibilities of teachers' management in academic anxiety. Through contributions from different areas of performance, the book is characterized as robust, current, useful, and informative material, which provides a theoretical deepening on different theories about anxiety in a teaching context, including interventional proposals, which can help psychologists, educators, and other interested professionals to better deal with these demands.

The Origin of the Book

The original idea for this book arose during the development of the doctoral thesis of the first organizer of the work, who studied aspects of the relationship between coping with stress in the academic context and students' personal resources in this process (Gonzaga, 2016). Thus, with the systematic review initially conducted by the organizer, he observed how other theoretical approaches could contribute to the process of prevention and management of academic anxiety and provide promising results in the area. The results of his research signaled the importance of identifying and analyzing the interrelationship between the variables of the person, such as coping skills and their management in the face of stressful situations, such as academic assessment to which students are subjected (Gonzaga, 2016; Gonzaga & Enumo, 2018). Thus, psychopathological conditions that develop at this stage of development could be better detected and prevented. We sought to review all important areas of evidence-based treatment for evidence anxiety through the exchange of traditional and current theoretical models, such as Third Wave Therapies.

We had the goal that this book could promote a collection of multidisciplinary chapters in the area of school, teaching, research, supervision, and clinic, which could raise theoretical reflections and intervention. Another interest was that this work could contribute as general information for the implementation of public policies. These could assess academic environmental variables, such as school stressors and test anxiety, bullying in schools, social systems, and anxiety, for example, that influence student academic performance and/or achievement. This book could also be used as a way to develop adaptive coping strategies in situations of school tests

and promote interventions based on the development of protective mechanisms during this phase of development, minimizing the development of behavior problems in children and adolescents.

Due to the pandemic context of COVID-19, which culminated in the temporary closure of educational institutions around the world, the work underwent some changes throughout its development. This occurred to include chapters on online interventions for academic anxiety for children, adolescents, and youth (Sartes et al., this volume), and on emergency remote teaching for the digital environment, with the implementation of technological resources (Maia et al., this volume). Organizing the book during the pandemic was challenging. It took a lot of commitment, partnership, resilience, understanding, and commitment of all authors involved in the development of this work so that it could be made and completed in the midst of the pandemic.

Anxiety in the School Setting

Anxiety is a natural psychophysiological reaction that occurs in anticipation of some important event and can be good, helping to preserve the individual, or pathological, when the person cannot manage it, or whose symptoms appear in a more intensified way (Kim, 2020). It is a complex and multifactorial phenomenon linked to the human condition, whose response involves cognitive, physiological, and behavioral components. Anxiety has been defined as an eliciting condition and as a pattern of response to an adverse condition, triggering a possibility of harmful evolution (Clark & Beck, 2010; Kim, 2020).

Anxiety is one of the most prevalent phenomena in psychological studies and, along with mental health complaints related to it, has been researched for years (Anniko et al., 2019; Lufi & Darliuk, 2005). A variety of research has contributed to the difficulty in reaching a consensus on the meaning of anxiety. On the one hand, the failure to differentiate between anxiety as a personality trait and anxiety as a transient emotional state has led to conceptual confusion regarding anxiety outcomes (Spielberger, 1975). There has been disagreement as to whether the term anxiety should refer to observable, clinically recordable events (e.g., through the measurement of human physiological measures such as galvanic skin response, skin temperature, heart rate, sweating, and assessment instruments to objectively measure it) or to a deductive state (Sarason, 1978). Part of the conceptual confusion arises from the frequent, almost simultaneous use of the construct anxiety in both terms.According to APA (2014), anxiety disorders include cognitive, affective, physiological, and behavioral characteristics. Its prevalence is high in Brazil and worldwide (Dalgalarrondo, 2019), and it is among the most common mental disorders (Juruena et al., 2020): “anxiety disorders in children and young people are common and constitute the largest group of mental health problems during childhood” (Stallard, 2010, p. 13). Exposure to early stress in childhood and adolescence may have serious consequences for the biopsychosocial lives of individuals, and

may be a risk factor for the development of psychopathologies, such as anxiety disorders and depression in adulthood (Juruena et al., 2020; Qin et al., 2021).

DSM-5 classifies anxiety into 10 types of anxiety disorders: Separation Anxiety Disorder, Selective Mutism, Specific Phobia, Social Anxiety Disorder (Social Phobia), Panic Disorder, Agoraphobia, Generalized Anxiety Disorder, Substance/Medication-Induced Anxiety Disorder, Anxiety Disorder Due to Other Medical Condition, and Other Specific Anxiety Disorder (APA, 2014). For test anxiety, also referred to as exam anxiety, exam stress, or test stress (Von der Embse et al., 2018), intense performance-related fears manifested in academic settings can be diagnosed as a social anxiety disorder with the performance-specific component only if all clinical criteria are met. Fear of performance may also manifest in work, school, or academic settings in which regular public presentations are required. Individuals with performance-related social anxiety disorder do not fear or avoid social situations in which they are not evaluated (APA, 2014). Test anxiety differs from other forms of general anxiety in that it is guided by situations involving assessment, for example, exams or tests (Von der Embse et al., 2018). However, test anxiety may be an indicator of other psychopathologies, such as depression (Wuthrich et al., 2021), and there are also associations with anxiety and suicidal thoughts in individuals with high levels of test anxiety (King et al., 1995).

Test anxiety can be seen as a proper subset of the broader domain of stress and anxiety research (Zeidner, 1998). Research on test anxiety is widespread, sometimes being included in broader constructs such as stress assessment, of which it is a core feature (Schwarzer & Buchwald, 2003). In recent years, there have been changes regarding the predictors, influencing variables, and theoretical understanding of test anxiety (see Von der Embse et al., 2018).

In this context, it has been observed that situations of academic assessment, in which the test is a dominant variable, have emerged as a stimulus eliciting anxiety in the educational area. It happens that many important decisions are related to performance in tests (e.g., college, work, competition). The test assists in decision-making about candidates in relation to their achievement, competencies, performance, and technical skills (Rana & Mahmood, 2010; Zeidner, 1998). Thus, when considering the regular use of this instrument in the students' selection process, it is not expected that the evaluative situation may trigger anxiogenic reactions in many of them, regardless of age group and level of education (Zeidner, 1998). It was also observed in some studies that high level of anguish, distress, depression, and anxiety are associated with important exams (Wuthrich et al., 2020; Wuthrich et al., 2021).

The development of effective treatment strategies focused on prevention is associated with the identification of the different profiles of test anxiety as well as their real needs, thus reducing the onset of psychological distress (Serrano-Pintado & Escolar-Llamazares, 2014; Wuthrich et al., 2020). These also lead to a better understanding of the role of emotion in these more vulnerable students' test performance (Von der Embse et al., 2018). Finally, several studies point out that the analysis of academic coping, relating it to development, motivation, and education is necessary,

as they prevent and moderate the stress experienced by students (Gonzaga et al., 2016; Skinner & Saxton, 2019).

It is considered important the in-depth discussion on the theme, which is done in the course of the work. The following are the chapters developed throughout this book.

Overview of Chapters

The introductory chapter provides an overview of the book so that you, the reader, can understand the complexity of the topic of anxiety in the academic context and the breadth of the book. Chapter "Anxiety in the Schools: Causes, Consequences, and Solutions for Academic Anxieties" contextualizes anxiety in the academic context, explains the emotional information model, and examines anxiety, its resources, consequences, and solutions. The themes worked are adjustment on threat in academic environment, recognition of stressors, goal structure used to resignify stressors, development of skills, and confidence to cope with academic problems (coping and self-regulated learning). In chapter "Supporting Student Success: The Role of Test Anxiety, Emotional Intelligence, and Multifaceted Intervention", there is an increased focus on the testing situation to provide an expanded view of situational assessment, self-awareness, and controlled processing in maladaptive reactions by describing the self-regulatory executive function processing model. The authors also seek to provide educators with practical ideas on how to reduce test anxiety. Chapter "Test Anxiety and Influences of Social Systems" brings a focus to different social systems and their role in the development and maintenance of anxiety through a biopsychosocial model of test anxiety. The authors present empirical evidence supporting the relationships between different social systems and test anxiety.

Chapter "Academic Anxiety: Relationships with Motivation and Attitudes Toward Learning Among Brazilian University Students" emphasizes the Brazilian context, identifies academic anxiety in college students, and examines it in relation to motivational, attitudinal, and demographic variables. Suggestions for improving emotion regulation and reducing anxiety in Higher Education are also presented.

Bullying is a school problem that affects students' mental health. Therefore, chapter "Bullying in Adolescence and Anxiety: An Integrative Review" addresses the topic through an integrative literature review of the last 5 years. It considered differences in relation to gender and the relationship between bullying, exposure to it, and anxiety. The chapter discusses aspects that can be used in intervention programs with students.

Chapter "Stress and Test Anxiety, Coping, and Academic Performance in High School and College" focuses on the coping used to deal with typical stressors in academic assessment situations and the relationship with academic performance, with a view to reflection and subsequent proposition of interventions to help students. Chapter "Mathematics Anxiety and Successful Reversal Strategies: A Brazilian Experience" is focused on the Brazilian context and presents an

experience in reversing math anxiety in elementary school students. The whole process of this program is deepened and detailed in the chapter.

Chapter "Interventions to Reduce Academic Procrastination: A Review of Their Theoretical Bases and Characteristics" is a literature review, with emphasis on psychoeducational and clinical approaches to reduce academic procrastination. Intervention programs are described associating them with their theoretical/conceptual bases, presenting their effectiveness. Chapter "Anxiety Disorders in Childhood and Adolescence: Prevalence and Diagnostic Considerations" presents prevalence rates and comorbidities, diagnostic considerations, and illustrative examples of different types of anxiety disorders in school-aged children and adolescents. Cultural aspects in the prevalence, diagnosis, and presentation of anxiety disorders are also discussed. Chapter "Applications of Preventive Child Regulation Work (tri-p) in the School Context" also addresses issues about the high prevalence of anxiety disorders in childhood and suggests prevention programs applied in schools, thus providing tools for children to manage their emotions, such as emotion regulation strategies and resilience to cope with adverse situations.

One way to have an adaptive adjustment to situations of anxiety in the academic context is via development of creativity. Thus, chapter "Creative Intervention Proposal in the Management of Academic Anxiety" shows a creative development program for managing academic anxiety. It involves exploration of new ideas, changes in perception, and problem-solving. Thus, the potential of the individual is sought, understanding that creativity can expand the possibilities of personal and professional achievement and improve emotional self-regulation in the academic environment in anxiogenic situations.

Cognitive-behavioral interventions are discussed in chapter "Cognitive Behavioral Treatments for School-Related Anxiety in Children and Adolescents" as they have proven effectiveness in school settings for students with various types of anxiety disorders, test anxiety, and school refusal. These interventions can be applied at different levels of student need. The importance of protecting the student's privacy and collaborating with parents or guardians is also discussed. Chapter "Cognitive Process Therapy for Schoolchildren with Test Anxiety" discusses Cognitive Processual Therapy, using specific techniques for cognitive restructuring. Its application in public schools for adolescents aged 11–17 years is described, in Salvador, a city in Brazil.

Chapter "Sleep-Wake Cycle and Moderating Effect of Physical Activity in Managing Anxiety" expands the issue of anxiety to psychophysiological processes. It discusses the impact of physical exercise on anxiety management and the relationship between sleep, anxiety, and physical exercise, in a psychophysiological way. Chapter "Acceptance and Commitment Therapy in Educational Setting" addresses the Acceptance and Commitment Therapy and its applications in education with workshops that can be incorporated into the school curriculum, self-guided interventions, and individual therapy. The authors provide an adapted self-guided intervention protocol in booklet format.

In Brazil there is the *vestibular*, a very competitive exam that determines admission to university, which triggers stress and anxiety in adolescent candidates. Thus,

chapter "Compassion-Focused Therapy Intervention for *Vestibular* Exam for Students from Private High School in the City of São Paulo" presents an intervention based on Compassion Focused Therapy for the promotion of emotional self-regulation and compassion training as an antidote to pre-exam anxiety in São Paulo, a large Brazilian city. In chapter "Use of Functional Analytic Psychotherapy in a Case of Test Anxiety", the author presents a view of test anxiety from the perspective of Radical Behaviorism and Functional Analytic Psychotherapy and presents a case study as an example of application of the approach.

Chapter "Dialectical Behavior Therapy Skills Training in the School Environment" discusses Dialectical Behavior Therapy, which is used for emotional regulation in severe cases, but for prevention of mental health problems. A proposal for adaptation of the American program for the academic context – DBT Skills in Schools: Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A) – is presented for the Brazilian context. Chapter "Applications of Rational Emotive Behavior Therapy for Students with Test Anxiety" discusses anxiety considering Rational Emotive Behavioral Therapy, whose focus is to understand how irrational beliefs contribute to anxiety. It seeks, in this chapter, to discuss specific interventions to help students with this problem. In chapter "Mindfulness--Based Interventions for Anxiety and Stress in College Students: An Integrative Review", the authors conducted an integrative review to investigate the effects of mindfulness-based interventions on anxiety and stress in college students. It is also discussed how such practices can improve quality of life. Chapter "Schema Therapy for Adolescents with Testroom Anxiety" presents the Schema Therapy as an interventional possibility for reducing anxiety and its impact on students' school performance, because studies point to significant correlation between maladaptive schemas and anxiety symptoms.

Chapter "Online Care for Adolescents and Young Adults with Anxiety During the Aftermath of the COVID-19 Pandemic" discusses the effects of the COVID-19 pandemic on routine, relationships, and academic activities of children, adolescents, and youth, considering that anxiety may worsen in this period. This chapter presents a 16-session online cognitive behavioral intervention for academic anxiety, discussing this format, its effectiveness, and the care one should take in the online psychotherapeutic context. Chapter "Emergency Remote Education in Brazil in the Context of the COVID-19 Pandemic: Dialogues on Teaching Practice" discusses the impacts of the pandemic in the Brazilian educational context, which affected teachers, students, and educational management. It refers to the discussion about the transformation of teaching, the transition to the digital medium, the implementation of technological resources, and issues about the teacher's health.

Chapter "Cognitive-Behavioral Intervention for Test Anxiety: Could Teachers Deliver the STEPS Program and What Training Would They Require?" describes an intervention called STEPS: Strategies to tackle examination pressure and stress – STEPS 2.0. The authors suggest that different school staff can be trained to apply the intervention. Finally, chapter "Teacher's Educational Social Skills: A Discussion About Their Importance for the Teaching-Learning Process" discusses teachers' educational social skills and how they can affect the teaching-learning process of students.

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Part I
Test Anxiety: Variables and Process

Anxiety in the Schools: Causes, Consequences, and Solutions for Academic Anxieties

Jerrell C. Cassady

It is largely acknowledged that learners are displaying increasing levels of negative affective responses within educational settings, primarily sparked by a wide array of stressors that are interpreted as threatening (Pekrun, 2006; Putwain, 2007; Thomas et al., 2017). The available data provide estimations ranging from 20 to approximately 50% of learners will struggle with debilitating anxiety, depression, or related emotional distress at some point in their academic journey (Putwain & Daly, 2014; von der Embse et al., 2013), with the probability increasing as learners get older (Greenberg et al. 1999; Kessler et al., 2005).

The fields of education and psychology have been progressively approaching a more pragmatic orientation toward tackling this problem, moving from predominant focus on assessment and theoretical studies to a significant increase in ecologically valid intervention strategies in schools and other education settings. However, the field is hampered by the reality that academic anxieties do not fall into any protected disability directly. While learners will often be identified with an emotional difficulty, the symptoms they experience generally are classified as a "preclinical" anxiety and falls short of receiving formal psychological support. Furthermore, the incidence rates and variations in severity would make traditional clinical approaches unwieldy in most schools. As such, much of what is done in schools to support learners with academic anxieties falls to teachers, counselors, administrators, and parents. To support their efforts, this chapter is focused on an integrated view of emotional information processing from the perspective of academic anxieties. The primary goal of this discussion is to review a model of emotional information processing, and identify how those stages of processing can be used to identify areas of need and intervention for learners struggling with academic anxieties.

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Academic Anxiety

To provide context to the approach taken to construct this chapter, a brief overview of my perspective regarding the refinement of the field of academic anxieties may serve a purpose. My earliest exposure to this field in the 1990s was in the exploration of how to effectively assess test anxiety, building upon the work of foundational scholars such as the Sarasons and Spielberger – attempting to target a specific dimension of test anxiety we referred to as "Cognitive Test Anxiety" (Cassady & Johnson, 2002). The purpose of the new term was to highlight the range of cognitive features that were implicated in what was generally identified as "Worry" in the bifactor model (Liebert & Morris, 1967), such as task irrelevant thinking, cognitive overload, and distraction. In essence, it was a "rebranding" of terminology to highlight the complexity of the construct.

In a similar line of reasoning, as my colleagues and I started to work more intentionally with a broader group of individuals reporting difficulties with anxiety in academic settings, we noticed that far too often teachers, parents, administrators, and researchers alike struggled with the expression of anxieties that were triggered in academic settings, but were not "test anxiety." Zeidner and Matthew's work in this realm was instrumental in guiding our thinking, as he began to use the term "evaluation anxiety" (going beyond "test" as the critical feature; Zeidner & Matthews, 2005). However, we also noticed there was sizable attention to anxiety focused on math, statistics, science, and technology (or computers). Recognition of these various "forms" of anxiety in academic settings was seen as a value to the field – because more learners who experience feelings of anxiety may be recognized and served. However, we also saw this as a challenge to teachers, parents, administrators, and counselors due to the perception that these were all unique "conditions" (none of which are clinically diagnosed).

To help in our discussions with these stakeholders, we adopted the term Academic Anxiety to help communicate the generalizable characteristics, outcomes, and solutions that may be adaptable to support learners experiencing academic anxiety, without requiring expertise in all these varied domains. At that time, we predicted "the term *Academic Anxiety* is not a common term in the literature, but one that I believe will begin to gain acceptance as a unifying formulation for the collection of anxieties learners experience while in schools" (Cassady, 2010; p. 1). As this volume demonstrates, attention to a broader dimension of academic anxieties has been great – and the growth in the field has been notable and valued.

To help operationalize academic anxieties, my colleagues and others have represented academic anxiety as a response profile to perceived stressors in any academic context. The interpretation of these stressors is formed in an individually specific constructivist framework in which environmental stimuli (e.g., challenges, stressors, expectations, classroom goal structures) interact with personal factors (e.g., self-efficacy, prior experiences, beliefs) to generate an appraisal of the degree of threat imposed balanced against the individual's perceived ability to meet that challenge (see Bandura, 2005; Cassady & Boseck, 2008; Lazarus, 1993, 2006; Lazarus

& Folkman, 1987). A recent study has also demonstrated that academic anxiety as a measurable construct is situated in a "nested" hierarchical construct where academic anxieties are distinct from and subordinate to generalized anxiety measures, but within that hierarchy academic anxiety appears to encompass more specific articulations such as cognitive test anxiety and emotionality (Cassady et al., 2019).

The focus of this chapter is to take another step in a process undertaken collectively by researchers and practitioners from a wide range of disciplines focused on helping individuals with anxieties in academic settings effectively identify the causes, consequences, and solutions that promote optimal performance for all learners. To that effort, this chapter will briefly summarize research documenting (a) sources that tend to underlie the manifestation of academic anxieties, (b) how academic anxieties impact learners, and (c) a solution paradigm that shows promise in providing a relatively generalized approach to supporting anxiety challenges across a wide range of learners and contexts.

Emotional Information Processing

To guide the discussion of causes, consequences, and outcomes of academic anxieties, this chapter will employ the Emotional Information Processing model as a framework. The EIP was designed to help practitioners and researchers interrogate learning events to identify conditions and processes that promoted thriving and success in emotionally charged settings (from a positive psychology perspective, Cassady & Boseck, 2008) as well as provide a stage-like information processing model to help isolate emotion regulation and self-regulated learning strategies that buffer anxiety in academic settings (Cassady & Thomas, 2020). The model was built upon the work of prior models focused on emotion regulation (e.g., Gross, 2015; Pekrun, 2006), social information processing (Crick & Dodge, 1994), and models focused on perceived stressors and coping strategies (Lazarus, 2006; Lazarus & Folkman, 1987). The model (see Fig. 1) recognizes that the cues learners attend to and the mental representations they form in response to those cues set the stage for setting goals to manage that context. In conditions where the perception is one of "threat," learners are more likely to activate avoidance or ego preservation goal sets – activating less adaptive and more reactive coping strategies. Throughout the process, the EIP recognizes that the processing of the environmental cues, interpretations of those cues, goal strategies, and coping/response strategies are continuously informed by their prior knowledge and repository of developed skills and abilities.

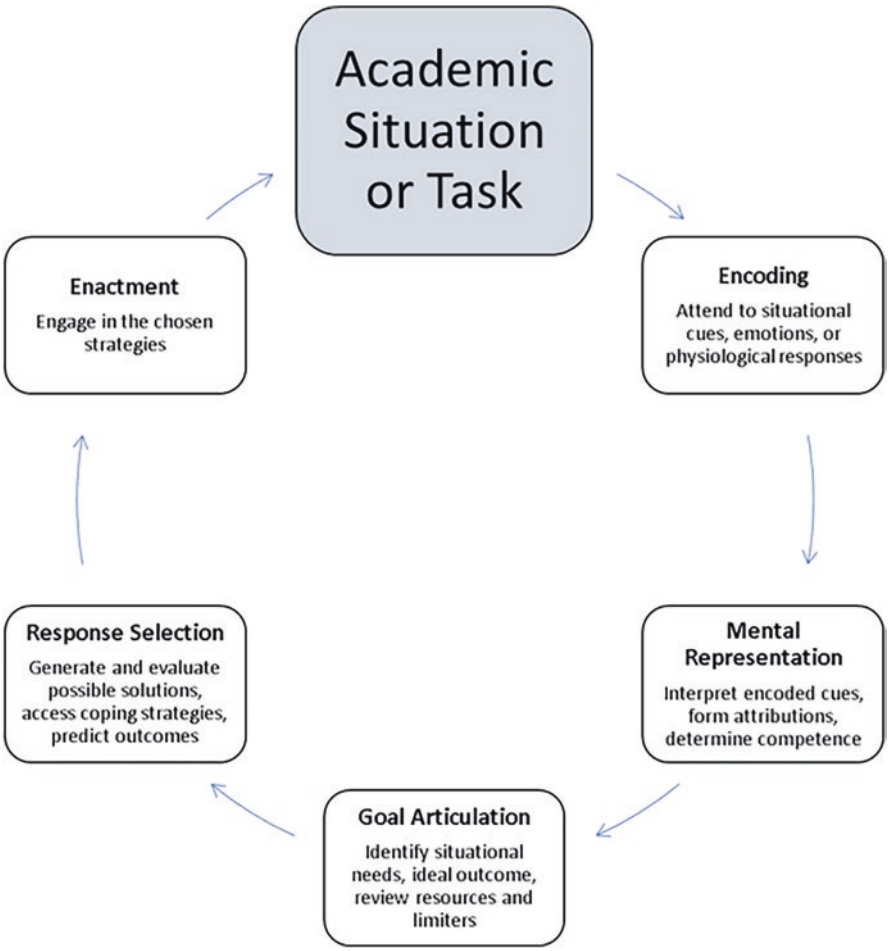

Fig. 1 Academic anxiety sources

Academic Anxiety Sources

To effectively identify meaningful strategies that are viable and successful in reducing academic anxieties, the first area of focus needs to be on the sources of those anxieties. One traditionally frustrating effect in many research attempts to address academic anxieties is the inability to find durable impact outcomes for participants receiving the chosen intervention. I propose one reason we find limited success with many studies on anxiety interventions in academic settings is the interventions do not match to the individual need. That is, a study examining the efficacy of mindfulness training often identifies that the practice is successful at reducing test anxiety – but only with a limited portion of learners in the study. Conversely, a study skills training program may prove effective with a different subset of anxious learners.

This often results in meta-analytic study findings of mixed or varied degrees of efficacy for specific methods of intervention for learners' levels of reported anxiety and/or subsequent academic performance (Hembree, 1988; Huntley et al., 2019). Careful attention to the sources of an individual's academic anxiety as well as the learners' emotion regulation skills and self-regulated learning skills that can serve as effective coping strategies should enable supporters of the academically anxious to "prescribe" interventions that target those areas of challenge or difficulty (Serrano Pintado & Escolar Llamazares, 2014).

Contemporary explanations for sources of academic anxieties can largely be categorized into four broad factors: (a) expectations imposed through social systems or networks (e.g., schools, parents, peers; Lee & Lowe, 2008; von der Embse & Witmer, 2014), (b) internal or personal expectations (e.g., perfectionism; Eum & Rice, 2011; Stoeber, 2004), (c) situational pressures (e.g., high stakes exams, atypical levels of underpreparedness; Putwain & von der Embse, 2018; von der Embse et al., 2018), and (d) perceived inability to meet the demands of a forthcoming task (Lazarus, 2006; Sommer & Arendasy, 2014). These relatively clear and differentiated domains of possible causes for elevated academic anxieties suggest that individuals with academic anxieties may be effectively "typed" – that is, compelling profiles of anxiety have been developed and have guided our field for decades (e.g., Zeidner & Matthews, 2005). Unfortunately, these profile models often make it difficult to disentangle the "source" or cause of anxiety and the "outcome" or consequence of having anxiety. While these "types of anxiety" frameworks are very useful in recognizing symptoms, activating possible solutions, and gaining insight to the foundations of anxiety, there is value in disentangling these elements to build models for wide application. In particular, two related theories focused on emotional responses to academic stressors have been instrumental in identifying sources of achievement emotions in an ecological framework that embraces the social cognitive tradition attending to environmental, personal, and behavioral influences (e.g., Bandura, 2005).

Pekrun's (2006) influential Control-Value Theory (CVT) model of achievement emotions is an excellent example of a model that focuses specifically on primary factors that trigger anxiety responses. An overly simplified description of this model is that the intersection of learners' perceived control over the outcomes of academic events and their value for success in those activities are fundamental to the formation of achievement emotions (Pekrun et al., 2007). Using this framework, the CVT implicates these two core perceptual representations of the environment and the self, suggesting that anxiety will be elevated in contexts where learners place high value on task success and/or they judge their abilities to achieve that success (control, self-efficacy) to be insufficient. In a recent confirmational study, the power of the CVT models was demonstrated for this field with findings that both control and value were instrumental in predicting math performance, as mediated through students' levels of anxiety (Putwain et al., 2020).

The Self-Reference Executive Function (S-REF; Wells & Matthews, 1996; Zeidner & Matthews, 2005) provides a detailed description of subcomponent features and operations that are implicated in the development of worry and anxiety in

academic settings. The S-REF was an early model in emotion regulation that recognized the utility of examining cognitive processing to identify both the "triggering" of emotional disturbances and possible interventions. Wells and Matthews (1996) summarized the formation of negative emotional responses as a "consequence of actual or anticipated inability to meet the goals specified" (p. 884). The S-REF model is consistent with the well-established transactional theory of stress and coping (Lazarus, 2006; Lazarus & Folkman, 1987) that proposed threat appraisals are developed in a recursive feedback loop where the learner examines the context and their perceived abilities to meet the expectations at hand. This appraisal is based on the interpretations of the environmental elements (expectations imposed by the task or others), perceptions of efficacy within that context (self-efficacy, control), and available coping strategies – which may be activated to overcome a deficit or used in a maladaptive coping process to escape the threatening context (Lazarus, 2006). In the motivational theory of coping, Skinner has argued that coping strategies all have adaptive value but what differs is the functional role of the coping strategy in the given setting (Skinner et al., 2003). That is, the various "families" of coping strategies are adaptive in aligning the individual's goal set with the environmental opportunities and challenges (e.g., Social Withdrawal adaptively addresses the goal of "reducing state anxiety" – but may not lead to optimal long-term functioning). Continued work in this domain has led to a proposed hierarchical grouping of the families of coping strategies as "challenge coping" vs "threat coping" – which is dictated by the level of perceived competence and control in the context (Zimmer-Gembeck et al., 2011).

In a series of recent empirical tests of CVT and S-REF in examining cognitive test anxiety in particular, we have documented the utility of both representations in predicting the presence of elevated levels of academic anxiety. Examining the CVT model directly, Thomas and Cassady (2019) detected that both Task Value (positive relationship) and Control (negative relationship) elements were instrumental in predicting the level of test anxiety. However, the data demonstrated that Control commanded roughly twice the explanatory power over degree of anxiety when compared to Task Value (Thomas & Cassady, 2019). This work is supported by several related studies demonstrating the buffering potential of positive self-efficacy or academic buoyancy in reducing anxiety (Putwain & Aveyard, 2018; Putwain et al., 2016). However, this line of research (like many in psychology) has been dominated by linear statistical models, leaving largely unexplored the potential curvilinear relationships among stress and performance.

To explore the role of control and anxiety more completely, our lab explored the potential of a curvilinear relationship between academic anxiety and elements of Control (Cassady & Finch, 2020). In that study, we identified that cognitive test anxiety peaked when the learner had the highest degree of "uncertainty" over the outcome of the academic event. This finding enabled by exploring non-linear solutions supports the oft-proposed notion that "some degree" of stress is a motivating impulse (aka facilitative anxiety). In that work, the traditional "inverted U" shape was observed, with low levels of anxiety exhibited for those perceiving certainty in their academic outcomes (either failure or success; Cassady & Finch, 2020). This

finding contrasts with the linear models primarily in the level of anxiety for situations when failure is perceived as imminent. Following a basic S-REF representation, it would be expected that the appraisal of failure would generate heightened anxiety. However, it is possible (within a CVT framework) that in settings with low expectation of success, the learner may have lower levels of anxiety due to recognition that the "outcome" of the event is beyond control or success has been devalued in an ego defense process.

Within the EIP framework, both of these possibilities can be accounted for by examining both the Mental Representations (Stage 2) and Goal Articulation (Stage 3) held by the learner in that context (Fig. 1). Furthermore, the EIP allows for the perspective that there can be a positive or motivating influence of academic stressors, provided the stressor does not exceed a threshold specific to that individual setting. This view, often linked to Yerkes and Dodson's work with mice receiving varying degrees of electric shock when they entered the "wrong" passage (1908), has developed into a representation of "facilitative stress" and proposes that these indications of challenge or moderate to low levels of stress serve to orient or activate our energy toward adaptive coping strategies to meet the needs of that setting (see Alpert & Haber, 1960; Kader, 2016). Indeed, recent research has demonstrated that curvilinear relationships exist with academic anxieties and behaviors related to academic success and thriving, illustrating that "no anxiety" over an academic event is sometimes an indication of failure-acceptance orientations, and predict learned helplessness and withdrawal (Raffety et al., 1997; von der Embse et al., 2018). These conclusions resonate with the model of motivational coping (Skinner et al., 2003; Zimmer-Gembeck et al., 2011), in that the coping strategies employed are reliant on mental representations (situational interpretation imposed challenge and personal competence/control) in concert with the established goals to determine the preferred enacted strategies.

Consequences of Academic Anxieties

Consistent with the perspective that specific and differential examination of the causes or sources of academic anxieties, it is imperative to recognize that the outcomes of academic anxieties vary significantly among and within individuals. However, negative outcomes connected to the presence of academic anxiety can be loosely classified into one or more of three common explanations: (a) development of or perseveration over beliefs about current or future academic tasks that center on doubt or worry; (b) activation of maladaptive coping strategies that promote escaping, delaying, or evading the source of the anxiety; and (c) operating with suboptimal cognitive processing efficiency that hampers optimal performance. Naturally, these various outcomes intersect and influence one another (e.g., maintaining negative beliefs about success increases the adoption of avoidance coping strategies), and the eventual consequences are the continuation of academic anxiety, lower

performance outcomes, and often a lower perceived quality of life (Ergene, 2003; Hembree, 1988; von der Embse et al., 2018).

In contemporary work with test anxiety in particular, considerable attention is given to explaining suboptimal performance by implicating essentially a cognitive load argument, that the additional processing energy dominated by doubts or maladaptive stressors occupies a form of extraneous processing and hampers performance (Chen & Chang, 2009). Both the attentional control and processing efficiency theories (e.g., Eysenck et al., 2007) focus on this inability to focus attention effectively on task-relevant activities or elements, reducing the ability to successfully meet particularly challenging goals. Processing efficiency theory helps account for findings in the literature that demonstrate heightened levels of anxiety alone do not necessarily hamper performance – but the performance declines are readily noted in conditions where the cognitive tasks challenge the learner. From a cognitive load perspective, in conditions where the cognitive challenge facing the learner is lower, the excess load imposed by external or internal stressors can be more readily tolerated – still having a lower level of efficiency, but not necessarily impacting overt performance. This has been convincingly demonstrated in studies that have demonstrated that individuals with high levels of anxiety demonstrate longer response times for challenging cognitive tasks, but did not show lower performance than their low-anxiety counterparts (Wong et al., 2013).

Solutions for Academic Anxieties

As articulated before, I perceive a potential limitation in the field of interventions for academic anxieties in the attempt to treat all participants in a study with a universal methodology. Naturally, this is driven by using quality, controlled research design, but it can limit the potential to adequately meet the individual needs of learners in realistic settings. Quite simply, there are a myriad of manifestations of academic anxiety exhibited by individual learners. To date, there are a few quality examples focused on providing individualized variations or multimodal approaches to reducing anxiety that show promise (see Huntley et al., 2019; Putwain et al., 2014).

Systemic Approaches to Solutions

Before identifying specific strategies that provide relief from academic anxieties for individual learners in unique contexts, it is valuable to attend to possible systemic solutions that support positive emotional environments to disrupt the disquieting trends in anxiety prevalence (Putwain & Daly, 2014; von der Embse et al., 2018). One promising environmental adjustment is to deescalate the degree and salience of emotional threat imposed by stressors in academic settings. Teachers, parents, and educational support staff can support this by reducing the number of “threat cues”

when presenting forthcoming evaluation events (Segool et al., 2013). Schools can be designed with attention to supporting the development of academic spaces as calm and secure areas for the learners (Hughes & Coplan, 2018), or promoting mastery-focused classroom goal structures, encouraging growth mindsets, de-emphasizing overt competition, and encouraging "risk taking" in the form of noting that mistakes are part of a learning process (Dweck, 2007; Meece et al., 2006; Putwain et al., 2010).

It is also essential to recognize the presence of systemic racism, sexism, ableism, and other externally imposed threats to the safety and security of learners in academic settings that exacerbate the "base rate" of anxiety experienced by learners from traditionally underserved and oppressed groups (Stovall, 2021). Furthermore, failure to recognize the unique features of cultural and personal identities can lead to the implementation or adoption of strategies intended to reduce anxiety (e.g., mindfulness exercises), but may perpetuate or elevate the degree of emotional distress by triggering traumatic experiences or perpetuating microaggressions (see Duane et al., 2021).

Another systemic strategy that holds promise for reducing the incidence of academic anxieties is to employ a method of universal screening and tiered intervention support (see Cassady & Thomas, 2020). Universal screening for emotional difficulties across all levels of formal education would ensure that early indicators of preclinical anxieties (among other concerns) can be detected and served. Tiered intervention systems (i.e., Multi-tiered systems of support; Brown-Chidsey & Steege, 2010; Walker et al., 2000) aligned with this process provides targeted support for individuals with varying degrees of need.

Finally, providing "multimodal" intervention programs that recognize cognitive, emotional, and behavioral components of academic anxieties and provide intervention support across these various domains provide a broader range of support to learners. For example, the STEPS program (Putwain et al., 2014) demonstrated success in supporting learners with test anxiety by providing a series of six pre-programmed self-paced training sessions that targeted cognitive behavioral (e.g., positive self-talk), relaxation techniques, self-regulated learning strategies, and contextual knowledge about how and when to implement the varied strategies.

Adjusting Perceptions of Threat (EIP Stages 1–2)

Consistent with Wells and Matthews' S-REF (1996) model, models of coping (Lazarus, 2006; Skinner et al., 2003), and Pekrun's CVT model (2006), the EIP identifies that in the first two stages, learners encode and interpret cues from the environment, reflect upon prior experiences, and develop a mental representation of the task at hand (Cassady & Thomas, 2020). In this process, the learner maintains a perception of the requirements of the task at hand, the resources available to meet those expectations, and establishes an initial appraisal of the likelihood of being successful. During these two phases (see Fig. 1), the learner determines the degree

of threat in the situation, their value for success, and the degree to which they have agency or control over the outcomes of the situation. For individuals who are likely to develop an appraisal of likely failure, high threat (to self, ego, or academic standing), the academic context will likely produce an anxiety response (Gross, 2015; Lazarus, 2006; Pekrun, 2006).

Employing strategies that have demonstrated promise in adjusting these *perceptions* that are constructed by individual learners can promote the potential for learners to engage with challenging academic tasks without reverting to hopelessness or avoidance profiles that limit potential academic and learning growth (Stoeber, 2004; von der Embse et al., 2017). To support this process, learners can be supported to adjust the way they interpret cues during the Encoding and Mental Representation stages. One strategy for this is to call attention to positive cues in the academic context that are often overlooked by learners with predispositions to anxiety, who demonstrate a tendency to encode threat cues and have restricted access to additional attentional cues (Britton et al., 2011). Highlighting positive environmental cues that may have been overlooked due to a hyper-focused attention on negative emotional signals can reduce the probability of generating maladaptive attributional biases (Zeidner & Matthews, 2005; Zentall et al., 2001). Further, focusing on internal cues (prior successes, available coping strategies) can activate positive self-efficacy and confidence to support higher appraisals of success or control (Cassady & Boseck, 2008; Lang & Lang, 2010; van Yperen, 2007).

As articulated in the appraisal theory (Lazarus, 2006) and transactional coping model (Lazarus & Folkman, 1987), the appraisal that the individual generates regarding the threat imposed by an academic stressor is the key feature in determining if an anxiety response and declining performance is likely. A burgeoning line of research in the past 10 years has focused on the potential to train students to "reappraise" the anxiety symptoms they detect, thereby defusing or disrupting perseverance on negative affective stimuli. Specifically, the reappraisal process first involves identifying indicators of stress and anxiety, then informing the learners that anxiety may support their learning efforts (working from a facilitative anxiety perspective). The evidence on this process demonstrates some promise, with reappraisal groups demonstrating superior performance on the Math portion of the GRE (but not the Verbal; Jamieson et al., 2010) and in first year college students' performance on course exams as well as a reduction in their levels of the worry component of test anxiety (Brady et al., 2018). Research suggests conditions that support successful reappraisal strategies include students accepting the potential that anxiety can be a motivational force, academic tasks that are cognitively challenging (i.e., higher cognitive load contexts), and when used in conjunction with effective learning supports (e.g., self-regulation strategies, content support; Brady et al., 2018).

Finally, there have been various approaches demonstrated to help learners reduce their level of overall reactivity in anxiety-laden situations, producing effective reductions in anxiety and heightened performance (Hartman et al., 2016; Hembree, 1988; Holzel et al., 2011). These methods have included relaxation techniques, yoga or meditation, focused breathing, and biofeedback training (Huntley et al., 2019). Recently, this collection of relaxation techniques has generated a growing

body of research on mindfulness-based training strategies that have demonstrated the utility of mindfulness strategies to relieve anxiety as well as support improved performance (e.g., Carsley & Heath, 2019; Chambers et al., 2008; Cho et al., 2016; Heath, 2021). Acceptance and Commitment Therapy, which adopts a mindfulness perspective to acknowledging and accepting – rather than attempting to manage or eliminate academic stressors – is one approach with promising evidence of both reducing reported levels of anxiety and leading to increased exam performance, outperforming similar students using cognitive behavioral therapies or systematic desensitization (Brown et al., 2011; Zettle, 2003). Within an EIP perspective, mindfulness strategies certainly impact the encoding and mental representations learners adopt by helping regulate attribution and threat appraisals – but also can be seen in later stages as an effective coping strategy to meet emotion-focused goals.

Effective Goal Structures (EIP Stage 3)

Expanding upon the mental representations learners adopt regarding academic stressors, the EIP aligns with research on effective goal structures that orient toward continued growth (i.e., growth mindset) and seeking strategies to promote active coping rather than avoidance or maladaptive coping strategies (Dweck, 2007; Lazarus, 2006). One particularly important observation that has been developed in the coping literature has been the recognition that "emotion focused coping" is not by nature a maladaptive or avoidance coping strategy (Thomas et al., 2017). To the contrary, there are considerable advantages for learners who have heightened states of negative affect to employ goal strategies that focus on emotional coping (in addition to goals centered on the academic tasks at hand; Gross, 2015). Simply, developing emotion regulation strategies that defuse negative affective energy can support an overall efficacy in cognitive processing required to support learning (Boekaerts & Pekrun, 2015).

While each situation is specific to the learner and context, general principles for optimal achievement goals are useful to support learners navigating challenging emotional settings. Given the noted tendency for performance-avoidance goals (withdrawal, self-handicapping, procrastination) among learners with academic anxieties (Thomas, 2021; Thomas et al., 2017; Zeidner & Matthews, 2005), the first recommendation is to guide learners to goal structures that are more adaptive. Generally speaking, these may be mastery or approach-oriented goals (Jarvela et al., 2015; Quoidbach et al., 2015). In a recent test of the 3 × 2 Achievement Goal model, Thomas (2021) confirmed this strategy with the finding that task-approach goals were associated with the lowest levels of test anxiety. Collectively, the research is converging on the suggestions that supporting learners with negative affective responses should involve helping them establish goals focused on (a) meeting the task at hand with effective self-regulated learning strategies, (b) managing or reducing symptoms related to anxiety through active emotion regulation strategies (e.g., expressive writing, exercise; Gross, 2015; Ramirez & Beilock, 2011; Serrano

Pintado & Escolar Llamazares, 2014), and (c) focusing on the *processes* supporting the achievement of learning goals (e.g., goals directed toward preparation) rather than the *outcomes* of an academic event (Dweck, 2007).

Coping Strategies and Self-Regulated Learning (EIP Stages 4 and 5)

Finally, in the fourth and fifth phases of the EIP, strategies for meeting the goals and achieving success in the academic context are evaluated (i.e., considering multiple options, examining the likelihood of success for each option) and enacted (Cassady & Thomas, 2020). Within the skills deficit explanation for test anxiety, one of the base assumptions is that training learners to have better study skills and strategies will improve their performance as well as adjust their anxiety for the event due to their appraisal of higher probability of success due to access to more effective learning strategies (Crede & Kuncel, 2008; Sommer & Arendasy, 2014).

Consistent with the discussion on the value of emotion-focused coping for learners with negative affective responses to academic challenges, meta-analyses examining research on academic anxieties have repeatedly demonstrated that study skills training alone is often ineffective for reducing anxiety and/or promoting performance for learners with academic anxieties (Ergene, 2003; Huntley et al., 2019). Specifically, the research demonstrates that the study skills training is generally more effective when paired with emotion-focused coping strategies that help manage the threat appraisals generated in the early stages of EIP.

Naturally, the proposed limitation of research studies employing a single intervention to treat academic anxieties that may differ in form or function is potentially implicated in this trend – but the EIP also explains that if a learner maintains a heightened level of anxiety based on the mental representations that are established in Stages 1 and 2, the goals they establish may be focused on reducing anxiety (and not on successful performance in the academic task) or escaping the negative affective state altogether (Stoeber, 2004). In those cases, newly trained study skills or self-regulated learning strategies may not be effectively reviewed and considered as a relevant or viable strategy in Stage 4. To test this proposition, Martynowicz (2017) provided a study skills training program that provided undergraduate students with a programmed presentation on how to engage in self-testing. The critical manipulation in that study was that half of the students also received a short video of a fellow student who explained that the new method had improved their success in academic tasks (presumably enabling a reappraisal of the level of competence to succeed in the task). This "testimonial" approach led to increased use of the strategy in their study diaries as well as higher appraisals of the efficacy of self-testing as an effective study preparation activity.

Study skills and strategies that have been indicated as viable adaptive coping strategies to support improved performance in stressful academically conditions

include planning and organization skills focused on managing time (Putwain et al., 2014), (b) test taking strategies or skills (Crede & Kuncel, 2008; Ergene, 2003), (c) general methods of managing cognitive load and spaced presentation of content (Mowbray, 2012), and (d) study habits and activities that are more "engaged" strategies for preparation (as compared to "receptive learning" methods; e.g., Cassady & Finch, 2020; Martynowicz, 2017).

Conclusions

Theories of academic anxieties, under a variety of names, have been developed and refined progressively for the last 50 years. Over that time frame, the field has generated more specific and refined representations of how anxieties are generated, how those anxieties impact learners, and viable strategies for supporting those with anxiety. More importantly, the field has shifted dramatically in the past 15 years in particular to a more explicit solutions-oriented discipline, with considerably greater attention given to field trials examining interventions to support both the reduced experience of anxiety and increased academic outcomes. The use of the EIP in this discussion has been a mechanism to help organize the literature that is moving in this direction as well as point to a method of "diagnosing" and treating the areas of greatest need for individual learners presenting with an academic anxiety response.

Using the stages of the EIP to examine learner experiences to identify areas of thriving as well as struggle, professional educators, counselors, and supportive family members can help learners with academic anxiety apply a multifaceted (or multimodal) intervention that targets the points at which the negative affective responses begin to exert negative influence on beliefs and behaviors. This process is similar in nature to a diagnostic intake interview, wherein the supportive professional or family member identifies (a) the appraisals held regarding the academic event in question, (b) the available resources and skills that can support performance, (c) explicit and implicit goals that have been developed or underlie the learners' experience, and (d) the repository of coping strategies that are available for that setting.

In our lab, the EIP model has served as a useful resource for supportive peers and faculty providing non-clinical support to learners with academic anxieties. Using the EIP framework, the support members have been able to have productive discussions with undergraduate university students presenting with academic anxieties to problem solve their perceptions and coping practices. In that context, university students generally identify the specific areas where they have the most difficulty, and build a self-support plan utilizing emotion regulation skills and strategies along with self-regulated learning strategies as needed. Rather than a "one size fits all" approach, our discussions with these learners focus on identifying a set of changes to their appraisal or study approaches to adopt more adaptive habits that meet their specific needs.

This approach naturally relies heavily on the autonomy of university learners, which is less viable for younger students. However, our work with school

counselors and school psychologists has demonstrated that they are able to take this basic representation for analyzing the multifaceted responses to academic anxiety for their students and identify group and individual intervention strategies to minimize the impact of academic anxiety in students in elementary and secondary schools. In that way, the educators and support staff scaffold the process of effectively monitoring and regulating the strategies until learners adopt and maintain coping strategies that become durable.

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Supporting Student Success: The Role of Test Anxiety, Emotional Intelligence, and Multifaceted Intervention

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Supporting Student Success: The Role of Test Anxiety, Emotional Intelligence, and Multifaceted Intervention

There is general agreement that testing events are a ubiquitous component of students' primary and secondary education (Cizek & Burg, 2006; Lane et al., 2016; von der Embse & Putwain, 2015; von der Embse et al., 2021). In his influential review of the purposes of educational assessment, Newton (2007) emphasized testing data informs decision-making efforts that have tangible short- and long-term consequences for students. For instance, test data are used by educators to make determinations about students' content mastery and to document academic progress (Lovett & Nelson, 2017; Newton, 2007; Wiggins, 1993). Decisions regarding student learning often serve as a "gatekeeper" to educational advancement and specialized academic opportunities (Newton, 2007). Take a moment to consider the experience of a student working to receive their secondary school credential. The student's ability to progress to the next grade level and attain a high school diploma is dependent, in part, on their performance on classroom and standardized assessments (Cizek & Burg, 2006; Segool et al., 2014). Further, access to gifted and talented programming and structured academic support services is often tied to judgments about students' academic performance that are based on testing data (Bracken & Brown, 2006; Cao et al., 2017).

Importantly, students' performance during testing events also has important implications for educators and their respective school systems. In the era of

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school-based accountability, government officials use performance on standardized assessments to make determinations about educational effectiveness and school quality (Leckie & Goldstein, 2019; OECD, 2008; von der Embse & Putwain, 2015). Schools and school districts whose students fail to reach achievement benchmarks are subject to sanctions designed to motivate administrators and educators to implement programmatic revisions to enhance teaching quality and student learning (Deming & Figlio, 2016). For instance, schools could be required to develop and implement improvement plans, replace personnel (e.g., principals, governors, etc.), allow students the opportunity to transfer to another institution, or potentially close their doors (Deming & Figlio, 2016; West et al., 2011).

Given the potential student and school-level consequences of test performance, classroom and standardized tests must provide an accurate estimate of student knowledge. Unfortunately, a concerning number of students experience affective, cognitive, and behavioral reactions to testing situations – known as test anxiety – that prevent them from demonstrating their content mastery and achieving their full academic potential (Putwain & Daly, 2014; von der Embse et al., 2018; von der Embse et al., 2014). Efforts to better understand why learners respond negatively to tests have suggested test anxiety is a complex cognitive-motivational phenomenon resulting from the interaction among situational demands, knowledge structures, enduring personality dispositions, controlled processing, and attempts to regulate emotional experiences (Thomas et al., 2017; Thomas & Cassady, 2019; von der Embse et al., 2018; Zeidner, 1998; Zeidner & Matthews, 2005).

Our purpose for this chapter is to provide an overview of the antecedents, nature, and outcomes of test anxiety that educators can use to inform student support efforts. Specifically, we will discuss the notions of affective and cognitive test anxiety, review the antecedents of test-anxious responses as outlined in the self-regulatory executive function model, provide a conceptual overview of the emotional intelligence construct, discuss the interplay among emotional intelligence, self-knowledge, and controlled processing in test anxiety severity, and conclude with a discussion of how educators can support test-anxious learners in the classroom.

The Distinction Between the Affective and Cognitive Dimensions of Test Anxiety

The test anxiety construct occupies a prominent position in the educational and psychology literature, given the widespread use of high-stakes testing to evaluate student learning and educational quality (Putwain, 2008; Segool et al., 2014; Symes & Putwain, 2020; Zeinder, 1998). Although theoretical frameworks differ in their conceptualization of the construct, there is general agreement that test anxiety is multi-dimensional and includes cognitive and affective components (Liebert & Morris, 1967; Morris et al., 1981; Morris & Liebert, 1970; Sarason, 1984; Symes & Putwain 2020; Thomas et al., 2020). The cognitive dimension, commonly referred to as worry (Liebert & Morris, 1967; Zeinder, 1998), or cognitive test anxiety (Cassady & Johnson, 2002), refers to internal dialog focused on the implications

and consequences that would follow poor test performance (Putwain, 2008; Symes & Putwain, 2020; Zeidner, 1998). For instance, studies have shown that test-anxious students report intrusive cognitions including (1) fear of how parents and other important social others will react to poor test performance (Depreeuw, 1984; Friedman & Bendas-Jacobs, 1997; Lowe, 2021; Lowe et al., 2008; Thomas et al., 2020), (2) negative self-referential thoughts calling into question their academic ability and overall self-worth (Blankstein et al., 1990; Carver & Scheier, 1988; Lowe, 2019; Sarason, 1960; Schwarzer, 1996), and cognitions focused on the broader consequences of poor test performance (Liebert & Morris, 1967; Spielberger et al., 1978). The affective dimension, referred to as emotionality (Liebert & Morris, 1967), comprises the activation of the sympathetic nervous system and the following physiological reactions learners experience during evaluative situations (Morris & Liebert, 1970; Roos et al., 2021; Ziedner, 1998). Investigators have provided converging evidence that test-anxious students report a variety of physiological responses including nausea, excessive (increased) sweating, elevated heart rate, need to use the restroom, and dry mouth during testing (Daly et al., 2011; Galassi et al., 1981; Suinn, 1984).

The negative association between test anxiety and academic performance can be explained by the impact the affective and cognitive dimensions described above have on information processing efficiency. Effortful attempts to monitor, suppress, and regulate affective and cognitive test anxiety interfere with efforts directed toward processing, storing, and retrieving test-relevant information (Cassady & Johnson, 2002; Eysenck & Derakshan. 2011). Specifically, test anxiety acts as a source of cognitive load that reduces the working memory – or attentional resources – that can be devoted to test-relevant tasks (e.g., studying for an assessment, attending to test questions, etc.) which in turn reduces performance on cognitively demanding evaluative events (Eysenck et al., 2007; Owens et al., 2008; Putwain et al., 2014). It is important to note that investigations have suggested the cognitive dimension of test anxiety is more strongly associated with performance than the affective manifestations (Hembree, 1988; Seipp, 1991; von der Embse et al., 2018). The differential impact of these anxiety components can be attributed to the fleeting nature of affective manifestations. For instance, investigations have demonstrated that the physiological manifestations present during the moments leading up to an evaluative event often dissipate once test performance is initiated (Zeidner, 1998). However, the cognitive manifestations present and persist throughout all phases of the learning testing cycle – meaning the worry and self-doubt have the potential to be a persistent barrier to effective information processing (Cassady, 2004; Zeidner, 1998).

The Self-Regulatory Executive Function Model

In the following section, we introduce the Self-Regulatory Executive Function (S-REF) Model, which describes how individual and situational factors interact to trigger the cognitive and affective manifestations of test anxiety described above.

The S-REF model was developed to explain the antecedents, outcomes, and perseverance of psychological disorders and maladaptive affective responses (Wells, 2000, 2019; Matthews & Wells, 2004; Matthews et al., 1999). According to the S-REF, various forms of psychological and emotional disturbance are the result of a dysfunctional cycle involving situational threat appraisals, declarative and procedural self-knowledge, and effortful self-regulation (O'Carroll & Fisher, 2013).

Situational Threat

Building from transactional stress (Lazarus & Folkman, 1987) and social-information processing frameworks (Crick & Dodge, 1994), the S-REF model posits that emotional distress begins when individuals are confronted with an event or some set of situational demands that have the potential to threaten one's sense of self-worth or prevent goal attainment if dealt with unsuccessfully (Wells, 2019; Wells & Matthews, 1996). Stated another way, a situation is perceived as threatening when the individual believes they do not have the skills and knowledge needed to meet situational demands (Lazarus & Folkman, 1987; Putwain & Symes, 2016; Uphill et al., 2019). Importantly, threat appraisal results in aversive affective and cognitive reactions that serve as the impetus for the next phase of the S-REF model, which is focused on the implementation of efforts to manage the environmental stressor. In relation to test anxiety, threat appraisals and the negative affective and cognitive reactions reported by test-anxious students follow from exposure to evaluative cues. Evaluative cues are aspects of the external and internal environment that signal to learners that an evaluative event (e.g., quiz, test, etc.) is imminent (Zeidner, 1998). Critically, evaluative cues are most problematic for students who value doing well on the assessment but have belief structures (e.g., poor efficacy beliefs, memories of past test failures, etc.) that make them question their ability to reach some desired performance standard (Pekrun et al., 2002, 2004; Putwain & Symes, 2014; Thomas & Cassady, 2019). For test-anxious students, the determination that the assessment is threatening causes adverse affective reactions (i.e., worry, fear, etc.) that motivate the learner to activate executive processing in an attempt to manage the situation and/or the emotional distress caused by the stressor (Lazarus & Folkman, 1984; Lazarus & Folkman, 1987; Wells, 2019; Wells & Matthews, 1996).

Executive Processing

Once it has been determined that the situation has the potential to generate unwanted outcomes, existing self-beliefs and knowledge structures are activated in an attempt to determine the appropriate course of action (Wells, 2000, 2019). Essentially, when confronted with stress, individuals must determine if situational demands are best addressed by altering the environment in an attempt to eliminate the source of stress

(i.e., problem-focused coping), taking steps to down-regulate negative emotional responses following from exposure to a stressor (i.e., emotion-focused coping), or removing oneself from the problematic situation (i.e., avoidance; Folkman & Lazarus, 1985; Lazarus & Folkman, 1984). Once the situational goal has been established, individuals evaluate, decide upon, and implement effortful behavioral and cognitive actions directed at goal attainment (Matthews & Wells, 2004; Matthews et al., 1999).

Efforts to reach the desired goal state initiates a self-regulatory loop involving the reappraisal of the source of threat, activation of stored knowledge, modification of situational goals, and goal-directed behaviors (Wells, 2000, 2019). It is this cycle of appraisal and action that determines the individual's ongoing affective response to the situation, as emotional experience is – in part – a consequence of our efforts to reach short-and long-term goals (Carver & Scheier, 1988; Crick & Dodge, 1994; Wells, 2000). Stated another way, emotions experienced during self-regulatory efforts provide information about the perceived success of efforts to achieve goals relevant to the situation. Persistent negative affective and cognitive reactions are an indicator that the individual believes they are struggling to attain the desired goal state (Carver & Scheirer, 1988; Folkman & Lazarus, 1985; Wells, 2000). Thus, when a maladaptive coping strategy is employed in an attempt to address the source of threat, negative emotions are maintained, which in turn increases focus on the threat and leads to elevated feelings of worry and fear (Wells, 2000).

Numerous studies have shown that test-anxious students demonstrate deficits in executive processing that trigger and perpetuate test-anxious responses. There is general agreement in the literature that test-anxious students often struggle with self-regulated learning and prefer shallow strategies that prevent them from developing a meaningful understanding of to-be-learned content (Benjamin et al., 1981; Zeidner & Matthews, 2005). Reliance on ineffective and superficial learning strategies contributes to test anxiety through multiple pathways. First, ineffective study practices contribute to feelings of academic under-preparedness during the learning-testing cycle's test preparation and performance stages. Students' realization that they do not possess the content knowledge needed to be successful impairs competence judgments which in turn triggers and/or magnifies threat appraisals and state anxiety (Benjamin et al., 1981; Naveh-Benjamin et al., 1987; Preiss et al., 2006; Zeidner, 1998). Further, the tendency of test-anxious students to rely on ineffective learning strategies reduces the likelihood of reaching desired performance outcomes (e.g., reaching mastery) during testing events.

As outlined in Bandura's (2005) influential Social-Cognitive Theory, mastery and failure experiences are the primary determinants of learners' competence beliefs. Logically, students who have experienced some degree of success believe they can perform well on similar tasks in the future, while students with a history of failure experiences question their ability to be academically successful (Bandura, 1977). Thus, test-anxious students lack the skill and content knowledge to be successful during testing, which contributes to test underperformance and negatively impacts competence judgments. Deflated competence judgments increase the likelihood future testing events will be viewed as threatening, thus perpetuating test-anxious responses.

Additionally, test-anxious learners often struggle to implement adaptive coping responses when confronted with evaluative stress. As described in the S-REF model (Wells, 2000) and transactional approaches to stress and coping (Lazarus & Folkman, 1984), threat appraisals are accompanied by aversive affective states that motivate the individual to select and implement strategies to navigate situational demands. A large number of theoretical frameworks suggest that responses to stress fall within two broad categories. For instance, individuals can implement problem-focused coping responses directed at eliminating or altering the characteristics of the stress-inducing event or emotion-focused coping strategies focused on minimizing the emotional distress caused by the situation (Lazarus & Folkman, 1984; Cassady & Thomas, 2020). Although the effectiveness of coping responses is dependent on how well the chosen strategy helps the individual reach a desired outcome (Cassady & Boseck, 2008; Lazarus & Folkman, 1984), studies have shown that students who employ problem-focused coping efforts demonstrate increased academic performance and report fewer negative achievement emotions than those who rely primarily on emotion-focused strategies (Aldridge & Roesch, 2008; Austin et al., 2010; Dyson & Renk, 2006; Giacobbi et al., 2004; Thomas et al., 2017).

Unfortunately for test-anxious students, competence judgments and perceived behavioral control heavily influence the decision to engage in problem-focused coping. Logically, individuals who question their skills and abilities or view situational demands as being out of their immediate control are less likely to take active steps to eliminate or alter sources of stress (Lazarus & Folkman, 1984). Although the implementation of emotion-focused strategies may lessen immediate test anxiety symptoms, emotion regulation efforts often contribute to academic underperformance because cognitive resources are being pulled away from test-relevant activities (Johns et al., 2008; Schmader et al., 2008).

Self-Knowledge

A central proposition of the S-REF model is the importance of self-knowledge to situational appraisal, controlled processing, and long-term adaptation to stressful events (Wells, 2000; Zeidner & Matthews, 2005). Existing knowledge impacts emotional experience through multiple pathways. First, investigations have shown that negative cognitions regarding sources of threat and personal capabilities impact situational appraisal and contribute to maladaptive coping responses (Wells, 2000). As outlined in previous sections, test-related distress often stems from negative self-knowledge, including beliefs regarding lack of competence and impending failure (Zeidner & Matthews, 2005). When a student believes they lack the ability to be successful on a test, this predisposes them to emotion-focused and avoidant responses, creating the risk of introducing choices or reactions that will negatively impact test performance (Folkman & Lazarus, 1985; Lazarus & Folkman, 1984). One's thoughts of perceived failure before the test has even begun in turn amplify feelings that are present during the test itself, which can

alter test performance and create a "self-fulfilling prophecy" that perpetuates test-anxious responses. Specifically, the person experiencing test-related anxiety performs to the standard they feared, thus reinforcing the negative association with testing and increasing thoughts associated with test anxiety during future evaluative events (Zeidner, 1998).

Students' stored declarative and conditional knowledge also impact the severity of test-anxious responses and the effectiveness of attempts directed at managing test-related distress. We previously discussed the role of academic under-preparedness stemming from poor self-regulated habits in test anxiety. The fact that test-anxious students struggle to study effectively indicates a lack of understanding of effective learning strategies and potential deficits in conditional knowledge governing when high-impact practices should be implemented (Naveh-Benjamin, 1991; Veenman et al., 2000). The importance of declarative and conditional knowledge is not limited to test preparation efforts. Learners' existing knowledge also guides the selection and implementation of coping responses. Test anxious students' reliance on generally ineffective coping methods is undoubtedly impacted by overall academic efficacy and perceived situational control. However, difficulties in the implementation of effective coping strategies could also be an indication that the learner does not have a repertoire of adaptive coping responses or does not fully grasp when to implement particular strategies (Cassady & Bosek, 2008; Crick & Dodge, 1994).

Weaknesses of the Self-Regulatory Executive Function Model

Although the S-REF model has advanced our understanding of the test anxiety construct and guided effects to support test-anxious students, it is important to note the theoretical framework has limitations. In their thoughtful overview of the test anxiety literature, Putwain and Symes (2020) detail two primary drawbacks of the current conceptualization of the S-REF model. First, although efforts to regulate emotional experience play a prominent role in successful adaptation to situational demands in the S-REF model, the processes by which individuals modulate affective experience are largely overlooked. Additionally, Symes and Putwain (2020) note that the S-REF framework largely ignores the influence of contextual and cultural factors on test-anxious responses. This limitation undermines the practical and theoretical utility of the model given the abundance of research showing factors such as class climate, instructional practices, parental pressure, methods used to communicate the importance of classroom and accountability tests, and cultural norms impact students' appraisal of testing situations and the perceived appropriateness of different coping responses (Bardi & Guerra, 2011; Federici et al., 2015; Putwain et al., 2017; Putwain & von der Embse, 2018; Putwain et al., 2010; Segool et al., 2014). We agree with these general criticisms and believe several shortcomings of the model can be partially accounted for by integrating our understanding of the trait emotional intelligence construct within the S-REF framework.

Trait Emotional Intelligence

Trait Emotional Intelligence (or TEI) is defined as a constellation of emotion-related self-perceptions best assessed through questionnaires and rating scales (Petrides & Furnham, 2001). In other words, TEI encapsulates how good we perceive ourselves to be at understanding, managing, and utilizing our own (and other people's) emotions. Unlike the ability-based model of emotional intelligence (Lang et al., 1997) that endorses the idea that the construct is comprised of a multitude of cognitive abilities that contribute to adaptive social functioning and is best assessed using maximum performance tests, advocates of TEI believe it is instead a distinct and compound construct that lies at the lower levels of personality hierarchies (Petrides et al., 2007a, b). Since most research in the field of EI is based on self-report measures of emotion-related behavioral dispositions and self-perceived abilities, one could make the argument that the majority of what we know about emotional intelligence derives from this broader domain of trait EI (Petrides et al., 2016). Measures such as the Bar-On Emotional Quotient Inventory (EQ-I; Bar-On, 1997), the Schutte Emotional Intelligence Scale (SEIS; Schutte et al., 1998), and the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides et al., 2003) are a few of the most widely adapted and validated scales used to capture individuals' perceptions of their emotional self-efficacy.

Increased levels of trait emotional intelligence are also associated with a multitude of positive mental and physical health outcomes. For example, the literature suggests that TEI is a strong predictor of well-being and mental health such that higher levels of TEI are associated with lower levels of stress, anxiety, and depression in young adults experiencing everyday life pressures (Martins et al., 2010; Petrides et al., 2011). Further, individuals with high levels of TEI are more likely to participate in health-promoting behaviors like physical activity and maintaining a healthy diet (Mikolajczak et al., 2015; Saklofske et al., 2007) and are less likely to engage in behaviors with deleterious health effects like smoking, drug-using, and self-harming (Riley & Schutte, 2003; Schutte et al., 2011).

Beyond the myriad of health-related benefits to possessing high levels of trait emotional intelligence, the literature is also indicative of a relationship between TEI and success markers in school. For example, trait EI is associated with self-rated prosocial behavior in primary school children (Mavroveli & Sanchez-Ruiz, 2011) and adolescents (Frederickson et al., 2012). Additionally, Sanchez-Ruiz et al. (2013) discovered that trait EI was predictive of academic performance in college students more so than individual cognitive ability and personality traits. Another study found that EI was associated with higher test performance in students with lower IQ (Petrides et al., 2004). A possible explanation for this phenomenon is that students with fewer intellectual resources may strategically draw upon other abilities to cope with the demands of their studies.

Unsurprisingly, TEI also has been linked to student engagement, a construct used to describe how involved and interested students appear to be in the learning process and how connected they are to their coursework, their institutions, and other

students (Axelson & Flick, 2010). Many researchers have conceptualized student engagement to be multidimensional, containing affective, behavioral, and cognitive components (Archambault & Dupéré, 2017; Ben-Eliyahu et al., 2018). Maguire et al. (2017) found trait EI to be a positive predictor of both cognitive and affective engagement in a group of undergraduate psychology students after controlling for academic ability, gender, and school engagement. In another study, emotional intelligence was shown to have a direct positive effect on behavioral and emotional engagement and a direct negative effect on behavioral and emotional disaffection, operationally defined as engagement's inverse (Thomas & Allen, 2021).

Just as high levels of trait emotional intelligence have been linked to positive student achievement outcomes, lower levels of emotional intelligence can be indicative of less desirable school-related dispositions and behaviors. A study examining trait emotional intelligence in 11–12-year-old children in Southeast England found that trait EI predicted how pupils were perceived by their teachers in that those students exhibiting emotional and behavioral problems at school scored lower on the TEIQue-CF, the selected evaluation method to assess emotional intelligence in children (Mavrovelli et al., 2008). This type of finding has been consistent across cultures. Siu (2009) found that adolescents' poor use of emotions may lead to higher levels of problem behaviors, such as depression, aggression, and anxiety among a group of secondary students from Hong Kong.

Trait Emotional Intelligence in the Context of S-REF

Of relevance to the current chapter is research linking trait emotional intelligence (and self-reported emotional competencies) to test and academic anxiety. Perhaps not surprisingly, a number of studies have demonstrated that high TEI students experience lower levels of test anxiety and academic-related stress than their low TEI peers (Abdollahi & Abu Talib, 2015; Brand et al., 2016; Romano et al., 2020; Thomas et al., 2017). Although few investigations have systematically investigated the proposed pathways by which TEI influences test anxiety, studies from various disciplines suggest emotional intelligence directly impacts constructs described in the S-REF model.

One prediction of the S-REF model is that test anxiety is activated when self-knowledge and situational characteristics cause learners to perceive an evaluative event as a threat to self-worth (Speilberger, 1966; Putwain, 2008; Symes & Putwain, 2020; Zeidner & Matthews, 2005). Critically, threat appraisals follow from the activation of problematic cognitive structures about one's abilities and characteristics of the larger evaluative situation. Specifically, test-anxious students are predisposed to activate memories involving prior struggles with testing events which cause learners to misinterpret internal cognitive and affective states, bias attention toward threat-inducing stimuli, and prevent learners from developing an accurate representation of situational demands (Zeidner, 1998). Ultimately, these factors cause learners to

conclude they do not possess the capabilities (social, motivational, intellectual) needed to be successful and appraise the situation as threatening (Zeidner, 1998).

Interestingly, a growing body of literature suggests trait emotional intelligence moderates the nature of cognitive appraisals such that high trait emotional intelligence individuals are less likely to view stressful situations as threatening compared to their low TEI peers (Mikolajczak et al., 2007; Mikolajczak et al., 2010). It is assumed this moderating influence is driven by the association between TEI and stored emotional knowledge. One of the primary propositions of trait emotional intelligence theory is that individuals demonstrate differences in dispositional factors – such as empathy, optimism, and emotional stability – that guide responses to situational demands (Petrides et al., 2004, 2018). Logically, those with dispositional traits that support engagement with, and the successful navigation of, complex emotional situations are going to have elaborate knowledge structures consisting of memories of successful adaptation to stress, cultural and social norms, sources of academic and social support, and personal emotional conditions (Cassady & Boseck, 2008; Salovey et al., 2009). Theoretically, the nature of these knowledge structures should allow learners to accurately assess their academic, motivational, and emotional competence and situational demands, reducing the likelihood of threat appraisals.

The benefits of TEI also extend to executive control processes outlined in the S-REF. As described above, individuals high in trait emotional intelligence possess dispositional traits that support adaptive emotional functioning and adaptation to stress (Petrides et al., 2004, 2018). As individuals successfully navigate emotionally laden situations, they begin to establish a repertoire of adaptive coping responses and develop an understanding of the appropriateness of coping strategies within different contexts (Cassady & Bosek, 2008; Cassady & Thomas, 2020; Crick & Dodge, 1994). Additionally, engaging in actions that contribute to desired outcomes boosts individuals' confidence in their ability to successfully implement adaptive coping responses when confronted with similar stressors (Cassady & Bosek, 2008; Crick & Dodge, 1994; Nairn & Merluzzi, 2019; Sirois & Hirsch, 2013). Thus, trait emotional intelligence contributes to experiences that support competent judgments and the development of the conditional and procedural knowledge needed to implement adaptive coping responses when confronted with sources of stress.

Practical Implications

One of the primary benefits of test anxiety frameworks is that they offer insight into the causes of test-anxious responses and can guide the development of practical solutions to support at-risk students (Putwain & Symes, 2020). The S-REF model proposes test anxiety involves situational threat appraisals, the activation of maladaptive forms of self-knowledge, and issues with the effortful regulation of emotional experience and learning efforts (Zeidner & Matthews, 2005). Thus,

effective intervention efforts must adopt a multifaceted approach emphasizing the development of self-efficacy, an understanding of emotional states and their internal/external antecedents, and adaptive coping responses (Cassady & Thomas, 2020).

As outlined in other sources, one of the most efficacious methods of boosting self-efficacy judgments involves ensuring learners have the skills and knowledge needed to experience success within academic situations. As such, we believe test anxiety intervention efforts must include structured instruction focused on informing learners how to implement high-impact self-regulated learning strategies such as retrieval practice, spaced learning, goal-setting, and self-monitoring (Nonis & Hudson, 2010; Okpala et al., 2000). However, teaching students how to implement effective learning practices is not sufficient because of production deficiencies noted among learners who struggle with self-regulated learning. Stated another way, evidence suggests that students with knowledge of high-impact learning practices do not implement them within situations in which they would be beneficial (Naveh-Benjamin, 1991; Veenman et al., 2000). Thus, it is critical that study skills instruction be paired with messaging focused on establishing students' understanding of the value and utility of the learning strategies. As outlined in expectancy-value orientations to motivation and learning, students are more likely to initiate goal-directed behavior when the overarching utility of the activity is made clear (Eccles & Wigfield, 2020). In essence, students who are willing and able to implement effective learning practices are more likely to experience success which enhances perceptions of academic and motivational competence. The revision of these competency beliefs goes on to influence the appraisal of future evaluative events and how individuals decide to respond to situational demands.

Additionally, the role of executive processing issues in the S-REF model solidifies the importance of helping students develop an understanding of adaptive coping responses. Those students who understand what coping strategies are effective and how to implement those strategies will be better able to navigate stressful situations (Cassady & Bosek, 2008). Fortunately, available evidence suggests individuals can be taught effective coping and emotion regulation strategies through a combination of direct instruction, modeling of how to respond to emotional stimuli, and structured opportunities to practice learned skills (Bandrua, 2005; Boyle et al., 2017; Wimmer et al., 2019). We would like to take a moment to emphasize the importance of providing learners the opportunity to practice active coping responses in a structured manner. One of the most robust findings in the educational field is that knowledge transfer only reliably occurs when learners construct well-developed schemas that can be used to guide future problem-solving efforts (Gick & Holyoak, 1983; Peltier & Vannest, 2017; Phye, 1990). One of the most efficacious methods of supporting schema development involves the provision and gradual removal of scaffolding as students work to solidify their understanding of complex concepts (Hultberg et al., 2018; Kern & Crippen, 2017; Sweller, 2011). The development of emotional information processing abilities is no different.

Conclusion

Given the current educational zeitgeist, we anticipate classroom and standardized tests will continue to serve an important role in assessing student knowledge and educational quality. Thus, it is critical that we take steps to identify and support test-anxious students as test anxiety has the potential to impair optimal academic performance (Segool et al., 2013; von der Embse et al., 2013). In an effort to assist educators in their attempts to support test-anxious students, we reviewed the characteristics of the affective and cognitive manifestations of test anxiety as well as potential causes as outlined in the S-REF model. Further, we provided an overview of trait emotional intelligence research and discussed how consideration of how emotional intelligence interacts with appraisal, self-knowledge, and controlled processes might improve our understanding of the test anxiety experience. Finally, we discussed the importance of multifaceted intervention programs emphasizing the development of academic and emotional competencies when working with test-anxious learners.

Conflicts of Interest We have no known conflicts of interest.

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Test Anxiety and Influences of Social Systems

Patricia Lowe

Test Anxiety: Definition, Prevalence Estimates, and Negative Correlates

Test anxiety has been described as a worldwide phenomenon (Bodas & Ollendick, 2005; Zeidner, 1998), and many different definitions of test anxiety exist. For the purpose of this book chapter, Lowe et al.'s (2008) definition of test anxiety will be used. Lowe defines test anxiety as the cognitive (i.e., cognitive obstruction, social humiliation, and worry), physical (i.e., physiological hyperarousal), and behavioral (i.e., task-irrelevant behaviors) symptoms students experience in testing situations. Test anxiety is reported to be a substantial problem, with approximately 20% to 33% of students experiencing anxiety in evaluative situations (Goonan, 2003; Methia, 2004). Test anxiety is associated with lower academic achievement, poorer test performance, learning difficulties, general anxiety, depression, and school dropout (Amrein & Berliner, 2003; Bedell & Marlowe, 1995; Bodas & Ollendick, 2005; King et al., 1995; Vanstone & Hicks, 2019; von der Embse et al., 2018). Therefore, it is an important problem to address in elementary, secondary, and postsecondary students.

Research has focused on the individual in the study of test anxiety. Yet, the influences of different social systems are believed to play an important role in the development and maintenance of test anxiety. Interpersonal relationships and the cultural context may contribute to a student's test anxiety. In this chapter, a description of Lowe et al.' (2008) biopsychosocial model of test anxiety is proffered. The biopsychosocial model of test anxiety underscores the importance of the influences of social systems in the development and maintenance of a student's test anxiety

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(Lowe et al., 2008). Following the description of Lowe et al.'s biopsychosocial model of test anxiety, empirical studies highlighting the association between the influences of different social systems and test anxiety are discussed.

Biopsychosocial Model of Test Anxiety

A myriad of test anxiety models have been proposed to explain the development and maintenance of test anxiety (Zeidner & Matthews, 2011). A recent model, the biopsychosocial model of test anxiety, developed by Lowe et al. (2008) underscores the importance of the influences of social systems in the development and maintenance of a student's test anxiety. According to Lowe et al. (2008), test anxiety is a cyclical process and involves the integration of biological, psychological, and social factors along with the appraisal of a future exam as threatening. More specifically, social systems (e.g., parent/family, school, and societal) contexts interact with within-child variables (e.g., intelligence, academic ability, personality traits, and academic self-efficacy) along with the appraisal of a test as threatening to elicit the different types of test anxiety (cognitive obstruction, physiological hyperarousal, social humiliation, task irrelevant behaviors, and worry) symptoms a student experiences as well as the intensity of those symptoms. As a student takes a test and completes each item on the exam, the person receives immediate feedback on how well one is doing on the test, resulting in a possible increase or decrease in the test anxiety experienced. Once the test is completed and the exam grade is received, the student's self-efficacy and other within-child variables along with the individual's social systems are affected, and the process begins again once the time for the next exam draws near (Lowe et al., 2008).

Research on the influences of different social systems on test anxiety is limited. The majority of previous work in this area is correlational, and causality cannot be implied. With these caveats in mind, a discussion of the empirical studies on the associations between the social (i.e., parent/family, school, and societal) system influences and test anxiety follows.

Parent/Family System and Test Anxiety

Parents and families play a powerful role in the nexus between children's emotions and achievement (Shadach & Ganor-Miller, 2013). Research has found parental and family practices associated with children's test anxiety (Peleg-Popko et al., 2003). In this section, empirical studies reporting on the relationship between parent/family systems, including parental academic expectations, parental pressure, parental emotional, conditional and academic support, parental divorce, parental over-involvement, and parental perfectionism, and test anxiety are discussed.

Parents' academic expectations and their children's test anxiety have been a topic of interest in the field. Children whose parents set high academic expectations may experience more pressure in testing situations because they do not want to disappoint their parents and they fear they will perform poorly on tests (Peleg et al., 2016). Several studies have been conducted to investigate the association between parental academic expectations and students' test anxiety (Peleg et al., 2016; Peleg-Popko et al., 2003). Researchers have found a direct association between parental expectations and their children's test anxiety (Peleg et al., 2016; Peleg-Popko et al., 2003).

Parental pressure is another parent/family system variable that has been examined in relation to test anxiety (Besharat, 2003; Peleg-Popko & Klingman, 2002; Putwain et al., 2010 ; Raufelder et al., 2015). Research studies have found increased levels of parental pressure are associated with increased levels of test anxiety in children (Peleg-Popko & Klingman, 2002; Putwain et al., 2010). According to Putwain and colleagues, test-anxious children are concerned about the possibility of failing a test and the negative reactions from their parents if they perform poorly on a test, resulting in a possible increase in their test anxiety levels.

Several researchers have examined the relationship between parental pressure and test anxiety in more depth (Putwain et al., 2010; Raufelder et al., 2015). Raufelder et al. explored gender of both parents and their secondary school-age children's test anxiety in a larger study investigating parental pressure and parental support influences in the relationship between secondary students' test anxiety and school engagement. Raufelder and colleagues reported pressure from both mothers and fathers were positively related to their sons' and daughters' test anxiety. Putwain et al. (2010) also examined the relationship between test anxiety and parental pressure. In their study, Putwain and colleagues specifically investigated the association between different dimensions (i.e., worry, test-irrelevant thinking, tension, and bodily symptoms) of test anxiety and parental pressure. The researchers found significant, positive associations between parental pressure and three dimensions (worry, test-irrelevant thinking, and bodily symptoms) of test anxiety. Based on Putwain's (2009) work, Putwain et al. (2010) suggest children may perceive their parents' acceptance of them is contingent on their performance on exams. This pressure children perceive from their parents may lead to higher levels of test anxiety.

Researchers have also conducted studies on the association between test anxiety and parental support. Putwain et al. (2010) found no significant relationship between the different dimensions of test anxiety (test irrelevant thinking, bodily symptoms, tension, and worry) and parental support. On the other hand, Raufelder et al. (2015) investigated the relationship between what they referred to as activating test anxiety and parental support. Based on the example of an item on their activating test anxiety scale derived from an achievement motivation measure, the scale appears to measure facilitating anxiety, the slight anxiety an individual experiences resulting in better rather than poorer performance on exams (Lowe et al., 2008; Zeidner, 1998). Raufelder et al. (2015) found a positive relationship between activating test anxiety and mother support for both boys and girls. The researchers also found a positive

correlation between activating test anxiety and father support, but only for boys. Based on Marcia's (1980) work, Raufelder et al. (2015) suggest that the positive association between activating test anxiety and father support for boys only may be due to a greater likelihood of fathers serving as role models for their sons.

Song et al. (2015) conducted a 3-year longitudinal study within a structural equation modeling framework and examined parental support along with teacher and peer support in relation to students' academic motivation and achievement in Korean middle school students. Song and colleagues investigated two types of support, emotional support and academic support, in relation to academic motivation and achievement. The researchers found parental emotional support predicted lower levels of test anxiety than peer and teacher support, and parental academic support predicted higher levels of test anxiety than peer and teacher support in their sample of middle school students. Therefore, the type of parental support provided to children may heighten or lessen the test anxiety children experience.

Elements of the family environment, including communication, personal growth (i.e., independence), and system maintenance, have been explored in relation to test anxiety. Open and direct communication, family encouragement of independence, and clear and predictable rules support the healthy development of children. Peleg-Popko and Klingman (2002) examined the relationship between these three elements of the family environment and test anxiety in a sample of sixth grade students and their parents. The authors found a negative association between open communication, independence, and clear rules and children's test anxiety. High levels of test anxiety in children were found in a family environment where poor communication, child dependence, and vague family rules were present. The authors suggest environments marked by these characteristics may lower children's self-efficacy and increase their stress and anxiety (Krohne, 1990; Margalit & Eysenck, 1990; Peleg-Popko & Klingman, 2002). Peleg-Popko et al. (2003) also examined elements of the family environment and found authoritarian parenting, consisting of less warmth and more control, was associated with more test anxiety in children, and a supportive family environment was associated with less test anxiety in children.

Children of divorce parents have been another area of research interest in relation to test anxiety. Research has shown children of divorce parents tend to be more anxious than children from intact families (Swihart & Brigham, 1982). Guttman (1987) examined the specific relationship between test anxiety and children of divorce parents and children from intact families in a sample of 30 tenth grade boys. Guttman found higher levels of test anxiety in boys of divorced parents than boys from two-parent families. Guttman suggests these findings may be due to the boys of divorced parents possibly fearing what may happen if they fail a test or being more anxious in general than boys from two-parent families.

Other parent/family variables found to be associated with test anxiety include parental over-involvement (Shadach & Ganor-Miller, 2013) and parental perfectionism (Besharat, 2003). Shadach and Ganor-Miller (2013) reported parents' over-involvement was associated with higher levels of test anxiety in the parents' children. Peleg et al. (2016) suggest that parents' over-involvement in their

children's academics prevents children from developing self-efficacy and makes them more anxious.

Parental perfectionism is also reported to be related to test anxiety. Besharat (2003) found students with higher test anxiety levels, as measured by a state measure of anxiety, also had mothers who reported significantly higher levels of negative perfectionism (i.e., striving toward achieving high goals to avoid negative outcomes). In contrast, students with lower test anxiety levels had fathers with significantly higher levels of positive perfectionism (i.e., striving toward achieving high goals to obtain positive outcomes). Besharat suggests the overall findings may be due to mothers feeling more responsible for how well their children do in school, and mothers may convey to their children the need to achieve high academic goals in order to avoid failing in school.

School System and Test Anxiety

Another social system relevant in the development and maintenance of children's test anxiety is the school context (Lowe et al., 2008). Schools play a central role in student's learning and emotional adjustment (Roeser & Eccles, 2014). Student success is associated with children's school performance and their physical and mental health (Lowe et al., 2000; King et al., 1995; Roeser & Eccles, 2014). Test anxiety is one factor that may negatively impact children's academic performance and their physical and mental well-being (King et al., 1995; Krohne & Laux, 1982; von der Embse et al., 2018). In this section, research examining competitive classroom and school environments, teacher-student relationships, and student-student relationships are discussed in relation to students' test anxiety.

Competitive Classroom and School Environments

Students, who are in classroom environments where effort and improvement, mastery of content, and cooperation and collaboration are emphasized, are usually less concerned about their abilities, have reduced feelings of anxiety, experience a sense of belongingness, and have fewer academic problems (Ames, 1992; Roeser & Eccles, 2000; Slavin, 1983). In contrast, students, who are in classroom environments that are highly competitive, report higher levels of test anxiety (Lowe et al., 2005). In addition, students of lower abilities and anxious students tend not to function as well in competitive classrooms. These individuals may see a decline in their academic performance, view themselves as a failure in comparison to their peers, perceive the competition in their classrooms as threatening, and experience heightened levels of anxiety (Hancock, 2001; Harter et al., 1987; Wigfield & Eccles, 1990).

Studies have examined reference groups and competitive environments in relation to students' test anxiety. Student reference groups are groups of peers in a

student's class or school. Competitive reference groups in classrooms or schools have been reported to be associated with higher levels of test anxiety in students (Goetz et al., 2008; Gröbel & Schwarzer, 1982; Zeidner & Schleyer, 1999). Gröbel and Schwarzer (1982) examined competitive environments in a sample of German students. In academic secondary schools, the researchers found as competition increased within the reference group and standards within the reference group was high, students' test anxiety levels increased. Zeidner and Schleyer (1999) also examined reference groups and competitive environments. Zeidner and Schleyer conducted a study with gifted Israeli students in grades 4 through 6 in regular education classes and gifted classes. Gifted students who were in gifted classes had more test anxiety than gifted students who were in regular education classes. Gifted students in the gifted classrooms perceived the gifted classrooms as more competitive than gifted students in regular education classes.

Teacher-Student Relationships

Another variable examined within the school system in relation to students' test anxiety is teacher-student relationships. Some research has supported a significant inverse relationship between teacher-student relationships and students' test anxiety (Hoferichter & Raufelder, 2015; Kecici, 2013). Kecici (2013) and Hoferichter and Raufelder (2015) examined teacher-student relationships in samples of adolescents in Turkey and Germany, respectively. The researchers reported a negative association between teacher-student relationships and girls' test anxiety. However, no significant association was found between teacher-student relationships and boys' test anxiety. Hoferichter and Raufelder indicated that girls may benefit from having close relationships with their teachers and having closer relationships with their teachers may lower their test anxiety levels.

Other research has found no significant association between teacher-student relationships and test anxiety (Hoferichter et al., 2014). Hoferichter and colleagues found no significant association between teacher-student relationships and students' test anxiety in a sample of German adolescents. This finding may be due to students spending less time with their teachers as they progress from elementary to secondary schools or teacher-student relationships becoming less important as they advance in grade level (Raufelder, 2007). Another possibility for the non-significant finding between teacher-student relationships and students' test anxiety is gender differences were not explored in the Hoferichter et al. (2014) study, and it appears from the other studies reported that gender may play an important role in teacher-student relationships and students' test anxiety, especially for girls.

Research on the relationship between teacher support and students' test anxiety has also yielded equivocal findings, and the equivocal findings may be due to the type of teacher support (i.e., general teacher support or a specific type of teacher support examined), measures used, and/or other variables included in the type of analyses performed in the different research studies. Hembree (1988) conducted a

meta-analysis of 10 studies on students' perception of teachers as being supportive and found no significant association between these two variables. In contrast, other research studies have found a direct association between teacher emotional support and students' test anxiety, but only in the third year of a 3-year longitudinal study (Song et al., 2015) and between teacher conditional support and students' test anxiety (Hascoët et al., 2018). Researchers suggest the direct relationship between teacher emotional support and students' test anxiety may be due to students' concerns about disappointing their teachers if they do not perform well on exams, resulting in higher levels of test anxiety for these students (Song et al., 2015). Researchers also suggest the positive association between teacher conditional support and students' test anxiety may be due to students' perception of teacher support being contingent on students' meeting their teacher's expectations, and those students who do not meet their teachers' expectations may succumb to test anxiety (Hascoët et al., 2018; Putwain, 2008). On the other hand, Song et al. (2015) found no significant association between teacher academic support and students' test anxiety.

Several studies have also been conducted on teachers as motivators in relation to test anxiety (Hoferichter et al., 2014; Hoferichter & Raufelder, 2015; Raufelder et al., 2015, 2018). Students who perceive their teachers as positive motivators tend to report higher levels of test anxiety (Hoferichter et al., 2014; Raufelder et al., 2015, 2018). These students may want to meet their teachers' expectations, but they fear they will not be able to meet their teachers' high standards, resulting in higher levels of test anxiety for these students (Raufelder et al., 2018).

Teacher achievement pressure is another teacher-student variable reported to be associated with students' test anxiety. As teachers exert more academic pressure on their students, students' test anxiety is reported to increase (Song et al., 2015). Song and colleagues discuss the paradox teacher achievement pressure has on students' test anxiety. Teachers put pressure on their students to improve their academic performance; however, it may have the opposite effect, resulting in students experiencing more test anxiety and possibly lowering their academic performance (Song et al., 2015).

Another teacher-student variable researched is students' perception that their teachers are unfriendly or negative towards them (Hembree, 1988). Hembree examined 10 different studies on the relationship between students' perception of their teacher being unfriendly or negative toward them and test anxiety. Hembree reported more teacher unfriendliness or negativity toward their students was associated with higher levels of students' test anxiety.

Student-Student Relationships

An additional variable within the school system related to students' test anxiety is student-student relationships. However, fewer empirical studies have been conducted examining student-student or peer relationships and students' test anxiety in

comparison to teacher-student relationships and students' test anxiety. Of the studies conducted, the focus has been on the perceived support students receive from others and students' perception of others as positive academic motivators (Hoferichter et al., 2014; Kecici, 2013; Raufelder et al., 2015; Song et al., 2015). Students' perceived positive support from others may serve as a buffer against stress (Cohen & Wills, 1985), making them less vulnerable to test anxiety.

Researchers have found an inverse relationship between perceived peer support and test anxiety. Students with high-quality relationships with other students are reported to have lower levels of test anxiety (Hoferichter et al., 2014; Kecici, 2013; Song et al., 2015). This inverse relationship between perceived peer support and students' test anxiety has also been found in longitudinal work. Song et al. (2015) reported lower test anxiety in Korean secondary school students who perceived they had high-quality support from their classmates in Years 2 and 3 of their 3-year longitudinal study.

Goldsmith and Albrecht (1993) also examined perceived peer support and students' test anxiety, but the researchers found a more complex relationship between these two variables. For those students with high test anxiety, the researchers reported a negative association between perceived peer support from their classmates and students' test anxiety, and a positive association between perceived peer support from peers who are not in the individual student's classroom and test anxiety. In contrast, for those students with low test anxiety, the opposite relationships between perceived peer support and students' test anxiety were reported. Goldsmith and Albrecht suggested the findings for students with high levels of test anxiety may be due to peers who are not in the individual student's classroom may have a closer relationship with the test-anxious student and may communicate acceptance of the test-anxious student better. The classmates may also be more understanding of the test-anxious student's worries and concerns.

Students who perceive their peers as positive academic motivators may feel pressure to perform academically in the school setting. The pressure these students experience to perform in the classroom is reported to be associated with higher levels of test anxiety (Hoferichter et al., 2014). Raufelder et al. (2015) found similar results between peers as positive academic motivators and students' test anxiety. Hoferichter et al. (2014) suggest students, especially students who are high on neuroticism, one of the Big Five personality traits and is more likely to make an individual more susceptible to anxiety, may become more dependent on their classmates who serve as positive academic motivators, and this dependency may make these students more at risk for test anxiety.

Societal System and Test Anxiety

Societal system influences in relation to students' test anxiety encompass a multitude of factors. Bodas and Ollendick (2005) and Zeidner (1998) enumerated a number of these factors, including political systems, religion, cultural values and

orientations, economic systems, socialization practices, and organization of educational systems and their selectivity of students. In this section, a select number of empirical studies examining cultural orientations, socialization practices, and the organization of educational systems and their selectivity of students in relation to students' test anxiety are presented.

Cultural Orientations, Socialization Practices, and Test Anxiety

Cultural orientations may influence the test anxiety students' experience. For example, societies may differ on the dimensions of collectivism and individualism. More collectivistic societies emphasize group goals at the expense of personal goals, relationships, and people feeling interconnected with each other (Ang et al., 2009). Family honor and educational success are emphasized in these societies, and children are raised not to disappoint their parents and teachers (Ang et al., 2009; Diaz-Guerrero, 1976; Nyroos et al., 2015). The expectations and pressures children experience in these societies may produce anxiety related to the school setting (Ang & Huan, 2006; Stankov, 2010). In contrast, more individualistic societies emphasize independence, autonomy, and the needs of the individual over the group (Kitayama et al., 2010). Competition is emphasized in individualistic societies (Hudley & Gottfried, 2008), and the competitive nature of these societies may help children adapt more easily to the competitive testing environment (Diaz-Guerrero, 1976).

Diaz-Guerrero (1976), Peleg-Popko et al. (2003), and Nyroos et al. (2015) conducted studies examining and comparing test anxiety of students from more collectivistic societies or groups to students in more individualistic societies or groups. Diaz-Guerrero (1976) conducted a longitudinal study and compared elementary and secondary students from Mexico, a more collectivistic society, where obedience to parents and teachers is underscored, and students from the United States, a more individualistic society. Diaz-Guerero found students from Mexico reported higher levels of test anxiety than US students.

Peleg-Popko et al. (2003) conducted a study and compared the test anxiety levels of Israeli-Arab adolescents and Israeli-Jewish adolescents. Arabs in Israel are described as more of a collectivist group, whereas Jews in Israel are described as more of an individualistic group (Weller et al., 1995). Moreover, Israeli-Arab adolescents are raised to meet their parents' demands, so they are expected to do well in school, thus reducing the likelihood of disappointing their parents (Barakat, 1985). Peleg-Popko et al. (2003) found Israeli-Arab adolescents had more test anxiety than Israeli-Jewish adolescents. However, the authors also found authoritarian parenting accounted for more of the variance in test anxiety scores in both groups of adolescents.

Nyroos et al. (2015) examined and compared test anxiety, but at the component (i.e., scale) level, in 3rd grade students from China, more of a collectivistic society, and Finland and Sweden, more of individualistic societies. Chinese students are raised to uphold their family's honor, not to disappoint their parents and teachers,

and to succeed in school (Carless & Lam, 2012). Nyroos et al. (2015) noted students from China self-reported greater autonomic reactions (i.e., emotionality) test anxiety symptoms than Finnish and Swedish students, and Finnish and Swedish students self-reported greater off-task behaviors test anxiety symptoms than Chinese students. The authors suggest that off-task behaviors test anxiety symptoms may not be universal, as Chinese students are taught from a very young age not to demonstrate off-task behaviors in school (Li, 2012). Although research has tended to support higher student test anxiety levels associated with counties or groups with collectivistic orientations, the research is not completely in agreement.

Organization of Educational Systems and Selectivity of Students and Test Anxiety

Tests scores are often used to make important educational decisions about which schools or universities students may attend and career paths students may pursue. The importance of these educational decisions and how they may affect students may result in higher levels of test anxiety in students in relation to standardized or national tests (Ang et al., 2009; Lowe & Ang, 2012; Zeidner, 1998). Although some research supports a direct relationship between students' test anxiety and selective and competitive educational systems, other research does not (Zeidner, 1998).

Lowe (2021) examined test anxiety in 19–26-year-old Canadian and US students. Canada and the United States have similar histories, economies, and cultural values (Bassani, 2005; Davis & Hammack, 2005), but they do differ in the structure of their higher educational systems (Davis & Hammack, 2005). For many US students, competition and pressure occurs before they enter a university in the form of a standardized test, such as sitting for the American College Test or the Scholastic Aptitude Test. Scores on these standardized tests play an important role in who will be admitted to a prestigious US university. In contrast, for Canadian students, the competition does not occur before admittance to a university, but during students' second or third year of university studies when they enter a degree program. There is intense competition for the most highly sought after fields of study where slots are limited. Entrance into highly sought after fields of study increases students' chances of having a lucrative career once Canadian students' graduate from their university (Davis & Hammack, 2005). This intense competition may lead to higher test anxiety in Canadian students. Lowe (2021) found Canadian students self-reported more worry and physiological hyperarousal test anxiety than US students when meaningful effect sizes were considered. These findings suggest differences in the structure of higher educational systems may lead to intense competition, and this intense competition in higher educational systems may be associated with higher levels of test anxiety in students.

Selective and competitive educational systems are also found in other countries, such as China, Jordan, and Singapore. In Jordan, for example, high school students sit for a national exam and students' scores on this exam dictate whether they will

be admitted to a university to pursue postsecondary studies (Ahlawat, 1989). Without a university degree, Jordanian students are less likely to be able to pursue a lucrative career. Ahlawat examined mean test anxiety scores of Jordanian high school students to the mean test anxiety scores of other high school students from other countries in previous studies conducted and the author found that Jordanian high school students had one of the highest mean test anxiety scores worldwide. These findings suggest selective and competitive educational systems play a major role in students' test anxiety. However, Ahlawat's finding needs to be interpreted with caution due to possible translation issues associated with the measure used in the study and no direct, current comparison was made between Jordanian students and students from other countries.

Lowe and Ang (2012) examined test anxiety in students in grades 4–5 in Singapore and the United States. Singapore's educational system is characterized as selective and competitive with one national exam administered at the end of elementary school and a second national exam administered at the end of secondary school, although more flexibility has occurred in Singapore's educational system in more recent years. These exams dictate to a large degree students' enrollment in schools and universities they may attend in the future (Singapore Department of Statistics, 2006). For Singapore students, there is intensive pressure to perform well on these exams (Ang et al., 2009). On the other hand, in the United States, students participate in high-stakes testing in elementary and secondary schools. The Every Student Succeeds Act (2015) requires states to administer standardized assessments in US elementary and secondary schools. Although there is stress associated with these standardized exams for US students (Sadker & Zittleman, 2004), there may be more stress and anxiety associated with Singapore's selective and competitive educational system and the high expectations Singapore parents and teachers put on children to excel in academic settings (Lowe & Ang, 2012). Lowe and Ang found a country by gender interaction effect in their study, with Singapore females self-reporting lower levels of physiological hyperarousal test anxiety than US females, and US males self-reporting lower levels of worry and physiological hyperarousal test anxiety symptoms than Singapore males. These findings suggest other cultural factors in addition to selective and competitive educational systems, such as socialization practices, may play a role in students' test anxiety.

Conclusion

Influences of different social systems are beginning to draw the attention of researchers in the field of test anxiety. Lowe et al.'s (2008) biopsychosocial model of test anxiety underscores the importance of social systems in students' test anxiety. In this chapter, Lowe's biopsychosocial model of test anxiety was introduced, and empirical studies were presented supporting the relationship between parent/family, school, and societal systems and students' test anxiety. Overall, limited research has been conducted on this topic, and more research is needed in order to better understand the different systems influences in the development of students' test anxiety.

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Academic Anxiety: Relationships with Motivation and Attitudes Toward Learning Among Brazilian University Students

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Introduction

Anxiety is conceptualized as a state of tension and discomfort, usually accompanied by fear (Erturan & Jansen, 2015; Hembree, 1988). Spielberger (1966) proposed the distinction between anxiety-state and anxiety-trait, both of which are considered in the literature (e.g., Ahmed et al., 2013; Ramirez et al., 2018). In the former case, it is a transient emotion and caused by a specific situation, whereas trait anxiety consists of a chronic inclination or mood, which emerges in a wide variety of situations.

In school learning contexts, studies on anxiety have taken on the focus of two specific conditions, termed, respectively, *test anxiety* (Brady et al., 2018; Jamieson et al., 2016; Westphal et al., 2018) and math anxiety (*Math anxiety*) (Ramirez et al., 2018; Reali et al., 2016; Recber et al., 2017).

The test anxiety, although it is eventually expression of trait anxiety, is particularly characterized by the influence of a set of intraindividual and situational factors, such as the context of the test, perception of threat, self-perception of competence, personal patterns of coping and motivation, and even study skills (Zeidner, 2014).

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Pekrun (2006), however, observed that, due to experiences of difficulties and pressure in assessments, anxiety can become a habitualized emotion, forming a procedural mental scheme. Subsequently, the mere occurrence of a new test or the situation of entering the class for classes, or even studying induces the student, even unconsciously, to evoke that scheme and feel anxiety. In fact, in any school discipline, the emotion of anxiety tends not to remain limited to test events. Mathematics anxiety, on the other hand, has been considered a form of trait anxiety (Ramirez et al., 2018), something more stable, so that the mere mention or proximity of this subject triggers the typical symptoms of this emotion. It arises both in testing and study situations of this subject (Jamieson et al., 2016).

In general, as every emotion originates in the interpretation of a situation-stimulus, a negative emotion, hopelessness or anxiety, will arise when the student perceives an event that escapes his or her control, that is threatening, over which the student does not see himself or herself as able to overcome (Hembree, 1988; Pekrun, 2006; Pekrun et al., 2004). Whether it is test anxiety or math anxiety, the two combined components of worry and emotionality should be distinguished in this emotion, as had been originally proposed by Liebert and Morris (1967) and embraced to date by numerous authors (e.g., Brady et al., 2018; Jamieson et al., 2016). The worry component consists of negative thoughts that are expressed in internal monologues, whose focus is on the possible negative consequences of failure, or the evaluation of one's own ability and comparison with peers, among other cognitive elements present in the experience of this emotion. The component of emotionality, inherent to all emotions, consists of physiological responses such as tachycardia, sweating, and tension.

Specifically among the students, anxiety has appeared related to impairments in intrinsic motivation, self-efficacy, and performance (Recber et al., 2017; Sutter-Brandenberger et al., 2018). In Roick and Ringeisen's (2017) research, high self-efficacy was associated to expectation of higher scores, lower anxiety before and after the exam, and better performance during the exam. Zeidner (2014) listed and described 15 phases and aspects of learning in which high anxiety produces negative effects.

Research has revealed positive relationships between both math anxiety and test anxiety and poorer performance (e.g., Erturan & Jansen, 2015; Jacobs & Gross, 2014; Justicia-Galiano et al., 2016; Pekrun et al., 2017; Reali et al., 2016; Zeidner, 2014). In the context of mathematics, an area in which many studies on anxiety focus, Justicia-Galiano et al. (2016) highlighted that high anxiety is associated with greater difficulties for students to inhibit or eliminate negative and intrusive thoughts from consciousness. They also revealed that anxious students tend not to feel that they have control over the situation, which ends up further increasing anxiety.

Gender, age, and education differences in academic anxiety in college students have also been reported in national and international literature. Although not always consistent, data have evidenced better ability to cope with anxiety among older and more advanced in the course and of the male gender (Arcoverde et al., 2020; Bartalo & Guimarães, 2008; Boruchovitch et al., 2020; Lins, 2013). Similarly, with regard to course year, Brady et al.'s (2018) research related to test anxiety revealed that it

was college students in early semesters who reported coping less favorably with anxiety and experiencing more anxiety-related symptoms and concerns than students in later years. Age and educational level were also associated with lower levels of anxiety, selective attention, and concentration in the research of Fernández-Castillo and Caurcel (2015) also with university students.

It is worth reinforcing that it is only high anxiety – not anxiety in a more moderate degree – that has detrimental effects on performance. The explanation lies in the high levels of worry, the cognitive component of this emotion, that interfere with cognitive functioning as working memory becomes compromised by the self-deprecating thoughts of the internal monologue (Ahmed et al., 2013; Brady et al., 2018; Erturan & Jansen, 2015; Ramirez et al., 2018; Zeidner, 2014). More recently, research by Schillinger et al. (2021) revealed that it is interference and lack of confidence, rather than worry, that most explain low test performance among anxious students.

Academic anxiety in general and text anxiety are major challenges faced by college students (Arcoverde et al., 2020; Boruchovitch et al., 2020). Since research shows that high anxiety compromises better quality motivation, attitudes and one's own performances in tests and academic tasks, and the ability of students to regulate their emotions is essential for school and academic success, the need to assess the incidence and frequency of this emotion among students arises. Knowing and characterizing academic anxiety in college students is of utmost importance. In this sense, this chapter aims to identify the academic anxiety of Brazilian college students of undergraduate and bachelor's degree courses, as well as examine it, not only in relation to motivational and attitudinal variables, but also in relation to demographic and academic variables of the sample. The intention was also to estimate the correlations between the variables of interest, as well as the internal consistency of the scales employed in this research.

Thus, the present chapter brings results referring to 345 students from a university located in the interior of the state of São Paulo. Of these students, 239 (69.28%) were female, 105 (30.43%) were male, and 1 (0.29%) was classified as other genders. The age of the participants ranged from 18 to 50 years and the mean age was 23.8 years. Students from 40 undergraduate, baccalaureate, and integrated undergraduate and baccalaureate courses participated in the survey. The courses with more participants were Degree in Pedagogy (n = 63; 18.26%), Degree in Languages (n = 30; 8.70%), Degree in Geography (n = 28; 8.12%), Bachelor and Degree in Physical Education (n = 27; 7.83%), Bachelor and Degree in Biological Sciences (n = 23; 6.67%), Bachelor and Degree in Dance (n = 20; 5.80%), Bachelor in Mathematics (n = 19; 5.51%), Bachelor in Physics (n = 15; 4.35%), and Bachelor and Degree in Chemistry (n = 14; 4.06%). Regarding the semester of the course, there were students enrolled from the 1st to the 10th semester. However, students were mainly concentrated in the 2nd semester (n = 66; 19.13%), 3rd semester (n = 47; 13.62%), 4th semester (n = 48; 13.91%), and 7th semester (n = 43; 12.46%). The majority declared themselves to be of white ethnicity (n = 241; 69.86%).

Data were collected using two instruments: the student's sociodemographic and academic life questionnaire and the translated version into Portuguese of the

Learning and study strategies inventory third edition - LASSI (Weinstein, Palmer, & Acee, 2016 – translation and adaptation of the 3rd edition by Boruchovitch et al., 2019). Both instruments are described below.

(a) *Student's sociodemographic and academic life questionnaire*

The sociodemographic questionnaire consists of eight closed questions, which sought to characterize the students in the following aspects: gender, age, semester of the course, chosen course, area of knowledge that the chosen course is inserted (Arts, Humanities, Biological and Exact), and ethinicity, intention to continue the undergraduate course, and self-perception about the performance.

(b) *Learning and study strategies inventory third edition* – LASSI (Weinstein et al., 2016 – translation and adaptation of the 3rd edition conducted by Boruchovitch et al., 2019).

The LASSI is a *Likert-type* scale, composed of 60 items subdivided into ten scales, namely, Anxiety, Attitude, Concentration, Information processing, Motivation, Selection of main ideas, Self-testing, Test-taking strategies, Time management, and Use of academic resources. These scales can be analyzed together or separately. Each scale is composed of six items and each item has five response options: "Rarely describes me," "Usually does not describe me," "Sometimes describes me," "Usually describes me," and "Almost always describes me." Of its 60 items, 34 have inverted scores due to the form in which they were written.

The ten LASSI scales are associated with the components of Skill, Will, and Self-regulation, components of strategic learning according to the Strategic Learning Model (Weinstein et al., 2016). In the present research, only the scales of the will component were used: Anxiety, Attitudes, and Motivation.

The anxiety scale assesses the degree to which students worry about university and their academic performance, for example, the item: "when I am taking an exam, worrying about performance interferes with my concentration." The Attitude scale examines students' attitudes and interests towards university and achieving academic success, by example, "I have a positive attitude toward attending my classes." The Motivation scale assesses students' diligence, self-discipline, and effort to accomplish their academic tasks, by example: "When the work is difficult, I give up or study only the easy parts."

All ten scales show high internal consistency, measured by Cronbach's alpha, in studies conducted in large samples of American students. The values ranged from 0.76 to 0.87. The internal consistency of the total LASSI and of each subscale, in Brazil, was estimated from a study conducted by Boruchovitch et al. (2020) in a sample of 163 students enrolled in a teacher training course at a public university in the state of São Paulo. The Cronbach's alpha value of the total LASSI was 0.911, which evidences the high internal consistency of the Brazilian version of the Inventory. With the exception of the scale of Use of academic resources (α =0.386), the reliability of the scales that make up the LASSI, assessed by Cronbach's alpha, was high, ranging from (α =0.717 to α =0.843) in nine of the ten scales (Pestana & Gageiro, 2014). Similar data were found in another Brazilian study (Arcoverde et al., 2020). The value of Cronbach's alpha of the scale Use of academic resources

could be improved with the removal of some of its items. However, for now, the decision was not to exclude any items from this scale because the psychometric properties of the Brazilian version of the LASSI are still under study.

The Data Collection: A Brief Description

The contact with the researched educational institution occurred in 2017. After the institution's acceptance, the project was submitted to and approved by the Research Ethics Committee of the Faculty of Education of a public university, in accordance with the current standards of the National Health Council, Resolution No. 506/16, which establishes the ethical issues of research conducted with human beings in Brazil (CAAE protocol: 81094017.0.0000.8142).

Data collection was scheduled after consultation of the most appropriate days and times, according to the teachers, in the years 2018–2021. The instruments were applied in the classrooms, in 2018 and 2019 in the physical classrooms and in 2020 and 2021 in the virtual classrooms of Google Meet.

Before starting the data collection, the researcher explained to the students the purpose of the research, how the data would be collected, and its confidential nature. A *link was placed* on the board/chat for students to access through their mobile phones, *laptops*, and *tablets*. When accessing the *link*, students were asked to register an *email*. After students registered their *emails*, they received the survey in their respective *emails* that directed them to the Autorregular Platform, built especially for the research, which housed the Informed Consent Form, the sociodemographic questionnaire and the LASSI, in addition to other scales that are not part of the objective of this chapter (Boruchovitch et al., 2019). Students under 18 years of age were instructed not to answer the survey, as this required the consent of parents and/or guardians. Data collection lasted approximately 35 min.

Data Analysis Considerations

The statistical program SAS System for Windows (Statistical Analysis System), version 9.2, was used to analyze the results. Descriptive and comparative analyses were performed according to the sociodemographic variables. After verifying that the data did not present normal distribution by the values obtained in the *Shapiro-Wilk* and *Kolmogorov-Smirnov* tests, the *Mann-Whitney test* was used to compare the variables between two groups, and the *Kruskal-Wallis* test was used to compare the variables between three groups.

For the purpose of analysis, some variables of interest such as age, ethnicity, intention to continue the undergraduate course, and self-perception of performance in the course were grouped into two or more categories as follows: course (5), age

(3), gender (2), ethnicity (2), intention to continue the course (3), self-perception of performance (4), semester of the course (3), area of knowledge of the course (4).

Cronbach's alpha was used to analyze the internal consistency of the scales. Alpha values above 0.70 indicate high internal consistency (Shavelson, 2009) and up to 0.60 are considered acceptable in Human Sciences (Prieto & Muniz, 2000). Correlations between the variables of interest were also estimated using *Spearman's* correlation coefficient, whose magnitudes were interpreted according to Cohen's (1988) criteria, i.e., from 0.10 to 0.29, the correlation was considered low; from 0.30 to 0.49, moderate; and from 0.50 to 1.00, high. The significance level adopted for statistical tests in this study was 5%, i.e., $p < 0.05$.

Results

Table 1 presents the results obtained with the descriptive analysis of the scales that make up the Will dimension of the LASSI.

The Cronbach's alpha values of the three scales under analysis showed, in general, their good internal consistency, which ranged from 0.710 to 0.854 (Pestana & Gageiro, 2014). The examination of the means and medians of each scale revealed that students seem to sometimes use the strategies that make up the anxiety scale, mention to generally use the strategies of the motivation scale and report using, almost always, the strategies that make up the attitudes scale. The highest scores were found on the attitudes scale (M = 4.05; Mdn = 4.17) and the lowest on the anxiety scale (M = 2.99; Mdn = 3.00). Standard deviations ranged from 0.62 to 1.03, being higher in the anxiety scale.

Table 2 shows the results of the comparisons of the scores of the three scales with the variables gender, age, ethnicity, semester of the course, and intention to continue the course.

The results presented in Table 2 show that significant differences emerged in the scores of the scales of the "Will" dimension of the LASSI and the variables gender, age, semester of the course, and intention to continue the course. The analysis by gender evidenced significantly higher scores on the anxiety scale for males and significantly higher scores on the attitude scale for females. Older students (≥30 years) showed significantly higher scores on the anxiety scale when compared

Table 1 Alpha of Cronbach values, mean, standard deviation, minimum, median, and maximum of LASSI Will Dimension

Scales	α	Mean	Std. Dev.	Min	Median	Max
Anxiety	0.854	2.99	1.03	1.00	3.00	5.00
Attitude	0.710	4.05	0.62	1.33	4.17	5.00
Motivation	0.747	3.46	0.79	1.17	3.50	5.00

Source: Authors (2021)
Std.Dev standard deviation, *Min* minimum, *Max* maximum

Table 2 LASSI means and gender, ethnicity, age, semester of course, and intention to continue

Learning and Study Strategies Inventory – LASSI											
Gender											
	Female (n = 109)			Male (n = 119)			Z	p			
Scale	M	Sd	Mdn	M	Sd	Mdn					
ANX	2.79	0.99	2.83	3.45	0.95	3.33	5.48	**<0,001**			
ATT	4.10	0.59	4.17	3.94	0.67	4.00	2.02	**0.043**			
MOT	3.50	0.81	3.50	3.38	0.74	3.33	1,52	0.129			
Ethnicity											
	White (n = 241)			Non-white (n = 104)			Z	p			
Scale	M	Sd	Mdn	M	Sd	Mdn					
ANX	2.95	0.99	3.00	3.08	1.11	3.17	0,91	0.365			
ATT	4.04	0.63	4.17	4.08	0.59	4.17	0.56	0.574			
MOT	3.46	0.80	3.50	3.48	0.76	3.50	0.08	0.940			
Age											
	<20 years (n = 93)			20–29 years (n = 100)			≥ 30 years (n = 25)			χ^2	p
Scale	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn		
ANX	2.98	1.04	3.00	2,90	1.01	3.00	3.43	0.97	3.17	6.84	**0.033**
ATT	4.35	0.47	4.33	4.00	0.62	4.17	4.12	0.66	4.17	10.22	**0.006**
MOT	3.81	0.74	3.67	3.42	0.77	3.50	3.47	0.86	3.50	6.80	**0.033**
Semester of course											
	1–3 (n = 126)			4–7 (n = 137)			8–10 (n = 76)			χ^2	p
Scale	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn		
ANX	2.79	1.07	2.83	3.06	0.95	3.00	3.20	1.04	3.17	7.60	**0.022**
ATT	4.12	0.60	4.17	4.07	0.63	4.17	3.90	0.61	4.00	8.39	**0.015**
MOT	3.53	0.76	3.58	3.52	0.78	3.67	3.25	0.82	3.33	6.25	**0.044**
Intention to continue the course											
	None/very low /low/moderate (n = 32)			High/very high (n = 66)			Total (n = 247)			χ^2	p
Scale	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn		
ANX	2.86	1.05	2.83	3.07	1.02	3.00	2.98	1.03	3.00	0.98	0.613
ATT	3.46	0.88	3.50	3.82	0.59	3.83	4.19	0.51	4.33	39.55	**<0.001**
MOT	3.05	0.80	3.08	3.19	0.68	3.17	3.59	0.78	3.67	24.16	**<0.001**

Source: Authors (2021)
M mean, *Sd* standard deviation, *Mdn* median, *ANX* anxiety, *ATT* attitudes, *MOT* motivation

to students aged 20–29 years. Younger students (<20 years) obtained significantly higher scores on the attitudes and motivation scales than those aged 20 to 29 years.

It was also observed that students from the final semesters (8th to 10th semester) obtained significantly higher scores in the anxiety scale and lower scores in the attitude scale when compared to those from the 1st and 3rd semesters. Similar data were obtained in the motivation scale, in which students from the 8th to 10th semesters had significantly lower scores than those from the other semesters.

Statistically significant differences were observed in the scores of the scales of attitudes and motivation and the intention to continue the undergraduate course. Students with full intention to continue the course had higher scores on the scales of attitudes and motivation, when compared to those who revealed no/very little/moderate and very/very much intention to continue the undergraduate course. No statistically significant differences were found between the LASSI scales and the variable ethnicity. Next, in Table 3, the results of the LASSI scales are presented in relation to the variables field of knowledge, self-perception of performance, and course.

As shown in Table 3, statistically significant differences emerged only in the scales of the LASSI Will dimension in relation to the variable self-perception about performance. Students with self-perception about performance as at average, below average, and well below average showed significantly lower scores on the anxiety scale, when compared to those with self-perception about performance as well above average and above average. In the attitudes scale, significantly lower scores were found in students with self-perception about performance at average, below, and well below average when compared to those with self-perception about performance well above average and to students who did not have this self-perception yet, due to having entered the university at the time when data collection occurred. Similarly, on the motivation scale, students with self-perceptions about performance at average, below average, and well below average showed significantly lower scores when compared to students who perceived themselves as having higher performance. No other significant differences between the LASSI Will dimension scales, course, and knowledge area were found. The correlations between the variables investigated are shown in Table 4.

Significant negative and weak correlations were found between the variables age and semester of the course and the scores of the attitudes and motivation scales. The semester of the course correlated positively and weakly with anxiety. Positive and significant moderate correlations were found in the intention to continue the course with attitude and weak with motivation. The variable self-perception about performance correlated significantly, negatively and weakly with anxiety and attitude, but moderately with motivation. Finally, significant, positive, and moderate intercorrelation was found between the scales of motivation and attitudes of LASSI.

Discussion

This chapter aimed to identify the academic anxiety of Brazilian college students of undergraduate and undergraduate courses, as well as examine it, not only in relation to motivational and attitudinal variables, but also in relation to demographic and academic variables of the sample. Furthermore, the correlations between the variables of interest were estimated, as well as the internal consistency of the scales in the sample.

It was interesting to note that significant differences were found in the scales of anxiety, attitude, and motivation due to the variables gender, age, semester of the

Table 3 LASSI means and field of knowledge, self-perception of performance, and course

Field of knowledge																
	Arts (n = 32)			Biological (n = 67)			Exact sciences (n = 77)			Humanities (n = 169)			χ^2	p		
Scale	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn				
ANX	3.04	0.96	3.33	3.19	1.04	3.17	3.02	1.07	3.17	2.89	1.01	2.83	4.56	0.207		
ATT	4.08	0.56	4.17	3.99	0.64	4.00	3.93	0.64	4.00	4.13	0.61	4.17	7.81	0.051		
MOT	3.53	0.75	3.50	3.47	0.78	3.33	3.27	0.81	3.33	3.54	0.78	3.67	6.42	0.093		
Self-perception of performance																
	Well above (n = 91)			Above (n = 158)			Average/below/well below (n = 85)			No self-perception (n = 11)			χ^2	p		
Scale	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn				
ANX	3.13	1.11	3.00	3.09	0.95	3.17	2,67	1.01	2.67	2.74	1.10	3.00	10.64	**0.014**		
ATT	4.22	0.58	4.33	4.10	0.55	4.17	3.76	0.69	3.83	4.26	0.49	4.33	27.93	**<0.001**		
MOT	3.85	0.65	4.00	3.53	0.72	3.50	2.94	0.76	3.00	3.44	0.90	3.83	58.48	**<0.001**		
Course																
	Bach/Lic biology (n = 23)			Bach/Lic physical Educ (n = 27)			Bach/Lic geography (n = 28)			Lic. Languages (n = 30)			Lic. Pedagogy (n = 63)			χ^2	p
Scale	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn	M	Sd	Mdn		
ANX	3.06	1.00	3.17	3.46	1.00	3.67	2.89	0.86	3.17	2.87	1.24	2.75	2.90	0.87	2.83	7.25	0.123
ATT	3.89	0.78	4.00	3.98	0.60	4.00	4.08	0.69	4.17	4.19	0.53	4.33	4.12	0.60	4.17	4.32	0.364
MOT	3.40	0.86	3.33	3.36	0.64	3.17	3.20	0.87	3.33	3.75	0.70	3.83	3.52	0.77	3.67	8.28	0.082

Source: Authors (2021)

M mean, *Sd* standard deviation, *Mdn* median, *ANX* anxiety, *ATT* attitudes, *MOT* motivation.

Table 4 Correlations among numerical variables and LASSI scores

Variables	Anxiety	Attitude	Motivation
Age	r = 0.09250 p = 0.0886	r = −0.11812 **p = 0.0294**	r = −0.15037 **p = 0.0055**
Course semester	r = 0.16636 **p = 0.0019**	r = −0.15651 **p = 0.0036**	r = −0.11768 **p = 0.0288**
Intention to continue	r = −0.00523 p = 0.9228	r = 0.33187 **p < 0.0001**	r = 0.26411 **p < 0.0001**
Self-perception of performance	r = −0.14634 **p = 0.0065**	r = −0.23705 **p < 0.0001**	r = −0.38722 **p < 0.0001**
Attitude	r = 0.01402 p = 0.7953		
Motivation	r = −0.05360 p = 0.3209	r = 0.50546 **p < 0.0001**	

Source: Authors (2021)

course, academic intention, and self-perception on performance. In this study, the male gender revealed to deal more strategically with anxiety. These results are in line with others obtained in Brazilian samples (Bartalo & Guimarães, 2008; Boruchovitch et al., 2020; Lins, 2013). The female gender, in turn, reported better attitudes towards learning than the male gender. However, these results differed from previous study of Boruchovitch et al. (2020) in Brazilian sample in which these significant differences did not emerge. Considering the importance of the gender variable in learning and the inconsistency in the result found in the present study, it is recommended that future research can examine its impact, with greater precision.

Developmental differences also seem to have emerged regarding age and anxiety. Older students in the present study also seemed to manage their anxiety better than those in the 20–29 age group. Younger students, on the other hand, showed better attitudes and higher motivation than older ones. Some studies reveal that motivation to learn and attitudes more favorable to learning tend to decrease as one advances in schooling. A similar trend emerged in the present study when examine the data regarding the semester of the course. It was also students further along in the course who reported coping better with anxiety, having less motivation, and possessing less favorable attitudes toward learning than students in earlier and intermediate semesters (Bortolleto & Boruchovitch, 2013; Boruchovitch et al., 2020; Brady et al., 2018; Fernández-Castillo & Caurcel, 2015). It was hypothesized from one side that advancement in schooling may contribute to increased knowledge of coping strategies and greater familiarity with ways to assessment, the that may contribute to a decrease in anxiety. On the other hand, this advance may generate greater demotivation, due to the overload imposed by the excess of subjects, the not always attractive character in the way they are taught, as well as their little connection with professional practice, often may constitute factors that cause greater disinterest and less favorable attitudes to learning in students closer to finish the course.

As pointed out in the literature regarding self-efficacy and self-perception of competence (Azzi & Polydoro, 2010; Bandura, 1997; Pajares & Olaz, 2008; Roick & Ringeisen, 2017), students with higher self-perception of performance in relation to the class revealed better coping with academic anxiety and have more favorable attitudes to learning and more motivation to learn. Similar trend was also observed in relation to the student's academic intention to continue their studies at undergraduate level (Bean, 1982; Morrow & Ackerman, 2012), as students who showed full intention to continue were those who obtained the highest mean scores on the anxiety, attitude, and motivation scales.

Since in the present sample, the course, the area of knowledge of the course, and the ethnicity of the participants were variables that were not significantly associated with differences in scores on the LASSI anxiety, motivation, and attitude scales, it would be desirable that further studies be conducted with these variables in samples in which they may be more numerically balanced.

The estimated correlations between the variables were not all in the expected directions, nor in the expected magnitudes. Unlike what would be expected, the self-perception of performance correlated negatively with motivation and attitude. In general, the correlational data of the present study point to the need for further investigations to better understand the reasons for the trends, now obtained, because by the literature of the area, it should be expected that they were moderate or strong, as well as that some were positive (Fernández-Castillo & Caurcel, 2015; Pajares & Olaz, 2008; Roick & Ringeisen, 2017).

The internal consistency of the scales was considered high in this study. Similar values were obtained in studies with American samples (Weinstein et al., 2016) and national samples (Arcoverde et al., 2020; Bartalo & Guimarães, 2008; Boruchovitch et al., 2020), which indicates that the data reported here were reliably measured. It is necessary, however, that the items of the Brazilian version of the LASSI be subject to future factor analyses to confirm its internal structure in larger and more representative Brazilian samples.

Final Considerations

The present study, by characterizing college students as to their anxiety, motivation to learn, and attitudes toward learning, as well as analyzing differences regarding these variables and others of demographic and academic nature, made it possible that some psychoeducational implications can be woven in favor of improving the academic life of Brazilian college students. Although caution is required, since the sample size of this study does not allow generalizations, it can be said, in general, that male students, older, more advanced in the course, with higher self-perception of performance, and with strong intention to continue the course are those who better manage their anxiety. Whereas the younger, less advanced in the course were those who showed higher motivation to learn and along with the female gender also revealed better attitudes regarding their learning.

Anxiety control and strengthening students' ability to regulate their emotions are essential for them to achieve success at university and quality of life. Evidence shows that interventions aimed at reducing anxiety as well as learning how to learn and strengthening self-regulatory processes can decrease academic anxiety, improve motivation to learn, and, consequently, raise students' performance, especially when taking into account the academic and demographic characteristics of the participants who are the most vulnerable and need more help (Arcoverde et al., 2020; Brady et al., 2018; Roick & Ringeisen, 2017).

Thus, interventional actions aimed at improving high anxiety need to focus on female students, younger, less advanced in the course, with lower self-perception of performance, and lower intentions to continue the course. Some studies recommend that interventions focus on strengthening the cognitive reappraisal strategy, and others emphasize that helping students improve their self-efficacy beliefs will contribute to reducing excessive anxiety. Research also shows that teachers should adopt non-threatening classroom instructions that modify students' interpretation of the evidence and, consequently, favor the reduction of anxiety. In addition, they should act to raise students' awareness about their positive and negative emotions related to learning. Cognitive-behavioral interventions should focus not only on promoting students' self-confidence, but also should help them to avoid distractions and be able to reduce negative and irrelevant interference in assessment and learning situations (Brady et al., 2018; Roick & Ringeisen 2017; Schillinger et al., 2021).

To advance research, studies that can assess the impact of different levels of anxiety on selective attention, concentration, and actual academic performance of students are equally important in all segments of schooling and need to be conducted in future investigations (Schillinger et al., 2021). It is further recommended that predictive power of these promising variables, studied in the present study, can be examined by additional research that also takes into account other psychological, academic, and contextual factors that may be associated with different levels of anxiety, successful academic performance, and emotional well-being of higher education students in order to expand our knowledge about how to prevent high anxiety among college students and maximize their learning.

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Bullying in Adolescence and Anxiety: An Integrative Review

Wanderlei Abadio de Oliveira

Introduction

School is an important microsystem of development for children and adolescents. It is in this context that intense social interactions occur, meetings of different thoughts and subjectivity expressions, aspects which favor the socialization process. It is also a space for education, content learning, and skills development. However, school and its functions may have a contradictory meaning to the extent that the school climate or demands or the social dimension become triggers for the development of anxiety and other psychological disorders (Muniz & Fernandes, 2016). According to the scientific literature, situations experienced at school, such as reading in class, writing on the blackboard, evaluations, presentations, and interacting with other people are a source of anxiety in adolescence (Vianna et al., 2010).

In the individual field, it is observed that the very moment of adolescence and its characteristics may trigger the development of anxiety symptoms. Body and psychosocial changes, greater involvement with the peer group, and dedication to identity formation, for example, are experiences that can increase anxiety levels at this time of human development. Studies show rates of anxiety and other health problems in adolescence, however, without seeking to explain or find reasons for the development of symptoms and even more serious from illness (Grolli et al., 2017).

On the other hand, when we perceive that social dimension context is important for adolescents, experiences, or occurrences of phenomena such as bullying, which affect the school climate, consequently, may be a source or explain anxiety pictures. Bullying is a type of violence that can manifest itself in different ways (e.g., physical aggression, verbal aggression, exclusion) and is characterized by meeting three

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defining criteria: intentionality, repetitiveness, and power imbalance between victims and aggressors (Oliveira et al., 2020; Olweus, 2013). The studies on this phenomenon began in the late 1960s in Sweden and, subsequently, in Norway. Dan Olweus was an important researcher on the phenomenon, being considered a pioneer in its conceptualization, identification through a classic instrument, and indication of prevention measures (Oliveira et al., 2017). From the beginning, the severity of this type of behavior was perceived for all people within the school context. Specifically, since the first research studies, it was already revealed that it affected the behavioral and mental health development of students.

Therefore, the association between bullying or bullying victimization and mental health is one of the best established and reproduced links in the literature on the topic (Mello et al., 2016; Rodrigues et al., 2021; Silva et al., 2018; Vieira et al., 2020). The diseases most associated with the phenomenon are depression, low self-esteem, and suicide ideation and attempts (Vieira et al., 2020). Feeling lonely, not having friends, having insomnia, and frequently using drugs are some of the mental health problems identified among 109,104 Brazilian adolescents who participated in the 2012 National School Health Survey (Silva et al., 2018). Anxiety also appears in studies related to involvement in bullying situations (Jadambaa et al., 2019; Rodrigues et al., 2021).

However, even with a vast scientific production on the relationship between bullying and mental health issues, it is essential to particularize conditions that are clinically complex and can worsen if there are no appropriate interventions to address them. Thus, this study aimed to verify the relationship between adolescent involvement in situations of bullying and anxiety. The object of this review is the integration of data on a social phenomenon and its relationship with the health-disease process. The results presented may support care actions aimed at promoting the overcoming of aggressive behaviors, but at the same time not neglecting the well-being psychological of the students.

Method

This study is an integrative literature review. This type of study is characterized by the gathering and description of texts to map the scientific production on a particular topic or theme of interest. The steps applied in this review were development of the guiding question; literature search or sampling; data collection; critical analysis of the included studies; discussion of the results; and presentation of the integrative review (Souza et al., 2010).

The guiding question was based on the PICo strategy, which is an acronym for population (P), phenomenon of interest (I), and context (Co) (Lockwood et al., 2020). Thus, the following question was defined: What is the relationship between involvement in situations of school bullying and anxiety in adolescence? It was found that the study population should be adolescents in school settings and address the phenomena of interest: bullying and anxiety.

The following databases were consulted: Web of Science; Scopus; Latin American and Caribbean Literature on Health Sciences (LILACS); and Psychology Electronic Journals (PEPSIC). Uniterms were used to search the sources (*academic anxiety* AND bullying; *anxiety* AND bullying*;* academic anxiety AND bullying; anxiety AND bullying). To privilege the most current evidence, we defined the time frame of the last 5 years (2017–2021) and applied the following inclusion criteria: text type scientific articles; only primary studies; publications in Portuguese, English, or Spanish; studies involving adolescents. The exclusion criteria were texts such as editorials, letters to the editor, and comments; literature reviews and secondary studies; studies with children, young adults, adults, or elderly; and research on bullying in other contexts (e.g., work).

Data were collected in June 2021 following the recommendations updated in 2020 of the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) (Page et al., 2021). Data were extracted using a synoptic table that gathered the main information of the studies (authors, year of publication, objectives, methodological aspects, main results). Following the assumptions of integrative literature review, data were descriptively analyzed with the purpose of integrating consensus or pointing out contradictions in the reviewed studies.

To evaluate the methodological rigor and the main characteristics of each reviewed study, a critical analysis of the included studies was performed. This action demands experience from the researcher who can use different instruments available for this purpose. This review used an adaptation of the *Critical Appraisal Skills Program* (CASP) and the assessment items indicated by the *Cochrane Collaboration*.

The *Critical Appraisal Skills Program* (CASP) allowed us to assess the studies regarding quality, rigor, credibility, and methodological relevance. The instrument is composed of 10 dimensions, as follows: (1) explanation of the objectives; (2) adequacy of the methodological design to the objectives; (3) presentation, justification, and discussion of methodological procedures; (4) explanation of the selection process and sample definition; (5) details of data collection procedures; (6) considerations about the relationship between researcher and researched; (7) ethical issues mentioned; (8) details of the data analysis process; (9) results presented and discussed; (10) description of the contributions, limitations, and implications of the study. After applying these items, each article is classified into three categories: category A gathers studies evaluated with low risk of bias that meet at least nine of the ten dimensions of the instrument; category B gathers studies that meet at least five dimensions and presented a moderate risk of bias; category C reveals studies with high risk of bias, because they meet less than five dimensions of the instrument.

The assessment items indicated by the *Cochrane Collaboration* contemplated the following dimensions of assessments: (1) definition of outcome; (2) presence of justifications for sample size and/or definition; (3) absence of selection bias (sample size, prediction of losses, and/or randomization); (4) clearly defined data collection (instruments and procedures adopted); (5) analysis procedures (appropriate to the objectives/appropriate statistical tests); (6) main findings related to the relationship between bullying and anxiety; (7) presentation of the contributions of the study and

its limitations; and (8) conclusions compatible with the results. Each of these questions was answered with "yes" or "no." Each article is assigned a score ranging from 0 to 8, being considered of high quality those that get 7 to 8 points, those of moderate quality obtain a score between 4 and 6, and those of low quality have a score of less than 4 points.

Results

The search process in the databases resulted in a total of 73 articles, 32 of which were duplicated between the databases. The number of articles identified reflects the search strategy adopted, which privileged the words contained in the titles of the texts. Figure 1 shows the flowchart of the process.

In the first stage of selection, based on the assessment of titles and abstracts, the excluded articles did not meet the inclusion and exclusion criteria presented (focus on situations of bullying at work or university; analyses of the experiences of autistic students; perception of adults on the experience of bullying *of* students with anxiety disorders; bullying among siblings). Then, in the analysis of the full texts, three articles did not present data that would allow answering the research question.

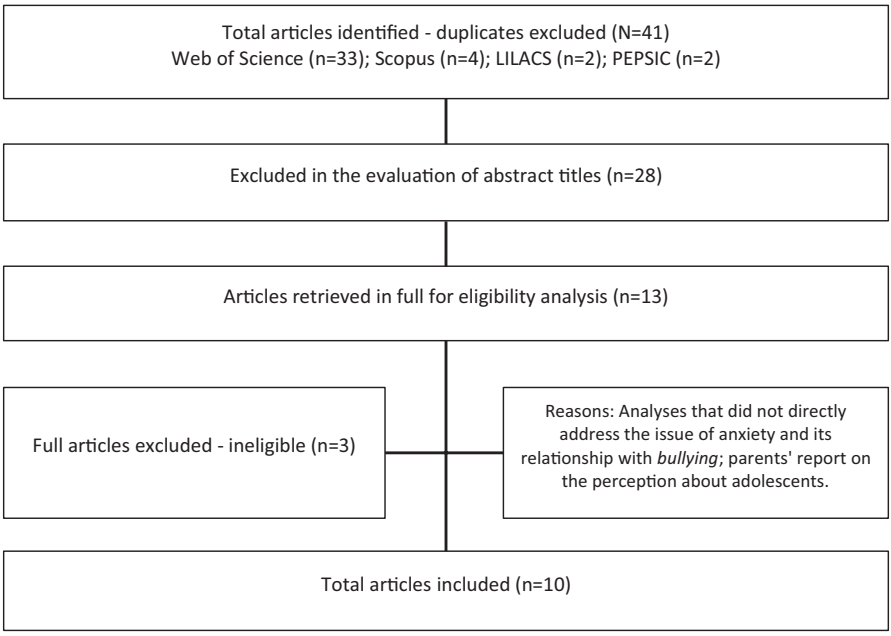

Fig. 1 Flowchart of the methodological steps for the construction of the revised corpus, according to the PRISMA 2020 guidelines

Thus, 10 articles make up the corpus from this review. Nine articles were published in English and one in Spanish. There is a diversity of places of origin of the studies (nine countries from three continents): Canada, China, South Korea, Spain, the United States of America, Portugal, the United Kingdom, Sweden, and Turkey. No Brazilian studies were found that focused on the issue of anxiety and its relationship with bullying. The number of participants in the studies ranged from 130 to 57,059. To verify the occurrence of bullying, the *Olweus Bullying Questionnaire* was used by two studies (Lee & Shin, 2021; Midgett & Doumas, 2019), and one used an instrument based on it (Coelho & Romão, 2018). The remaining studies used specific structured instruments, vignettes, or the peer-naming strategy. To assess participants' anxiety levels, three studies used the *Revised Children's Anxiety and Depression Scale* (Jungert & Perrin, 2019; Jungert et al., 2021; Lee & Shin, 2021), and two studies used versions of the *Self Report of Personality-Adolescent Form* (Lee & Vaillancourt, 2019; Midgett & Doumas, 2019). The main results on students' involvement with bullying and the relationship of this phenomenon with anxiety are summarized in Table 1.

Of note, one of the studies reviewed was developed during the COVID-19 pandemic and analyzed pre- and post-confinement data in Spain (Gómez-León, 2021) and another analyzed data longitudinal from a large sample (Jones et al., 2017). Overall, it was found that a bullying victimization can trigger anxiety symptoms, while being an observer of this type of situation can also be an anxiogenic factor. Regarding gender, girls are more vulnerable to the development of anxiety disorders.

To assess the methodological quality of the articles, it was found that all have levels of reliable evidence. The data from this evaluation are presented in Table 2.

In the assessment with the CASP instrument, six studies were classified as level A, which reflects the requirement of editors and reviewers for publication according to internationally defined quality criteria. The same occurs in the assessment of risk of bias according to the methodological quality assessment items, formulated from the *Cochrane Collaboration* guidelines. The studies assessed as level B or of moderate quality presented weaknesses in respect to the critical examination of the researcher about their performance (potential bias), the lack of information on the theoretical and methodological procedures, and the explicitness of the selection criteria (inclusion and exclusion) of the sample.

Discussion

This study aimed to assess, through an integrative literature review, the relationship between adolescent involvement in situations of bullying and anxiety. It was found that boys report more bullying practice, while girls report more victimization. Significant rates of victimization were revealed, as well as high rates of witnessing bullying situations. Girls and students identified as victims are more likely to develop anxiety pictures or symptoms. Students who witnessed bullying situations also reported higher levels of anxiety. The studies have good methodological

Table 1 Characterization of the studies reviewed, types of bullying identified, and related anxiety factors

References	Country(ies), sample, age/ grade, or school year	Types of bullying	Related factors
Coelho and Romão (2018)	Portugal, 668 participants, aged 11–16 years/ secondary education	Traditional bullying was more evident both in terms of practice and in terms of being victimized. Boys were identified as more aggressors (8%)	Girls reported significantly more social anxiety when compared to boys Victims of bullying reported more social anxiety compared to students not involved in of bullying Gender and victimization were significant predictors for anxiety social
Gómez-León (2021)	Spain, 276 participants, aged 12–14 years/ secondary education	94 students (34%) were identified as victims of bullying	The results show that victimization is positively related to anxiety and depression During the confinement situation in the COVID-19 pandemic, the anxiety and depression levels of students identified as victims decreased
Jones et al. (2017)	UK, 4564 participants, reported bullying between 12 and 16 years old/NI	Non-heterosexual adolescents reported more experiences of bullying when compared to heterosexual adolescents	Non-heterosexuality at age 15.5 was significantly associated with the presence of a diagnosis of anxiety disorder at age 17.5 Girls and boys who experienced bullying between the ages of 12 and 16 were more likely to be diagnosed with anxiety disorder at age 17.5 years
Jungert and Perrin (2019)	Sweden, 202 participants, mean age 16.44 years/ secondary school	Focus on students' intrinsic or extrinsic motivation in advocating or not advocating for victims of bullying	Girls and students with victimization experiences showed higher levels of anxiety when compared to boys and non-victimized students
Jungert et al. (2021)	Turkey, 388 participants, aged 11–14 years/ secondary school	Victimization by bullying or cyberbullying. Testimony of these situations and processes of identification with victim or aggressor	Traditional bullying was associated with higher levels of anxiety Students who witnessed bullying situations reported higher levels of anxiety

(continued)

Table 1 (continued)

References	Country(ies), sample, age/ grade, or school year	Types of bullying	Related factors
Lee and Shin (2021)	South Korea, 609 participants, NI/ high school	Boys reported a higher level of bullying practice	There was no direct association between anxiety and perpetration of bullying
Lee and Vaillancourt (2019)	Canada, 657 participants, ages 10–14 years/NI	Girls reported more instances of victimization at all time points in the study There were no significant gender differences in bullying practice	Anxiety symptoms were identified as strong predictors for bullying victimization and perpetration
Midgett and Doumas (2019)	USA, 130 participants, ages 11–15 years/high school	60.5% (n = 78) of participants reported witnessing bullying in the last 30 days prior to data collection. Of this group, 48.1% (n = 37) also reported being victims and 16.9% (n = 13) reported also having engaged in bullying	Higher levels of anxiety were uniquely associated with being an observer of bullying situations
Patte et al. (2021)	Canada, 57,059 participants, ages 13–18 years/ secondary school	Girls and boys reported being victims of bullying *to the* same extent (20.3% and 20.2%, respectively)	Students (boys and girls) who did not experience victimization had a lower risk of anxiety when compared to boys who experienced bullying in the past 30 days
Wu et al. (2021)	China, 4790 participants, ages 14–20 years/high school	The mean rate of bullying victimization was 0.34. The gender of the participants was negatively associated with bullying *victimization*	Victimization was significantly and positively associated with social anxiety

Notes: *NI* Not informed. To define the grade or school year, the nomenclature adopted in the study was used

indicators (e.g., representative samples and adequate data collection tools), and the assessment of methodological quality revealed high and moderate levels of evidence.

In general, studies on bullying reveal small differences between boys and girls in involvement in bullying situations. However, it is known that girls are more likely to report being victims while boys are more likely to be identified as bullies. These differences may be explained by social issues that expect girls to take a more passive position in social interactions, while among girls, the types of violence are more subtle and difficult to identify – social exclusion and dissemination of gossip, for example (Silva et al., 2013). Boys, in turn, are more encouraged to adopt aggressive behaviors to resolve issues and conflicts, aspects that are more related to perpetrators of bullying situations.

Table 2 Summary of the methodological quality assessment of the corpus reviewed

References	Quality level (CASP)		Methodological quality		
	A	B	High	Mod.	Low
Coelho and Romão (2018)		X		X	
Gómez-León (2021)		X		X	
Jones et al. (2017)	X		X		
Jungert and Perrin (2019)	X		X		
Jungert et al. (2021)	X		X		
Lee and Shin (2021)	X		X		
Lee and Vaillancourt (2019)	X		X		
Midgett and Doumas (2019)	X		X		
Patte et al. (2021)		X		X	
Wu et al. (2021)		X		X	

Notes: Level *A* studies assessed with low risk of bias; Level *B* studies assessed with moderate risk of bias. *Mod.* Moderate

On the other hand, the number of victims of bullying remains constant and high, which may reflect the ineffectiveness of intervention strategies adopted by schools or even processes of neglect. In Brazil, an analysis of three editions of the National School Health Survey found that the report of suffering bullying increased from 5.4% in 2009, to 7.2% in 2012, and to 7.4% in 2015 (Mello et al., 2018). Another example, in an epidemiological study developed in Paraíba/Brazil, we found a prevalence rate of victimization of 29.5% in a sample of adolescents (Marcolino et al., 2018). It should be noted that, in Brazil, since 2015, Law 13.085 requires schools to propose and implement measures to combat systematic violence.

Girls are known to be more vulnerable to anxiety disorders during adolescence (Coelho & Romão, 2018; Vianna et al., 2010). A study involving 243 adolescents identified a significant association between being female and having moderate and severe anxiety symptoms, for example (Jatobá & Bastos, 2007). This finding is confirmed by studies with other populations that found that women had a higher prevalence of anxiety than men (Costa et al., 2018; Orellana et al., 2020).

Victimization is also a strong predictor for the development of behavioral, affective, as well as psychological problems (Binsfeld & Lisboa, 2010). A systematic review verified the longitudinal association between bullying victimization and the recording of anxiety disorders and depression in the Australian population (Jadambaa et al., 2019). Specifically, the authors identified that 7.8% of anxiety disorder rates could be attributed to bullying victimization in that country. At the same time, observing or witnessing bullying situations, although assessed as harmless by common sense, is something that can trigger emotional problems, including anxiety (Midgett & Doumas, 2019; Jungert et al., 2021; Romualdo et al., 2019).

The indices of anxiety identified in this study may be even more problematic to the extent that it is understood that one of the ways to deal with the problem is to adopt avoidance behaviors. This type of behavior prevents the construction of friendship bonds with peers. Colleagues, the which makes it even more difficult to

break away from situations of victimization. The peer group is important for adolescents. Acceptance, sense of belonging, loving/affective relationships, and friendship are significant experiences for the development of relative autonomy and identity construction. Thus, the experience of bullying at school and the consequent onset of anxiety disorders may reinforce the idea that interpersonal relationships are not safe, the other is not reliable, and this affects the adolescents' whole development. Anti-bullying intervention strategies should consider this aspect.

Also, worth commenting in this discussion is the study developed during the pandemic of COVID-19 (Gómez-León, 2021). In the article, it was pointed out that during the confinement situation, a non-pharmacological measure to control the contagion by the new coronavirus, the levels of anxiety and depression of students identified as victims decreased (Gómez-León, 2021). This finding is consistent with the perception that the anxiogenic context was removed and that being at home might be safer for victims. However, conclusions in this direction should be cautioned, as it may be understood that one measure to control or combat bullying would be to stop attending school. This should not be an option for victims, or any student involved in bullying situations.

Reflecting on intervention strategies in schools, it is noteworthy that the reviewed studies presented high or moderate methodological rigor, with clear evidence on the relationship between bullying and anxiety. Thus, the analytical process of the articles allows to include at review some practical implications. In this sense, interventions should consider aspects of students' mental health and include strategies to deal with the anxiety that involvement with the phenomenon can trigger. Techniques of relaxation, mindfulness (state of attention and full awareness of the present moment), and for the control of negative emotions can be associated with specific *anti-bullying* interventions.

Final Considerations

This literature review study revealed that girls, victims, and observers of bullying situations, may have higher rates of anxiety conditions or symptoms. Its original contribution lies in the particularization of anxiety and its relationship with the phenomenon experienced by adolescents in the school context. It was built a narrative that may provide *insights* for future research seeking to better understand bullying and suggest effective ways to address it considering mental health aspects.

However, while acknowledging these strengths of the review presented, it is necessary to point out at least the three main limitations of the study. First, the focus of this review was on the issue of anxiety, but other mental health consequences are known to be associated with bullying and with anxiety itself. Further studies may extend this review by seeking to integrate data on general mental health problems associated with bullying. Second, related to this first limitation, in the search process it was realized that the variable anxiety was assessed and correlated to other phenomena, not only to bullying. Often anxiety was secondary, which did not allow

the inclusion of more studies in the review. Finally, the different instruments used in the reviewed articles to collect data, as well as the low number of studies included in the review, prevent conclusions of cause and effect on the variables under analysis.

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Coping with Test Anxiety and Academic Performance in High School and University: Two Studies in Brazil

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Adolescence is a period of life between 12 and 18 years old with psychophysiological changes and hormonal and bodily changes that may predispose to vulnerability to developmental and behavioral problems (Skinner & Zimmer-Gembeck, 2016; Zimmer-Gembeck, 2011; Zimmer-Gembeck & Skinner, 2008). In addition to the developmental changes typical of this phase of life, stressful experiences are added,

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including taking school tests, relationships at school, professional choice, the entrance exam for university admission, and social and affective relationships, which are stressors that can affect the physical and mental health of adolescents (Grant et al., 2006) and their academic engagement, that is, the quality of their participation or involvement in the learning process (Skinner, 2016). Thus, in high school, the adolescent has numerous challenges to face in his or her developmental journey.

Admission to university, in turn, represents a significant change in the student's life, when compared to the school trajectory undertaken until high school, both in relation to studying and learning, and in the personal and social sphere (Graner & Cerqueira, 2019). The need for long hours of study, the change in teaching methodology, which usually requires greater student autonomy, and the demands of teachers, family members, and the students themselves may lead to the development of stress and anxiety, which may require interventions in student support services (Ramos et al., 2018a). To this end, Brazilian (e.g., Ariño & Bardagi, 2018; Silva et al., 2018) and international (e.g., Auerbach et al., 2018; Bayram & Bilgel, 2008; Eisenberg et al., 2007) literature shows that this population of young adults is more vulnerable to mental health problems than the general population.

Students at different levels of education have common stressors in the academic context, such as test anxiety (Putwain et al., 2016; Sarason, 1958; Skinner & Saxton, 2019). Stress and anxiety albeit are normal and adaptive responses of the human species to cope with threats (whether real or imagined). However, stress at excessive levels becomes harmful, as it provokes psychophysiological reactions, and can limit the individual's ability to perform in various areas of life (Morais et al., 2010). Both emotional states – anxiety and stress – involve physiological, behavioral, and cognitive components that occur in an intertwined manner (Folkman & Lazarus, 1985). One of the situations with the greatest potential to trigger stress and anxiety, both in high school and university students, are tests and other school assessment activities (Gonzaga & Enumo, 2018; Gonzaga et al., 2016; Sarason, 1958).

The test is an assessment tool widely used in various fields, such as education, government, and private institutions, to assist in decision-making regarding the competencies, performance, and abilities of individuals (Rana & Mahmood, 2010). In a culture of heightened appreciation of assessment components in the teaching-learning process, the result of which can influence or even determine the future of an individual in the most diverse aspects (academic, emotional, family, social, professional, among others), it is evident the magnitude of the importance of these tests and therefore, it is understandable that states of stress and anxiety are experienced in this situation (Gonzaga et al., 2016).

Test anxiety is defined as a set of psychological, physiological, and behavioral reactions that occur in association with concern about negative results in assessment situations. Thus, the psychophysiological and behavioral reactions, arising from the anticipated concern about negative results and poor performance in assessment situations, stand out (Folkman & Lazarus, 1985; King et al., 2000; Zeidner, 1998). In this context, anxiety reactions typically occur at times before, during, or after an examination period (Folkman & Lazarus, 1985), these being referred to,

respectively, as the anticipatory phase, the confrontation phase, and the waiting phase (King et al., 2000; Zeidner, 1998). A last phase is proposed by Folkman and Lazarus (1985), the *outcome stage*, after learning how he or she has done the test.

In the anticipatory phase, in which the assessment situation is about to occur, the individual tends to experience concern about the demands associated with the test and the uncertainty of its result. In the confrontation phase, which occurs during the test situation, anxiety may reach a peak in the initial moments of contact with the assessment instrument, but it usually stabilizes during the resolution process. Finally, the waiting phase for the exam results usually generates apprehension, which can be resolved if the grade obtained is favorable or redirected to the possible consequences of an unfavorable grade (King et al., 2000; Zeidner, 1998).

Data from international literature indicate that over 33% of elementary and high school students experience test anxiety at some point (Methia, 2004). A study with a sample of 2435 English high school students pointed out that 16.4% of participants had test anxiety, with a higher proportion in female students (22.5%) (Putwain & Daly, 2014). In the Brazilian context, the literature is incipient in this area, although there is a growing interest in the influence that test anxiety exerts when addressing variables such as academic performance and academic motivation (e.g., D'Avila & Soares, 2003; Gonzaga & Enumo, 2018; Rodrigues & Pelisoli, 2008).

Brazilian studies investigating emotional changes in test situations found that many young people facing selective processes did not consider themselves physically and psychologically prepared. Reports of difficulties in concentration, restlessness, headaches and muscle pain, and dizziness are common, in addition to many presenting levels of anxiety, stress, fear, insecurity, and distress (D'Avila & Soares, 2003; Rodrigues & Pelisoli, 2008). The study by Gonzaga and Enumo (2018) pointed out the prevalence of 62.53% of students with test anxiety, with a significant difference in favor of girls (66.96%), in a sample of 379 high school students from a public school, in the city of São Paulo, Brazil.

The gender difference was also found by Feldman et al. (2008) in university students from Venezuela. This study also found that 53.73% of 442 undergraduate students presented stress, generally related to "excessive amount of material to study" (89.30% of students), "lack of time to study" (83.80%), and "entering or leaving the classroom that has already started" (81.30%). The study showed relationships among other relevant variables to understanding test anxiety, such as social support and stress, indicating that the higher the academic stress and the lower the perceived social support, the higher the perceived anxiety and the report of mental health problems. Furthermore, the authors found that the situations, taking a written exam, preparing for an upcoming test, and waiting for and receiving the results of a test, were reported by more than 90% of the participants as being the greatest generators of academic stress.

In the same way, García-Ros et al. (2012) found 82% of 199 first-year Psychology and Pedagogy students in Spain with perceived stress, related to academic activities. The main anxiety and stress-causing activities were taking tests, giving oral presentations, academic overload, and lack of time. Among the main difficulties encountered by students in university, Sahão and Kienen (2021) in a systematic review

study (with 23 articles), pointed out interpersonal relationships, leaving home, lack of support network, financial situation, and level of demand in university, the latter being the most mentioned factor (in 73.9% of the analyzed articles).

The studies thus show that stress and test anxiety are variables that influence students' psychological well-being (Conley & Lehman, 2012; Putwain, 2009; Putwain et al., 2016) and their performance, both in high school (Lufi & Darliuk, 2005) and in university (Latifa et al., 2012). With this focus, this chapter analyzes aspects of coping with academic test anxiety and its relationships with students' academic performance, illustrating with data from research conducted at the high school and university levels in two capital cities in the Southeast Region of Brazil.

Coping with Test Anxiety

The study of coping is fundamental in the academic environment, as coping strategies influence student engagement and exam study behavior, which consequently affect academic performance (Yumatov et al., 2001; Skinner et al., 2008, 2013; Skinner & Saxton, 2019). Any attempt to manage stressors in the academic context from the individual's personal and social resources, whether successful or not, is considered a form of coping (Freire & Noriega, 2011; Skinner & Saxton, 2019).

Coping refers to the process of self-regulating emotion, behavior, and motivational orientation under conditions of psychological stress, according to the Motivational Theory of Coping (MTC) (Ramos et al., 2015; Skinner & Wellborn, 1994; Skinner & Zimmer-Gembeck, 2007). This more recent definition of coping as part of the self-regulation process under stress was preceded, in the 1980s, by Lazarus and Folkman's (1984) cognitive and transactional perspective of stress-coping. The initial categorization of coping strategies, elaborated by these authors, is "problem-focused" coping, in which the subject actively seeks to modify the situation causing stress, and "emotion-focused" coping, whose main function is the regulation of the emotional response provoked by the stressor (Seidl et al., 2001).

The categorization of coping strategies into problem-focused and emotion-focused proposed by Lazarus and Folkman (1984) is, however, widely debated by researchers in the field in relation to the category system used to describe coping and the classification of problem-focused coping as adaptive and emotion-focused coping as maladaptive (Skinner et al., 2003). This form of categorization, however, has been and continues to be applied in studies in this area.

Using these two categories, the study by Doron et al. (2011), for example, pointed to the relationship between coping strategies and student motivation. The authors' analysis revealed that problem-focused coping is negatively associated with demotivation, while emotion-focused coping has a positive correlation with demotivation. Thus, the more demotivated a student is, the less likely he/she is to cope with the test situation actively, focusing on the problem, and the more likely he/she is to cope with the test from emotion regulation. Complementing this framework, Liu et al. (2021) showed, in a sample of 1266 medical students in China, that

psychological resilience plays a mediating role between emotional regulation and test anxiety, indicating the importance of training focused on psychological resilience for cases of test anxiety.

Other studies have used Lazarus and Folkman's framework for investigating coping in the context of university (e.g., Piemontesi et al., 2012; Strack & Esteves, 2015). Analyzing the relationships between anxiety/stress and academic test coping, Piemontesi et al. (2012) assessed test anxiety and coping styles in undergraduate students with low, high, and moderate anxiety. The results showed that the most anxious students were those who use self-blame and rumination (repeatedly focusing on the negative aspects of the situation) coping strategies, and the least anxious students used approach stressor (e.g., problem-solving, information seeking) and accommodation (acceptance, resignification) coping strategies.

The transactional approach to coping also emphasizes the meaning of emotions, such that positive and negative emotions experienced after a stressful event reflect assessments of benefit and harm. Negative emotions experienced prior to the occurrence of a stressful event are associated with threat assessments, and positive emotions with perceived challenge (Lazarus & Folkman, 1984). In the academic context, the study by Strack and Esteves (2015), for instance, showed, in a sample of 103 Portuguese undergraduate students, that interpreting pre-test anxiety as a facilitating emotion was associated with the perception of the situation as motivating rather than threatening or emotionally exhausting. They concluded that the same stressful moment can be experienced as threatening or as motivating, depending on how people interpret their anxiety, thus affecting how they assess events and situations. Authors such as Abella and Heslin (1989) also identified, in 174 North American Psychology students, that an interpretation of anxiety as a facilitator was associated with evaluating the test situation as a challenge, suggesting that the relationship between stress/anxiety and test coping may be mediated by the perception of the stressful situation.

The study by Au (2015) showed this process in more detail, using the theoretical framework of MTC on the role of perceived control, to examine the joint action of three types of beliefs about control: (a) internal locus of control (perceiving one's own actions as being responsible for an outcome), (b) self-efficacy (perceptions about one's ability to succeed at a specific task), and (c) perceived control over outcomes, prior to mid-year and end-of-year exams, in 225 Asian undergraduate students. The author identified that internal locus of control and self-efficacy contribute exclusively to students' academic experiences. They also observed that perceived level of control is an important mediator between (a) internal locus of control and self-efficacy on mid-year exams and (b) level of perseverance, course-specific stress, and satisfaction or enjoyment with the course in the end-of-year exams.

The Motivational Theory of Coping conceptualizes coping as a regulatory action, part of the individual's broader self-regulation processes, in a model that encompasses cognition, emotion, and motivational orientation toward the stressor, according to Skinner and Wellborn (1994). For these authors, stress occurs when an event or situation threatens or challenges the basic psychological needs (BPN) proposed by the Self-Determination Theory (SDT) by Deci and Ryan (1985) – the BPN of

Relatedness, Competence, and Autonomy, affected by stressful situations. The Relatedness BPN includes the need to feel connected, being part of other people's lives; the Competence BPN corresponds to the need to experience effectively in interactions with social and physical environments; and the Autonomy BPN points to the need to express the self authentically and to feel it as the source of action (Connell & Wellborn, 1991). These three BPN are considered universal and innate and have adaptive evolutionary value (Skinner & Wellborn, 1994). Therefore, coping is understood as individual efforts to maintain, restore, or repair one or more of the three BPN.

In view of the diversity of existing coping classifications in the field, an international consortium coordinated by Skinner and collaborators (Skinner et al., 2003) proposed another way to analyze the coping process, based on a hierarchical system composed of (a) family of coping, with high-order categories associated with adaptive processes, containing (b) ways of coping, categorized according to the purpose, meaning, or functional value of the behavior (and involving actions based on efficacy to produce desired outcomes and prevent undesired ones), and (c) at its base, instances of coping – what the person does, thinks, and feels in the face of stressors (Skinner et al., 2003, 2013). Coping strategies can thus be activated if the event is assessed as a threat or challenge to the self and to the context (Skinner et al., 2003). Therefore, this categorization system represents a theoretical advance in explaining the relationship of coping strategies with their adaptive functions and their likely consequences on development and mental health in the medium and long term, in addition to having a developmental perspective, considering coping processes according to different ages (Skinner & Zimmer-Gembeck, 2007, 2016).

The coping families, proposed after the analysis of more than 400 types of coping strategies described in the literature, and elaborated according to the rules for the best construction of a category system, were classified as being more adaptive or maladaptive in developmental terms, from mental health and academic and social performance. Families with adaptive outcomes are associated with the perception of challenge to BPN (Skinner et al., 2003): Self-Reliance and Support-Seeking (presented in the face of perceived challenge to the Relatedness BPN), Problem-Solving and Information-Seeking (Competence BPN), Accommodation, and Negotiation (Autonomy BPN). The coping families with maladaptive outcomes in the medium and long term are associated with perceived threat to the BPN: Delegation and Isolation (threat to Relatedness BPN), Helplessness and Escape (Competence BPN), and Submission and Opposition (Autonomy BPN).

The Self-Confidence coping family encompasses, for example, strategies such as emotional regulation, behavioral regulation, emotional expression, and emotional approach. Support-Seeking, on the other hand, includes strategies such as seeking contact, seeking comfort, instrumental help, and social referencing. In Problem-Solving, the person tries to plan strategies by means of instrumental action aiming at mastering the stressor. The Information-Seeking family involves strategies such as reading, observing, and asking others. In Accommodation, the person presents cognitive distraction, cognitive restructuring, minimization, and acceptance of the

stressor. Negotiation involves the use of bargaining, persuasion, and priority setting (Skinner et al., 2003).

Strategies such as complaining, self-blame, regret, and seeking maladaptive support belong to the Delegation family. In the Isolation coping family, strategies such as social withdrawal, avoidance of others, dissimulation, and freeze are used. The Helplessness family, in turn, is associated with confusion, cognitive interference, cognitive exhaustion, and passivity. The behavioral avoidance, mental withdrawal, denial, and wishful thinking strategies are associated with the Escape family. The Submission coping family, on the other hand, features strategies such as rumination, intrusive thoughts, and rigid perseverance; while the Opposition family involves strategies such as blaming others, projection, aggression, and defiance (Skinner et al., 2003; Skinner & Zimmer-Gembeck, 2007). Thus, the classification performed by MTC in coping families organizes the many possibilities that the individual may have when faced with various stressful situations into only 12 categories, which can encompass countless strategies. The theoretical framework of the MTC was used to assess anxiety and coping in academic tests in two research studies conducted with Brazilian high school students from the city of São Paulo, and from a public university in the state of Espírito Santo, as described in this chapter.

In the academic area, Skinner et al. (2013) highlight five adaptive coping strategies – strategizing, help-seeking, comfort-seeking, self-encouragement, and commitment – and six maladaptive ones, confusion, escape, concealment, self-pity, rumination, and projection. These adaptive strategies are related to "academic motivational resilience" as opposed to maladaptive strategies, including 11 of the 12 coping families proposed by MTC. It is thus possible to understand the dynamics between ongoing engagement, emotional reactivity, coping, and re-engagement in the face of difficulties and setbacks in the school environment.

With this motivational perspective, Skinner and Saxton's (2019) review shows there are differences in the coping pattern across development between elementary school students and in adolescent students. Children show more adaptive coping, with improvement especially in problem-solving, and lower levels of maladaptive coping. This pattern, however, reverses in early adolescence, returning midway through this developmental stage. The authors highlight that, at all ages, adaptive coping in the school context is associated with high levels of personal resources (perceived competence, goal orientation and autonomy, intrinsic motivation, sense of belonging, engagement, self-esteem, optimism, future aspirations, and personality) and interpersonal resources (warm environment, structure provider, and autonomy promoter), while maladaptive coping is related to high levels of personal vulnerabilities and low levels of interpersonal support. The latter include the type of support from teacher, family, and peers. Thus, the "coping repertoire" makes a difference in academic engagement or disengagement, with impacts on academic performance, as discussed in more detail below.

Coping with Test Anxiety and Its Relationship to Student Academic Performance

Research on school test anxiety points to the importance of studying the processes associated with this phenomenon in their relationship with student academic performance (Cassady & Johnson, 2002; Chapell et al., 2005; Gaudry & Spielberger, 1971; Hancock, 2001; Khalid & Hasan, 2009; Nicholson, 2009; Oludipe, 2009). Studies on the relationship between levels of anxiety and stress in test situations and academic performance show divergent results regarding the interference of these emotional states in the results of assessments to which students are submitted, as shown below.

For university students, Feldman et al. (2008) found a positive association between academic performance and stress level, i.e., the higher the stress experienced by the student, the higher his/her test scores; a result also found in the study of García-Ros et al. (2012). On the other hand, Baqutayan (2011), in an experiment that sought to help Malaysian university students manage their levels of academic stress using social support, demonstrated that students who managed to reduce their stress level had greater satisfaction with their academic performance. In a similar direction, the studies by Chapell et al. (2005), Masson et al. (2004), and Stober (2004) demonstrated that students with low test anxiety had higher academic performance than students with moderate and high level in test anxiety. The study by Durako and Hoxha (2018) also demonstrated a positive association of social support as a protective factor for test anxiety for 284 undergraduate students (60.3%) and high school students in Kosovo.

In high school, Rana and Mahmood (2010) found a negative correlation between test anxiety and performance in a sample of 414 Iranian adolescents, aged 15–19 years old, such that the higher the test anxiety, the lower the students' academic performance was, and vice versa. Similar results were found by Gill (2020) in a sample of 264 high school students from India.

One of the reasons why test anxiety may negatively impact academic performance is its influence on attention and concentration, which, in turn, have effects on memory, and thus may impair academic performance (Yousefi & Redzuan, 2010). This view is also shared by Cassady and Finch (2015) who maintain that students with test anxiety may perform poorly due to the inability to effectively interpret, organize, or understand the content to be used during the assessment situation.

In the case of the relationship between the coping strategies used by students and their academic performance, Endler et al. (1994), for example, pointed out in a study of 272 students at a Canadian university, that students who developed problem-focused coping strategies obtained better grades because they turned to action, whereas students who developed emotion-focused strategies obtained lower academic performance. The authors also found that task-oriented coping was related to test scores, but such an association was found only among male undergraduate students.

The importance of coping in academic performance could also be observed in the study by Edwards and Trimble (1992) of 75 Psychology students in the USA. It was shown that task-oriented coping is a significant predictor of test performance, even when the baseline variables (gender, trait anxiety, and coping styles) were controlled by hierarchical regression analysis. To this end, in a sample of 325 English students at the end of high school, Putwain et al. (2016) identified that higher anxiety or concern predicted lower exam grades. This result was partially mediated by a lower use of effective pre-examination coping strategies.

By contrast, some research has pointed to inexpressive correlations between the coping variables and academic performance, such as the study by Carver and Scheier (1994). These authors found that undergraduate students' coping reactions, prior to the test, generally did not predict their grades, with the exception of mental disengagement, which was inversely related to the grades obtained. Other studies have also reported non-significant predictive effects of coping on test performance (Abella & Heslin, 1989; Edelmann & Hardwick, 1986).

This body of studies shows that there is divergence in the literature regarding the effects of test anxiety and coping on student academic performance. Considering that such relationships are most often studied in undergraduate students, a survey conducted with high school students that sought to assess the relationship between these variables is described below.

Relationships Between Test Anxiety, Coping, and Academic Performance: An Example of a Study with Brazilian High School Students

This study was conducted by Gonzaga and colleges initially with the delivery of the consent form to 567 adolescents of both genders, high school students – HS (1st to 3rd year) of a public school in the city of São Paulo, Brazil (Gonzaga, 2016; Gonzaga & Enumo, 2018; Gonzaga et al. 2016, 2018). Of these, 150 were not interested in participating in the research, and 6 were excluded from the research for having dropped out during the data collection phase (exclusion criterion), resulting in 411 students who participated in the research.

As a result of this incident, in the data collection process, not all students answered all the instruments, which implied a change in the sample number for each phase of the instrument applied, as can be seen in the number of students in the research instruments.

The ethical requirements in research were followed, with the approval of the university's Ethics Committee in Research (Protocol No. 1.055.076), the authorization from the institution's school coordination, and the consent of the guardians and/or participants. Students were characterized by means of an identification form, with 26 open and closed questions about gender, date of birth, age, education, number of siblings, who they live with, their age, work, and parents' occupation. To

measure anxiety in academic tests, we applied the Test Anxiety Scale (TAS) (Sarason, 1958), authorized by the author of the instrument, after its translation and adaptation to Brazilian Portuguese. To assess academic performance, we considered the student's overall mean in the previous semester in the 12 subjects he/she took (Portuguese, English, Arts, Physical Education, Mathematics, Biology, Physics, Chemistry, History, Geography, Philosophy, and Sociology), as it is considered an objective indicator for this analysis.

The Test Anxiety Scale (TAS), originally developed by Sarason (1958), was translated into Portuguese, with the author's authorization. The instrument aims to assess the subjects' level of anxiety in facing situations of academic tests based on the classification of 37 statements as being true or false, with the participant's answers being compared to a "template," and the result generated refers to the number of corresponding items between the template and the subject's resolution, the more alike the answers, the higher the individual's test anxiety level (Gonzaga & Enumo, 2018).

The way in which adolescents deal with test anxiety prior to, during, and after taking a test (before the results) was assessed by the Coping with Academic Test Scale (CATS), specially developed by Gonzaga and Enumo (2018) based on the Coping Response Booklet (Lees, 2007), supported by MTC (Skinner & Wellborn, 1994; Skinner & Zimmer-Gembeck, 2007). This scale assesses the coping strategies used before, during, and after taking school tests, corresponding to the three phases of test anxiety: anticipation, confrontation, and waiting. For each phase, the participant must read a short text that contains a test-related situation (the news that there will be a test, the time of taking the test itself, and waiting for and receiving the test result) and answer 21 items on a five-point Likert-type scale, indicating how he/she feels in the situation, so that point 1 represents that he/she would feel "a little" as described in the item and point 5 represents that he/she feels "very much." Each of these items is assessed for analysis of different measures: emotional reaction, threat assessment, challenge assessment, orientation, identification, adaptive coping (mean score of six coping families related to perceived challenge to BPN: Self-Confidence, Support-Seeking, Problem-Solving, Information-Seeking, Accommodation, and Negotiation) and maladaptive (mean score of six coping families related to the perceived threat to BPN: Delegation, Isolation, Helplessness, Escape, Submission, and Opposition). The CATS has a good level of internal consistency in all three situations: S1-before the test ($\alpha = 0.70$); S2-during the test ($\alpha = 0.72$) and S3-after the test ($\alpha = 0.77$), as well as in the Adaptive Coping (AC) subscale ($\alpha = 0.83$) and in the Maladaptive Coping subscale (MC) ($\alpha = 0.88$), indicating a good level of internal consistency for both (Gonzaga & Enumo, 2018).

Spearman's correlation coefficient was used for the relationships between scale scores and school grades, due to the lack of normal distribution of the variables. The significance level adopted for the statistical tests was 5% ($p \leq 0.05$, according to Fife-Schaw, 2010). To perform the statistical analyzes described below, the Statistical Analysis System [SAS] software for Windows©, version 9.2, was used.

A total of 411 adolescents, aged between 14 and 20 years old ($M = 16.27$; $SD = 1.04$) participated in the study, 59.85% of them girls, and a greater number of

students from the 2nd year of high school (1st year, 126/30.66%; 2nd year, 148/36.01%; 3rd year, 137/33.33%). Most participants did not work (76.58%) and had a medium-high (54.31%) or medium (40.47%) socioeconomic status, according to the Brazilian Economic Classification Criteria, of the Brazilian Association of Research Companies (ABEP, 2013).

To measure academic performance (outcome or dependent variable), the overall mean of the student in the previous semester was considered, through the 12 subjects taken by him/her (Portuguese, English, Arts, Physical Education, Mathematics, Biology, Physics, Chemistry, History, Geography, Philosophy and Sociology), as it was considered an objective indicator for this analysis. Academic performance, assessed by the school means in the subjects taken by the students, corresponded to the outcome or dependent variable. Table 1 presents the descriptive statistics of the sample variables (n = 406). The students in this study presented, in descending order, a higher mean in the subject of Arts, followed by English and Mathematics. The lowest means were in the subjects of Biology and Geography. Moreover, the school means did not fall below five points in any of the subjects (Table 1). Of the 406 students, 93.35% (n = 379) had a mean above score 5, so that only 27 students (6.65%) had a lower mean, indicating failure.

In the evaluated sample (n = 379), there was a prevalence of 62.53% of students with test anxiety, with a mean TAS of 17.09 points for males and 22.35 for females, this difference being significant. Compared with grades and ages, the prevalence of test anxiety was higher in the 1st year, followed by the 3rd year, as well as for younger students, but these differences were not statistically significant (Table 2).

Compared to the boys, 3rd year female students showed more test anxiety (Table 3).

Table 1 School means in subjects taken by high school students (N = 406)

Subjects	Mean (SD)	Median (range of variation)
Arts	7.33 (±1.58)	8 (1–10)
English	7.18 (±1.76)	7 (2–10)
Mathematics	7.02 (±1.62)	7 (1–10)
Portuguese	6.97 (±1.52)	7 (0–10)
History	6.96 (±1.51)	7 (2–10)
Chemistry	6.78 (±0.99)	7 (4–9)
Philosophy	6.74 (±2.03)	7 (0–10)
Physical education	6.66 (±1.39)	7 (2–10)
Sociology	6.46 (±1.74)	6 (1–10)
Physics	6.32 (±1.61)	6 (3–10)
Geography	5.81 (±1.86)	6 (1–10)
Biology	5.29 (±1.59)	5 (1–9)
Average	6.63 (±1.18)	6.67 (2–9.25)

Source: Report of the school subject means provided by the school (Author elaboration)

Table 2 Frequency of high school students with test anxiety by TAS, by gender, age, and grade (N = 379)

Variables	With test anxiety *n* (%)	Without test anxiety *n* (%)	Mean with test anxiety (SD)	Mean without test anxiety (SD)	*p-value
Gender					
Female (*n* = *227*)	152 (66.96)	75 (33.04)	25.91 (±3.67)	16.00 (±3.22)	
Male (*n* = *152*)	85 (55.92)	67 (44.08)	21.74 (±4.32)	11.00 (±3.36)	0.030*
Total	237 (62.53)	142 (37.47)			
Age					
14–15 years (*n* = 88)	62 (70.45)	26 (29.55)	23.10 (±3.67)	15.00 (±4.14)	
16 years (*n* = 138)	82 (59.42)	56 (40.58)	24.82 (±4.56)	13.00 (±3.90)	0,209
≥17 (*n* = 153)	93 (60.78)	60 (39.22)	24.84 (±4.58)	13.00 (±3.94)	
Total	237 (62.53)	142 (37.47)			
Grade					
1st year (*n* = 115)	75 (65.22)	40 (34.78)	23.28 (±4.06)	14.50 (±4.16)	
2nd year (*n* = 144)	86 (59.72)	58 (40.28)	24.58 (±4.59)	13.00 (±3.91)	0.647
3rd year (*n* = 120)	76 (63.33)	44 (36.67)	25.22 (±4.34)	13.00 (±3.85)	
Total (*n* = 379)	237 (62.53)	142 (37.47)	24.38 (±4.40)	13.31 (±3.94)	

Source: Gonzaga et al. (2016)
Note: *TAS* Test Anxiety Scale (Sarason, 1958)
$p \leq 0.05$ = * Significant values by Chi-Square test

Table 3 Frequency of high school students with test anxiety by TAS, by gender and grade (N = 237)

Grade	Female	Male	Total	*p-value
	n (%)	*n* (%)		
1st year	35 (70.00)	40 (61.54)	75	0.345
2nd year	60 (62.50)	26 (54.17)	86	0.337
3rd year	57 (70.37)	19 (48.72)	76	0.021*
Total	152	85	237	

Source: Gonzaga et al. (2016)
Note: *TAS* Test Anxiety Scale (Sarason, 1958)
$p \leq 0.05$ = * Significant values by Chi-Square test

In the assessment of test anxiety coping, some coping families showed differences in relation to the three stressful situations (before, during, and after the test). In these three situations, the most frequent coping families were Problem-Solving (before, 59.13%; during, 55.81%; after, 42.9%) and Information-Seeking (before, 55.07%; during, 47.1%; after, 44.06%), with emphasis on Self-Confidence (47.53%)

after the test. Analyzing the types of coping families most chosen by the students (at least by 50%), it was noticed that these three stressful moments of the test were more a challenge than a threat to their BPN.

Comparative analyses were performed between groups with and without test anxiety in relation to academic performance, showing no significant differences between groups. However, analyzing the relationships between academic performance and test anxiety coping, significant correlations were obtained for the coping families defined by the MTC as more adaptive (Self-Confidence, Support-Seeking, Problem-Solving, Information-Seeking, and Accommodation), with the adaptive coping repertoire being related to good academic performance, and the lower performance being related to the lower frequency of these coping families. On the other hand, there was a significant negative correlation of the overall indicator of Maladaptive Coping [MC], with ways of coping of Delegation and Submission, which are associated with lower academic performance and vice-versa. These results are consistent with data found in studies using MTC (Skinner et al., 2013) and in the review by Skinner and Saxton (2019).

It is observed, therefore, that the coping resources used in the situation of school tests can influence student motivation and academic motivational resilience (Skinner et al., 2013). These are variables that influence academic performance, as already pointed out by authors in the field (e.g., Piecontesi et al., 2012; Putwain et al., 2016; Zeidner, 1995), conditions that also occur in undergraduate students, as illustrated below.

Coping with School Tests in University: An Example of a Study with Brazilian Undergraduate Students

This study met the ethical requirements for research, being approved by the Ethics Committee for Research (Protocol No. 1.345.372). Data collection took place during three workshops offered as part of an Extension Project for psychological care at the Center for Applied Psychology at the Federal University of Espírito Santo (UFES), in Vitória, capital of the State of Espírito Santo, Brazil. The workshops were offered in three modalities, one focused on study orientation, the other focused on the development of social skills, and the third dedicated to the new experience of being a university student. The members of the workshops were invited to participate in the research, being informed about the objectives of the study, the fact that participation is voluntary, not causing harm to the continuation of the workshop if they chose not to participate.

The sample consisted of 26 students from different areas of knowledge, with a mean age of 32 years (*SD* = 15.55; range of variation: 18 to 52 years), with 20 female participants. Most students were in the first semesters of their undergraduate degree: 1st to 3rd semester= 46.15%; 4th to 7th semester = 34.4%; 8th semester

onwards = 13.7% (one student was already in graduate school and one did not inform). Most students (69%) reported not working.

All participants signed an Informed Consent Form (ICF) and completed a general data protocol, the Test Anxiety Scale (TAS) (Sarason, 1958; translated into Portuguese) and the Coping with Academic Test Scale (CATS) (Gonzaga & Enumo, 2018), described above, evaluating the coping strategies used before, during, and after school assessments. The General Data Registration Protocol aimed to survey participants' sociodemographic variables, such as gender, age, family income, and course, among others. In addition, it contained two questions about identification and satisfaction with the course. Thus, the undergraduate student answered whether he was "very," "a little," or "not at all" satisfied with his degree course; and how much he/she identifies with the course ("a lot," "a little," or "not at all").

The instruments were applied in a single session, collectively, and the responsible researcher accompanied this application, making himself/herself available to answer any questions individually. After completing the instruments, each participant received, as feedback, a booklet on fear of exams and how to deal with stress and anxiety in this context (Gonzaga & Enumo, 2018). The data from the instruments were submitted to descriptive statistical analysis, in order to evaluate the test anxiety indicators and the coping strategies presented by the undergraduate students.

Most students reported identifying a lot with the course (75.8% of participants) or identifying "a little" (24.2%); none of the participants reported identifying "not at all" with the course. Half of the sample said they were very satisfied with the course, 46.5% said they were "a little" satisfied, and 3.5% reported being "not at all" satisfied with the course.

Regarding the TAS assessment, half of the students (50%, $n = 13$) scored above this mean for test anxiety ($M = 29.69$; $SD = 3.68$), and the other half were below this mean ($M = 14.23$; $SD = 5.29$). Among the 13 students rated above the mean in test anxiety, eight were a little or not at all satisfied with the course, while only five were very satisfied. Among the other 13 students without test anxiety, four were a little satisfied, eight were very satisfied, and one student was unable to respond. These results show the relationship between test anxiety and the degree of student satisfaction with their courses, as in this sample these variables were inversely proportional. In this regard, further research with a larger number of students is suggested, in order to allow statistical analyses that confirm the direction of the relationship of these variables.

The Coping with Academic Test Scale data were analyzed at three moments: before, during, and after the test (anticipation, confrontation, and waiting phases), classifying the responses in adaptive coping (Adaptive Coping Subscale = mean score of six coping families – *Self-Confidence, Support-Seeking, Problem-Solving, Information-Seeking, Accommodation, and Negotiation*) and maladaptive coping (mean score of *Delegation, Isolation, Helplessness, Escape, Submission, and Opposition*), as shown in Table 4. Among the 26 participants, two did not answer all the questions of the instrument, which invalidated the data.

Also based on CATS, the coping families most and least used by students in each phase of test anxiety were identified:

Table 4 Adaptive and maladaptive coping in the three phases of coping with test anxiety by Brazilian undergraduate students ($N = 24$)

Phases of test anxiety	CATS			
	Adaptive coping		Maladaptive coping	
	M	*SD*	*M*	*SD*
Anticipatory phase	3.43	±0.53	2.79	±0.84
Confrontation phase	3.22	±0.60	2.77	±1.00
Waiting phase	3.19	±0.73	2.75	±0.89

Note: *CATS* Coping with Academic Test Scale (Gonzaga & Enumo, 2018)

Table 5 Emotional reactions of Brazilian undergraduate students in the three phases of coping with test anxiety ($n = 24$)

Phases of test anxiety	CATS				
	Fear		Sadness		Anger
	M	*DP*	*M*	*DP*	*M DP*
Anticipatory phase	3.9	±1.26	3.44	±1.29	2.56 ± 1.42
Confrontation phase	3.27	±1.48	2.48	±1.40	1.72 ± 1.03
Waiting phase	3.48	±1.32	3.2	±1.17	2.2 ± 1.26

Note: *CATS* Coping with Academic Test Scale (Gonzaga & Enumo, 2018)

(a) Anticipatory phase: Problem-Solving ($M = 4.24$; $SD = 0.68$) and Information-Seeking ($M = 3.93$; $SD = 0.96$); lowest scores: Delegation ($M = 2$; $SD = 1.16$), Submission ($M = 2.24$; $SD = 1.35$), and Opposition ($M = 2.28$; $SD = 1.38$).
(b) Confrontation phase: Problem-Solving ($M = 3.96$; $SD = 0.94$) and Escape ($M = 3.65$; $SD = 1.61$); less frequent: Delegation ($M = 2.27$; $SD = 1.38$) and Opposition ($M = 2.13$; $SD = 1.52$).
(c) Waiting phase: Escape ($M = 3.93$; $DP = 1.46$) and Problem-Solving ($M = 3.72$; $DP = 1.06$); lower scores: Delegation ($M = 1.86$; $SD = 1.21$), Submission ($M = 2.44$; $SD = 1.35$), and Opposition ($M = 2.24$; $SD = 1.37$).

These data show that the Competence BPN was the most challenged, but also threatened in the context of testing. At the beginning, before the test, students cope with stress in an adaptive way, perceiving the situation as a challenge to their competence. This Competence BPN, however, was also perceived as threatened during the test, so much so that Escape was the second most frequent coping family, after Problem-Solving. These positions were reversed after the test, with Escape predominating. This coping family is composed of behaviors associated with avoidance and is usually associated with emotions such as fear, pessimism, and hopelessness (Ramos et al., 2015).

The Coping with Academic Test Scale also assesses participants' emotional reactions in the three phases, since emotions are also part of the coping process, as defined by the MTC. The emotional reactions assessed by the scale (fear, sadness, and anger) are shown in Table 5.

According to the data obtained, in the three phases of test anxiety assessed by CATS, the emotional reaction most presented by undergraduate students was fear,

especially in the anticipatory phase. This finding is consistent with the literature, as this is one of the main symptoms of general anxiety, and in the case of test anxiety, it is the fear of failure, indicating a perception of threat to the Competence BPN (Skinner & Pitzer, 2013).

Most undergraduate students in this sample showed test anxiety above the mean shown by a Brazilian sample, despite presenting a more adaptive coping in all three phases of the test situation, aimed at Problem-Solving, especially in the anticipatory phase, indicating a self-perception of efficacy, feeling safe and competent. However, during the test, and particularly in the phase of waiting for the results, they reported escape as a frequent strategy.

These results indicate that, despite the predominance of adaptive coping, interventions may be necessary to reduce fear and anxiety related to the assessment situation, as proposed by authors in the field (e.g., Furlan, 2013; Serrano-Pintado & Escolar-Llamazares, 2014), with emphasis on Liu et al. (2021), who indicated interventions in psychological resilience to control test anxiety. Thus, it may be interesting to develop stress and anxiety management workshops for students (e.g., Ramos et al. 2019), helping them to manage such emotional states, using psychoeducational and interventional material, such as the Deck of Cards for Test Anxiety (Gonzaga & Enumo, 2021), a useful and playful resource, empirically based, for students and professionals in the clinical and educational field in Brazil. The literature also points out that intervention programs generally involve the use of techniques to control anxiety and those that seek to develop the subjects' study skills, both demonstrating efficacy in reducing these emotional states (Ramos et al., 2021; Ramos et al., 2018b).

Concluding Remarks

School life can present many stressful events from its beginning, even afterwards, in high school and university. In this context, test anxiety stands out, which may negatively affect the student, in terms of performance and mental health. How the student copes with the situation, depending on his/her personal and interpersonal resources, coping repertoire, and psychological and academic resilience, can particularly influence academic performance.

It is important to highlight that, in the relationship between emotional states and academic performance, the highest levels of stress do not always occur together with better academic performance, or vice-versa, since the relationship between these variables is not of direct causality, but of multidirectional and reciprocal influences. New research with high school and undergraduate students may contribute to advances in the area, elucidating the relationships between test anxiety, coping, and academic performance.

In situations where the effects of anxiety and stress on test situations are detrimental, interventions are needed to reduce such emotional reactions in students. Therefore, it is possible to foresee a likely benefit for this population in participating in intervention programs specifically aimed at test anxiety.

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Mathematics Anxiety and Successful Reversal Strategies: A Brazilian Experience

João dos Santos Carmo and Eliane Portalone Crescenti

Introduction

Investigations on mathematics anxiety were inaugurated by researchers Dregger and Aiken Jr., in 1957, in the United States. These researchers coined the expression "number anxiety" to refer to a specific set of unpleasant emotional reactions and negative verbal statements regarding the subject of mathematics issued by college students from different areas. These records, obtained by means of inventory and interviews, were compared with the performance of these university students in the respective mathematics subjects they attended, and a negative correlation was found between performance and unpleasant emotional reactions during exams and performance of mathematical tasks, that is, the greater the unpleasant emotional reactions, the lower the performance.

From this inaugural study, a front of investigations was opened to identify characteristic aspects of those specific reactions, such as gender difference, occupational choice, general anxiety, and AM, which will be summarized below. The expression "number anxiety" lasted until the early 1970s, when it was replaced by "maths anxiety" by Richardson and Suinn (1972), and such expression was adopted by other researchers and became widespread not only in academia, but also among the general public, from a book by Sheila Tobias, in 1978, published by commercial publishing house. However, despite the new nomenclature, the research interests

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remained the same, extending to other aspects that aimed to broaden the understanding of this phenomenon who have devoted themselves to understanding crucial issues, such as formulation of maths anxiety as a construct that helps to describe the phenomenon; causes and origins of maths anxiety; identification and measurement of maths anxiety; correlations between maths anxiety and generalized anxiety, gender, career choice, intelligence, school performance, and neurobiological bases; and strategies to help individuals with maths anxiety. For a general review of the different research topics, we recommend reading Dowker et al. (2016) and Ramirez et al. (2018).

In the present chapter, we will specifically focus on successful reversal strategies, highlighting a Brazilian experience that has been developing in recent years. To this end, we will adopt an operational definition of maths anxiety proposed by Carmo (2011) and complemented by Carmo et al. (2019). Such operational definition has the advantage of facilitating the identification and description of crucial components of mathematics anxiety, as well as assisting in the planning of intervention strategies aimed at reducing and reversing this framework.

An Operational Definition of Mathematics Anxiety

Mathematics anxiety is defined by three sets of simultaneous reactions when faced with situations that require performance in mathematics: (i) unpleasant physiological reactions, (ii) cognitive reactions, and (iii) operant reactions.

Unpleasant physiological reactions are common to any anxiety condition. Frequently anxious individuals report altered measurements of heart rate, blood pressure, cold extremities, excessive sweating, difficulty breathing freely, and feeling of chest oppression. Less common, but no less important, are sensations of faintness, blurred vision, and insomnia.

In cases of mathematical anxiety, the most frequent cognitive reactions are the momentary and contextual inability to coordinate thinking, remember an algorithm or formula (the feeling popularly known as “I’ve gone blank”), and difficulty operating a calculation. And also the confirmation of rules (myths, taboos) learned socially, such as “maths is very difficult” and “maths is not for everyone.” Finally, the development of self-deprecating descriptions is noted, such as “I will never be good at mathematics,” “I am a real failure at mathematics,” etc.

Operant reactions can be divided into two types: avoidance reactions and escape reactions. First, however, it is important to clarify that we are using the term “operant” to refer to any behavior whose function is to modify some aspect of the environment, be it physical or social, and that the modifications produced tend to increase or decrease the probability of occurrence of the same behavior in similar future situations (de Rose, 2001).

An avoidance reaction is characterized by the anticipation of some situation considered (or previously experienced) as aversive, harmful, punitive, and the consequent presentation of some behavior able to avoid or postpone the occurrence of

such a situation. For example, a student may report being ill on the day of an exam and thus be excused from it. Frequently arriving late to mathematics class or skipping class may also have the function of avoidance if, by acting in this way, the student avoids contact with the situation considered aversive or, at least, gains some extra time before facing the situation.

Unlike avoidance, the escape reactions occur when the individual is already exposed to a condition considered by him (or previously experienced) as aversive, harmful, and punitive and begins to present some behavior that has the function of ending or at least reducing the intensity of that situation. Thus, for example, returning the test blank or with some attempts at resolution, enables the student to immediately leave that situation. Getting rid of the aversive situation (escape) or avoiding/preventing its occurrence is, therefore, quite common operant reactions among students with mathematics anxiety.

As we can see, the triggering context for such reactions is always characterized by the presence of numerical or mathematical stimuli, particularly formal teaching-learning situations, everyday social situations, and situations in the workplace. In the first case, it is quite common for the student to be faced with a mathematical problem (from a simple one- or two-digit addition problem to complex equations, either in the classroom or while doing homework at home), in which he or she is powerless to find an adequate solution. In the second case, situations in which it is necessary to carry out some kind of calculation (purchasing and sales situations) which, however, do not materialize satisfactorily. And in the third case, when in a work environment, it is not possible to perform tasks such as the organization of spreadsheets and other tables containing numerical information and calculations (e.g., organization of stocks of goods, presentation of monthly product sales reports). Such triggering contexts can be described as the occasion in which to present some kind of adequate mathematical performance. Exposure to these contexts may lead individuals to develop patterns of avoidance and evasion in relation to them, if on other similar occasions they have presented difficulties in solving the problem and have received, as a consequence of poor performance, different forms of punishment (such as low grades, school failure, job loss, salary cut, mockery from colleagues, retaliation from superiors).

Aversive consequences can generate long-lasting emotional effects (Mazzo & Gongora, 2007). We are all highly sensitive to the consequences that follow immediately after our behaviors, such that in similar situations in the future we tend to act in the same way if the consequences received in the past have been reinforcing, or we tend to avoid situations in which we have received punitive consequences for acting in a certain way in the past.

Thus, we can with strong reason predict that a large occurrence of failure to solve a mathematical problem, when often followed by punishment, increases the likelihood of anxiety, given that the individual again experiences failure under similar conditions in which he or she was previously punished.

So far, the operational definition we have adopted informs us that anxiety reactions, in order to occur, need (i) a specific context that signals the need to present mathematical repertoires, (ii) a set of physiological, cognitive, and operant reactions

during the attempt to solve the mathematical problem, and (iii) aversive, harmful, or punitive consequences that follow if the individual does not present the appropriate solution to the problem.

However, it is worth emphasizing that the occurrence of an isolated situation or a few similar situations is not enough to rush to classify the individual as having mathematics anxiety. That is, to the description of the complex situation should add three defining parameters: (i) high frequency in the occurrence of the three types of reactions previously described when the individual is faced with situations that require some knowledge of mathematics; (ii) high intensity of the aversive consequences; and (iii) feeling of total or partial uncontrollability of the aversive situation (feeling of helplessness). Such parameters are fundamental to be identified.

To conclude this exposition of the operational definition of mathematics anxiety, it is worth highlighting that the immediate or mediated repercussions are increase in the number of mathematics errors; insecurity when solving mathematics tasks; low self-esteem or more properly low self-efficacy; procrastination in studying or performing mathematics tasks; giving up learning mathematics (a kind of learned helplessness given the sequence of unsuccessful attempts at learning mathematics); and generalization to other out-of-school contexts, such as in shopping situations or at work, as described above.

Successful Strategies for Reversal of Mathematics Anxiety

Faced with the explicit suffering demonstrated by the anxious individual facing mathematics, the effect that clinical and educational strategies generate regarding the reduction of emotional reactions and even reversal of mathematics anxiety pictures has been investigated. Some of these researches highlight successful procedures, such as the classic study by Richardson and Suinn (1973) that compared the efficacy of clinical techniques of systematic desensitization, accelerated mass desensitization when applied to 20 college students following treatment for mathematics anxiety. The students were divided into two experimental groups. Being the first group exposed to traditional systematic desensitization and the second group to accelerated massive desensitization, and both answered, as pre and post-test, a scale for measuring maths anxiety. In addition, two control groups formed by students who did not present maths anxiety participated only in the pre- and post-test. It should be noted that both clinical procedures are widely used in individuals with anxiety disorders. The results indicated gains in emotional control of participants in both experimental groups, but the data were inconclusive as to the efficacy of one procedure over the other.

The merit of the study by Richardson and Suinn (1973) was to inaugurate a series of studies that followed in the search for systematization of knowledge around reversal strategies. Another merit was the demonstration that pictures of maths anxiety can be minimized or even reversed. Based on this finding, other investigations sought to identify conditions conducive to reversal.

Hembree (1990), in turn, sheds light on the need to implement interventions in the classroom, paying attention to the use of individualized didactic procedures that may help students with mathematics anxiety and with evident difficulty in acquiring concepts, skills, and algorithms for problem-solving. However, Hembree concludes that only educational strategies are not sufficient to reduce mathematics anxiety, although strategies aimed at increasing performance in mathematics seem to be directly related to reducing fear and tension when facing exercises in this subject. The author adds that studies on the effect of psychotherapeutic procedures have shown their potential with individuals with mathematics anxiety, such as the study by Richardson and Suinn (1973), cited above. Although Hembree's study dates back to the early 1990s, its conclusions are quite current, and highlight that both behavioral and cognitive psychotherapeutic procedures show relevant efficacy, and currently, cognitive-behavioral therapy (CBT) has stood out in helping individuals with anxiety disorders (Teles, 2018).

A Brazilian Experience

There are few systematic attempts to help students with mathematics anxiety in Brazil, at least in terms of experience reports or study reports. One of the factors that may be behind this context is the little knowledge and information available about maths anxiety in our country. Another possible factor is the misconception that maths anxiety and developmental dyscalculia are synonyms and, therefore, refer to the same problem. This ignorance and misconceptions may also lead some Education professionals to consider maths anxiety as a pathology to be cured or a pathology without cure, a "defect" of the individual. Whatever the context involved, it is extremely relevant and necessary the authoritative and enlightening disclosure on mathematics anxiety and the increasing conduct of research aimed at developing controlled interventions for reversing mathematics anxiety.

Two good examples of Brazilian studies are those of Colombini et al. (2012) and Haase et al. (2013). Colombini et al. (2012) describe the treatment of a 16-year-old adolescent with mathematics anxiety, highlighting the importance of teaching appropriate study habits (modeling pro-study behaviors) and the use of strategies aimed at reducing anxiety symptoms. Among these strategies, the authors highlight the training of coping, positive feedback contingent on successes, and presentation of problem-solving models. The results achieved with these strategies point to a significant decrease in typical anxiety reactions, while there was an improvement in school grades and maintenance of appropriate study habits.

In the investigation of Haase et al. (2013), they start from important assertions about mathematics learning difficulties, particularly mathematics anxiety, and suggest that the procedure of learning without error for children with a history of school failure has proved to be quite effective in clinical settings.

Thus, despite the publication of international studies on strategies to help and reverse mathematics anxiety, we understand as a lack and an urgent national

challenge the conduction of Brazilian studies that focus their attention on intervention with individuals with mathematics anxiety. If we take the results achieved by our country in large-scale assessments in mathematics, it is even more urgent to face this demand.

A first and crucial question to be asked to start any undertaking aimed at helping students: is it possible to reverse mathematics anxiety? Such a question only makes sense if we know, first of all, how to characterize and identify pictures of mathematics anxiety. The operational definition presented in the first section of this chapter enables an understanding of mathematics anxiety in its different aspects and components. The application of this model is at the basis of the elaboration of a Likert scale, baptized as Math Anxiety Scale (MAS), elaborated by Carmo (2008) and validated by Mendes (2016). Although there are other international academic scales (such as the best known, the MARS - Mathematics Anxiety Rating Scale), the MAS was specifically developed for Brazilian students in Elementary II and High School, because it covers situations typically experienced by our students in school mathematics classes.

The MAS was initially inserted in a context of School Psychology internship offered to Psychology undergraduates from Universidade Federal de São Carlos. The internship is part of a research and extension project called "Contributions of Psychology to the understanding of motivational aspects and emotional problems in learning mathematics: research and intervention." By applying MAS, we learned to identify different degrees of mathematics anxiety, focusing special attention on students who presented high and extreme degrees (Fassis et al., 2014; Mendes & Carmo, 2011).

The identification of these degrees, however, did not prove to be sufficient for the understanding of factors involved in the development of mathematics anxiety. It became necessary to understand a little of the context of the study of mathematics of these students in order to start designing intervention programs. To this end, we formulated a simple survey about the students' conception of mathematics. This survey consists of brainstorming in which the student is invited to write down everything that immediately comes to mind when reading the word "mathematics." To do so, the student was given a white A4 sheet of paper with the written word "mathematics" located in the center of the sheet. They then proceeded to write words or short phrases that reflected their attributions given to mathematics.

A simple technique, such as brainstorming, unveils different aspects about the student's understanding, their values and beliefs, their memories, and their experiences in relation to mathematics. In the study by Mendes and Carmo (2011), 57 Primary School students participated in the survey through brainstorming, 28 from the second grade and 29 from the sixth grade. Initially, to familiarize them with the technique, A4 sulfite sheets with words that had no direct relation with the word mathematics were handed out: football, television, mobile phone, and Internet. For each word given, the students individually wrote down everything that came to mind when reading those words. Then, after understanding the "joke," each student received another sheet of paper, this time with the word maths written in the center. The process was repeated, that is, each student wrote down in his/her sheet

everything that immediately occurred to him/her about that word. The results were organized into the following categories: positive aspects, negative aspects, contents, methodological aspects, applicability of the contents studied, and other responses.

The data obtained and analyzed showed that the category negative aspects predominated, and the most frequent statements were by sixth-grade students when compared to the statements by second-grade students. Although this is not the aim of this chapter, this data is intriguing as it points to a possible increase in aversion to mathematics as they move up the grade, something to be investigated in future research.

The application of MAS and brainstorming were revealing of the emotional contexts, but they did not allow us to know some nuances about the way students dealt with the study of mathematical contents and abilities, either in the classroom or in the tasks to be done at home. To access this information, we developed the Inventory of Mathematics Study Habits (IHEM). Thus, the use of these three instruments provided a better understanding of each student so that we could take the first steps towards the design and application of a program to reverse maths anxiety.

We learned from these surveys that the problems experienced by students with maths anxiety were typically concentrated on three broad fronts: (i) inadequate study habits; (ii) difficulty with emotional self-control in the face of mathematics study and examinations; (iii) and lack of social skills in the classroom.

Inadequate study habits were divided into classroom environment and home environment. In classroom situations, we identified typical patterns, such as not taking the mathematics notebook; not making notes in the mathematics notebook; not handling the mathematics book when requested by the teacher; and not performing mathematics tasks, individually or in groups. As for inadequate habits at home, we identified the absence of systematic moments to review or perform homework assignments, procrastination, and inadequate study environment at home, such as the presence of distracting elements during review or exercises.

Emotional self-control difficulties can be summarized with the help of the components already described above when dealing with the operational definition of maths anxiety. These findings resulted in the teaching of counter-control strategies, as will be seen below.

Regarding the lack of social habits in the classroom, we identified that students with high or extreme maths anxiety very often avoided asking or asking questions to the maths teacher or to more experienced colleagues. They avoided or refused to show the mathematics notebook when asked by the teacher. They did not know how to seek help when facing difficulties in learning a topic, despite the monitoring service at school and access to the library and to the computer lab.

This complex context reported here led us to a systematic search of literature dealing with reversal of mathematics anxiety (Carmo & Simionato, 2012). The survey helped us to identify strategies commonly used in international studies, which were characterized on two fronts: (i) modifications of study habits and study environment and (ii) clinical techniques to aid emotional self-control.

As for the lack of social habits in the classroom, we identified that the students were not able to develop social habits in the classroom, and so we developed an

experimental program that was applied by Psychology trainees, under the supervision of the first author. This program was characterized by three moments:

I. Identification of differentiated degrees of mathematics anxiety, attributions given to mathematics, and inadequate study habits.
II. Selection of cases from the predominance identified (inadequate study habits; difficulty of emotional self-control in the face of study and examinations in mathematics; lack of social skills in the classroom) for the purpose of intervention.
III. Application of the intervention with measures of previous assessment (application of the instruments mentioned above) after the intervention (application of the same instruments of the previous assessment).

The intervention, therefore, was configured in an individualized manner. That is, depending on the focal need of the student, the emphasis was on teaching adequate study habits in the classroom and at home; teaching diaphragmatic breathing and Jacobson's progressive relaxation; and teaching social skills in the classroom. Depending on each case evaluated, it was sometimes necessary to intervene in all three contexts identified. Further details on the functioning of this program can be found in Carmo and Henklain (2022). An account of this experience can be found in Mendes et al. (2020), where the first author developed a successful intervention with a student in Primary II.

The intervention program consists of weekly meetings for monitoring the student. Each meeting lasts around 1 h, making a total of 12–15 meetings. This program, as already seen, is characterized by the guarantee of individualization in care, from the identification of the pressing needs of each student. We have learned that each history of mathematics anxiety has its own nuances and, therefore, it makes no sense to apply a unique program that fits each selected student. Similarly, it would make no sense to compare one student's development with another student's development. We adopted the single-case methodology, in which a participant is compared to himself or herself before, during, and at the end of the intervention. This measure makes it possible to verify the achievements and gains acquired throughout the process.

Despite this characteristic of individualization of the intervention program, we counted on the collaboration of the classroom teacher and a family member responsible for the student. This feature became fundamental for the success of the intervention. In the classroom, the teacher was invited to observe and discreetly record the student's progress regarding the behavioral patterns taught. Every week or every fortnight, the trainee met with the teacher to collect the record of the teacher's observations and impressions in relation to the case attended to. These moments were also used to instruct the teacher as to the next steps to be taken by the student. As for the family member responsible (usually a parent, or some other relative, such as an uncle or older brother), he was instructed to help the student with the organization of the study environment at home, avoiding distractions and setting up a study agenda and appropriate times. The relative was also instructed as to the release of reinforcing consequences upon compliance with the tasks.

Final Considerations: What Have We Learnt from the Interventions?

The program has taught us that an intervention aimed at reversing mathematics anxiety must ensure a global understanding of each case and can never do without working with the teacher and the family. It is a fact that the student's life context often provides contexts that maintain the particular difficulties of students who deal adversely with mathematics.

At school we can find inadequate teaching methodologies and teachers who present mathematics as a great and almost insurmountable challenge to be overcome. At home, it is not uncommon to find intense demands for high grades, or even the dissemination of myths around mathematics, such as that this subject is very difficult, that men are better than women at mathematics, and that only geniuses can learn mathematics. Obviously, we cannot generalize for each and every classroom or family situation. However, the fact that there is a missing link between teaching and learning becomes increasingly clear. This link is study, or more specifically how to study. Teachers and parents often dictate the same imperative rule: "Study. Otherwise, you won't get good grades!" However, what is it and how does one learn to study? One can study by dodging, i.e., to avoid failing. One can study by rote learning. One can study in order to acquire new knowledge and skills, making learning meaningful when what one learns is applicable to life. From this we can infer that the imperative rule is not enough. It is necessary to teach how to study and highlight the gains and advantages to be achieved when studying properly.

In the case of learning mathematics, teaching models that present it distant from reality and reduce it to rules and algorithms to be memorized mechanically, can never generate motivation for the study and for the development of mathematical thinking. Methodologically inappropriate conditions will not make children numerate, active, and creative (Nunes & Bryant, 1996). The absence of mathematics that makes sense in everyday life may be at the root of aversion to mathematics and the development of mathematical anxiety.

Thus, we have learnt that the problem cannot always be characterized as a picture of mathematical anxiety but rather a deficiency in the teaching methodology employed and/or the absence of adequate teaching habits. In this chapter we will not dwell on the indication of teaching methodologies. Our interest lies in the unveiling of methodological conditions that may be contrary to the development of mathematical thinking and that may be at the origin of the widespread aversion to this subject.

We have also learnt that learning and emotion are closely related. It is a fact that a learning environment in which positive affect marks the interactions between teacher and student, and among students themselves, can generate motivation and openness to learning. Mathematics, as a science and as a subject, is pure discovery, experimentation, and thought exercises. An environment that is open to discovery, experimentation, and comparisons tends to be more conducive to learning mathematics. Students exposed to environments like these can be helped to overcome fear and alienation from mathematical ideas.

We have learnt that mathematics is a living, unfinished set of systematizations and discoveries, not a closed set of rules to be followed mechanically, and that errors are simply performances that do not meet a certain performance criterion arbitrarily established. In this sense, the occurrence of mistakes can be used as a pedagogical opportunity that aims to discover the clues that the student followed that did not work out. Making a mistake need not be an occasion to label the student as a bad student. Making a mistake can be a bridge that connects not learning with effective learning.

We have learnt that anxiety is not and should not be seen as something totally harmful and undesirable. Our species has developed, throughout its phylogenetic evolution, biological mechanisms that automatically trigger some survival and self-protection reactions. It is not an exaggeration to say that without anxiety, as a defense mechanism, our adaptation to a complex and challenging environment would be a total failure. But we have also learnt that anxiety reactions can exceed certain limits and become harmful to the individual. In this case, the development of strategies which help to deal productively with aversive situations becomes extremely necessary. Learning to breathe correctly (diaphragmatic breathing) helps control blood pressure, widens the attentional focus, and induces tranquility. In addition, learning how to relax when facing anxiogenic situations is necessary when we have math anxiety. Productively facing tests and exercises and staying calm in stressful situations have helped students to regulate their emotions when required to prove some knowledge in mathematics.

Jacobson's progressive relaxation has proven to be an extremely effective technique for establishing self-control. It consists of learning to differentiate between the states of tension and relaxation of each part of the body. A step-by-step guide is followed, through which the individual recognizes the tense parts of the body, the environmental situations which generate such tensions, and learns to induce states of relaxation in those parts, automatically generating physical wellbeing. Initially, the practitioner induces the individual, by means of verbal control, to identify tensions and gradually relax. After a few sessions, the individual becomes increasingly autonomous so as to be able to induce states of relaxation by himself. Thus, correct breathing and scientific relaxation have been two great aids when the student is tense in mathematics classes and activities. The application of these techniques requires professional preparation. In this case, the collaboration of trained psychologists is recommended if these procedures need to be applied.

In this chapter we present a description of our experience in helping students with mathematical anxiety. We call such experience successful because of the results achieved so far. However, there is still a long way to go. In this sense, the second author of the present text has continued, identifying variables and conditions responsible for the success of reversal procedures.

Finally, it is important to highlight that another challenge, as urgent and necessary as the reduction of mathematics anxiety, is the search for the systematization of prevention strategies for mathematics anxiety (Boaler et al., 2018). This challenge can only be overcome if we start from the evidence of academic-scientific research to the creation of educational environments that provide:

(i) Changes in school culture regarding mathematics. This subject is still related to erroneous ideas or images, such as failure, difficulty, distance or lack of application to everyday reality, decoration of meaningless formulas and algorithms, mechanical and repetitive learning, and aversiveness. Changing this culture requires efforts involving students, teachers, managers, and families; workshops that promote reflection and reconstruction around what mathematics is, its importance, and everyday applicability; activities that present mathematics in a pleasurable way, removing the image of the dreaded "bogeyman"; and alternative ways of teaching which promote learning to think mathematically, in short, efforts aimed at the formation of a new way of thinking around mathematics, a new school culture of mathematics.
(ii) Curricular and philosophical changes in degree courses in Mathematics, Pedagogy, and Special Education, in order to guarantee the training of educators who will be able to present mathematics in a renewed way. To this end, at least three fundamental aspects should be guaranteed in their training, namely, knowledge of mathematics (this knowledge must be solid enough so that the educator knows how to think mathematically), knowledge of the behavioral and cognitive processes involved in the acquisition of mathematical concepts and skills (how mathematics is learned), and pedagogical knowledge about how to teach mathematics effectively.

Thus, new investments in research need to aim at both remediation and prevention of mathematics anxiety. This is a challenge for all of us, researchers and educators, engaged in the commitment and search for mathematics for a mathematics for life.

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Interventions to Reduce Academic Procrastination: A Review of Their Theoretical Bases and Characteristics

Luis Alberto Furlan and Thelma Cristofolini

Introduction

Studying is an activity that aims at accomplishing learning goals and that requires cognitive and metacognitive information processing abilities as well as emotional self-regulation skills. Facing academic challenges adequately is crucial to achieve planned objectives, and in that context, motivational and cognitive processes play a crucial role in organizing behavior in a way that academic activity can be performed regularly and productively (Howell & Watson, 2007). Academic activity means responding to continuous demands, adapting to new responsibilities, timetables, tasks, and evaluations, which usually have deadlines. Delaying the beginning or ending of academic tasks and assignments makes it harder to complete them and may cause personal and academic problems (Domínguez-Lara et al., 2014).

Academic procrastination (AP), also called procrastination in studying (Contreras-Pulache et al., 2011) or academic default (González et al., 2006), may be defined as a "dysfunctional behavior that consists of avoiding, making promises of doing something later, excusing or justifying delays or avoiding a feeling of guilt when faced with an academic task" (Onwuegbuzie, 2004, p. 4). It has also been conceptualized as the action of voluntarily or unnecessarily delaying the completion of tasks to the point of experiencing subjective discomfort (Clariana et al., 2011) or as the habit of irrationally postponing the completion of an activity related to academic tasks considered important for the subject in question, which can be completed, but the subject postpones without any apparent reason, and this delay causes subjective discomfort (Natividad-Saez, 2014). The main tasks students usually

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procrastinate on are essay writing, studying for exams, weekly readings, and administrative, attendance, and institutional tasks (Steel, 2007).

In the view of Ferrari et al. (1995), this phenomenon has a cognitive and behavioral pattern related to the intention of completing a task and to the lack of diligence to start it, to work on it, and to complete it. It is catalogued as the "I'll Do It Tomorrow Syndrome," and its two main causes are fear of failure and considering the task as aversive (Lay, 1994).

Fear of failure consists of thoughts related to being unable to fulfil other people's expectations and one's standards of perfection, or it may be related to a lack of self-confidence. Apparently, this is common in students with low tolerance to frustration who work on a task or have difficulties when it comes to regulating their emotions (Moreta-Herrera et al., 2018). Students decide to work on the task and are aware that procrastination goes against their own interests and that it will be detrimental in the long term, which as a result provokes feelings of uneasiness, annoyance, awkwardness, or preoccupation (Semb et al., 1979). On the other hand, when the task at hand is considered boring, imposed, difficult, or unpleasant, it triggers feelings of annoyance, apathy, boredom, or anxiety that lead to it being postponed (Solomon & Rothblum, 1984). In some cases, this behavior is reinforced by academic success obtained after having postponed a task, which strengthens beliefs such as "I work better under pressure" (Senecal et al., 2003).

Procrastination is not only a problem of deficient planning, but it also has to do with an interaction between emotional aspects like fear of failure, cognitive ones such as excessive self-confidence, and behavioral ones like problems with self-efficacy (Moreta-Herrera et al., 2018). Academic procrastination has been related to diverse mental symptoms (Furlan et al., 2014), such as depression and anxiety (Rozental & Carlbring, 2014), guilt, low grades (Watson, 2001), irrational thoughts (Bridges & Roig, 1997), self-deception (Roig & De Tommaso, 1995), and low self-esteem (Stead et al., 2010). Furthermore, procrastination includes a series of physiological consequences that may increase health risks such as chronic fatigue, inability to relax, uneasiness, high levels of restlessness, sudden emotion, and/or mood swings (Cardona, 2015).

Personal Factors Involved in Academic Procrastination

There are diverse individual factors related to AP. One of these is the repertoire of strategies to face stressful situations. When students self-perceive as incapable of coping with certain demands of the academic realm**,** which they consider overwhelming, they will be more likely to feel stressed and to postpone the task. Even though postponement may cause relief at first, it ends up being a maladaptive behavior that will cause a higher stress level, as time to complete the task starts running out.

Another factor that plays an important role in the origin and persistence of this phenomenon is *perfectionism*, more specifically maladaptive perfectionism. Perfectionists, apart from setting high-performance standards, worry excessively

about the possibility of making mistakes. This characteristic may be adaptive (functional or positive perfectionism; Hamachek, 1978) in certain contexts, but in other cases, it may become highly dysfunctional as it may result in negative consequences for individuals' lives. This is what is usually known as maladaptive perfectionism (Keegan, 2016).

Burka and Yuen (1983) detected that procrastinators share many cognitive characteristics with perfectionists, including the tendency toward emphasizing the importance of always being successful and toward imposing unrealistic demands on themselves. Both constructs are characterized, among other things, by their relation to irrational beliefs and fear of failure (Beswick et al., 1988; Flett et al., 1991; Rice et al., 2012; Smith et al., 2017; Solomon & Rothblum, 1984). It is also possible to say that perfectionism – and more specifically the maladaptive variety – influences procrastination since subjects constantly perceive that they do not meet the high standards they had set for themselves, which leads them to postponing the activities (Slaney et al., 2001).

Other factors that have been considered to increase procrastination are low tolerance to frustration and tying self-worth to performing adequately in a proposed task. Procrastination is then related to emotiveness, self-control, and personality (Medina-Loaiciga & Guicha-Duitama, 2014).

Another element that is related to the successful self-regulation of behavior is the ability to postpone immediate gratification in favor of long-term benefits. This is related to impulsivity and self-control in general. Different studies have found an important correlation between procrastination and inadequate organization, self-control, and planning skills (Steel, 2007).

Among the personality traits that are potentially related to AP, there is a consensus on the role of *responsibility*, given that responsibility is characterized by strong self-control, determination, persistence, effort, punctuality, order, sense of duty, and self-discipline (Costa & McCrae, 1992; Natividad-Saez, 2014; Steel, 2007; Uzun-Ozer et al., 2013). On the other hand, several authors indicate the existence of a connection to *neuroticism*, which explains the tendency to experience negative emotions such as fear or feelings of guilt, sadness, or anger (Matrangolo, 2018). This does not necessarily imply the existence of a condition but rather the tendency to suffer from disorders that were described as "neurotic" in the past (Sánchez & Ledesma, 2007).

Neuroticism is sometimes considered the origin of procrastination, given that it may be a trigger that will lead to avoid working on a task (Natividad, 2014). Results gathered by Uzun-Ozer et al. (2013) indicate that there is a positive correlation between neuroticism and procrastination. People with high levels of neuroticism tend to have high levels of anxiety that make impulse control harder, which leads to procrastination (Matrangolo, 2018). A positive relation has been postulated in regard to *extraversion*, given that this trait is related to sociable, optimistic, energetic, expressive, and impulsive profiles. Extroverted people often look for social interaction opportunities and tend to excel at activities that require socializing (McCrae & Costa, 2012). Extraversion is closely related to impulsivity given that this characteristic indicates spontaneity and a tendency to act according to whims and inclinations. As low impulse control increases procrastination, there may be a

relation between extraversion and procrastination. However, there are no empirical results that clearly support this hypothesis (Steel, 2007).

Lastly, the factors that are least related to procrastination are *openness to experience* and *agreeableness*. *Openness to experience* is a characteristic factor of those people that are more aware of their feelings and are more inclined to symbolic thought, and it is presented as a dimension of cognitive style (Costa & McCrae, 1992). In Steel's (2007) meta-analytical and theoretical review, there is not a direct relation between procrastination and openness to experience. However, it could be argued that people with high scores of openness to experience may leave tasks unfinished given their curiosity and tendency to change, which could increase the possibility of procrastination (Matrangolo, 2018). With respect to *agreeableness*, it manifests itself in people in the form of cooperative and harmonious traits (Matrangolo, 2018) in which the ability to establish psychosocial bonds and the tendency to worry for others are analyzed (Sánchez & Ledesma, 2007). According to Clariana et al. (2011), there is a negative correlation between agreeableness and procrastination ($r = .107$).

The aforementioned individual factors are just some of the most studied. Therefore, the range of factors to consider is wider and more diverse. To summarize, it can be affirmed that academic procrastination is a phenomenon that can affect – with different intensities – most students and that can also significantly influence the academic trajectory and the emotional well-being of the students that regularly suffer from it (Furlan et al., 2014; Zacks & Hen, 2018). Therefore, the identification of the factors involved is not only necessary to create models that allow researchers to predict and explain this phenomenon but also to design interventions to reduce it.

Interventions to Reduce Academic Procrastination

Several psycho-educational and therapeutic programs have been developed to prevent and treat procrastination, many of which rely on empirical studies that support their efficacy. The first works published are from the 1980s. A noticeable increase of the studies related to this topic can be observed in the last 20 years. The theoretical and conceptual approaches were diversified, and ICTs were incorporated gradually, thus generating a wider range of proposals. Since scientific work about the topic is scattered, the information available had to be organized and included in this review.

In this article, the programs from the scientific literature will be described in depth, making reference to their theoretical and conceptual bases and to their technical characteristics. On the one hand, their theoretical bases include concepts from cognitive educational psychology**,** theories of motivation, time management, and self-regulated learning. On the other hand, there are interventions that arise from clinical psychology based on different modalities that cognitive-behavioral therapy has adopted in in-person contexts and on intervention experiences that include the utilization of ITCs. Finally, there are interventions inspired by other approaches

from psychotherapy (acceptance and commitment therapy and systemic therapy). We will introduce the theoretical bases of every approach, and we will describe some technical aspects of the programs in question**.**

Programs to Improve Time Management

From this perspective, procrastination is conceptualized as a time management deficit related to an inadequate forethought and organization during the planning stage, as well as to inefficiency during the development of the task, owing to distractions or interruptions. The programs aim at achieving consistent behavioral objectives such as making the tasks to be worked on observable for others and at these actions being specific, concrete, and itemized in small steps.

Burka and Yuen (1983) developed a program that includes strategies to visualize task progress, to optimize the possibility of success, to respect a time limit, to begin before wanting to, to avoid excuses, to focus on taking one step at a time, to overcome the first obstacle, to be flexible when having to alter an objective, to eliminate the need for perfection, and to reward the progress made.

Häfner et al. (2014) elaborated a short-term intervention with a similar approach. At the beginning of this intervention, the participants select an important task they wanted to work on for the following 4 weeks. A diary is employed with a sheet assigned for each day with 20-min intervals to record the time they employed working on their tasks. This recording takes place at home every night. Training lasts 4 h and is made in small groups of up to 12 students.

Gieselman and Pietrowsky (2016) created a time management program with two formats of implementation (in-person or via instant messaging) of 90 and 120 min, respectively. The participants are given a manual, and the intervention is developed in two modules that address the achievement of punctuality and realistic work and schedule planning. At the technical level, the formulation of achievable sub-objectives and motivational strategies is included, together with rituals to start on time and to minimize distractions, preparations to create a comfortable, disruption-free environment, and self-reinforcement strategies. The signing of an agreement about performing the activities is included.

Programs to Promote the Self-Regulation of Learning

The self-regulated learning model (Zimmerman, 2000) is useful as a reference for these interventions. The self-regulation cycle includes setting the current state of knowledge and the goals to be achieved, selecting what will be the strategy used and how it will be implemented and monitored, and the assessment and adjustment of results. The student is conceived as an active participant in their own learning, who is self-motivated through goal-setting and utilizes metacognition to monitor their

progress and to regulate their emotions. Procrastination is associated with difficulties in one or several stages of the self-regulation cycle.

Grunschel et al. (2018) formulated an intervention based on the model from Zimmerman (2000), with five weekly 90-min sessions in groups of up to ten students. It includes goal-setting and time management techniques (forethought stage), self-motivation (self-reflection stage), distraction and temptation management (performance stage), and preparation for the future. Constant self-monitoring of the studying activity is proposed during participation in the program.

Behavioral Programs in the Educational Field

Tuckman and Schouwenburg (2004) developed two behavioral intervention programs: "Strategies for Achievement" and "Task Management Groups." Both seek to increase control on the environmental stimuli that function as antecedents and consequences of academic procrastination, identifying them through functional behavioral assessment. The antecedents that are modified include (a) environmental restructuring (through weekly assessments, self-assessment at the participant's discretion, and external monitoring), (b) social influence (verbal persuasion as a source of self-efficacy, public commitment, plus support and/or monitoring among peers), and (c) training (time management, monitoring, and self-reinforcement). As regards the consequences, the fundamental issue is responsibility for behavior. External monitoring is employed, and performance standards are established, which has clear and inevitable consequences that can be either positive or negative.

The program "Strategies for Achievement" was implemented at the Ohio State University. It seeks to improve studying skills and motivation and to diminish the tendency toward procrastination. In its conceptual framework, it integrates contributions from the achievement theory of motivation (McClelland, 1965), the social cognitive theory (Bandura, 1977, 1997), and the schema theory (Anderson, 1995). The program adopts four basic strategies: (a) taking moderate risks, (b) taking responsibility for the results, (c) adapting the environment, and (d) utilizing feedback.

The instructive approach of the program is centered on specific, concrete, measurable, and realistic behavior. The purpose of the group is to establish a regular study pattern learning to divide long-term, individual study objectives into weekly, feasible, and observable tasks. In the module about procrastination, the following is taught: (a) how to distinguish between procrastination rationalizations, such as "I work better under pressure," from the real reasons not to work on a task, (b) how to recognize thoughts and feelings triggered by difficult situations, (c) how to counteract the tendency toward procrastination by employing achievement strategies, and (d) how to employ time through the creation of a checklist.

The module about building self-confidence includes techniques related to emotional self-regulation, approval seeking, correct model selection, and simply working on the task. The module is based on the four sources of self-efficacy proposed by Bandura (1997).

This program is developed throughout the year; it is integrated to the curricular structure and it awards academic credits. It is composed of ten weekly meetings of four and a half hours, and it is a "hybrid" course that combines the key characteristics of traditional classroom-based instruction with those of computer-based instruction. The program also includes 216 activities that enable the practice of relevant skills and their application on personal academic life.

The program "Task Management Group" was implemented at the University of Groningen North Western Germany, and it has a similar theoretical approach (context management, social influence, and training). It seeks to encourage a regular studying behavior, organized by means of long-term objectives and short-term goals. The weekly studying tasks are formulated by enumerating *s*pecific and concrete activities that can be *measurable* (with a specific number of pages or hours dedicated to them), acceptable, *a*ttainable (or objectively feasible), *r*elevant, and *t*ime-based (SMART objectives), temporal meaning that the objectives are programmed or scheduled in a concrete calendar (SMART objectives).

The program is structured in small groups of 12 self-perceived procrastinators who want to change this behavior. The individual work plans are explained to the group and then discussed in couples, alternating the roles of supervisor or "booster" and "student." Once the plan is adjusted and revised in successive rounds, its implementation begins and its performance is monitored. Task progress must be reported in weekly group meetings. Furthermore, group acceptance or the fear of rejection in case of failure triggers a growing awareness of competition.

Interventions Based on the Temporal Motivation Theory (TMT, Steel 2007)

The TMT (Steel, 2007) is a model that was initially developed to explain the selection of activities according to the motivation to do them that has been employed to understand procrastination. The model determines four components in which the intervention can focus on: expectations, value of the task, impulsiveness, and delay.

An example of a program based on this approach is the Motivational Package to Reduce Academic Procrastination Levels (Fung, 2014). In order to work on *expectancy/academic self-efficacy*, it aims to teach how to divide tasks into smaller subtasks. In relation to the *task value*, the compiling of a list about the benefits of completing a task during the intervention workshop is encouraged. In the case of *sensitivity to delay/distractibility*, writing the expected end dates for every sub-task and fixing them as deadlines to meet are encouraged. This aims at shortening the time between the effort (completing the task) and the rewards (sense of achievement after completing a task). Relaxation techniques are also employed.

Cognitive-Behavioral Treatments

These treatments arise from the realm of clinical psychology and in order to address frequent problems during psychotherapeutic consultations related to mood and anxiety disorders. Some of their principles have been gradually applied to address procrastination. The treatments recover principles from classic and operant conditioning and also tackle cognitive evaluation processes as mediators of emotional and behavioral responses, of negative automatic thoughts and cognitive distortions, as well as of the coping process and strategies. At the technical level, functional behavioral assessment and a wide range of relaxation techniques, cognitive restructuring, and the handling of contingencies, self-reinforcement, and exposition are applied.

The "Doing It Now" program is the first systematic attempt to address procrastination made from a cognitive-behavioral approach. The program aims at identifying the dysfunctional cognitions that trigger procrastination (overestimation of future motivation, underestimation of the difficulty of the task, cognitive distortions) and the decrease of concomitant anxiety, with the objective of modifying not only neurotic avoidance but also lack of awareness. This program also works on negative self-esteem that derives from irrational beliefs. The program is developed in ten sessions, and it includes techniques of self-control and relaxation and also the establishment of verbal commitments regarding the estimated time to complete the task. Cartoons that depict people who do not complete their tasks efficiently are used in these sessions as a stimulus to encourage reflection and analysis.

The book *The Now Habit* (Fiore, 2007) is another renowned contribution to the field for its novel approach and the high impact it had on the population, due to its self-help format. It includes psycho-education, strategies to modify self-talk, enjoyment without guilt as a strategy to improve performance, the productive use of preoccupation, the reverse calendar, and the un-schedule. It also promotes the self-recording of thoughts and behaviors, and it modifies the idea of planning the activity, which usually gets postponed, inviting the person to record the activity only if it was performed for at least 30 min. This book (or some of the activities) frequently integrates programs implemented at different universities.

Van Horebeek et al. (2004) created a program to assist students with high levels of procrastination, and it was implemented at the Catholic University of Louvain (Belgium). It is directed to students whose discrepancy between their intentions and their actions is very high, but who are highly motivated to pass examinations and graduate. The authors emphasize the need of an adequate selection process, through the inclusion only those who comply with the criteria and the reorientation of those who do not study hard enough or who lack motivation. The presence of psychopathological comorbid symptoms is very frequent.

In order to shorten the gap between intention and action, the program proposes to transform procrastination, lack of awareness, despondency, and lack of motivation into effort, knowledge, and self-confidence. Firstly, comprehension about subjective functioning is increased, and then a change of behavior is promoted. At the theoretical level, the program adopts the approach from Miller and Rollnick (1991)

on motivation, conceiving it as something that arises from the interaction between client and therapist. During motivational interviews (similar to those used in addiction treatments), the program seeks to gradually increase motivation to change by taking into account the perception of the negative effects procrastination has on the participants' personal lives. However, there is reticence toward this because it implies reducing short-term reinforcement activities and increasing the effort made by the participants. Therefore, the process of change does not begin until an appropriate motivational state is reached. Instead of arguing, the students' resistance is used to change their perceptions and to propose new points of view.

Behavior change occurs in stages (Prochaska & Di Clemente, 1984; Prochaska et al., 1992) called pre-contemplation, contemplation, decision-making, active change, stabilization, and relapse. To conceptualize the cognitive processes implicated, the ABC model from rational emotive behavior therapy (Ellis & Grieger, 1977) is applied.

The program consists of ten weekly, 1-h meetings in groups of up to seven students coordinated by psychologists or occupational therapists. At the technical level, it includes a task behavior model, the conceptualization of individual procrastination in the behavior change wheel model, the SORC diagram (situation, organism, response, and consequences) for functional behavioral assessment, time management, and cognitive restructuring. The program ends with a module about relapse prevention.

Cognitive-behavioral coaching for procrastination (Karas & Spada, 2009) derives from the principles and practices from CBT. What differentiates CBC from CBT is the former's primary approach on *non-clinical problems and challenges*, its emphasis on the improvement of well-being (instead of the reduction of discomfort), and its utilization of training techniques.

The program is developed in groups of seven participants, with six encounters of 1 h maximum. It includes psycho-education, a list of motivational costs, and motivational tasks, such as the *De Shazer's miracle question* (De Shazer, 1988, p. 78). Long-term objectives are visualized through the *rocking chair exercise*, and short-term objectives based on the SMART principles are set. The weekly task requires that the participants keep a register of time adapted from the *Un-Schedule* (Fiore, 2007). The following elements are analyzed: cognitive scripts and irrational self-talk, cognitive restructuring, relapse prevention, and the elaboration of a plan that included a detailed relation, among the main coaching strategies learned.

The short-term program based on the ABC model (Uzun-Ozer et al., 2013) is a group intervention based on the ABC model (Ellis & Knaus, 1977), and it is structured in five 90-min group sessions. It includes the identification of typical thoughts and feelings associated with a certain procrastination style, the introduction of Ellis's ABC theory (in which participants are assigned tasks to clarify their procrastination pattern), and it also includes the identification of irrational thoughts and cognitive distortions (Beck, 1976). Cognitive and affective underlying factors are analyzed. The progress made during the sessions is summarized, and the benefits obtained in the sessions are specified.

The CBT psycho-educational group program (Toker & Avci, 2015) includes eight 90-min group sessions, in which participants work on what the purpose of the tasks is, employing visual material (cartoons, illustrations, diagrams, etc.) and artistic objects (photos, music, poetry, etc.), metaphors, annotations, duties created through Socratic dialogue, breathing skills, relaxation, and *safe place* techniques in cases of extreme stress.

CBT Interventions That Utilize ICTs

These interventions are similar in their theoretical bases and in therapeutic action mechanisms to those described previously, but their novelty is the use of technological devices for their administration.

Program with Short Text Message Service (SMS) Technology (Davis & Abbitt, 2013). Supported by the principles of operant conditioning, avoidance behavior can occur at any moment to delay aversive stimuli (Cooper et al., 2007). In this model, finalizing the weekly studying exercise would result in the interruption of repetitive text messages that remind the participant of the task to be done (aversive stimuli), and therefore the studying exercise is completed. The message starts with a personalized greeting that includes the first name of each participant. There are two ways of suspending the reception of these messages: completing the exercises and omitting the later weekly messages or ending participation in the program, which cancels all future messages.

CBT for Procrastination Based on the Internet (ICBT, Rozental et al., 2015). This intervention can be applied on numerous groups (75 participants) and includes ten modules, with 166 pages of text and graphics, as well as an average of three exercises that will have to be completed on a weekly basis during the treatment period (10 weeks). It contains basic reasoning from CBT, as well as psychoeducation regarding the different aspects that affect motivation, the concept of ego depletion, and also mental fatigue. It also includes techniques such as the establishment of objectives, time scheduling, the identification of distractions, the clarification of values, the analysis of behavior patterns, behavioral activation, gradual exposure, behavior experiments, the identification and testing of beliefs, rigid assumptions, and stimuli control. The final module focuses on relapse prevention.

Smartphone-based treatment program (Lukas & Berking, 2017) is a strategy based on smartphones that employs the app *mind-tastic procrastination (MT-PRO)*. This app is used in combination with two group counseling sessions, and it systematically targets the users' motivations to meet or avoid the stimuli that trigger behavior related to procrastination and thus encourage the change of relevant attitudes in a particular domain. Its training approach is based on cognitive bias modification (CBM), computer gaming principles, computer-based therapies, and operant conditioning. Learning principles (operant conditioning) are crucial in games, since they mold the user's unconditioned answers and, in the long term, improve the game

experience since they keep the user's motivation high (Siang & Radha Krishna Rao, 2003).

In group in-person sessions, psycho-education is developed according to the Rubicon model (Heckhausen & Gollwitzer, 1987), which proposes which are the limits between the motivational and volitional phases and establishes four phases and two key moments. The first stage occurs when there is a transition from the motivational state to the volitional one (Rubicon crossing), and the second one when there is a transition from the volitional state to the motivational one, which leads to an assessment of the achieved action (Gordillo-León et al., 2016). Secondly, therapists repeatedly resort to the metaphor "per aspera ad astra," ("through hardships to the stars") to express the importance of sustained effort to overcome procrastination.

Tiong-Thye Goh et al. (2011) developed a program applying Fogg's intervention principles. Fogg (2003) is the author who proposed the term "captology," which is the study of how computers can be used to persuade people to change their attitudes and behavior. The authors resorted to the persuasive service of text messages to promote self-regulated learning strategies for students through the sending of persuasive and encouraging text messages.

Acceptance and Commitment Therapy (ACT)

From the perspective of ACT, procrastination is an expression of low psychological flexibility and inability to be mindful and to be able to change or maintain their behavior in order to achieve valuable goals (Hayes et al., 2011). Perfectionist thoughts and/or thoughts that justify procrastination are addressed through defusion techniques to achieve their disentanglement and to stop them from controlling behavior. In addition, the acceptance of negative valence emotions that can cause uneasiness during the therapy is encouraged, and attention is focused on the activity and the goals.

Acceptance is promoted through experimental exercises which help the participant realize that the efforts to manage and control their thoughts and emotions are not only useless, but they also stop one from taking valuable action on one's life.

Scent and Boes (2014) implemented two 90-min workshops in which concepts from ACT are introduced using metaphors and experimental exercises. The following techniques were applied, debates in which the group defined procrastination and the experiences related to it, remembering a task they were procrastinating on and writing down the thoughts that arose once the task was finished. Furthermore, the "passengers on the bus" metaphor is used, which consists of a defusion technique in which the participant is ascribed the role of the driver and there are "passengers" that represent thoughts and positive and negative emotions. Besides, the brief "Milk, Milk, Milk" exercise is applied, in which the therapist asks the participant to think about qualities associated with the word "milk." Afterward, the therapist asks them to repeat the word "milk" for 45 s. After some time, a great number of people realize

that the word eventually loses all the associations with other words and turns into a meaningless combination of sounds or vocalizations. The word starts losing its meaning when it is said repeatedly.

These cognitive defusion exercises help turn a stimulus perceived as threatening into an inoffensive one (Masuda et al., 2009). In these workshops, conscious breathing (a daily practice of 5–10 min) was also applied, together with "the compass" metaphor to distinguish between values (which, according to the metaphor, are people's path or direction in life) and objectives (destinations found throughout the journey of life). Furthermore, participants are asked to write down a list of personal values and to select the most valuable ones. They are also asked to identify which tasks or actions would allow them to make progress on short-term goals. Other techniques such as self-compassion, the setting of realistic goals, and mindfulness techniques are also applied.

Glick and Orsillo (2015) implemented an ABBT (acceptance-based behavior therapy) program at the Suffolk University (USA) in which the underlying processes of procrastination are addressed (psychological flexibility, experiential avoidance, behavioral commitment with valuable tasks, cognitive fusion, emotional self-regulation, and rigid self-concept). At the technical level, the program includes psycho-education, mindfulness, and value clarification.

Another program based on ACT (Hayes et al., 2011) and mindfulness (Kabat-Zinn, 2012) was conducted at the Université du Québec (Canada) by Dionne et al. (2016). This program is carried out in three 90-min sessions, coordinated by ACT-trained psychotherapists. The sessions include some experiential learning, as metaphors, paradox, and exercises in group and at home, and were designed to help build five core skills: (1) being mindful of procrastinatory behaviors, (2) choosing a direction in life by clarifying values, (3) distancing oneself from negative thinking, (4) taking actions, and (5) being willing to accept the discomforts related to academic tasks

Wang et al. (2017) also implemented an ACT-based intervention using acceptance, cognitive defusion, self-observation, and valued action techniques. Sessions also included the learning and practice of cognitive skills and mindfulness skills, the development of self-observation when establishing connections with bodily sensations, and the environment. The goal is to explore and clarify life values plus to make plans to achieve personal objectives and to commit one-self to performing definite actions.

Other Interventions

Paradoxical interventions (López & Wambach, 1982) consist of the use of change-inducing techniques in participants in order to discourage change (Haley, 1963; Seltzer, 1986) in a brief intervention of two 30-min sessions with an interviewer during which experiences with postponement are discussed and the directives are presented. In the first interview, the counselor does not confront or challenge any of

the complaints of the subject in regard to the impulsive nature of their problem. These observations are highlighted as representative of a "lack of consciousness and understanding." After the problem has been discussed, the subject is instructed to "observe procrastination in order to understand how to control it."

Based on this reasoning, they are instructed to avoid studying for a period of 30 min and to focus on postponing in order to observe the said behavior. In the second interview, any report of positive change (less postponement) on the part of the person is minimized and met with skepticism (as it might be a temporary change). If the individual studied during the postponement periods, they are admonished, regardless of their individual experience with the directive, as all the subjects were instructed to organize and practice postponement.

Dowd et al. (1988) used different paradoxical techniques to diminish procrastination in two weekly interview sessions. Two types of restraining strategies called "negative consequences of changing" and "inhibiting change" were used. In the first technique, the subjects were told about the negative consequences of changing their procrastination behavior (e.g., "If you studied more, you might get better grades, and others may be envious of you."). The other technique consisted in telling the subjects that they had to "go" slowly and cautiously in the attempt to change. Furthermore, another type of treatment was also used, which was a reframing in which the symptom was interpreted in a more positive light. An example of a procrastination reframing statement was the following: "The fact that you can allow yourself to procrastinate shows that you have great confidence in your ability to get things done."

Restriction of time (Hocker et al., 2012) is an approach that consists of making work time more valuable by restricting it. Participants are only allowed to work within certain "time windows." This increases motivation to better take advantage of the time available and to draw a clearly separate line between study and free time. Only if a predefined percentage of work time is used efficiently is additional work time granted. The beginning of the restriction treatment was identified for the first time by Spielman et al. (1987) when they were working on sleep restriction; this gave rise to the idea of applying this principle to increase the likelihood of the desired behavior being adopted.

The intervention is conducted in groups, and it is structured in five weekly sessions of 90 min each, lasting 120 days in total. In the first two sessions, the time restriction method is explained and introduced in a practical manner. Two 20-min work windows are established, in which participants are advised to schedule one or two free days per week. Then, an online work diary is opened, in which work units can only be added per day. In the third and fourth sessions, the application of work time is still the key component of the sessions. However, higher familiarity with the process means that less time is needed to discuss the experiences and to calculate work efficiency. The rest of the time in this session is used to introduce the participants to condition management or to brief psycho-educational elements. In the third session specifically, self-reinforcement is discussed, and in the fourth session, the participant receives information on how to design his work station and on how to face distractions. In the fifth one, work efficiency is calculated again, and a work

window is established for the last time. Progress from the participants is also checked, and, considering the possible obstacles, there is an assessment of how that progress can last.

Coherence therapy (Ecker & Hulley, 2000) consists of a brief way of assessment developed as a method to help participants achieve a long-lasting therapeutic change through a profound understanding of the underlying and emotional cause of a symptom. This therapy has been associated with a constructivist epistemology (Toska et al., 2010) that acknowledges the positive side of something that may appear negative and avoids pathological models in favor of growth and adjustment models. Furthermore, this therapy places emphasis on the individual's healing capacity over his or her deficits and dysfunctional characteristics.

Secure attachment (Yıldız & Iskender, 2019) is a psycho-educational program developed in Turkey. It has an eclectic framework of references, and it is oriented toward the development of a secure attachment style in high school students to reduce intolerance to uncertainty and academic procrastination. This program consists of a group intervention that includes eight weekly sessions in which the concepts of attachment, operant internal models, fear of rejection, tolerance to uncertainty, cognitive biases, and procrastination are addressed. Furthermore, self-value analyses and analyses about the self and family influence in its conformation are incorporated. Lastly, the development of a secure attachment style and its application on daily life behavior is encouraged.

Programs Conducted at the National University of Córdoba

To complete this presentation, we have included two programs developed at the local level intended to improve emotional self-regulation in students that deal with high levels of anxiety while taking a test. These programs also included specific techniques to reduce procrastination levels.

The program to reduce test anxiety in university students (PAE-U, Furlan, 2014) was based on the model of efficiency reduction during processing (Eysenck & Gutiérrez, 1992), on behavioral cognitive psychotherapy techniques and self-regulated learning (Zimmerman, 2000). The program contains three modules that aim at supplying tools to optimize the learning process, to improve emotional self-regulation, and to improve test-taking performance. It includes from 10 to 12 weekly 2-h meetings and homework, with groups from up to eight participants. A group format was adopted because of the advantages associated with peer interaction, as it gives rise to coping strategies, emotional support, and a relative autonomy from the coordinator a group may achieve.

Abdominal breathing techniques are applied, as well as the identification of automatic thoughts, the discussion of irrational beliefs, the elaboration of self-instructions, and an alternative pattern of coping behaviors that combines vicarious

and covert procedures and behavioral rehearsals of performance in oral exams. For procrastination specifically, the drawing of a contract was included, which is presented to the group with the compromise of behaving to achieve a goal (studying in order to sit for a final exam). The observance of the contract is checked weekly, and feedback is given.

Program to Reduce Test Anxiety and Procrastination (Furlan et al., 2020). This brief intervention (six encounters) was first implemented in person and later on online (due to the COVID-19 pandemic). This program was based on a cognitive-behavioral approach, and it included cognitive restructuring, time management and relaxation techniques, self-instructions, organization of the studying process, and the analysis of thoughts that lead to procrastination.

Efficacy of the Interventions to Reduce Academic Procrastination

Interest in the treatment of academic procrastination has risen in the last few years, as an increase in publications about this topic can be observed. These include numerous empirical studies that aim at gathering evidence of the efficacy of the different programs and some reviews that mainly include European and American works (Van Erde & Klingsieck, 2018; Zack & Hen, 2018). In this article, there has been an attempt to widen the range of studies analyzed through the incorporation of works from Asia and Latin America, which also include some novel approaches and techniques.

Regarding studies about efficacy, Cristofolini (2021) made a review including 30 pieces of work published between 2000 and 2019. It can be claimed that most approaches are the cognitive-behavioral approaches but in turn vary widely according to the field they come from (either clinical or educational psychology) and to the reformulations made by authors who bring new perspectives to the clinical field inside the same tradition (cognitive-behavioral therapy and acceptance and commitment therapy) and also to the educational field (social cognitive theory of self-regulation and control-value or temporal motivation theory). Some works based on different conceptualizations (such as attachment theory and paradoxical interventions) are very interesting and promising, but there are still few empirical studies that assess their efficacy. Therefore, the range of alternatives to make interventions directed to specific individuals of each socio-cultural context and educational level is quite varied and interesting.

There has been a growth in the use of information and communications technologies such as SMS, online chat, programs that utilize the Internet asynchronously, and online scheduling. In 2020, due to the COVID-19 pandemic, some individual and/or group programs were adapted to online formats through the use of video calls (Furlan et al. 2020), which diminished the dropout rate among the participants

and therefore increased attendance to the meetings and widened its reach to students that live in other parts of the country, which resulted in a higher efficacy in comparison to the in-person format that had been implemented at first. Regarding the results obtained in the empirical studies, 95% of the studies showed mild to moderate reductions in procrastination levels after the interventions.

In the cases in which there was a control group that underwent no treatment, the group that took part in the intervention reported significant differences in the post-test (Dionne et al., 2016; Otermin-Cristeta & Hautzinger, 2018; Toker & Avci, 2015). On the other hand, when groups with different treatments were compared in the same study, efficacy levels (about its changes before and after the interventions) were similar, but in the follow-up differences were observed. The results showed that the decrease in procrastination levels stayed the same in the long term after the treatment (Binder, 2000; Uzun-Ozer et al., 2013; Toker & Avci, 2015; Lukas & Berking, 2017; Eckert et al., 2018; Otermin-Cristeta & Hautzinger, 2018). Only in one intervention there was a slight decline (Karas & Spada, 2009). When the efficacy of diverse interventions was compared (ACT with CBT, for instance), both proved to have similar short-term effects, but in the medium term, ACT was superior (Scent & Boes, 2014; Dionne et al., 2016; Glick & Orsillo, 2015; Wang et al., 2017.)

The treatments that incorporated information and communications technologies had dissimilar results. In some cases (Lukas & Berking, 2017), the changes achieved were still present in the follow-up, which was attributed to the use of the MT-PRO app. In others (Eckert et al., 2018) the highlight was that reduction in procrastination levels was similar in groups that were treated with the same protocol, but there was a stronger effect that continued in the long term whenever the participant was oriented via Internet through text messages (ISMS). One exception was the study from Rozental in which the most important finding was in the change in the post-treatment and follow-up for both formats (ICBT – self-guided Internet intervention – and CBT). In this study, there were no differences during treatment, but once it was over, there were better results after 6 months in the CBT group but not in the ICBT group, which showed slightly worse results. Lastly, only one of the 30 studies showed no significant changes (Gustavson & Miyake, 2017).

Even though there is a great degree of variability in the duration of the programs, in the experimental designs, in the characteristics of the participants, in the measuring instruments, and in the data analysis strategies, all these programs have been successful in achieving their original goals. Significant change can be achieved in a reduced number of sessions (between five and eight), and in most cases, the use of device groups and the complementary use of ITCs would seem to increase the positive effects of the programs.

Whoever needs to implement a program to reduce procrastination levels in a specific educational context will find in this article up-to-date information about a wide array of options to choose. Critical analysis of each of these programs, taking into account the particular socio-cultural characteristics of the population and the material possibilities for their implementation, will lead to the most adequate choice.

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Anxiety Disorders in Childhood and Adolescence: Prevalence and Diagnostic Considerations

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Prevalence of Anxiety Disorders

Anxiety is a normal, natural emotion experienced by individuals across the lifespan. Everyone experiences anxiety from time to time, and it is very common for youth to feel anxious in novel situations or when certain demands are placed on them, such as when starting school, meeting new friends, or giving a presentation. In many situations, this anxiety is adaptive for youth. For instance, mild anxiety about an upcoming test promotes adequate studying and preparation. Worries about safety motivates youth to make healthy decisions or simply prompts them to remember to look both ways before crossing the street. However, when anxiety occurs at a high level or arises too frequently, it may cause excessive distress that interferes with functioning (e.g., social, emotional, academic). Anxiety often manifests in school settings, where youth are faced with many social and academic demands. Unwanted, excessive anxiety can lead youth to avoid situations that are anxiety-provoking which can negatively impact otherwise normal development. When anxiety leads to avoidance of age-appropriate expectations, such as attending school or socializing with peers, and causes distress or other impairment, it may constitute an anxiety disorder and warrant intervention.

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Anxiety disorders are among the most common mental health problems youth are facing, impacting up to one in three children before they reach adulthood (Merikangas et al., 2010). Moreover, the development of anxiety disorders occurs early; a recent meta-analysis found that the mean age of onset for social anxiety, separation anxiety, and specific phobias was before the age of 15 (de Lijster et al., 2017). Impairment associated with youth anxiety can manifest in the home, school, and peer settings. Throughout the lifespan, anxiety disorders are linked with reduced quality of life and deleterious health-related consequences (Comer et al., 2010; Hendriks et al., 2016). In the school context, anxiety also can lead to academic impairment (Nail et al., 2015). For example, a recent systematic review demonstrated that youth with anxiety were at higher risk for school refusal and were less likely to enter college than those without significant anxiety (de Lijster et al., 2018).

Separation anxiety disorder (SEP), social anxiety disorder (SAD), and generalized anxiety disorder (GAD) are among the most common anxiety disorders experienced by children and adolescents. While more formal diagnostic presentations are described later (see Table 1), briefly, SEP involves excessive anxiety about separating from a major attachment figure, SAD includes fears of social humiliation and rejection from others, and GAD involves pervasive worry and nervousness. Anxiety disorders emerge early and tend to worsen throughout adolescence. Lifetime estimates suggest that approximately 8% of adolescents meet diagnostic criteria for SEP, 9% for SAD, and 2–3% for GAD (Burstein et al., 2014; Merikangas et al., 2010). Specific phobias, including test anxiety, are also very common, with approximately a 19% lifetime prevalence in adolescents (Merikangas et al., 2010). Although test anxiety may be very discrete and best conceptualized as a specific phobia, it also may be a symptom of another anxiety disorder, such as concerns about negative evaluation by others (SAD) or perfectionism (GAD). Estimates suggest that 16.4% of youth report high test anxiety (Putwain & Daly, 2014), so this type of anxiety is frequently encountered by those working in school settings. School refusal, which can be (but is not always) related to anxiety, is less common and occurs in about 1–2% of youth (Egger et al., 2003).

Of note, anxiety disorders are considered to have high *homotypic comorbidity* (Angold et al., 1999), meaning that they often co-occur; it is common for youth with significant anxiety to meet criteria for two or more separate anxiety disorders (Kendall et al., 2010). Approximately 79% of youth receiving treatment for anxiety present with comorbid disorders (e.g., Cummings et al., 2014; Essau et al., 2018; Kendall et al., 2001). Additionally, approximately 1 in 3 youth with anxiety has comorbid depression (Ghandour et al., 2019). Youth anxiety also has been found to be highly associated with externalizing disorders such as attention-deficit/hyperactivity disorder (ADHD) and oppositional defiant disorder, especially among males and in younger children (Marmorstein, 2007).

It is important to acknowledge that there has been less attention given to understanding the prevalence and development of anxiety among culturally diverse groups and anxiety in the context of youths' intersecting identities (e.g., gender, race/ethnicity, socioeconomic status), with studies rarely assessing group

Table 1 Diagnostic criteria for common anxiety disorders

DSM-5 criteria
Separation anxiety
Excessive fear of separating from child's caregiver or other attachment figures. The fear is developmentally inappropriate, and the individual has at least three persistent and recurrent symptoms of the following for 4 weeks:
1. Experiences excessive distress when anticipating separation or separating from home or attachment figure.
2. Worry about losing caregiver or major attachment figures and/or them being harmed (e.g., injury, disaster, illness, death).
3. Worry about something bad happening (e.g., getting lost or taken) that causes the individual to be separated from their attachment figure.
4. Reluctance/refusal to leave home, to go out, to school, and to work due to fear of separation.
5. Fear/reluctance to be alone or without major attachment figure at home and in other settings.
6. Reluctance/refusal to go to sleep without being near caregiver/major attachment figure.
7. Repeated nightmares about separation from the major attachment figure.
8. Complaints of physical symptoms (e.g., headaches, stomachaches, nausea, vomiting).
Social anxiety
1. Fear or anxiety about one or more social situations (e.g., social interactions, being observed, performance) in which the individual is exposed to possible scrutiny. For children, it must occur in peer settings, not just with adults.
2. The social situations almost always provoke anxiety.
3. The fear or anxiety experiences are out of proportion to the actual threat posed by the social situation or sociocultural context.
4. Social situation is endured with intense fear/anxiety or avoided.
5. The anxiety or fear causes clinically significant distress or impairment in social, occupational, academic, or other important areas of functioning.
6. The fear, anxiety, or avoidance is persistent, typically lasting for 6 months or more.
Generalized anxiety
Excessive worry about various events or activities that are difficult to control occurring more days than not for at least 6 months. Only one of the following symptoms is required for children:
1. Restlessness or feeling on edge.
2. Feeling easily fatigued.
3. Difficulty with concentration or mind going blank.
4. Irritability.
5. Muscle tension.
6. Sleep disturbance (difficulty falling or staying asleep or restless sleep).

differences in prevalence (Merikangas et al., 2010). For example, regarding gender identity, most studies assessing prevalence rates by gender use binary gender categories (male versus female). Among these studies, prevalence rates of anxiety disorders tend to be higher in females compared to males (Ghandour et al., 2019; McLean et al., 2011). In a recent study assessing mental health difficulties among transgender youth, several disorders including anxiety disorders were higher among transgender youth relative to cisgender youth (Becerra-Culqui et al., 2018).

Research assessing anxiety among multiple cultural groups has been varied (Anderson & Mayes, 2010). One study examining lifetime prevalence rates among multiple racial and ethnic groups found that White participants were more likely to be diagnosed with SAD, GAD, and panic disorder than Black, Hispanic, and Asian participants (Asnaani et al., 2010). The same study also found that Asian Americans were less likely to meet diagnostic criteria for GAD and PTSD than Hispanic Americans and that Black individuals were more likely to be diagnosed with post-traumatic stress disorder (PTSD) than all other racial/ethnic groups (Asnaani et al., 2010). In another nationally representative study of children and adolescents, those identifying as White non-Hispanic had the highest anxiety prevalence followed by Latinx, multiracial, and Black youth, respectively (Ghandour et al., 2019). Other studies have found that ethnic minority youth report more severe internalizing symptoms when compared to their White non-Hispanic counterparts (Anderson & Mayes, 2010; Beidas et al., 2012). However, studies with treatment-seeking samples have demonstrated that differences in baseline anxiety by race or ethnicity may be better explained by socioeconomic status (Gordon-Hollingsworth et al., 2015), indicating further research is needed.

People from marginalized backgrounds are impacted by systemic and structural inequities (e.g., racism and discrimination, lack of access to needed resources) which can lead to increased rates of mental health difficulties, including anxiety (Alegría et al., 2015; Gaylord-Harden et al., 2020; Moreno & Corona, 2021). Specifically, experiences of discrimination and internalization of that discrimination (e.g., internalized transphobia/racism) have been shown to lead to higher rates of anxiety (Alegria et al., 2019; Sosoo et al., 2020). Living in low-income, under-resourced neighborhoods is also associated with increased rates of anxiety; however, these effects are mediated by experiences of discrimination and negative peer experiences, suggesting that environmental and social contexts play an important role in the development of anxiety (Alegria et al., 2019). More nuanced research is needed to better understand differences in prevalence rates across those with diverse cultural backgrounds, which also may inform diagnostic and treatment considerations.

Assessment and Identification of Anxiety Disorders

One of the major challenges in accurately identifying youth with significant and impairing anxiety in the school setting is anxiety's very nature, as *internalizing* symptoms, worries, fears, and distress often are not readily observable in the classroom setting. Even when youth symptoms of anxiety are more overt (e.g., extreme shyness, difficulty speaking to others), these difficulties are often not overly disruptive to the classroom. As such, anxiety disorders often go unnoticed and undetected; estimates suggest that teachers accurately identify only 40% of the youth in their classroom that are experiencing significant anxiety (Cunningham & Suldo, 2014).

Due to challenges detecting youth with significant anxiety and the associated high risk of "falling through the cracks," *universal screening* has been proposed as a critical step in advancing school mental health efforts (Dowdy et al., 2015). Universal screening refers to the wide-scale provision of brief screening measures indexing anxiety designed to identify youth that score above a clinical threshold and *may* be experiencing significant anxiety. Asking children and adolescents to complete brief, self-rating scales regarding their own anxiety is an effective strategy for identifying a large portion of youth experiencing significant anxiety who might benefit from further assessment or treatment (Margherio et al., 2019).

It should be noted that while the benefits of universal screening are widely touted, this can be a costly approach for schools to undertake (Margherio et al., 2019). Furthermore, schools must be careful to set their screening threshold at a level of risk that will not overwhelm school staff with the volume of students who "screen positive" for further evaluation. In the absence of universal screening, it is critical for school personnel to develop an understanding of the hallmark diagnostic features of the most commonly presenting youth anxiety disorders.

Diagnostic Considerations and Common Presentations of Anxiety Disorders

While determining whether a youth formally meets the criteria for a specific anxiety disorder (versus identifying general anxiety impairment) may have questionable utility (Pearl & Norton, 2017) and may not be necessary for youth to benefit from evidence-based treatment (Ginsburg et al., 2015), understanding the ways in which anxiety presents in youth is critical for correctly identifying youth struggling with anxiety. Below, we briefly review the primary ways anxiety disorders can manifest in youth in general and provide specific examples of how these disorders may present in the school setting.

As noted above, SEP, SAD, and GAD (Merikangas et al., 2010) are among the most common anxiety disorders likely to be seen in the school setting. Below we will illustrate cases with SEP, SAD, and GAD.

SEP is characterized by consistent, developmentally inappropriate, excessive, and functionally impairing fear of separating from a caregiver (APA, 2013). These youth may experience intense worries about their own safety or the health and safety of their caregivers when they are not with them. In the school setting, these youth may struggle with points of separation (e.g., school drop-off), may express worries that something bad may happen to them or their parents, or may attempt to engage in contact with their caregivers throughout the school day (e.g., attempting to call or text message their caregivers throughout the day).

An Example of a Youth with Separation Anxiety Disorder (SEP)
Carlos is a 6-year-old male in the first grade at an under-resourced public school with large class sizes. Since starting kindergarten last year, Carlos has always had a hard time separating from his parents, especially from his mother who usually drops him off, for the school day. His mother had to start driving Carlos to school because he was refusing to get on the school bus, which presents a hardship to the family because it often makes his mother late for her job at a nearby grocery store. Most days, Carlos's teacher has to physically remove him from his mother's body because he is clinging to her at drop-off. Carlos cries most mornings. His mother noted that he often has trouble separating from her in other contexts, such as when she has to leave him with a babysitter to work a weekend shift.

SAD is characterized by intense fear and avoidance of social situations (APA, 2013). Youth with social anxiety often experience fears that they will be negatively judged by others in social situations and/or that they will experience intense embarrassment. These youths may display extreme shyness, may appear isolated from peers, may appear to avoid social interactions or answering and asking questions, and may exhibit high distress when asked to speak in front of others or when at the center of attention.

An Example of a Youth with Social Anxiety Disorder (SAD)
Alexis is a 15-year-old multiracial female in the tenth grade. She exhibits social anxiety that began shortly after she started high school. Alexis exhibits a great deal of anxiety about social evaluation from peers. Shortly after the onset of her anxiety symptoms, she stopped participating in sports and in class. Previously she had excelled in these domains, but now she has stopped attending volleyball practice and no longer raises her hand in class. School became so aversive for Alexis that she began refusing to attend. In response, her family began homeschooling her. At the recommendation of Alexis's school counselor, the family has begun outpatient therapy with the goal of getting Alexis back into her local public school.

GAD is characterized by excessive anxiety and worry that is difficult for the youth to control (APA, 2013). Youth with GAD can present in the school setting in a variety of ways. Most commonly, these youth may display perfectionistic behaviors and exhibit high worry about and poor tolerance for perceived failures. These youth may also seek reassurance more than other youth their age (e.g., asking if they understood the directions appropriately) or spend more time than is necessary

checking or reviewing their schoolwork. Youth with GAD often may experience somatic symptoms of anxiety that may manifest as stomachaches, headaches, or muscle aches and may be associated with frequent trips to the school nurse throughout the school day. However, it should be noted that these physical symptoms can manifest in any youth with significant anxiety, regardless of the specific disorder.

An Example of a Youth with Generalized Anxiety Disorder (GAD)
Kiki is a 12-year-old female in the seventh grade. She attends an academically demanding private school with high expectations for student achievement. Kiki has begun exhibiting perfectionistic concerns in her academic work and expressing concerns about failure. Per her caregivers, she has always been a worrier. However, lately she seems distressed by her worries, and she has begun engaging in a lot of reassurance seeking from adults. She also has been studying until late into the night every night and triple-checking her schoolwork for errors. Kiki recently began experiencing panic attacks before tests and is very concerned she will fail out of her elite school, even though she consistently earns exemplary grades and has tested as gifted. Despite assurances from her teachers and counselor that she is doing very well in school, Kiki seems consumed with worry that she will fail academically.

After initial identification of youth who may be experiencing significant anxiety, additional assessment is typically recommended to identify which youth may benefit from or require treatment. Recommendations for diagnosing youth anxiety disorders typically include a multimethod, multi-informant assessment approach. For youth anxiety disorders, the current gold standard assessment includes semi-structured diagnostic interviews conducted with youth and their caregivers, such as the *Anxiety Disorders Interview Schedules for Children and Parents* (*ADIS IV C/P*; Silverman & Albano, 2004). Such interviews typically include a structured set of questions that comprehensively assess the myriad of symptoms associated with maladaptive anxiety and their associated functional impairment. It is typically also recommended to gather collateral information from other important individuals in a child's life, such as teachers, as well as data from standardized questionnaires along with behavioral observations. Unfortunately, this comprehensive approach is rarely feasible for the school setting.

An alternative approach is to utilize more comprehensive questionnaires than those that might be employed within the context of universal screening. Becker-Haimes and colleagues (2020) reviewed the literature of brief (< 50 items), freely available youth mental health measures and identified 11 freely available, validated measures of anxiety. Of these, three were highlighted as having the strongest psychometric support: the Spence Children's Anxiety Scale (SCAS; Spence, 1998), the Screen for Child Anxiety-Related Emotional Disorders (SCARED; Birmaher et al., 1997; 1999), and the Revised Child Anxiety and Depression Scale (RCADS; Chorpita et al. 2005). See Table 2 for specific information for each of these

Table 2 Free anxiety measures identified with strong psychometric support[a]

Measure name	No. of items	Link to measure
Spence Children's Anxiety Scale (SCAS; Spence 1998)	38	https://www.scaswebsite.com/
Screen for Child Anxiety-Related Emotional Disorders (SCARED; Birmaher et al., 1999)	41	https://www.pediatricbipolar.pitt.edu/resources/instruments
Revised Child Anxiety and Depression Scale (RCADS/RCADS-P; Chorpita et al., 2005)	47	https://www.childfirst.ucla.edu/resources/

[a]As described in Becker-Haimes et al. (2020). All measures are available freely online in multiple languages

anxiety measures. Each of these measures have companion parent and youth forms to facilitate the collection of information from both sets of informants, with clear clinical cutoffs to indicate youth who are experiencing potentially clinically significant anxiety. Importantly, all three are also available in multiple languages to facilitate their potential utility across diverse populations. To complement these parent and youth reported symptom measures, the School Anxiety Scale-Teacher Report (Lyneham et al., 2008) is a freely available, 16-item instrument to assess teacher perceptions of youth anxiety.

Specific Considerations for the School Setting

As previously noted, anxiety symptoms often present in the school setting due to social and academic pressures and can result in poorer school functioning (e.g., Kendall et al., 2010). At times, anxiety can be difficult to identify, as symptoms may not interfere with classroom instruction. Being aware of the presentation of anxiety in the classroom setting can aid in the identification and proper referral of impairing anxiety in youth. These symptoms may manifest in behaviors including avoidance of certain classes, frequent visits to the nurse, extreme shyness with peers, difficulty finishing or starting class work, and difficulty participating in class (e.g., raising hand in class, reading out loud).

It also is always recommended that specific learning disorders be assessed along with mental health difficulties such as anxiety when there is impairment in academic functioning. For example, a child with a reading disability who reads at a lower grade level than their peers may be embarrassed to read aloud in class because they know their reading skills are not commensurate with other children their age and/or because their classmates tease them when they read aloud. If this is the only context in which the child experiences anxiety, then an anxiety diagnosis may not be appropriate.

Cultural Considerations

Assessment and Diagnosis

Despite similar prevalence of anxiety disorders across racial and ethnic groups, racial and ethnic minority youth are more likely to be misdiagnosed (Anderson & Mayes, 2010; Liang et al., 2016) due in part to instrument bias (e.g., being normed on primarily White non-Hispanic samples) and differing cultural expressions and understandings of mental health (Asnaani et al., 2010; Liang et al., 2016). Common assessment measures and current diagnostic criteria may not fully capture disorders due to cultural differences in the conceptualization of various anxiety symptoms and culturally specific experiences, and expression of symptoms may artificially lower prevalence rates (Asnaani et al., 2010). Therapist racial bias and lack of awareness of cultural context and structural factors (housing/food insecurity, community violence, discrimination) play a crucial role in misdiagnoses of mental health disorders. Examining our own racial biases, the biases inherent in the diagnostic system and conducting thorough cultural assessment can lead to more accurate diagnoses.

A person-centered assessment of cultural factors (e.g., beliefs about anxiety and normative expressions of emotions, housing/food insecurity, experiences of discrimination, learning, or physical disability) that may influence the occurrence and expression of anxiety is recommended along with appropriately normed anxiety assessment tools, to ensure accurate diagnosis (Jarvis et al., 2020; Sanchez et al., 2021; Zigarelli et al., 2016). Additionally, anxiety in the school setting may be exacerbated for immigrant youth and those with English as a second language (e.g., Toppelberg et al., 2005). Racial and ethnic minority youth may in some cases experience higher levels of anxiety related to experiences of discrimination by peers and adults in the school setting. Especially for youth with marginalized backgrounds, their anxiety may be appropriate to their level of hardship and actually may be protective. For example, youth experiencing acute or chronic trauma (e.g., community violence, racism) are commonly diagnosed with other types of anxiety disorders (Spinazzola et al., 2005). At times, anxious responses may be better explained by contextual factors creating realistic fears and may warrant different treatments than that for anxiety disorders. Similar to how a youth with a reading disorder who experiences circumscribed anxiety related to making mistakes while reading aloud would not be considered to have an anxiety disorder, a child who is experiencing worries about separating from their mother due to deportation concerns may not be experiencing SEP. Rather than solely assessing anxiety symptoms and impairment, it is important to recognize the cultural and contextual factors at play to accurately diagnose and treat youth.

The Presentation of Anxiety Disorders

Differences in the expression of anxiety exist between cultural background and identity and are important for understanding the many ways anxiety may present in the school setting. Societal and cultural norms influence the expression of anxiety, what emotions are acceptable, which are discouraged, and for whom (Liang et al., 2016). For example, males and some cultural groups may be more likely to express anxiety externally (e.g., interpersonal conflict, physical fights) due to societal pressures or norms (Liang et al., 2016; Marmorstein, 2007). Black youth, for example, are often misdiagnosed with externalizing disorders when their difficulties are best explained by underlying internalizing disorders (e.g., anxiety/depression). This may be due to both differential expressions of anxiety experiences as well as clinician biases.

In addition to more fully assessing contextual and cultural factors related to anxiety, understanding cross-cultural variations in the presentation of mental illness and cultural concepts of distress (e.g., as described in the DSM-5 [APA, 2013]) is important. Different ethnic groups have been found to hold concepts of distress that differ from and often overlap with typical DSM anxiety and other diagnoses. For example, *Shenjing shuairuo* is a condition reported by some Chinese communities that is characterized by symptoms such as mental and physical fatigue, dizziness, headaches, sexual dysfunction, and sleep disturbance (APA, 2013). Other cultural concepts of distress include *ataque de nervios*, which includes feeling out of control, intense emotional upset, screaming, and crying, among Latin American, Mediterranean, and Caribbean communities, and *taijin kyofusho*, the fear of interpersonal relationships and fear of displeasing others, in Japanese communities. While it can be helpful to have general knowledge regarding common expressions of anxiety across cultures, it is always critical to understand the problem from the patient and family's perspective, rather than assuming an individual ascribes to the same beliefs as others in their racial/ethnic group (Hays, 2016: La Roche, 2020).

Contemporary Considerations: COVID-19

COVID-19 has created an environment of increased uncertainty, stress, and loss for many children and adolescents. With the COVID-19 global pandemic, rates of anxiety have increased among youth and are expected to persist (de Miranda et al., 2020; Hawes et al., 2021). Specifically, a recent study found that within-participant rates of GAD and SAD increased during the COVID-19 pandemic. Greater home confinement, in particular, was associated with higher rates of GAD and lower SAD (Hawes et al., 2021). The decrease in SAD may be due to the lowered expectation and opportunity for social contact. In addition to stay-at-home orders, virtual schooling was implemented for youth in many parts of the USA and internationally.

Online schooling can provide flexibility for the student and the ability to learn at their own pace and can allow a student to continue to thrive academically without the additional stresses of in-person learning. If receiving therapy, youth can simultaneously learn the skills to be able to function in a school environment and in other social settings. However, virtual schooling can also serve to maintain anxiety symptoms and further isolate youth through the avoidance of social interactions. The COVID-19 pandemic has forced many children and adolescents to largely "avoid" social demands typically present in school, and for those predisposed to anxiety, their symptoms and distress related to anxiety may be exacerbated. Despite any short-term decrease in social anxiety due to the lowering of social demands, it is likely that this anxiety will return and even increase as social demands return. It is highly anticipated that some youth will have difficulty transitioning back to in-person schooling after the pandemic due to anxiety (Khan et al., 2021).

Conclusion

Anxiety disorders are highly prevalent among school-aged children and adolescents worldwide (e.g., Bernstein & Borchardt, 1991; Chavira et al., 2004; Costello et al., 2004; Ghandour et al., 2019; Merikangas et al., 2010). Social anxiety, separation anxiety, and general anxiety are among the most common anxiety disorders experienced by children and adolescents (e.g., Merikangas et al., 2010). Specific phobias, including test anxiety, and school refusal related to anxiety are also commonly experienced by school-aged youth (Egger et al., 2003; Putwain & Daly, 2014). Anxiety causes impairment in social, familial, and academic functioning and can be highly distressing for youth, their caregivers, and even educators (Mychailyszyn et al., 2010). Children and adolescents with anxiety may go unnoticed in schools because their distress or impairment is not always as readily apparent as it is for youth with externalizing or disruptive behaviors that may impact classroom functioning. Highly effective treatments for anxiety, such as CBT models that utilize exposure, exist and can offer relief for youth who are struggling with anxiety (Higa-McMillan et al., 2016). Due to the existence of effective treatments, and the negative consequences of untreated anxiety, including increasing risk for depression (Essau et al., 2014), substance misuse (Benjamin et al., 2013), and suicide (Wolk et al., 2015), screening and identification of youth anxiety in schools are necessary (Mychailyszyn et al., 2011). Cultural considerations in the identification and assessment of youth are imperative to ensure appropriate referral and treatment. For youth identified with mild to moderate anxiety, treatment can sometimes be managed in the school setting by onsite mental health professionals. When such services are not available in schools, or for youth with more severe anxiety, referral to a community clinician with expertise in exposure therapy for anxiety is recommended.

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Part II
Students Interventions in Academic Anxiety

Applications of Preventive Child Regulation Work (P-CRW) in the School Context

Marina Gusmão and Guilherme C. P. Francisco

Introduction

Anxiety-related disorders can be defined as difficulties in regulating a specific basic emotion: fear. When felt in low doses, this can prepare us for future events, but in high doses, it can paralyze us or even escape from the feared event, activating our fight-and-flight system of the feared situation (Kandell et al., 2014; Rangé & Borba, 2013). Anxiety can also be directed to different objects, bringing about a spectrum of what can be considered anxiety disorders.

In childhood and adolescence, anxiety disorders may be considered the third main reason for referral to psychological and psychiatric clinics, second only to attention-deficit/hyperactivity disorder (ADHD) and conduct disorders (Ashbar, 2004). In longitudinal studies, the presence of anxiety disorders in childhood may be predictive of the presence of these disorders in adulthood, if there is no adequate intervention from the onset of the first symptoms (Viana et al., 2009).

This chapter has the following objectives: (1) present data on anxiety in children and adolescents, (2) conduct a brief introduction on intervention programs in the

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clinical area, (3) devote itself to describe the P-CRW program within school settings in order to prevent the presence of anxious disorders, and (4) present a P-CRW intervention model in the school context in order to illustrate the application of the program. It is believed that the application of emotional regulation intervention programs in school settings may prove to be widely effective for the prevention of anxiety disorders and performance anxiety at school.

Anxiety Disorders in Childhood and Adolescence

One of the first descriptions of the presence of anxiety in children was dated back to the beginning of the twentieth century with Freud's 1909 text "The case of Hans," in which, through letters with his father, Freud analyzes the specific phobia of a 5-year-old child for horses (Viana et al., 2009). Since then, with the advancement of psychiatric studies and the development and improvement of the editions of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, currently in its fifth edition, the presence of childhood or early-onset anxiety disorders can be observed (Boarati et al., 2016).

Friedberg and McClure (2019) point out that fear and its derivatives (anxiety and worry) are common occurrences in childhood. At some point, it is expected that the child will go through at some degree, by experiences that will leave him or her feeling anxious, worried, or afraid. At normal levels, fear and anxiety protect us from possible threats, preserving our life as in the case of leaning over a window in a high building or crossing the street without looking to the sides (Caminha & Caminha, 2017). At high levels, fear and anxiety can cause significant harm to the child's overall development, leading to psychological, behavioral, cognitive, and interpersonal changes (Caminha & Caminha, 2017; Caminha, 2019; Friedberg & McClure, 2019).

Throughout development in childhood, a child is expected to have specific and transient fears, such as fears of thunder and loud noises, fear of animals, fear of being abandoned, and fears of witches, spirits, and "the big bad wolf." In adolescence the most common fears are related to your peers, such as fear of judgment and fear of exposure (Papalia & Feldman, 2015).

Separation anxiety and selective mutism are among the anxiety disorders of childhood (APA, 2014; Souza, 2017). Separation anxiety can be defined as the "fear of being abandoned" causing inappropriate emotional reactions when there is imminent danger of reparation from their attachment figure, a common disorder especially when the child begins the schooling process (APA, 2014). Selective mutism can be defined as a persistent difficulty in communicating with certain people who are not close to the child, making his/her social relationships significantly more difficult; in these cases, the child is limited to communicating with people he/she feels safe with, preferably his/her parents (Souza, 2017; Boarati et al., 2016).

Gonzaga and Francisco (2021) point out that test anxiety causes intense emotional reactions, reaching up to 30% of school-age individuals. In general, anxiety

in academic situations may involve psychological, physiological, cognitive, and behavioral reactions when the association with concern about the negative results regarding the performance in these assessment situations in three moments occurs: (1) before the assessment, (2) during the assessment, and (3) after the assessment (Gonzaga, 2016; Guimarães et al., 2020).

Overview of Individual Treatments for Anxiety in Childhood and Adolescence: Validity of the Clinical P-CRW

Among the treatments available for anxiety in childhood and adolescence, Petersen (2011) points out that strategies based on cognitive-behavioral therapy (CBT) are among the most effective strategies for clinical improvement. The techniques raised by the author point out that psychoeducation, cognitive restructuring, and exposure strategies are among the most effective for this population.

In a study of clinical intervention in anxiety focused on mathematics, i.e., a type of academic anxiety, Guimarães et al. (2020) point out that individuals who participated in intervention based on cognitive-behavioral therapy for anxiety obtained not only a decrease in anxious symptomatology but also a better academic performance in mathematics. These results point out that by reducing the emotional and cognitive variables that interfere with academic performance (academic anxiety), the impediment to arithmetic development developed considerably.

Francisco (2019) discusses that CBT treatment for anxiety disorders, in addition to significantly reducing anxious symptoms, modifies the neural networks involved, mainly in the emotional processing of the year, involving areas of the amygdala, prefrontal cortex, hippocampus, and anterior cingulate cortex. The author also points out that emotional regulation techniques, such as psychoeducation about the disorder and the functioning of emotions, provide a better adjustment of emotional processes (Francisco, 2019).

The publications of naturalist Charles Darwin (1876) are the starting point for the study of emotions as phylogenetically transmitted and with an adaptive function. In addition to Darwin, Ekman (2005) is responsible for substantiating the theory that emotions are universal. The so-called basic emotions (joy, surprise, sadness, disgust, fear, anger) have, according to the author, a universal facial expression. Therefore, they are, in fact, cross-culturally and phylogenetically transmitted.

The Portuguese psychologist Antonio Damasio (1997), when questioning Descartes by suggesting that "I feel, therefore I am" instead of "I think, therefore I am," divides emotions into three categories, being the background emotions, primary emotions, and social emotions. The latter category includes love as an emotion that requires social exposure to be activated (Caminha et al., 2017). In the deck cards, the authors chose to use joy, love, anger, sadness, disgust, and fear as background emotions.

The protocol for children's clinical care developed by Renato Caminha and Marina Gusmão is effective for the treatment of children and adolescents with anxiety disorders (Caminha et al., 2017). The child regulation work (CRW) is a protocol developed for children aged 7–12 years with disorders or symptoms of anxiety and/or depression consisting of 20 sessions involving playful activities based on psychoeducation and emotion regulation, cognitive restructuring, and focus on behavioral issues with development of social skills and problem-solving training. The term CRW, besides indicating an acronym in the name of the intervention, is also used as an acronym in the suggestion of stages to follow, being them: W (work your emotions), R (recycle your thoughts), and C (innovate your behaviors) (in Portuguese is TRI). For each stage a specific instrument is used. In step W, the "Baralho das Emoções" (deck of emotions) (Caminha & Caminha, 2011) or the Baralho da Proficiência e regulação emocional (deck of proficiency and emotional regulation) (Caminha & Caminha, 2015). In the R stage, the deck of thoughts (Caminha & Caminha, 2012), and in stage C, the deck of behaviors (Caminha & Caminha, 2013).

From these instruments, in the first stage, 15 steps were developed with the objective of working on tools for the development of emotional regulation. In the second stage, the authors proposed a methodology to recycle thoughts that do not help, that is, a technique to cognitively restructure dysfunctional thoughts. Finally, in the final stage, the focus on behavioral issues aims at increasing green behaviors, i.e., behaviors that help, as well as developing plans to face problem situations within a step-by-step problem-solving approach (Caminha et al., 2017; Caminha, 2019). Although the protocol was developed based on cognitive-behavioral theories, with the expectation that the main clinical changes would occur in the R phase of cognitive restructuring (recycle your thoughts), what the statistics showed was that the main clinical gain occurred in the W phase (work on your emotions).

In a validation study, Paiva (2017) points out that the first stage of the protocol (stage W) was the one that generated the most significant gains among all the steps of the protocol. Of the 19 children who underwent intervention, at the end of stage T, only 4 children (21.1%) remained with clinically significant symptoms of anxiety. At the end of the 12 sessions of the protocol, only 1 child (5%) remained with clinical symptoms of anxiety; the remaining children completed the sessions with total remission of symptoms (Paiva, 2017). Thus, it can be observed that the P-CRW protocol in its clinical model has good evidence of clinical improvement in children and adolescents with anxiety disorders, especially in the phase focused on the development of emotional regulation.

The Work of Child Regulation, Preventive Mode: P-CRW

As much as the individual clinical treatments conducted in psychology clinics are directed to a specific population, these not being serving a large part of the population that does not have direct access to these services and even so succumb to the difficulties of regulating their own emotions. The need to implement services of

social-emotional education to intervene in organic contexts, such as in the child population and in schools, is observed.

In recent years, great importance has been given to policies for the development of socioemotional skills that work in what the World Health Organization (WHO, 2004) calls primary health care, where the objective of these programs is to reach a population in a preventive manner, to delay or reduce the symptoms of diseases if they appear later. When talking about interventions for children and adolescents, one of the most favorable environments for the development of these skills is the school environment.

Working with preventive strategies in the socioemotional context has been shown to be effective in reducing anxious symptoms (Farias & Rodrigues, 2020; Francisco, 2021). Goleman (1995) in his book famous book *Emotional Intelligence* highlights that emotional literacy programs in school contexts are effective in preventing emotional problems and behavior problems throughout childhood and adulthood.

Preventive programs have been seen as a possibility to reduce alarming rates of mental illness in the general population and expenditures with their treatments. It is estimated that 7.30% of children and 10.10% of adolescents suffer from some mental disorder (Justo et al., 2017). As previously mentioned, anxiety disorders are among the most prevalent disorders in childhood, and we still have no accurate statistics on the increase in cases during the pandemic.

Justo et al. (2017) conducted a review of the main programs of social and emotional education in childhood and adolescence with effectiveness studies. Among the materials found, the P-CRW protocol, which will be described in more detail below, stands out.

The P-CRW program (preventive regulation work) was developed by Marina Gusmão and Renato Caminha in the period that the authors realized within the clinical protocol the advantages in working emotional regulation with clinical population. If the results for anxious and depressed children were so positive, why not look for ways to serve a universal audience to prevent anxiety and depression problems? Taking a non-clinical intervention into schools was seen as the most effective way to meet a greater demand.

Thus, first a program of social and emotional education was designed for elementary school students for third years. In 18 meetings, an intervention is made by a psychologist or other professionals of the school's psycho-pedagogical team, with the purpose of developing an "emotional literacy" through games, exercises, and the use of a guiding notebook of activities.

In addition, teachers and educational staff are trained in 8 h for the development of a social and emotional environment suitable for the sequence of work initiated with the students. Parents and caregivers can also receive training in both lecture and course format, to participate in the basic concepts of the program proposal. Following this, a program was developed by the authors with the collaboration of Liane Doria for children in the last year of kindergarten (children with 5–6 years old) with 13 meetings focused on basic emotions.

In a recent study, Heinen et al. (2021) applied the child regulation work protocol in the school setting with 28 children from 7 to 9 years old. Twelve 1-h and 15-min

group meetings were held. The results show a significant reduction of 25% in behavior problems in relation to the pre-intervention results and an increase in the emotional regulation indexes and decrease in the emotional lability indexes in the experimental group after the intervention in the school setting.

In clinical studies using P-CRW, an improvement in clinical symptoms of anxiety and depression was observed, and in the preventive protocol, a significant improvement in the rates of emotional lability and behavior problems was observed, proving that, in both forms of intervention, the P-CRW proved to be effective for developing social-emotional skills (Paiva, 2017; Heinen et al., 2021).

P-CRW Application Model in a School in Portugal

The following is a model of a P-CRW intervention in a school, to illustrate the results obtained so far in addition to providing guidelines for its application. The pilot project in Portugal, in the city of Cascais, was developed under the coordination of Marina Gusmão in a school of early childhood education, in the last year, involving children from 5 to 6 years old. The project was adapted from the first intervention proposal of P-CRW for early childhood education applied in Brazil and developed by Marina Gusmão, Renato Caminha, and Liane Doria.

The two teachers responsible for the class were invited to participate in the meetings. Both participated in the conversation held with parents to explain and authorize the project, as well as to teach these caregivers the main themes of the intervention. Thus, parents and teachers were trained with the concepts of P-CRW and social and emotional education.

The students were told that they would have weekly meetings with a psychologist who would come to teach about emotions. These 13 meetings lasted 45 min. The first one had the objective of presenting the proposal and the participants and also worked on the main metaphor involving the making of the little paper boat to teach about emotions as waves that shake it.

The remaining 12 encounters were divided between the six basic emotions of the P-CRW protocol, which are joy, love, sadness, fear, anger, and disgust. For each emotion, two meetings with psychoeducation activities about them use stories that are part of the intervention: Where Joy Walks (Caminha, 2018a), The Birth of Love (Caminha & Lhullier, 2017), When Sadness Appears (Caminha, 2015a), Fear and Its Disguises (Caminha, 2015b), The Wave of Anger (Caminha et al., 2016), and Eca Cacaca (Caminha, 2018b), in addition to the activity booklet, the dolls with the faces of emotional expressions to choose and stick, and other group activities to also strengthen social skills pertinent to the activation of each emotion.

At each meeting, two children should express the emotion to be worked on in the two dolls based on the discovery of the emotion when facing a challenge brought to the group. From this moment on, the group received directed activities using the material in the kit or through dramatizations, exercises, and games. Every meeting

was concluded with breathing or relaxation exercises which were practiced aiming a better management of emotions.

The process of intervention with the group, with no therapeutic proposal but rather preventive, generated a very strong bond between the applicator and the group of students and teachers. The feedbacks were very positive. The children showed motivation, vibrated at the beginning of each intervention, asking for more meetings. Already during the process, the capacity to internalize the proposed content in a playful way was perceived. They responded and interacted in a participatory manner, respecting the rules of social interaction, and showed themselves to be more skilled in managing their emotions in the classroom. They understood well the concept of empathy and demonstrated the ability to cooperate within the group.

In addition, the teachers also gave important *feedback* on the work, sharing that they were learning a new way to deal with this issue in the classroom. Some parents also shared their impressions with the school about how their children began to perceive emotional experiences differently, including being more attentive to how to express them.

Final Considerations

Anxiety disorders are the third largest complaint of psychiatric and therapeutic intervention in childhood and adolescence that can delay until adulthood. Currently, there are several evidences of clinical intervention programs to work with anxious disorders, among them the protocol of P-CRW. The chapter presented the preliminary evidence of effectiveness of P-CRW for reducing clinical symptoms of anxiety and depression in its clinical form P-CRW and seeking to prevent them in its preventive form P-CRW. Studies involving stimulation programs of socioemotional skills in the school environment have shown to be effective for prevention of emotional problems in children in adolescence and adulthood. The P-CRW proves to be effective in working with children in the school context seeking to prevent the presence of anxiety disorders and, consequently, academic anxiety for school-age children.

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Creative Intervention Proposal in the Management of Academic Anxiety

Tatiana de Cassia Nakano

Creativity: Definition and Importance

Creativity has been evaluated as an essential skill of the twenty-first century so that the expansion of interest in creativity occurs, given its potential role in personal growth (Cui et al., 2020). This characteristic is related to the production of ideas, insights, and products that are new (original) and appropriate (useful) in a given situation (Runco & Jaeger, 2012). In this sense, creativity is recognized as an ability present in all individuals, at least as a potential, which can manifest itself in different ways and to different degrees (Robinson et al., 2007), provided it is not inhibited or blocked (Cropley, 1999).

When considering that every individual can be creative, we are talking about specific creativity, called *little c*. This creativity will be the focus of this text. The creativity of the *little-c* type is that type of creativity that allows solving everyday problems, which require creative solutions (Kaufman & Beghetto, 2009). It can be manifested, for instance, when you invent a new food recipe using the ingredients you have available at home, combining them to create a new dish, develop a song of your authorship, or decorate your room in a new way. In this type of creativity, the value of ideas involves solving daily problems or challenges.

The recognition of this type of creativity has proven to be very useful by allowing the misconception that only a few people can be creative to be dispelled. Help people to recognize the critical role that creativity plays in everyday life and the need for its encouragement in the most different contexts, such as schools, workplace, and social contexts (Helfand et al., 2017).

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In this sense, it is essential to recognize that creativity can manifest itself in different ways, such as music, drawings, verbal, body, visual, and scientific language, among many other possibilities, and that can even modify it through creative development programs (Nakano, 2011, 2015). Creativity development is the focus of this chapter, based on creative intervention program suggestions to deal with academic anxiety. The next topic will explain the relationship between both constructs.

Relationship Between Creativity and Anxiety

Several reasons, such as (1) the recognized importance of creativity for the complete and healthy development of the individual (Wechsler, 2008), (2) the possibility of acting as a resource to face current risks and challenges, (3) its direct relationship with positive mental health (Oliveira et al., 2016), and (4) of acting as a facilitator to overcome the difficulties imposed by the environment (Oliveira & Nakano, 2011) and (5) achievement of awareness about their potentials, freedom, and autonomy (Sakamoto, 2000), this characteristic can be thought of as a skill to be stimulated in anxiety management. In this sense, creativity may act as a protective factor related to positive mental health indicators (Godinho, 2012).

Creativity has proven to be an essential resource to deal with daily stressors, emergencies situations, and crises, acting as support in the face of changes and frustration in the front of problems apparently without solution (Middents, 1970). The author also points out that this ability would allow the individual to think of alternative possibilities and plans, less rigidity, and greater flexibility, helping to avoid anxiety arising from the anticipation of possible failure in solving daily problems and achieving a state of relaxation and self-control.

Participation in projects involving creative expression (such as arts, music, drawing, painting) and everyday creativity (such as cooking, writing) has shown a positive and significant effect in reducing several symptoms related to stress, anxiety, burnout, and depression (Tribe et al., 2021). Researchers have also associated creativity with positive emotional functioning, well-being, sense of accomplishment, relaxation, self-esteem, and confidence.

Due to the relationship between the constructs, several studies have examined the effect of anxiety on creativity, investigating the impact of emotions and mood on creative performance (Byron & Khazanchi, 2011; Tritsaroli, 2019). We know that several anxiogenic situations can be associated with worry and fear, and it is precisely in this context that we can use creativity. Having the courage to deal with ambiguity, uncertainty, and the possibility of failure is an integral part of the process of becoming creative (Carlsson, 2002).

It is also clear that an excess of anxiety can prevent the individual from engaging with new and unusual ideas, so anxiety can lead to a lower level of creativity, reducing the ability to consider different perspectives, flexible thinking, and problem-solving (Van Leeuwen & Baas, 2017). The literature has shown that anxiety can affect creative performance due to its influence on cognition, reducing working

memory and long-term memory. Consequently, anxious individuals may present difficulties combining multiple ideas, creating mental images, and elaborating associations between concepts (Byron & Khazanchi, 2011) and skills related to creativity. In this sense, the literature may recommend creativity stimulation and development in the presence of an anxious condition as a tool to address the losses that may occur in problem-solving skills.

In this sense, studies have argued that creativity's stimulation in anxiety situations can help what they need for problem-solving. Anxiety can also positively influence the quality of ideas resulting in a greater number of generated ideas (Strasbaugh & Connelly, 2021). Creativity could be an auxiliary resource controlling and managing anxiety (Grossman, 1981), depression, and stress (Godinho, 2012).

Development of Creativity

Given the relevance of creativity, researchers from several countries have created and applied creative development programs visualized as a set of methods, techniques, exercises, and strategies, whose objective would be to develop a creative potential by stimulating abilities and behaviors related to creativity (De la Torre, 2008). These programs have been considering the increment of opportunities for creative expression on the part of the subject.

In these programs, creativity represents a set of aptitudes and skills to be learned or developed. As a result, we can see essential outcomes like increased quantity and quality of creative ideas, participation, improved academic performance, and greater motivation (Sánchez et al., 2002). The opportunity to realize one's talents develops potentials and awareness of one's creative potential and fosters the ability to generalize learned skills to other purposes and contexts (Bahia, 2008). In favor of programs, Torrance and Myers (1976) state that creativity stimulation can be worked on at all education levels, reinforcing that "students almost always noticeably and sometimes spectacularly improve their ability to provide original and useful solutions to problems" (p. 98).

These programs bring creativity development and the presentation of more applied resources, including creative problem-solving techniques and awareness about creativity-inhibiting factors. In this sense, we are proposing an intervention proposal based on creativity development to control and reduce academic anxiety. Its main objective is to promote anxiety coping through activities aimed at breaking routine, opening to new experiences, changing thinking, and overcoming emotional blocks that may reduce creative expression acting as inhibitory factors.

The proposed activities aim to develop personality characteristics associated with creativity, notably those presented by Guilford (1967) and subsequently extended by Torrance (1966). According to the authors, specific characteristics of cognitive and emotional origin facilitate creative expression and are commonly present in creative individuals. In Fig. 1, you can view a detailing of these characteristics.

Creative characteristic	Definition
Fluency	Represent the ability to produce a large number of ideas without censorship in the responses that emerge. A creative person would have the ability to generate many ideas when faced with a situation or problem. This ability is essential because the more ideas we have, the greater possibility of getting solutions to our needs. Generally, the first ideas we have are always the most common ones. In this way, we can say that quantity leads to quality.
Flexibility	It can be understood as the change of perspective when viewing a problem from different points of view. Represents the tendency to work freely with diverse ideas, subjects, materials, and techniques, demonstrating an ability to produce varied responses.
Elaboration	It is defined as developing, expanding, and implementing their ideas, enriching the initial idea through its detailing. It is a fundamental characteristic to be developed since the individual often has a good idea, but ends up presenting it in a rude, incomplete way, which makes it not be accepted or end up finding difficulties in its acceptance.
Originality	Competence to produce ideas that depart from common sense involves: (1) going beyond the obvious, (2) breaking the usual way of thinking, and (3) developing alternative possibilities for problem-solving.
Unusual Perspective	Involves the ability to see problems from different perspectives or different points of view.
Use of context	It would to understand the problem within a larger universe by inserting the solution within a broader context.
Expression of Emotion	It is related to feelings, needs, and emotions. Emotions are seen as facilitators of the processes of enlightenment and inspiration processes by allowing creative solutions to problems, functioning as a facilitating effect of creativity.
Fantasy	Use of imagination and fantasy in problem-solving. The ability of the individual to mix reality and fiction.

Fig. 1 Personality traits associated with creativity. (Source: Nakano, 2015; Torrance & Safter, 1999)

We will present examples of activities that encourage their expression for each of these characteristics. The creative development program aims at the development of daily creativity activities, mainly focused on problem-solving. It seeks to stimulate creative ways to control academic anxiety and its main reasons, namely, self-charging, performance pressures, task overload, frustrations, and stress arising from assessments (Perico et al., 2021).

In the proposal, we will understand academic anxiety generated by the educational environment, its demands, and the different stressors caused by the course, as proposed by the authors cited. In this sense, the intervention includes, as one of its main objectives, the direction of attention to systematically focus on each aspect of a problem to achieve the best solution and better emotional control.

Method

As a basis for the proposed activities, we will use three main elements: (1) warming up (getting attention, increasing perspectives, and stimulating curiosity), (2) deepening expectations (allowing students to engage with learning, assimilate and integrate new information, evaluate and reassess, use new perspectives), and (3) maintaining achievement (making sense of what you have learned, investigating new sources of information, experimenting).

For such goals, you will visualize several suggestions of activities to stimulate and develop creativity. They involve exploring new ideas, changes in cognition and perception, and generating solutions to problems and should be carried out in the most conveniently way for the participant. However, it is essential to clarify that the greater the practice, the greater the later and the natural use of these skills becomes. For example, daily practice during the first month is recommended.

Some examples of activities aimed at the development of the creative characteristics mentioned in Fig. 1 are provided below based on the suggestions presented by Nakano (2015), Virgolim (2014), and Wechsler (2008).

Fluency

1. Make up as many titles as you can for the following picture figure.

2. What different kinds of uses can you think of for matchsticks besides being used for lighting?
3. List all the reasons children can tell to their parents for not going to school the next day.
4. Imagine you found a trunk inside an abandoned house. What might you have seen when you opened it?
5. In what ways can I increase student attendance at the university?

Flexibility

1. Imagine how you can improve a book to make it more interesting and attractive? To do so, complete the following sentences:

   (a) Replacing.....
   (b) Combining.....
   (c) Modifying.....
   (d) Deleting.....
   (e) Increasing.....

2. Think about how many ways you could help a child to learn to walk by himself or herself. Make a list of the possibilities.
3. Present exciting and different ways to clean the floor of your home.
4. What do you imagine holidays will be like in the future? Write down three different ideas.
5. You are looking at an image. What would you like to know about it? What kind of question can you think of?

Elaboration

1. Describe in as much detail as possible your dream job.
2. Imagine a toy factory has hired you to create a new toy that should save the company's finances. What is your idea? Provide as much detail as you can about your creation.
3. Without saying the name, describe what your favorite food is in as much detail as you can.
4. Based on the following images, try to write a story that contains a lot of details and involves all three images.

5. If you had to teach someone how to get from the city center to their home, what would they have to do? Give the information in as much detail as possible to avoid getting lost on the way.

Originality

1. Think about professions that do not yet exist and that will be important in the future.
2. If you were a scientist capable of inventing anything, what would you create? Why would you invent it?
3. Imagine someone hired you to tell the story of *The Three Little Pigs* from the viewpoint of the big bad wolf. How would the story end?
4. If someone hired to sell broken and unrepaired watches, what arguments could you use to convince people to use the product for a purpose other than marking time?
5. Think of a different and original ending for the story of *Pinocchio*.

Unusual Perspective

1. Remember the last time you complained about a service. Now imagine that you are the person who received your complaint and had to respond to it. If you were that person, what would you say?
2. Imagine you are a teacher and you have just surprised a student by "cheating" on the exam. Think about the arguments the teacher can use to show the student's mistake.
3. Now, think about the arguments the student can give the teacher to justify their behavior.

4. For 1 minute, look closely at your surroundings. Now try to draw it, imagining that you are a tiny ant. What would it look like?
5. Choose an object. Now try to draw that object from the above visualization.

Use of Context

1. Think about the main problems that are being faced by the society today. Then choose the one that seems most severe and urgent to be solved. What solutions can we adopt in the short and long term?
2. We know that many household items have lost their usefulness in recent decades due to technological advances, such as the typewriter replaced by the computer, the walkman replaced by the mp3, or the computer diskettes that gave way to the pen drive. Given this fact, think of other objects that will lose their usefulness in the future.
3. Think of someplace you have been before. How would you describe this place to someone who has never been there?
4. We know that the notion of time varies greatly among people. Give examples of how a minute can make a difference for someone.
5. You had a deadline for handing in an assignment, and you could not meet it. What reasons do you think would be acceptable to justify this delay?

Expression of Emotion

1. Try to describe how you would feel if you were:

   (a) A stray dog.
   (b) A bird trapped in a cage.
   (c) A person who has just been surprised with a surprise party.
   (d) Wrongly accused of something he did not do.
   (e) A baby that has just been born.

2. Talking objects: imagine what the following objects would say to you if they could talk:

   (a) Your backpack.
   (b) Your favorite outfit.
   (c) Your ID.

3. Recall a time when you felt happy. What did you feel? What kinds of things did you think?
4. How do you imagine you would feel if you were the victim of an injustice?

5. If you were very anxious about a situation and did not want other people to notice, what could you do to try to control yourself?

Fantasy

1. Think about what it would be like if, instead of water drops falling every time it rained, soap bubbles fell. What would happen?
2. What would happen if you shrunk and became the size of a pen?
3. If you were to turn into rain, which paths would you pass through?
4. What do you imagine the means of transport will be like 100 years from now?
5. Imagine that the week from now on will have 8 days. It is a free day to do whatever you want. How would you enjoy the day?

It is important to emphasize that the activities proposed here should be used as presented or be adapted. For example, we can mention activity 2 of fluency, which offers new uses for a matchstick. The participant can change the object (to a pencil, sheet of paper, aluminum can, etc.), maintaining the initial proposal (finding new uses). In the same way, they can select other images and those provided in the activities (activity 1 of fluency, activity 5 of flexibility, activity 4 of elaboration) to create titles, invent stories, or think of hypotheses. The activities exemplified are only a guide.

Desired Results

Considering the idea that creativity is a characteristic that represents a set of aptitudes that can be learned or developed through practice, we prepared the present chapter. The intervention proposal presented here was based on the main personality characteristics usually associated with creative manifestation and offering techniques that favor its expression and suggestions of activities to be developed by the individual, individually or in groups.

In the text, you can use the proposed activities' different contents as facilitators of the transposition of the exercises and techniques to different contexts (e.g., which require more fluency, originality, or emotional expression). They can also help individuals perform tasks in other domains, to broaden their applicability and possibility of generalization to the most diverse demands.

You can also contextualize the activities with abstract content proposed in the chapter to everyday life. This diversity will allow greater motivation and even appropriation in the face of what they are addressed and greater possibility of consolidation, generalization, transfer, and application of the process to different situations (Nakano, 2015). In this sense, we ensured that the activities did not address topics directly related to academic anxiety to avoid those feelings and symptoms

associated with the condition could be triggered, generating aversion by the individual.

Thus, it is expected that the practical application of the suggestions presented here may favor the potential creativity present in each one. The activities can help increase the possibilities of creative expression and, consequently, act as resources for anxiety control in the academic context. As a result, you can expand the opportunities for personal and professional achievement and better emotional control in this environment.

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Cognitive-Behavioral Treatments for School-Related Anxiety in Children and Adolescents

Aparajita Biswas Kuriyan, Amanda L. Sanchez, and Courtney Benjamin Wolk

Anxiety disorders are common in school-aged children with 7–20% of children in the general population and primary care settings reporting clinically significant anxiety (Chavira et al., 2004; Ghandour et al., 2019; Merikangas et al., 2010). School refusal, which can be related to anxiety, occurs in about 1–2% of youth (Egger et al., 2003). Additionally, 16.4% of youth report high test anxiety (Putwain & Daly, 2014). The risk for anxiety increases with age (Ghandour et al., 2019); approximately 11% of adolescents meet diagnostic criteria for social anxiety disorder and 9% for separation anxiety disorder (Merikangas et al., 2010). Panic attacks and panic disorder also become more common in teens (Beesdo et al., 2009). This chapter provides an overview of cognitive-behavioral treatments for youth anxiety in school settings, including specific discussions on test anxiety and school refusal due to their relevance in school settings.

Anxiety is, at times, a normative and developmentally appropriate response. Many youth, for example, experience anxiety on the first day of school or when performing in a school play or recital. Anxiety can also be highly adaptive, such as when nerves before a big test motivate a youth to study. However, when anxiety causes prolonged distress or interferes with functioning, treatment may be indicated. In elementary-aged children, anxiety may manifest in the school setting as difficulty separating from a caregiver at morning drop-off, frequent reassurance seeking from teachers about academic work quality, or extreme shyness. In older students, social evaluation and performance anxiety may be displayed, such as difficulty answering questions in class, reading aloud, or doing presentations. Students with generalized anxiety disorder (GAD) may exhibit perfectionism in their school

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work (e.g., erasing and rewriting multiple times) or excessive studying above and beyond what is needed and in great contrast to their peers.

Fortunately, when treatment is needed, there are evidence-based options for children and adolescents, including those that have been specifically developed for and evaluated in schools. The psychosocial intervention approaches with the most empirical support for youth with anxiety are grounded in principles of cognitive-behavioral therapy (CBT; Higa-McMillan et al., 2016). These include CBT protocols developed for specific populations, for example, youth with social anxiety disorder (Beidel et al., 2000) or panic disorder (Pincus et al., 2010), and those that have been designed and tested for youth with a range of anxiety disorders and presentations (Kendall & Hedtke, 2006a, b). Social anxiety disorder, GAD, and separation anxiety disorder are believed to share an underlying anxiety construct (Pine & Grun, 1998), are commonly researched collectively and treated similarly (Kendall et al., 2008; Walkup et al., 2008), and are highly comorbid (Hankin et al., 2016).

CBT for child anxiety is classified as a well-established treatment; it has been shown to be effective in reducing symptoms of anxiety and improving functional impairment and is recommended as a first-line treatment (Higa-McMillan et al., 2016). One of the more widely researched CBT protocols for youth anxiety is the *Coping Cat* program (Kendall & Hedtke, 2006a, b). *Coping Cat* was developed for youth ages 7–14; an adolescent version, the *CAT Project*, is also available (Kendall et al., 2002). *Coping Cat* has been translated in several languages and adapted for a variety of international contexts. Randomized controlled trials have shown *Coping Cat* is effective for youth with social anxiety, separation anxiety, and GAD (e.g., Kendall et al., 1997, 2008) and that treatment gains are maintained long term (e.g., Benjamin et al., 2013; Kendall et al., 2004). Between 50% and 72% of children with anxiety who receive CBT no longer meet criteria for their primary pre-treatment anxiety disorder following treatment (e.g., Barrett et al., 1996; Kendall et al., 2008). In the multi-site Child/Adolescent Anxiety Multimodal Study (CAMS; Walkup et al., 2008), 12 weeks of CBT (i.e., *Coping Cat*) was compared to medication (i.e., sertraline), their combination, or pill placebo. Both CBT and sertraline alone effectively reduced anxiety symptoms, and combination treatment was superior to either monotherapy (Piacentini et al., 2014; Walkup et al., 2008). A 12-session computer-assisted program based on *Coping Cat* (i.e., "Camp Cope-A-Lot"; Kendall & Khanna, 2008) has also been developed and shows promise (Khanna & Kendall, 2010).

CBT protocols for child and adolescent anxiety share a number of common intervention components (Gorman et al., 2002; March & Mulle, 1998; Velting et al., 2004). These include psychoeducation about anxiety and its treatment, self-monitoring anxiety symptoms and triggers, cognitive restructuring (identifying, challenging, and changing maladaptive thoughts and beliefs, also sometimes referred to as anxious self-talk; Kendall & Hedtke, 2006a), relaxation training (diaphragmatic breathing, progressive muscle relaxation), problem-solving, and exposure. Homework is also a routine part of CBT treatments for youth with anxiety, though clinicians may opt to call it by another name, such as take-home practice, to avoid associations with school homework.

There are several reasons why it makes sense to treat anxiety in schools and advantages to treating anxiety in this context (Beidas et al., 2012; Mychailyszyn et al., 2011). Children already spend much of their time in school, so the provision of mental health services in schools has the advantage of treating children where they already are. This can reduce burden on families, increase access to care, and reduce stigma. Additionally, school treatment enables good communication between mental health personnel and teachers, which can be a challenge in the outpatient context. It can also facilitate opportunities for exposure, because peers are readily available and opportunities to practice test-taking or public speaking, if those are anxiety-provoking for a given youth, are easy to arrange. In some countries, including the United States, more children receive their mental health care through schools than through other publicly funded systems (Farmer et al., 2003; President's New Freedom Commission on Mental Health, 2003) so it is critical for school mental health clinicians in these contexts to have training in effective interventions for anxiety.

School-Based Prevention and Intervention Services

When anxiety is exhibited in the school setting, teachers are often first to identify symptoms. They play a critical role in identifying and referring students with anxiety to school mental health professionals or counselors for additional support. Children with mild to moderate anxiety can often be treated in school if a trained school mental health clinician is available. In cases of more severe anxiety or when mental health services are not offered within the school, a referral to a community provider, ideally with a specialization in treating anxiety, may be warranted. Assessment and treatment planning is best engaged in as a collaborative process where parents, teachers, and the youth themselves provide their perspectives to the school mental health provider and work as a team to develop a treatment plan (Mychailyszyn et al., 2011).

Numerous evidence-based programs at different levels of service delivery exist within the school setting. These include universal prevention services provided to all students in a classroom, selective prevention provided only to students at risk for mental health problems according to a teacher referral or mental health screening, and targeted intervention for students identified as having clinically elevated anxiety.

School-Based Universal and Selective Prevention Programs

Universal and selective prevention programs play a critical role in expanding access to services. Research suggests that CBT-based prevention programs can be effective in reducing anxiety, at least in the short term (Johnstone et al., 2018; Werner-Seidler et al., 2017). Results from a recent meta-analysis reported no difference in

effectiveness between universal and selective prevention programs (Werner-Seidler et al., 2017). These programs are typically manualized with a group leader and child workbook and incorporate the common components of CBT (see Table 1). Prevention programs vary greatly in length, (2–40 sessions) with the majority containing 8–12 sessions, and are often conducted in a group format. Few programs include parent involvement, although there is some evidence to suggest parental involvement may support maintenance of program gains (Manassis et al., 2014).

One of the most well-studied and widely implemented school-based anxiety prevention programs is FRIENDS, a CBT-based program that has been designed as

Table 1 Top components of school-based CBT treatment for anxiety disorders

Component	Description
Exposure	Techniques or exercises that involve direct or imagined experience with a target stimulus, whether performed gradually or suddenly, and with or without the therapist's elaboration or intensification of the meaning of the stimulus
Cognitive restructuring	Any techniques designed to alter interpretation of events through examination of the youth's reported thoughts, typically through the generation and rehearsal of more realistic, alternative counter-statements. This may be accompanied by exercises designed to comparatively test the validity of the original thoughts and the alternative thoughts by gathering and reviewing real-life evidence
Relaxation	Techniques or exercises designed to induce physiological calming, including muscle relaxation, breathing exercises, imagery, meditation, and similar activities. Relaxation strategies, such as progressive muscle relaxation, can be applied class-wide. Audio scripts are widely available (e.g., https://www.anxietycanada.com)
Psychoeducation (child and caregiver)	The formal review of information with the child/caregiver about the development of a problem and its relation to a proposed intervention (e.g., how anxiety is maintained through avoidance). For example, information about the cycle of anxiety and the maintenance of anxiety through avoidance
Modeling	Demonstration to the youth of a desired behavior, typically performed by a therapist, peers, or other actors to promote the imitation and subsequent performance of that behavior in the youth
Social skills training	Providing constructive information, training, and feedback to improve interpersonal verbal or non-verbal functioning, which may include direct rehearsal of the skills. This can include group feedback, the use of audio or videotape, or feedback from a therapist or peer
Praise/rewards	The training of parents, teachers, or others involved in the administration of rewards to promote desired behaviors (e.g., specific praise statements, tangible rewards)
Maintenance/ relapse prevention	Exercises and training designed to consolidate skills already developed and to anticipate future challenges that might arise after termination or reduction of services, with the overall goal to minimize the chance that gains will be lost in the future

Sources: Elements are listed in order of most frequently present to least frequently present in school-based cognitive-behavioral interventions with good support or better (adapted from PracticeWise, 2021)

both a universal and a selective prevention program (Barrett et al., 2006). Three versions have been developed for school-aged youth, Fun FRIENDS for children 4–7 years old (Barrett, 2012), FRIENDS for Life for children 8–11 years old (Barrett, 2005), and My FRIENDS Youth for teenagers 12–15 years old (Barrett, 2010). FRIENDS is an acronym that describes the types of skills being taught: F, feelings (emotion identification), R, remember to relax (physiological responses, relaxation strategies, and mindfulness), I, I can try my best (inner helpful thoughts – cognitive coping), E, explore solutions and coping step plans (problem-solving, social skills, and social support), N, now reward yourself (teaching rewarding effort toward approach behavior), D, do it every day (encourage continued use of skills after program ends), and S, smile! stay calm, and talk to support teams (relapse prevention). FRIENDS is a manualized nine and ten session programs, with options to include booster sessions and parent psychoeducation. Caregiver sessions provide an overview of the program, rationale for CBT, and the skills that children learn in order to reinforce learning in the home environment.

School-Based Targeted Interventions

The majority of well-supported targeted intervention programs that have been specifically tested in schools are group-based; only about 37% contain an individual treatment component (PracticeWise, 2021). School-based interventions typically leverage the school setting to conduct externally valid, real-world exposures in the school setting and are similar in length to clinic-based CBT (e.g., 12–16 sessions). A recent meta-analysis demonstrated that session length for school-based interventions was not predictive of outcomes (Sanchez et al., 2018), suggesting that brief interventions can be effective while being less burdensome on school staff (e.g., Crawley et al., 2013). Some programs incorporate specific skills related to particular anxiety disorders (e.g., social skills development and assertiveness training for youth with social anxiety; Beidel et al., 2006; Masia Warner, 2016). Most CBT for anxiety protocols that have been tested in schools share a set of common components which are defined and listed in Table 1 and build on core strategies established in *Coping Cat* (Kendall & Hedtke, 2006a, b).

Modular CBT, in which the session order and number of sessions can be flexibly delivered and tailored, is particularly well suited for school settings. Modular CBT has demonstrated efficacy in outpatient settings and preliminary effectiveness in school settings (Chiu et al., 2013; Ginsburg et al., 2020; Kininger et al., 2018). We draw special attention to the most critical component of anxiety treatment: exposure (Abramowitz, 2013; Higa-McMillan et al., 2016). Figure 1 provides an example of a fear ladder, which is used to plan exposure sessions in a school setting. The fear ladder is collaboratively created by the clinician and client (often with parental input) to develop a hierarchy of situations, ordered from least to most feared. The child gradually practices the situations in order. Exposure helps the child learn that

Fear Ladder

	Fear Rating	
Harder	10	Answering questions about my presentation in front of the class.
	9	Presenting my work in front of the class.
	8	Being called on by the teacher to answer a question.
	7	Raising my hand in class.
	6	Reading aloud in front of the whole class.
	5	Practicing my presentation in front of a small group.
	5	Practicing my presentation in front of 1 person not in my family.
	4	Answering questions about my presentation in front of my family.
	3	Practicing my presentation in front of my mom.
	3	Answering a question that another student asks me individually.
	2	Watching my classmate present their work.
Easier	1	Sitting in the classroom with the whole class present.

Fig. 1 Example fear ladder in a school setting

the situation is not actually dangerous, that they are capable of coping, and that anxiety will often naturally dissipate with time (Kaplan & Tolin, 2011).

Test Anxiety

Test anxiety, also known as exam anxiety, exam stress, or test stress, is defined as the emotional, physiological, and behavioral responses related to perceived consequences of an exam (von de Embse et al., 2018). Test anxiety can be experienced prior to, during, and after an exam. Although text anxiety is not a diagnostic category listed in the DSM-5 or ICD-10, more than half of children with high test anxiety also meet criteria for another anxiety disorder, most often social anxiety and generalized anxiety disorder, and have elevated symptoms of depression (Beidel et al., 1994; King et al., 1995). Untreated test anxiety is associated with negative outcomes such as poor grades, reduced academic engagement, and increased risk for anxiety and depression (von der Embse, 2018). Because test anxiety is a significant concern of schools, we discuss specific CBT approaches to test anxiety (Neill et al., 2021).

Interventions for Test Anxiety

Experts recommend that school officials take a tiered approach to preventing and treating test anxiety in schools. A review on test anxiety interventions for K–12 students found that interventions using cognitive-behavioral strategies were among the most frequently tested, although results differed according to the strategies used and intervention level (von der Embse et al., 2013). Universal prevention strategies include class-wide interventions facilitated by a teacher or mental health staff. Effectiveness in decreasing test anxiety and improving grades for universal prevention strategies is varied. For example, Gregor (2005) found that following a cognitive-behavioral prevention program, performance improved only for mathematics, but not other subjects. On the other hand, Yeo et al. (2016) found reductions in self-reported test anxiety for a four-session prevention program for fourth graders in Singapore. Interestingly, they found that behavioral skills, such as study skills and relaxation training, contributed to the treatment effects, whereas cognitive skills, such as calming self-talk, did not (Yeo et al., 2016).

Targeted interventions for students who report high test anxiety include computer-facilitated, group-based, and multicomponent interventions. Testbusters, an 11-week group program on study skills and test-taking strategies developed for elementary and middle (primary) school students, found decreases in self-reported test anxiety and improvements in grade point average but found no improvements on self-reported cognitive, social, and physical competence (Beidel et al., 1999). Weems and colleagues (2015) developed and tested a group intervention delivered in public schools for students ages 8–17 with elevated test anxiety. It was delivered in five sessions over 4–6 weeks by advanced graduate students and was designed to promote positive emotional development by targeting test anxiety. Results indicated a decrease in test anxiety and reduction in related anxiety disorder symptoms and depression symptoms post-treatment and during subsequent follow-ups in the next year. Putwain and colleagues (2014, 2017) developed a six-session computerized intervention, STEPS, to reduce test anxiety in secondary (high school) students. STEPS consists of the following components: identifying signs and triggers of test anxiety, changing negative self-talk, relaxation, study and test-taking skills, and goal setting. They found a reduction in worry and tension scores, but not test-irrelevant thoughts or bodily symptoms. Furthermore, the authors found that the intervention may have specifically helped students reduce uncertain control. As a result, after the intervention, students believed that their actions are linked to their exam outcome. In sum, school-based cognitive-behavioral interventions focused on test anxiety show promising results for elementary through high school populations in improving grades along with other areas of well-being.

Anxiety and School Refusal Behavior

School refusal is defined as a child's refusal to attend part or all of the school day. Youth with anxiety-based school refusal experience high levels of emotional distress with the anticipation of attending school (Heyne et al., 2019), and it is not uncommon for them to have a comorbid diagnosable anxiety disorder (Kearney & Albano, 2004). They display a variety of behaviors related to absenteeism along a continuum from consistent pleas to parents to skip school to repeated tardiness, all the way to prolonged absence from school (Kearney, 2008). Consequently, it is important for school officials and parents to be aware of the early signs of school refusal. Untreated children with school refusal behavior have prolonged problems with school attendance and are at risk for later mental health problems, low educational achievement, and social difficulties (Maynard et al., 2018; Egger et al., 2003). School refusal may be distinguished from truancy in that children with school refusal have an absence of severe antisocial behavior and do not conceal their efforts to stay at home during school hours from parents (Heyne et al., 2019). Understanding the primary reason behind a youth's school refusal behavior provides a greater understanding of the problem and improves treatment planning (Kearney & Silverman, 1999).

School procedures to regularly review patterns of student attendance and tardiness fit well within a tiered approach to prevention and treatment of school refusal behavior (Ingul et al., 2019). The National Dropout Prevention Center (2021) highlights effective universal strategies such as improving family engagement, providing educator professional development on working with at-risk youth, and developing school community collaborations. Targeted (tier 2) interventions may be appropriate for students who are under the legal allowable limit for absences but show a concerning pattern of absences (Kearney & Graczyk, 2014). Targeted interventions begin with creating a collaborative plan with school staff, the student, and family to improve regular student attendance and providing frequent communication and support for the family. Examples of tier 2 interventions may also include providing referrals for mental health services, tutoring, or community supports (Kearney & Graczyk, 2014).

In addition to planned reviews of attendance, students at risk for school refusal may need more frequent and nuanced assessment. The SRAS-R (School Refusal Assessment Scale-Revised; Kearney, 2006) is 24-item self-report measure available in child and parent versions that differentiates profiles of children who refuse school. Kearney (2006) describes the four profiles included on the SRAS-R to differentiate students who (a) avoid school-related stimuli that provoke negative affectivity (i.e., anxiety and depression symptoms), (b) escape school-related aversive social and/or evaluative situations, (c) gain attention from significant others (e.g., parents), and/or (d) pursue tangible reinforcement outside of school (e.g., shopping, playing with friends, or drug use). After determining the primary profile of the student, it is recommended to follow up with additional evidence-based assessments related to the profile. For example, a student whose primary motivation is to avoid school-related

stimuli that provoke negative affectivity, it is recommended to follow up with assessments for anxiety and depression symptoms (Kearney & Albano, 2004). In addition, a biopsychosocial approach to understand other problems that relate to absenteeism should be assessed and incorporated into the treatment plan, such as chronic medical conditions, family functioning, family adversity (e.g., homelessness, transportation concerns), social concerns, and academic difficulties.

Treatment for school refusal behavior is more likely to be successful when a treatment plan is developed based on the profile ascertained from the SRAS-R (Kearney & Silverman, 1999). For example, a student whose primary motivation is to pursue tangible reinforcement outside of school, treatment may need to include family coordination to increase supervision and behavioral contracts to ensure that reinforcers are earned when the child attends school. Common components of intervention for school refusal include cognitive-behavioral strategies (e.g., listed in Table 1) along with other components such as contingency management or communication skills training (Kearney & Albano, 2018). Generally, greater treatment success is found with younger students and prior to the development of severe and chronic attendance problems (Strömbeck et al., 2021). Consequently, a key component in treatment includes a focus on increasing the student's return to school early in treatment (Maynard et al., 2018).

Cognitive-behavioral interventions for school refusal behavior have resulted in positive effects such as improved attendance and decreased symptoms, especially when related to anxiety (Pina et al., 2009). Furthermore, these interventions have been tested with a wide range of students from elementary to high school (Kearney & Graczyk, 2014). A rigorous meta-analysis on eight studies of psychosocial treatments for school refusal found a positive effect for attendance but found varied effects for anxiety depending on the study (Maynard et al., 2018). Additional studies on the effect of treatment long term and on other pertinent variables (e.g., self-esteem, social adjustment; Heyne et al., 2020) will enhance the field.

Culturally Responsive Prevention and Intervention for Anxiety

Despite evidence that school mental health services can increase access to care, research continues to point to disparities in the receipt of anxiety treatment for culturally diverse youth (Gudiño et al., 2009). The majority of anxiety prevention and intervention programs are conducted with primarily White non-Hispanic students and implementers (Huey & Polo, 2008) and do not consider the unique needs and strengths of culturally diverse youth that may affect their mental health and treatment experience. Youth from intersecting marginalized identities (e.g., race/ethnicity, gender, lower socioeconomic status, immigration status) are particularly likely to experience stressors related to racism, discrimination, acculturation, and housing or food insecurity that contribute to experiences of anxiety (Anderson et al., 2018).

In these cases, it is important that school-based prevention and intervention services acknowledge and incorporate this context into program development (Graham et al., 2013). For example, rather than challenging irrational thoughts, strategies could focus on addressing internalization and negative self-focused thoughts due to experiences of marginalization. Additionally, incorporating a focus on cultural strengths and identity development (e.g., racial/ethnic identity, cultural pride, values, heritage) has been shown to be an important aspect of treatment effectiveness for culturally diverse youth (Anderson et al., 2018; Morris et al., 2021; Yoon et al., 2013). Researchers continue to explore ways that salient cultural and contextual factors can be intentionally incorporated into the development and delivery of school-based mental health programs (Castro-Olivo, 2017; Owens et al., 2013).

Implementation Challenges in a School Setting

While providing services in the school setting can reduce stigma and increase access to needed services, there are several challenges that must be acknowledged. First, conducting services in the school setting means youth are likely receiving services with peers and teachers/staff that they will interact with in other settings, making confidentiality and privacy more complicated. Moreover, if students are receiving targeted interventions, it may be more likely for them to be singled out or for other students to be aware of their participation in services. To minimize these issues, it is important that rules around confidentiality are laid out clearly among students and staff from the onset of service provision.

Second, many school-based programs do not focus on parental involvement and those that do often have poor attendance, which is typically a result of competing demands from parent work schedules. Lack of intentional and successful parental engagement may explain less than ideal long-term prevention and treatment gains (Lee et al., 2016), as studies have suggested that including caregivers in child anxiety treatment can improve treatment outcomes and maintain gains (Manassis et al., 2014). Therefore, it is imperative that mental health programs in schools promote school-home communication. Providing childcare and meals and holding sessions in the evenings are some ways that schools can support caregiver participation.

Third, sufficient staffing and resources remain a problem for sustainability of mental health programing. While over half of prevention and intervention programs tested in rigorous trials are delivered by external personnel (e.g., researchers, graduate students, external clinicians), CBT delivered by school providers in school settings can also be effective (e.g., Ginsburg et al., 2020; Masia Warner et al., 2016). It is important to consider whether the format and intensity of a manualized CBT program are feasible when considering competing demands, priorities, and resources of school-based providers (LoCurto et al., 2020). These challenges lead us to suggest that effective school supports require collaborative partnerships with community-based organizations; a focus on low-burden, brief interventions; and additional funding for hiring of staff in order to focus attention on mental health services.

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Trial-Based Cognitive Therapy for Schoolchildren with Test Anxiety

Érica Panzani Duran

The Influence of Beliefs with Test Anxiety

It is common for children and teenagers to worry about school, from a teacher's reaction when they forget a homework assignment to their performance on tests and, consequently, on their grades. Sometimes worry can be a positive motivating force to act or make behavioral changes, as well as having difficulty understanding a subject and focusing more on it in order to do well (Mayer, 2008). Furthermore, stress levels can improve memory, attention, and motivation and can lead to better performance on tests (Salend, 2011).

However, when anxiety levels are high, it can be disabling. And one of the integral components of anxiety is worry, which usually makes the person focus only on the short-term issues of a specific event or circumstance (Mayer, 2008) and which for the most part will never materialize (DeMartini et al., 2019). Poor study habits and the physiological debilitating effects of anxiety are known to lead to poor academic performance (Culler & Holahan, 1980). Children and adolescents are still not fully aware that their anxiety is disproportionate to the situation. When they recognize it, they still do not have the resources to deal with this situation, taking a big risk of becoming avoidant (intermediate beliefs), that is, when he/she no longer faces the anxiogenic situation, he/she performs avoidance behavior with this emotional anxiety and feels better, thus increasing the avoidance cycle. However, the strengthening of the negative core belief system – an individual's distorted view of the perceived danger – along with the evolution of being unable to handle or control the situation, leads to anxiety symptoms in an exacerbated way (Mayer, 2008). This chapter aims to bring an alternative intervention in a playful way to effectively work on core beliefs and break the cycle of maintenance of anxiety symptoms in the face

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of tests. A clinical case of individual psychotherapy will be illustrated, even though TBCT can be applied in groups in classrooms.

Trial-Based Cognitive Therapy

Cognitive behavioral therapy (CBT) applied to children and adolescents aims to maintain the principles of the approach with adults. The main activities of CBT are psychoeducation, self-monitoring, behavioral measures, skills training, performance achievement, and cognitive competence. With children and adolescents, greater emphasis is needed on developing emotion regulation, problem-solving skills, as well as specific complicated information processing and ways of approaching distorted thinking (Kendall, 1994).

Oliveira et al. (2016) carried out a study on changes in dysfunctional core beliefs of adolescents aged 11–17 years using a group trial-based cognitive training (G-TBCT). The aim of the study was to bring about a new approach to schools, an adaptation of CBT in adults with a more attractive format for adolescents, and provide a form of preventive intervention in the classroom (de-Oliveira et al., 2015).

G-TBCT was developed with the goal of being more effective at changing belief systems than conventional thinking records. It is a three-level, three-phase case-delivery approach based on cognitive therapy. It has its own conception and associations of techniques that make it a distinct intervention in modifying the patients' core beliefs. One of its main techniques is rehearsal-based thought recording (RBTR) or simply "trial I," a structured strategy that presents itself in analogy with the law, in which the therapist involves the patient in a simulation of the judicial process (de Oliveira, 2008). It is an empirically validated method, with preliminary but promising results (Duran et al. 2020; Hemanny et al., 2020; Powell et al., 2013; de Oliveira et al., 2012a, b).

G-TBCT is an adaptation called trial-based group trial, which has not been published so far. The use of role-plays is to be a more effective way for teenagers and is performed in four stages: mind detective, mind advocate, mind judge, and mind master. It can last for 18 weeks. The main aim is to teach and encourage students to put into practice skills of discovering and evaluating their negative core beliefs, thinking about their own thinking, that is, performing metacognition, and to promote decision-making based on assertiveness and ethics and being able to provide yourself with a moment of self-relaxation.

Stage 1: Mind Detective

The mind detective analogy is because the patient will be taught that the mind has three levels of cognition. The first level has four minds/points: event, thought, feeling, and behavior. In this first level, the recognition of feelings and bodily sensations

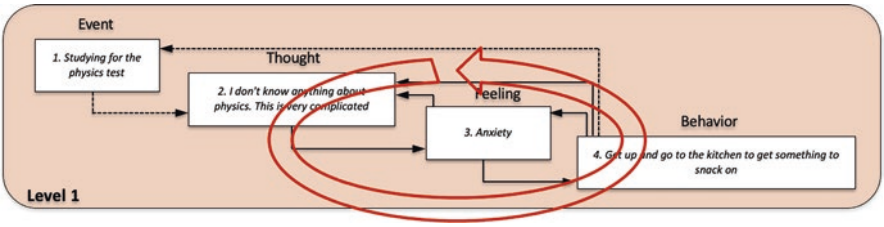

Fig. 1 TBCT conceptualization diagram – Circuit 1 (Phase 1)

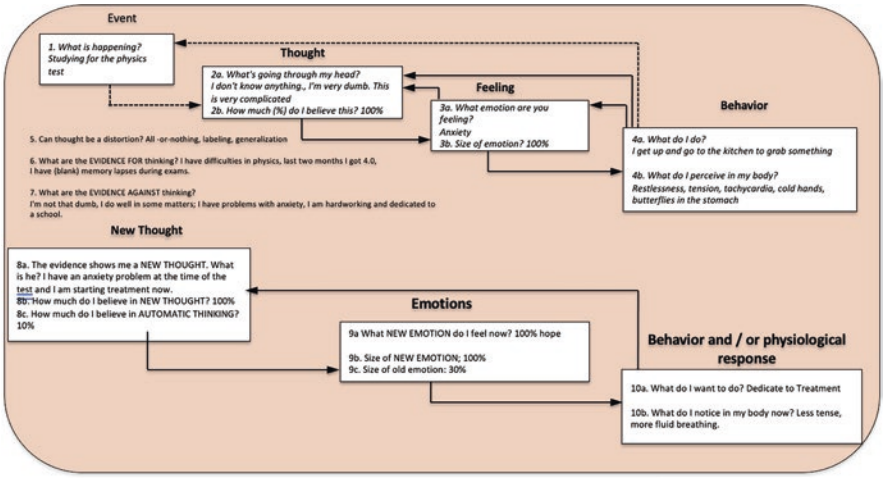

Fig. 2 Mind detective lens

of anxiety, in addition to related thoughts, is worked. The arrows coming back show that feeling and behavior generate new hypotheses and thoughts, thus closing a vicious cycle, as seen in Fig. 1.

The mind detective aims to check cognitions in test situations and to develop the ability to face this situation because of problem-solving and exposure to the feared stimulus. Another intervention needed for these patients is the emphasis on self-monitoring and recognition of distorted cognitions and their role in mood alteration. For this, psychoeducation about cognitive distortions is necessary, where the patient is presented with a list, smaller than those used for adults, which contains only eight types of cognitive distortions. The most common distortions in teenagers are all or nothing, predicting the future, disqualifying the positive, labeling, mind-reading, generalizing, rash, and blaming. To monitor and facilitate the psychoeducation of cognitive distortions, the mind detective uses the Cognitive Distortions Questionnaire (CD-Quest) adapted for this population.

To continue the mental training, the mind detective investigates the thoughts using a metaphor of a "lens." This metaphor of the lens consists of questions that identify the event, the thought, the feeling, and the behavior. Then an investigation

is carried out, verifying the veracity of the thought and the evidence that confirms or does not confirm the thought. The mind detective (Fig. 2) helps the patient to identify distortions and place a new thought that has a positive emotion and consequently a healthier behavior. As homework, the patient has to write about what he understood of automatic thinking and to fill a mind detective's lens with some stressful or unpleasant situation that has occurred for a week.

This phase of treatment can last around six sessions, depending on each patient's progress. Once this is done, we start a second phase, which consists of reaching the most important moment in the investigation of the mind detective, where we will find the central belief (Fig. 3). Afterward, students stage a court of law to assess and change negative core beliefs through the process-based thought record (P-BTR) in six subsequent sessions.

The importance of placing negative central beliefs as a therapeutic goal is because they are the basis of intermediate beliefs and thoughts that will arise in the future and are difficult to access and modify. Therefore, the aim is to make this belief system more flexible to be healthier. At this point, we promote the central beliefs and activate them using the volcano as an analogy, when the detective of the mind makes an investigation to find what is at its center, the magma, that is, the central belief with the help of a ladder descending, as an analogy (Oliveira et al., 2016).

After finding the indictment, the following characters that will enter the therapeutic scenario are the advocates of the mind, who will lead the prosecution for a detailed investigation. They are two lawyers of the mind: the prosecutor and the defense lawyer. From this, we started with the psychoeducation of male characters. The prosecutor represents the prosecution when he finds evidence that incriminates

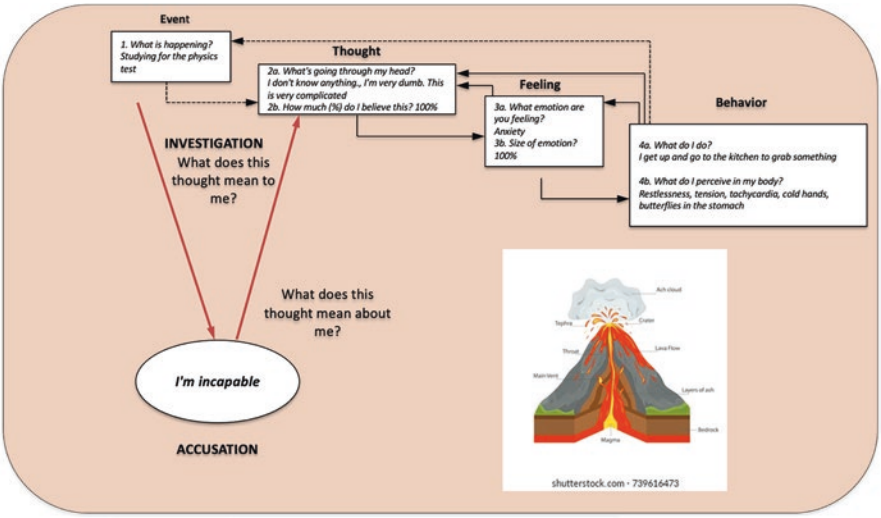

Fig. 3 Mind detective's most important investigation

the accused. The defense lawyer is the one who seeks evidence for the defendant's defender (who will be the patient himself). However, before starting the judgment, an exercise is performed with the patient on a *but* conjunction who wants to do the sentence reversal technique – added afterward to the conjunction *therefore* to express the idea of conclusion. Only then the prosecution will be brought to trial, and we begin the drama.

The therapist or facilitator will play the roles of judge and juror number 2, while the patient plays the roles of prosecutor, defense attorney, witness (if necessary), and juror number 1. At this moment, the therapeutic setting, or the classroom, becomes a courtroom, in which the chairs are arranged as shown in Fig. 4.

Thus, we begin the courtroom dramatization with the investigation of negative central beliefs, the downward arrow technique (Burns, 1980), to identify the automatic thoughts involved in central belief and emotion. We will quantify the intensity of both how much the patient believes in the core belief and the intensity of the emotional charge (Fig. 5).

Then, the prosecutor (column 2) and the defense attorney (column 3) will gather the evidence that supports and does not support the negative central belief. For column 4, the prosecutor will make a rebuttal, which will disqualify the evidence brought by the defense attorney using a *but* conjunction, making the arguments have little credit. In column 5, the judge reads the allegation given by the prosecutor in column 4, adds the *but*, and asks the patient to read what was said by the defense attorney in column 3 for the judge to ask the patient for the meaning of that sentence that was reversed (sentence reversal) so that we can encourage the patient to create

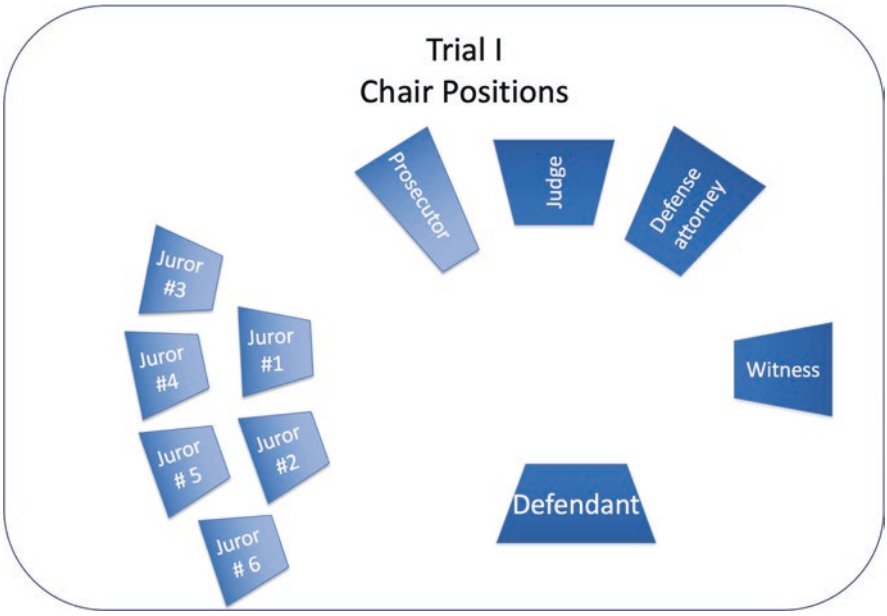

Fig. 4 Suggested chair positions during trial 1

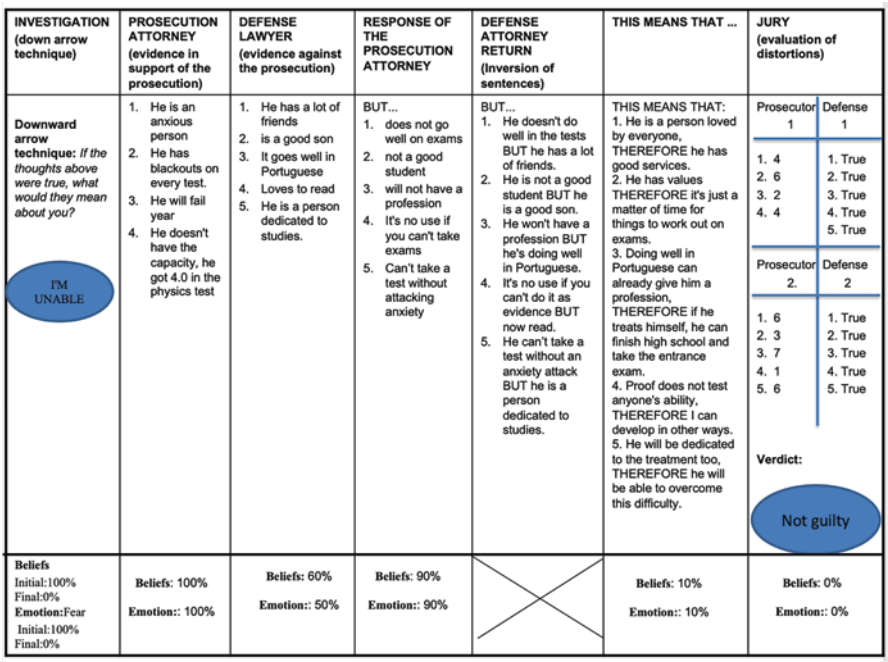

Fig. 5 Intensity of core belief and emotional charge

a positive central persistence. We go further and ask to add the conjunction *therefore* and continue the sentence that now has a positive connotation about the defendant that will be filled in column 6. In the end, having done this in each sentence, there will be a meeting with the jurors (therapist and patient) to analyze what was said in court, verifying in each sentence what facts are and which are cognitive distortions. At the end of this analysis, the objective is to ascertain which of the lawyers performed less cognitive distortions to establish the verdict of guilty or not guilty. For the most part, the defendant is acquitted of the accusation.

At the end of the activity, the therapist performs an ascending arrow to arrive at the positive central belief "Assuming that the defense attorney is right, what does that say about you?" for the therapist to fill in the process record the intensity of how much he believes in the negative central persistence and the intensity of the emotion at the end (Velasquez et al., 2017). However, the prosecutor will not be silent throughout the week so we ask the patient if the prosecutor is satisfied with the outcome and if he would ask for an appeal. The patient is then guided to the appeal (Fig. 6) that will occur in the next session (application once again of the process of the same belief) where he will record small deeds, events, or facts that support the positive central belief and will measure the intensity of how much he believes on it at the moment.

I am CAPABLE (positive origin derived from the ascending arrow)

Date (%) 1. I studied math for 1 hour 2. I was able to pay attention in class 3.	**Date** (%) 1. 2. 3.	**Date** (%) 1. 2. 3.	**Date** (%) 1. 2. 3.	**Date** (%) 1. 2. 3.	**Date** (%) 1. 2. 3.
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Fig. 6 Preparing for the appeal

Stage 3: Judge of Mind

At this point in the treatment, after carrying out some processes I of negative core beliefs, the patient is invited to sue the prosecutor for the incompetence of never having won a case, abuse of power with false accusations, moral harassment, and bullying (de Oliveira et al., 2016). He makes accusations in more inappropriate places, such as in the classroom and at the time of performing as tests and mock test, in the form of internal voices with the tone of criticism and judgments. This stage lasts for three meetings.

Before presenting the prosecutor as a defendant and the charges filed, the patient is psychoeducated about metacognition. In this technique, the therapist has little intervention, and the patient will build ideas for the realization of this court. And noting that the prosecutor had harmful effects on his life, and the jurors had met to deliberate on the defendant prosecutor's accusations. The objective of this stage is to create a metacognitive awareness. The patient will learn self-monitoring of their cognitive processes, clarifying their thoughts, thus generating greater self-awareness.

Stage 4: Master of the Mind

Here the objective is to bring greater mastery to the patient in the event of difficulties concerning decision-making, with which they will learn assertive and ethical behavior. At this stage, the patient can already choose whether or not to respond to thoughts or act accordingly.

The consensual role-play technique will help you in decision-making, bringing a better balance between reason and emotion (Fig. 7), and preparing an action plan for the feared or desired situation. This technique helps the patient overcome chronic worries, increasing their confidence and coping skills, for example, planning with him in the action plan on how to make school tests less stressful.

Finally, the metaphor of the sailing boat, associated with relaxation, teaches the patient or student an essential coping strategy to provide a state of well-being in their own body when they feel the need, as it facilitates or interrupts the acceleration response. This technique was introduced to this patient when we were working at the second level, giving him greater mastery and a coping strategy to be able to pass the exams better.

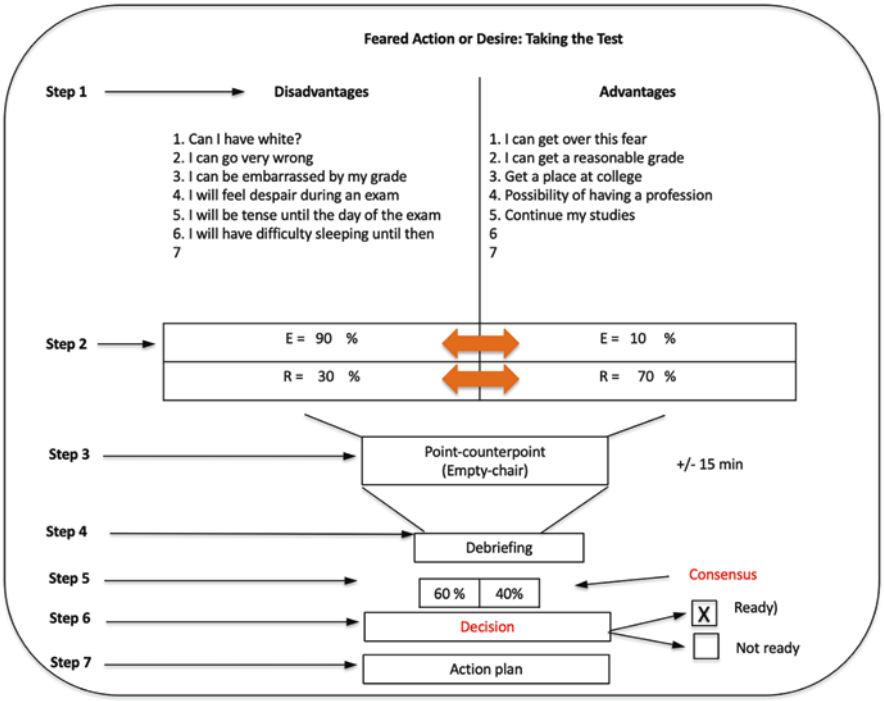

Fig. 7 Consensual role-play (CRP), a decision-making approach

General Considerations

One critical aspect to consider when planning an intervention is good research before implementing the program and monitoring whether the results are sustained over time. In addition, the support of the school and the involvement of teachers and family members are constructive for the outcome and maintenance of interventions. Thus, in addition to working on creating positive core beliefs, G-TBCT aims to generate greater self-efficacy and self-regulation skills. The most critical aspect of TBCT is not to focus on a specific dysfunctional automatic thought but to show the patient or student the way they think. Teaching the person to evaluate these thoughts, that is, metacognition, where the patient or student is invited to observe their thoughts in a court of law and thus feel more confident in achieving their life goals.

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Sleep-Wake Cycle and Moderating Effect of Physical Activity in Managing Anxiety

Andressa Melina Becker da Silva and Juliana Landolfi Maia

Introduction

Anxiety is a psychophysiological process, which is natural to human beings. It is an anticipation of a situation that has not yet occurred and which is interpreted as a potential threat. According to the *Diagnostic and Statistical Manual of Mental Disorders* [*DSM-5*] (American Psychiatric Association [APA], 2014), there are common reactions present in anxiety disorders, such as excessive worry, difficult to control these concerns, difficulty concentrating, irritability, muscle tension, and sleep disturbance, among others. In addition, in some cases, there are physical reactions such as tachycardia, sweating, and increased urination.

The classifications for pathological conditions related to anxiety disorders are separation anxiety disorder, selective mutism, specific phobia, social anxiety disorder, panic disorder, agoraphobia, generalized anxiety disorder, substance/medication-induced anxiety disorder, anxiety disorder due to another medical condition, and other specified anxiety disorders (APA, 2014). It is noteworthy that the Global Burden of Disease (GBD) estimates identified anxiety as one of the three major causes of illness among adolescents (GBD, 2019).

Self-regulation skills are developed during adolescence; however, it is known that this period is characterized by intense body and brain changes, which may be aggravated by a pathological condition of anxiety. According to the literature review proposed by Young et al. (2019), many self-report studies indicate a strong association between emotional dysregulation and anxiety in adolescents. In addition,

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neuroimaging studies confirm that there is an altered functioning of the prefrontal cortical circuits of the amygdala (Young et al., 2019; Zhang et al., 2017).

As an example, there is the paper by Zhang et al. (2017), with 31 patients with generalized anxiety disorder (GAD) and 28 patients as a control group, which aimed to investigate how GAD influences different brain frequency bands. The results showed that patients with GAD exhibited abnormal changes in short- and long-range functional connectivity density in generalized regions in three specific frequency bands, as well as positive correlation with scores on the State Anxiety Inventory. Thus, a neuropsychophysiological evaluation is necessary for the interventions to be more reliable and presents better results.

In addition to neuroanatomical and physiological changes, anxiety can impact the quality of sleep, including due to its own neuropsychophysiological mechanisms, as well as its own psychological dynamics (emotional and behavioral). On the other hand, physical exercise can reduce anxiety and manage sleep quality. Thus, the present chapter aims to understand the impact of physical exercise on anxiety management and the relationship between sleep, anxiety, and physical exercise, discussing the psychophysiological aspects of these relationships through a literature review. For this, it is necessary to understand, at first, the sleep-wake cycle in its relationship with anxiety. Subsequently, physical activity will be presented as a moderating factor of anxiety and improvement of sleep quality.

Sleep-Wake Cycle and Its Relationship with Anxiety

As mentioned by the APA, in the classifications of anxiety disorders, people with psychopathological conditions of anxiety may have sleep disorders (APA, 2014). Anxiety has been associated with unsatisfactory sleep, and sleep deprivation in adolescents may increase the risk of suicide (Zambotti et al., 2018). Sleep is a basic and vital physiological need, whose dysfunction can generate countless damages – behavioral, social, emotional, cognitive (including memory), metabolic, and immunological (due to a dysregulation of the hypothalamic-pituitary-adrenal axis).

Different studies have mapped the functional neuroanatomy of sleep regulation in both animal and humans' models, although human research is more difficult (Fritz et al., 2021; Nofzinger et al., 2004; Wellman et al., 2013). There is strong evidence that specific brain regions and cell types are differentially activated in non-rapid eye movement (NREMS), rapid eye movement (REMS) stages of sleep, and wakefulness, and they influence each other by positive and negative feedback for sleep and wake regulation. There is also the importance of neurotransmitters such as glutamate and GABA (Richards et al., 2020; Saper & Fuller, 2017) in the process. Investigations that addressed neuroimaging suggest that people with anxiety disorder showed reductions in sleep duration and continuity, increases in lighter stages of sleep (NREM), and abnormalities in REMS, such as the interruption of this sleep stage, when compared to individuals without anxiety (Nofzinger et al., 2004; Richards et al., 2020).

The amygdala and insula – emotion processing regions – are involved in the expression of anxiety, showing more hyperactivation in neuroimaging studies (Duval et al., 2015) and greater activation of the dorsal anterior cingulate cortex. The hippocampus is considered a modulator of emotion in anxiety and usually shows hyperactivation in studies of anxiety disorders, as does the thalamus (Duval et al., 2015). The thalamus is also a key structure involved in slow sleep wave generation as well as negative regulation of sensory processing during sleep. The dorsolateral prefrontal cortex has shown patterns of hyper- and hypoactivation in anxiety disorders (Duval et al., 2015). The *locus coeruleus*, the main generator of norepinephrine in the central nervous system, plays an important role in sleep-wake regulation as well as in anxiety-related processes through its inputs to and from the amygdala, as does the cerebral cortex (Richards et al., 2020).

Some studies have shown that the prefrontal cortex performs an important role in emotion regulation (Cohen Kadosh et al., 2016; Del Río-Casanova et al., 2016; Richard et al., 2020). However, it is worth remembering that it is developed at the end of adolescence, that is, adolescents still have certain difficulties and will improve their ability to self-regulate over time (Steinberg et al., 2018). Sleep deprivation can affect the development of the frontal lobe, a region capable of controlling impulsive behaviors. Thus, adolescents who do not get enough sleep are more likely to engage in risky behaviors, such as riding a bicycle without a helmet, not wearing a seat belt, alcohol abuse, smoking, and having risky sexual intercourse (Meldrum, & Restivo, 2014; Wheaton et al., 2016).

In still observing the relationship between neuroanatomy, anxiety, and sleep disorders, there are evidence showing deficits in cognitive inhibition, such as difficulty paying attention to irrelevant stimuli (Ballesio et al., 2019), as well as a relationship between rumination (characteristic of patients with GAD) in individuals suffering from insomnia (Palagini et al., 2017). A vast literature indicates associations between worry, rumination, and sleep disturbances (Lund et al., 2010; Palagini et al., 2015; Takano et al., 2012; Zoccola et al., 2009).

Thus, anxiety-related behaviors are associated with higher chances of having sleep disorders. It is also suggested that insomnia may be a predecessor or even occur concomitantly to anxiety-related disorders (Herring et al. 2015; Jansson-Fröjmark & Lindblom, 2008; Johnson et al., 2006). Evidence from studies with polysomnographic investigations indicate that patients with mild to moderate anxiety symptoms report insomnia, shorter total sleep time, and low sleep efficiency (Monti & Monti, 2000; Papadimitriou & Linkowski, 2005).

It is known that anxiety disorder and insomnia are prevalent comorbidities considered public health problems, for which successful treatment remains limited. A psychophysiological assessment and intervention on anxiety could, therefore, improve sleep quality and, consequently, quality of life. In this sense, improving sleep in adolescents may help prevent anxiety or reduce its symptoms (Richter, 2015).

Aiming at improving sleep, the Sleep Foundation (2021) makes recommendations that can help in sleep hygiene and thus improve the quality and quantity of sleep. Suggestions include keeping the same sleep schedule every day (including weekends); having a more relaxing routine before bed; having adequate mattress

Table 1 Sleep time recommendations according to age group and scientific institution

Sleep foundation		Centers of Disease Control and Prevention (CDC)	
Age	Sleeping hours	Age	Sleeping hours
0–3 months	14–17 h	0–3 months	14–17 h
4–11 months	12–15 h	4–12 months	12–16 h (including naps)
1–2 years	11–14 h	1–2 years	11–14 h (including naps)
3–5 years	10–13 h	3–5 years	10–13 h (including naps)
6–13 years old	9–11 am	6–12 years old	9–12 h
14–17 years old	8–10 h	13–18 years old	8–10 h
18–25 years old	7–9 h	18–60 years old	7 or more hours per night
26–64 years old	7–9 h	61–64 years old	7–9 h
65 years and over	7–8 h	65 years and over	7–8 h

Note: Recommendations were reported by Sleep Foundation (2021) and Centers of Disease Control and Prevention (CDC) (2017)

and pillows; reducing light, sound, and agitation before bed; disconnecting from electronic devices (cell phones and computers, for at least half an hour before bed); and avoiding caffeine and alcohol before bed.

The recommendations of the Sleep Foundation (2020) for parents are (a) talk to their children about the quality of sleep, because many parents do not realize that their children have problems sleeping; (b) consult a doctor when necessary; (c) help the child in sleep hygiene, such as defining a routine and time to sleep; and (d) avoid a routine overloaded with tasks and commitments, because this can increase anxiety and other psychological problems. In addition, it is valid to observe the recommendations in relation to sleep time suggested by scientific and medical institutions recognized worldwide. Table 1 shows the recommendations according to age group, sleep time, and scientific institution.

In a study proposed by Blakemore et al. (2018), the term "social brain" was advocated as a network of brain regions that are involved in understanding other people and includes the medial prefrontal cortex and posterior superior temporal sulcus. These regions are fundamental to the process of attributing mental states to oneself and to other people. It is also known that the activities of the so-called social brain change during adolescence. In this sense, to minimize the impacts of lack of sleep or even the triggering of anxiety, changes in environmental risk factors are necessary, such as increasing the level of physical activity, for example, which can contribute to a better lifestyle and to the transformation of habits throughout life. We will discuss this aspect in sequence.

Physical Activity as a Moderating Factor of Anxiety and Improvement of Sleep Quality

Anxiety is a risk factor that interferes with health-related quality of life and is associated with increased mortality risk, especially cardiovascular diseases. Several epidemiological studies associate anxiety as a risk factor for mortality in healthy individuals and patients with heart disease (Tomazoni & Benvegnú, 2018).

Many treatments supported by the literature show efficacy in reducing anxiety, including cognitive-behavioral therapies and psychotropic drugs, especially selective serotonin inhibitors (SSRIs). However, these treatment options are also associated with barriers to treatment, as the medication approach may generate side effects, for example. Although the psychological approach is also considered a structured intervention for anxiety disorders, people with financial difficulties may have access problems, which increases the need for non-pharmacological treatments and alternative therapies for this purpose. Thus, exercise and physical activities can be made available as an affordable treatment option for individuals with anxiety (Saaed et al., 2019; Stonerock et al., 2015).

It is necessary, however, to differentiate exercise from physical activity. The first is defined as any body movement, produced by skeletal muscles, which results in energy levels higher than the resting levels and may vary from individual to individual since it is influenced by body weight and physical fitness index. Thus, it encompasses all daily activities, including domestic, occupational, and leisure activities, as well as active transportation. Despite some elements in common, physical exercise has no identical connotation to physical activity and refers to all planned, structured, and repetitive physical activity that aims to improve and maintain one or more components of physical fitness (ACSM, 2011; Guedes, 1999).

The literature presents several studies investigating an inverse association between exercise and referred anxiety symptoms in adults. In a recent meta-analysis, an evaluation of 12 experimental studies concluded that, as a treatment for high anxiety or anxiety-related disorders, exercise offers benefits comparable to the main established treatments, including pharmacological and behavioral therapies (Stonerock et al., 2015). However, methodological variability lacks consistency regarding the individuality of exercise prescriptions. In contrast, Jayakody et al. (2014) suggest that both aerobic and anaerobic exercises seem to reduce anxiety symptoms and patients with anxiety illness may benefit from exercise in combination with behavioral therapy.

It is known that one in ten children and adolescents worldwide has chronic diseases such as asthma, diabetes, and cancer and such patient is more likely to develop psychological problems that include anxiety (Herring et al., 2015). Furthermore, sedentary lifestyle can induce anxiety and sleep-related disorders (Vancampfor et al., 2019). In this direction, different strategies that contribute to the treatment of anxiety in this age group have been considered as interventions – from simple, multimedia text-based programs to interactive programs such as games and virtual reality (Thabrew et al., 2011).

In an investigation on the effect of exercise in the treatment of anxiety in adolescents, Larun et al. (2006) inferred that, although there seems to be a small effect of exercise in reducing depression and anxiety-related scores in children and adolescents, the small number of studies and the clinical diversity of interventions and methodological protocols bring limitations to precise definitions. However, it is suggested that interventions involving physical activity reduce sedentary behavior and improve the mental health of adolescents (Hoare et al., 2016; Merry et al., 2004/2011).

Similarly, a look at sleep is necessary when addressing the dimensions related to quality of life. Despite the consensus that both exercise and sleep are fundamental to aspects related to well-being and health maintenance, there is still a low adherence by adolescents to this practice. Studies indicate that two thirds of adolescents attending high school sleep less than recommended and have levels of physical activity lower than those recommended by the World Health Organization (Eaton et al., 2012; Paruti et al., 2016).

But how can we relate these two aspects of behaviors? Investigations have been directed toward understanding sleep physiology and the interrelationship between sleep and exercise (Harris et al., 2017; Lang et al., 2016; Mendelson et al., 2016; Suppiah et al., 2016). Managing problems related to so-called sleep hygiene in adolescents involves, among other factors, increasing total sleep time and improving other environmental factors that impact sleep quality, such as physical activity (Lang et al., 2016). There are evidence that regular physical activity is associated with better psychological functioning in adolescents, including better sleep (Adamo et al., 2009). In addition, physical activity is considered a preventive and non-pharmacological treatment for insomnia (Ainsworth et al., 1993).

Some authors defend the fact that sleep contributes to energy conservation, body restoration, and thermoregulatory functions (Madisson et al., 2010). In this direction, recent publications indicate that any type of physical activity, even at night before bedtime, positively impacts sleep, and the thermoregulatory hypothesis is based on the principle that the onset of sleep is triggered by the reduction in body temperature that occurs circadianally at the beginning of the night (Youngstedt & Kline, 2006; Zhang et al., 2020a, b). Other studies describe the function of the hypothalamus as an important element in regulating body temperature and in inducing sleep (Lu et al., 2000; Murphy & Campbell, 1997).

Therefore, exercise can create a condition capable of increasing body temperature that will interfere with the onset of sleep, through the activation process of heat dissipation controlled by the hypothalamus and the sleep induction mechanism (Zhang et al., 2020a, b). Figure 1 illustrates some physiological contributions of exercise to the body and the consequent impact of these changes on anxiety and sleep improvement.

The restorative or compensatory theory predicts that the condition for anabolic activity during sleep is favored after high catabolic activity during wakefulness. In this way, exercise could facilitate sleep by reducing the body energy reserves, which would increase the need for sleep (Montgomery et al., 1982).

In a study proposed by Kelley and Kelley (2017), which includes different populations, including adolescents, the results suggest both aerobic and strength exercises to improve sleep. In a recent meta-analysis, Vancampfor et al. (2019) indicated that acute and chronic exercises have an effect on sleep; however, like the investigations that address anxiety, methodological differences bring some limitations regarding the comparison of groups under different methodological protocols. Figure 2 shows a summary of the main exercises and physical activities proposed as mediating factors of anxiety and sleep improvement indicated in this chapter.

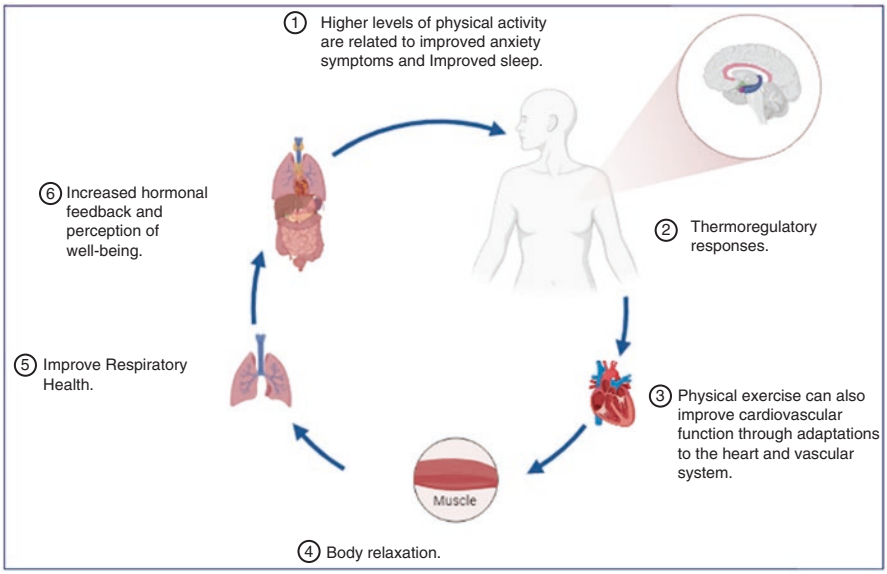

Fig. 1 Benefits of exercise as a mediating factor in anxiety and sleep improvement. (*Note:* Information extracted from Adamo et al. (2009), Kline (2021), Madisson et al. (2010))

Educational interventions can be fundamental in the articulation of a multidisciplinary work, since the school period takes up a considerable amount of time in the lives of children and adolescents. When we observe then the importance of integrated work in treating anxiety in children and adolescents, beyond specific interventions, a long-term contribution that develops throughout basic education is necessary. Therefore, it is essential to consider teaching and learning methodologies that enable and promote socioemotional development of students – in the classroom and in the school environment.

Although social and emotional aspects are the basis and driving force of cognitive development, they are rarely the subject of intentional development in the curriculum and teaching practice. It is necessary to understand what socioemotional skills are and how to develop and evaluate them to provide assertive interventions for this age group.

Final Considerations

This chapter showed that several studies indicate hyperexcitation during sleep in anxiety disorders, including explanations on brain architecture and its neurophysiology, which compromise the continuity and quality of sleep that, in turn, impact cognitive, emotional, and immunological functions important to the organism.

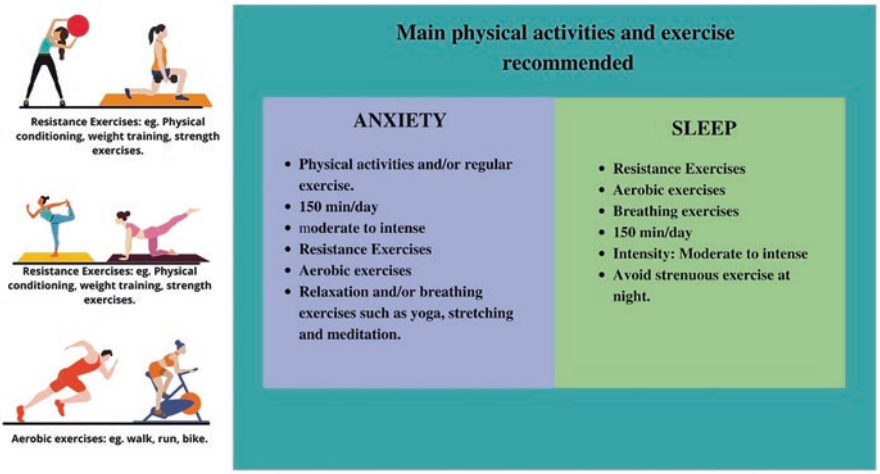

Fig. 2 Main physical activities recommended as factors moderating anxiety and improving sleep. (*Note:* Information extracted from Kelley and Kelley (2017) and Vancampfor et al. (2019))

Exercise and physical activity can assist in managing anxiety and improving sleep quality.

In addition, we were able to dimension the role of exercise in the mediation of anxiety, sleep improvement, and the interrelationship between them. In the case of anxiety, regular physical activity is associated with results close to those of conventional pharmacological and behavioral therapies. In the same way, important contributions of exercise in improving sleep are observed; however, it is necessary to pay attention to the intensity, practice schedules, and types of exercise, since these factors impact sleep.

It is worth mentioning that we did not intend to exhaust here all the discussion about the relations of the variable's anxiety, sleep, and physical exercise, because they are complex and require further studies. In any case, it is believed that with this overview of the biopsychosocial functioning of the human being, interventions can be made to improve quality of life and full development.

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Acceptance and Commitment Therapy in Educational Setting

Michaele Terena Saban-Bernauer and Ana Cristina Santana Matos-Ragazzo

Introduction

Acceptance and Commitment Therapy

Acceptance and commitment therapy (ACT) was proposed by Steven C. Hayes, Kirk D. Strosahl, and Kelly G. Wilson in the 1999 manual. This therapeutic proposal was under construction in the mid-1980s in the movement of behavioral therapies called third-generation or contextual behavioral therapies. This new generation of behavioral therapy brings focus to the inner world such as thoughts, feelings, bodily sensations, memories, and predispositions, previously less salient in the radical behaviorist tradition. Other characteristics that make up this movement are the therapeutic relationship and broader analyses of behavior.

ACT conceptualizes its proposal within relational framing theory – a behavioral theory of language and cognition (Hayes et al., 2001). This theory has therapeutic developments such as those of ACT that will be presented here and other applications in learning in teaching and training models for individuals with atypical development.

ACT aims at psychological flexibility, which is a broad and general model of human functioning and adaptive capacity (Hayes et al., 2012). This model describes processes that "determine how well humans can adapt to life's changes and frequent challenges" (Hayes et al., 2012, p. 67). It is characterized by experiencing the experiences of the internal world openly and without defenses while choosing actions

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that are truly important to the person. This process is crucial for enrichment and meaning in life. ACT does not aim to decrease suffering specifically, as traditional therapies do. Understanding relational framing theory and its scientific evidence indicates that attempts to avoid, suppress, or anesthetize suffering tend to generate immediate relief but in the medium and long term generate other problems (Hayes et al., 2012). As actions directed to meaningful life choices, they commonly involve suffering but important changes.

For example, test performance anxiety. The student who feels anxious about tests often avoids or has difficulties studying, as the study itself signals that there will be a judgment on their performance, generating anxiety. If the student is focused on getting rid of anxiety, he can avoid studying and take more time in these activities; the blank-out test itself is a way to "erase" the thoughts that lead to anxiety. All this keeps him away from studying and generates more anxiety in the medium and long term. The proposal of ACT contemplates accepting anxiety, training the student to experience these sensations that accompany anxiety and the feeling itself so that he does not have to engage in eliminating them. Then he will be able to face the situations in which anxiety will be present. Remembering that anxiety is present in cases where study or performance is important to the student. Another arm of ACT constitutes the exploration of what is important to each person and highlights these purposes in decision-making.

Psychological flexibility involves:

(a) Experiencing private events (thoughts, feelings, sensations, memories, and predispositions)
(b) Moving the attention to the present moment while perceiving oneself in the situation and observing what occurs within oneself
(c) Taking actions consistent with what the individual values

To go through this process of psychological flexibility, we train the following skills in therapy:

- Creative helplessness – observation of attempts to avoid, evade, distract, or anesthetize private events (experiential avoidance). This observation of this pattern of behaviors emphasizes the costs of experiential avoidance that usually generate additional suffering. In the case of the student with performance anxiety, the experiential avoidance of not studying and go play or even while studying diverts attention to stimuli other than the task and the blank-out test. All avoidances generate more damage in the study than the anxiety itself.
- Acceptance – is the process of experiencing private events, without defenses, accepting the feelings, sensations, memories, predispositions, and thoughts that arise when acting in the direction that is important to the person. The tendency, to abandon the study activity drops considerably when the student experiences anxiety during training, through perceiving the body, feelings and memories of other performance situations considered bad. He can only notice these events, does not need to act upon them, and does not need to react to them.
- Defusion – observation of the process of thinking and the flow of thoughts. When defusing from a thought, a person can observe the content of the thought without

considering it as a fact or reacting according to it. The student can notice that thoughts appear and disappear in a flow, such as thoughts of evaluation, and self-criticism can appear at the time of the test and pass, without him having to do anything about it.

- Mindfulness – is the ability to direct attention to the present moment. This skill is fundamental for the individual to notice his/her internal world and turn to what is happening in the situation. This alternating focus of attention allows for greater adaptability to the environment.
- Self as context – observation of self as the place where private events appear and disappear.
- Values – clarification of what is important to the person and how they want to act in their life.
- Actions aligned to values – training of specific actions that are consistent with the values.

All these processes together aim at enriching life by transforming the way we relate to our inner world (by listening to it rather than reacting to it) and acting in line with what is important to us.

ACT in the Educational Context

Group ACT interventions in face-to-face or web-based educational settings constitute an intervention model for improving the quality of life of students and teachers, presenting empirical evidence. Here are some studies from recent years.

Grégorie et al. (2018) conducted a randomized clinical trial with 144 university students recruited from four universities in Canada. They utilized ACT-based workshops (KORSA program www.korsa.ugam.ca/en/) with the aim of improving psychological flexibility and promoting mental health and academic achievement. The results showed that students who underwent the intervention showed greater psychological flexibility and mental health (improvements in well-being, academic performance, lower stress, anxiety, and depression symptoms) compared to the control group (waitlist).

Another study (Moyer et al., 2017) conducted training based on experiential ACT exercises with doctoral students. The results were the impact on learning and professional development through personal psychological insight involving self-compassion and interpersonal relationships. These experiential exercises were designed to achieve processes of psychological flexibility, attention in the present, experiential acceptance, defusion, flexible perspective taking, values, and committed actions.

Mental health problems are prevalent in college students (Blanco et al., 2008) in the United States. This population goes through university counseling centers, which have high waiting times and reduced attendance protocol (Ghetic, 2007). The

study conducted by Mullen et al. (2021), (n = 237), proposed single-application ACT- and Yoga-based supportive workshops introduced into the curriculum as an intervention strategy to increase psychological flexibility and decrease psychological distress, suggesting that workshops may influence psychological flexibility and greater attention to the present moment.

Firestone et al. (2019) describe in their study a self-guided intervention program aimed at promoting values-based psychological well-being, with a 60–90-min session, electronically (Living Your Values Program). This program was applied to 133 university students, evidencing an increase in the lives valued in relation to leisure, recreation, community, and citizenship values.

Accessibility to web-based therapies is a reality today; an example of this appears in a study (Levin, 2013) that sought to evaluate an online ACT training as prevention of depression and anxiety in college students, suggesting that self-guided ACT training can reduce and prevent mental health problems in non-clinical populations including international college students (Muto et al., 2011), individuals with mild and moderate depressive symptoms (Fledderus et al., 2011), and elementary and middle school teachers (Jeffcoat & Hayes 2012).

Intervention Proposals

ACT, as a broad and general model of intervention, can be applied in a variety of ways. In the educational context, some examples are group intervention workshops in schools or universities, electronic self-guided interventions, and individual therapy.

The workshops constitute a more general and motivational approach, focusing in prevention of anxiety and depression in students. They should be guided by a trained ACT professional and aim to improve the quality of life of the student. They are interesting options to insert in school curricula, as well as in higher education.

When the student presents difficulties related to anxiety and school engagement, self-guided interventions are a good alternative because they are applicable on a larger scale. Generally, a trained ACT practitioner provides the self-guided interventions and follows their progress through communication with the student going through the program. If the student persists with difficulties after the self-guided interventions and in cases of psychiatric conditions such as depression, anxiety, and phobias, individual psychological care is recommended. Below are some presentations of the content of ACT workshops and the description of a self-guided protocol (Firestone et al., 2019), exemplifying the interventions proposed in this approach (it describes the exercises that can be done in workshops, in self-guided interventions, and in individual therapy).

Workshop: ACT Workshops Embedded in the Academic Curriculum

For interventions in group, the workshop interventions are a great option. They can be part of the school curriculum and promote quality of life for students, prevent the development of mental health problems, do not require extra hours of dedication, and help with stigma issues about seeking psychological help (Mullen et al., 2021).

The following are two examples of an ACT-based workshop structure. The intervention described in Table 1 (Mullen et al., 2021) was incorporated into a 1.5-h ACT-based undergraduate curriculum delivered by trained ACT practitioners.

The next workshop was used in a randomized clinical trial at four different universities in Canada. The research sought to examine the effect of four ACT-based workshops on psychological flexibility, mental health, and academic achievement in university students. Students participated in an intervention developed by the research team (Grégorie et al., 2018) called KORSA (www.korsa.uqam.ca/en/). The name KORSA comes from the Swedish "pass through/pass by" referring to the program's goal of helping students get through their studies while maintaining quality of life. This protocol was also administered by professionals trained in ACT. The intervention comprises four (4) workshops of two and a half hours offered to groups of 8–15 students during four consecutive weeks as described in Table 2.

The therapeutic strategies in these workshops were composed of ACT exercises such as the matrix developed by Polk and Schoendorff (2014), the target exercise (Harris & Hayes, 2009), and behavioral activation strategies (Mazzucchelli et al., 2010). Students were provided with additional mindfulness exercises to practice at home and supplementary readings.

Protocol for Self-Guided Interventions

The protocol described in Charts 1 through 8 is based on the program called "Living Your Values" (LYV, Firestone et al., 2019). It is a 60- to 90-min self-guided protocol originally proposed in an online format on an interactive platform composed of exercises, audios, and digital interactive games. The student enters a website and goes through the program activities.

In this chapter, the interventions will be adapted to self-guided activities in written format. The exercises will be presented, and the student/reader will fill in their answers by going through the interventions. The division of the protocol into primer-style frames follows the original proposal that divided the protocol into lessons.

In this protocol are some of the classic ACT exercises and metaphors. Parts of this material can compose workshops (such as the "Personal Values Questionnaire" adapted from the tables of Hayes, Strosahl, and Wilson (1999, pp. 226–227),

Table 1 ACT-based interventions/workshop incorporated into undergraduate curriculum

Therapeutic strategies	Description of the strategy	Therapeutic objective
Clarification exercise of values, actions, and obstacles	Identify values and put them into practice through actions at the time of the workshop. Observe the obstacles that arise when acting in alignment with values	Identifying what is important to the student and how to act on the value and noting the barriers to doing so
Autopilot	Fill out a table reporting the moments that stay on autopilot and what are the behavioral trends that appear	Observation of behavioral trends
Mindful eating exercise	Conscious eating or mindful eating is a practice of eating with full attention. Through meditation observe sensory and interoceptive stimulations	Attention to the present moment
Mindful body exercise: body scan	Mindfulness exercise observing sensations from various regions of the body	Attention to the events internal/sensitive events
Graduation speech exercise	Student graduation imagination exercise, in which the person reports what they would like friends, family, and teachers to say about them and their achievements	Clarification of values
Metaphor holding suffering	Considering the obstacles to act in the direction of value, the student represents with a posture how he has been dealing with his suffering. Through the representation of the posture, it is discussed how the student has been dealing with his suffering and how he can be more open to feelings and thoughts	Acceptance of suffering
Metaphor of the ball of wool	After everyone talks about how they deal with suffering in the previous metaphor, a ball of wool is passed from person to person to create a connected network, symbolizing shared humanity. Discussion about how everyone experiences difficulties	Humanization of suffering, compassion, and formation of a support network
Exercising action committed to values	Students write and commit to a goal aligned to a chosen value	Commitment to actions guided by values

Adapted from Mullen et al. (2021)

Table 2 KORSA team program

Workshops	Description of the strategy	Therapeutic objective
1. Exercising values and actions with commitment	Identification of values in various domains of life (e.g., school, family, etc.) and their translation into concrete goals and actions Homework: practice actions aligned to the values during the week	Clarification of values and encouragement of actions in their directions
2. Creative hopelessness, acceptance, and defusion	Observation of reactions to difficult thoughts, feelings, and sensations. Identify if they are strategies of control or avoidance of these experiences. Analyze whether these strategies work in the long term and their effects on life. After the discussion is presented the alternative option: accepting the internal experiences. Through experiential exercises and metaphors, promote defusing difficult thoughts like "I'm a loser" or "I'll never be able to complete my bachelor's degree," and encourage staying focused on your values, even in the presence of these thoughts	Observation of the cost of private event avoidance strategies Defusion of thoughts and engagement in actions toward values
3. Mindfulness training and self as context	Different mindfulness practice trainings	Training to direct attention to the present moment and internal experiences. Perception of self as distinct from internal experiences, as a continuous and secure self that observes events
4. Overview	Review the skills trained in the other workshops and explore application in daily life	Synthesizing learning and the generalization for the life of the learner

Adapted from Grégorie et al. (2018)

proposed in the KORSA team workshop (2018) and also exemplify how it can be conducted in individual therapy.

Another use of the protocol activities is the inclusion of motivational activities in the school curriculum by teachers. When the teacher applies any activity described here, it is not a treatment, but a reflection aimed at motivating the student's engagement.

Chart 1: Introduction to the "Living Your Values" Program

Welcome to the "Living Your Values" Program!

This program aims to help you live the life you want by connecting with your values.

Values is meant *what is most important and meaningful to* you and how you want to live your life.

Why are values important? They guide our decisions, motivate us to make changes, engage us in our daily lives, and help us deal with life's stresses and challenges.

In this program you will:

- Visit the main concepts for living a life guided by values.
- Apply these concepts in your life through exercises.
- Learn specific skills that help you engage in a values-driven life.
- Set goals guided by your values.

Adapted from Firestone et al. (2019, p. 34)

Chart 2: Education About the Concepts for Living a Life Guided by Your Values

Differences Between *Values*, *Goals*, and *Feelings*

- Values are directions. It's like going east, you can constantly go in that direction, but there is no such thing as "arriving in the east." For example, the value of being free, one can be free for many years and not wake up one day and be "done being free."
- Goals are achievable. They are ways of realizing the values. For example, a goal in the direction of being free might be to set aside an hour each day to do whatever you feel like doing at the time.
- Feelings are transitory. Feelings are the fruit of what we live and change according to the situations we are in. Values are more constant. What is important to someone usually lasts through good or bad times. Even if in some days the person is happy, in others sad, or angry, being free is still important, and having your time of freedom will be welcome regardless of feelings.

Ana's Story

"Ana had a very important and cherished value which was connecting with people. However, sometimes Ana's life seemed meaningless, tedious. This is because Ana did not always go in the direction of connecting with people. Because connecting is something important to her, Ana was nervous to speak her opinions, she was afraid of hurting, contradictory. She was anxious with her class from school, because she didn't know if they would accept her if she said what she really thought. Even in her studies, she had difficulty in the tests, because she would be evaluated by the teacher. Although Ana's value

was connection, because this was very important, she had feelings that opposed to the value, such as shame, anxiety, and fear. When Ana didn't want to feel this, it was easy, she would be quiet, stay in her room, on her computer, do the test quickly, and go back in silence back to her seat, talking as little as possible. But this only took her away from what was really important to her, the connection with other people. So Ana set goals, she would talk to at least Marta who sat next to her at school. So she started. It wasn't easy, she was anxious, but she was really scared and she talked to Marta. And so her story began to change. Make no mistake, there was much more fear, but there was also a laugh, an exchange of opinions between Ana and Marta. Ana got to know Marta, who was funny, and sometimes thought like her, sometimes not. Little by little the school class grew and it wasn't just Marta anymore. The teacher and her grade no longer mattered as much as putting on the test what she knew. And that initial step grew into a much more interesting and richer journey."

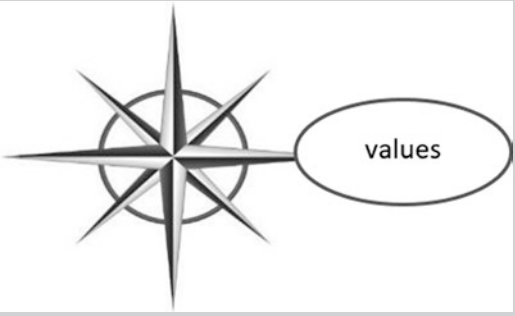
Story based on a clinical case. Names and situations have been changed to preserve anonymity.

Adapted from Firestone et al. (2019)

Chart 3: How Can Values Guide You to Meaningful Life Directions? Compass Metaphor

One way to check if what you've been doing is in the direction of your values is to imagine two compasses – one pointing to your values and the other is about your actions.

Answer the boxes below:



Considering your answers, mark on the second compass where your actions are taking you, whether it is eastward in the direction of values or in another direction.

When both compasses, of values and your actions, are pointing in the same direction, you are on the right path!

Adapted from Firestone et al. (2019)

Airplane Exercise

Imagine you are an airline pilot heading toward your values. But inside your plane, you have all kinds of passengers, some polite, some quarrelsome, and some very scary. Think of something that is important to you, but that is hard to reach or accomplish. Write it down below:

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Why is this important to you?

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Reread your answers and write one or two words that mean this value of yours in box 1 in Fig. 1.

As you think about acting in this direction, doing what is important to you, what happens inside you that makes it difficult? What thoughts arise? What feelings? What difficult feelings, memories, and tendencies come up for you?

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In Fig. 1, name passengers based on their response about difficult thoughts, feelings, sensations, memories, and tendencies. For example, "fear," "I won't make it," "how angry," "you're worthless," etc.

When these inconvenient passengers show up, they tend to take away the pilot's concentration. Sometimes, we have to stop and land the plane so we can fight with these passengers. We try to get them off the plane, hide them, or take them to the back of the plane so they can't get near us. But they come back and insist on staying on top of you. So you make a deal with them, they will sit still, as if they were not there, but you have to go in the direction they ask you to go, which is not the direction you have chosen.

And for a while, you obey the passengers. They are so calm that it seems as if they have disappeared. But in the next window, you see your destination getting further and further away. You feel lost, because you're not really going anywhere, just reacting to get rid of what you don't want to look at.

Then the control unit sends a message: Pilot, where are you going? You are the pilot! You fly the plane, not the passengers! The invitation is for you to resume steering wheel and go to the direction you have chosen. At first the passengers will scream again, but that's all they know how to do. Sometimes they may seem like they will hurt you, but they are only threats. The real damage they can do in your life is to keep you from your destination.

Adapted from video by Mindifriend (2012)

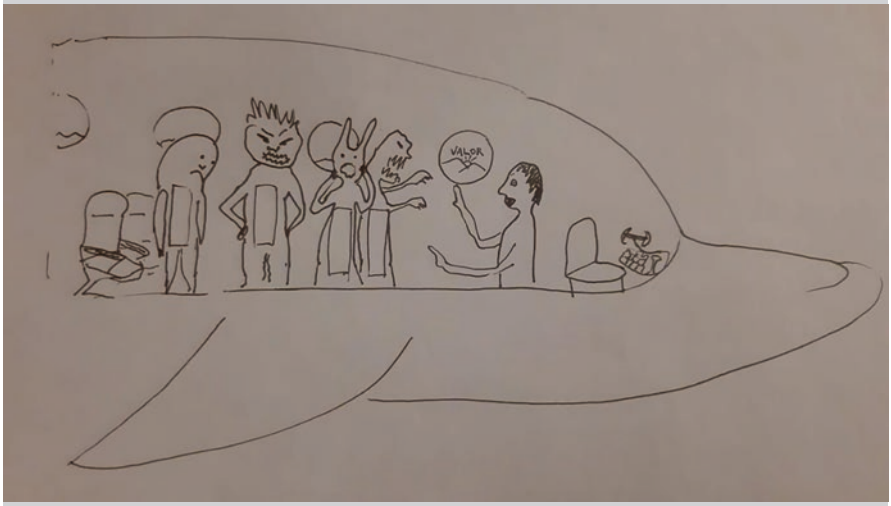

Fig. 1 Passengers on the plane. (Illustration by the author)

Learning to listen to passengers and stay on course to your destination!

Values also play a very important role in overcoming barriers and challenges.

The purpose is to listen to what these difficult thoughts and feelings have to say and gently turn your attention to their value.

Here is an *exercise of imagination* to practice listening to what is going on inside you, without having to react or do anything to get rid of these discomforts. Just notice the discomfort, and turn your attention to the value.

Sit in a comfortable position, and lead your imagination naturally as you read this text. Notice how you are now, how your body feels. Stop reading for a few moments to simply notice how you are now.

Now let's go to the imagination exercise. Recall a recent difficult situation. See what naturally comes.

Turn around 360° and see where you are. Look at the situation with your eyes from when you lived through the situation. See what you saw in the situation, hear what you heard, and remember what happened.

See what thoughts come. Go noticing the sequence of thoughts that come up now.

Notice your feelings. What feelings are present? Name them (anxiety, sadness, fear, anger, etc.). And notice how they appear in your body. What sensations are present? What space do these sensations occupy? What does the strongest sensation look like? If it had a color, what color would it be? What texture would it have? Notice the movement of this sensation, and how it naturally transforms, effortlessly.

Consider why this memory is important to you. Why is this situation important to you?

Slowly go back to observing your body as a whole. Notice changes in your body from the beginning of the exercise until now. And then turn your attention back to this text.

Suffering and values are two sides of a coin. We hurt because we care, that is our human condition. But every emotion comes and goes, like a wave, and we can move on in our own direction.

Adaptation of an excerpt from the exercise "Monster of Tin" by Hayes and Smith (2005, pp. 141–148)

Chart 4: Clarifying Our Values
Complete the questionnaire to identify your personal values.

Personal Values Questionnaire

Areas of life	Value (how do you want to act/ be in this area?)	Importance (how important is the area to you?)	Success (how successful have you been in moving in this direction?)	Consistency (how consistently you have been acting in accordance with this value)	Note
Friends/ romantic relationship					
Family relationships					
Studies/work					
Leisure and community					
Health/ wellness and spirituality					
Others					

Adaptation of tables from Hayes, Strosahl, and Wilson (1999, pp. 226–227)

Another way to clarify your values is to describe the actions of people you admire.

Writing: Someone You Admire

Consider someone you admire and write down their qualities.

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Adapted from Firestone et al. (2019)

Composing Your Values

Here is a *list of values* that people usually consider important. Write in the box after the list of values, the ones that are most important to you. The aim is to review some examples of values and begin to consider which ones are most significant to you.

- Acceptance: accept the things that happen. Accept what is happening inside my skin. Accept myself, others, life, without resistance.
- Adventure: being adventurous.
- Assertiveness: to be assertive. Request what I want.
- Authenticity: to be authentic. To be genuine, to be real, to be true to myself.
- Beauty: create, cultivate, appreciate, and nurture beauty in myself, others, and the environment.
- Challenge: to challenge myself, to move toward learning, development, and growth.
- Compassion: being caring and thoughtful about one's own suffering and the suffering of others.
- Connection: being deeply in touch with what you are doing and in personal relationships.
- Contribution: to contribute, help.
- Compliance: being respectful and obedient to rules and duties.
- Courage: to be brave, to persist even in the face of fear or difficulties.
- Creativity: be creative and innovative.
- Curiosity: to be curious, open-minded, interested, wanting to explore, discover.
- Encouragement: to be encouraging, to motivate myself and others.
- Equality: treating everyone equally, without prejudice.
- Excitement: engage in exciting and stimulating activities.
- Justice: to be fair, with myself and with others.
- Body care: improving or maintaining my physical form, my body. Taking care of my physique, my body so that it stays healthy.
- Flexibility: to be adaptable. Be flexible depending on situations.
- Freedom: to be free, to choose how you want to act and live. Help others in this search.
- Friendship: to be a friend, to be a companion.
- Forgiveness: forgive yourself for your mistakes and the mistakes of others.
- Fun: to be fun, to look for situations of fun and relaxation.
- Generosity: to be generous, to give and receive for myself and others.
- Gratitude: to be grateful. Appreciate the things you already have and be grateful for them.
- Honesty: to be honest, trustworthy, sincere with myself and others.
- Humor: look for and appreciate humor in life situations.
- Humility: be humble, let my achievements speak for themselves.
- Dedication: to be dedicated, to work hard.
- Independence: to be independent, to support myself. To choose my own way of doing things. Not depending on others.
- Intimacy: being open, surrendering, revealing myself emotionally and physically to the people in my relationships.
- Love: be kind and affectionate to myself and people.

- Mindfulness: being aware of the here and now, not being lost in thoughts or distracted.
- Order: be organized.
- Empathy: giving up some points of view, seeing things from other perspectives, putting yourself in the other person's shoes.
- Patience: be patient with myself and with others. Know how to wait.
- Pleasure: to create pleasure, to give pleasure to oneself and to others.
- Influence: to be influential, to lead, to inspire.
- Reciprocity: creating relationships where there is a balance between giving and receiving.
- Respect: be respectful to myself and others.
- Responsibility: to be responsible to do what was agreed upon.
- Romanticism: to be romantic, to devote and show love or great affection.
- Safety: protect, create a safe environment for myself and others.
- Self-awareness: being aware of your own thoughts, emotions, and actions.
- Self-care: taking care of yourself, your physical, emotional health, and my basic needs.
- Self-control: to be self-controlled, to know how to say no to desires.
- Sensuality: create, explore, and develop experiences based on the five senses.
- Sexuality: exploring and expressing my sexuality.
- Spirituality: connecting and cultivating the aspects *greater* than self.
- Loyalty: being loyal, trustworthy, being able to be someone others can trust.

Values most important to you

Observe whether the values you have selected form a set, revolve around a theme, a direction.

Adapted from Harris (2011)

Chart 5: Connecting Values with Actions and Goals

Choose one personally important value to explore in more depth based on the answers given in the previous exercises (Personal Values Questionnaire, writing: someone you admire and values list). Write about *how this value is especially meaningful to you* and how it applies in your daily life and occasions when this value can guide your actions.

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Exercise of the Long Journey

Imagine you are going on a very long trip, from which you will return after a few years. Your friends and family have a farewell party and decide to record a video talking about you, what you are like, and your values. The goal is to consider what you would like them to say about you. Select three people significant to you; it could be family, friends, teachers, etc. Imagine yourself watching this video, and write down what these three people would say about you and your actions.

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When we identify actions guided by values, it is not only about what to do specifically but also how to do it. The values manifested in actions are the qualities of the actions. For example, the value of being a gift to a friend is not just about being with someone in conversation but the attention and care that you will be giving to that person.

Setting Goals Toward Values

Goals are ways of realizing values. Imagine you are moving toward your value like on a road; the goals are the towns you travel through as you move toward this direction. Write (in Fig. 2) on top of the direction sign a value that is important to you. Then on the town signs, write goals in the direction of this

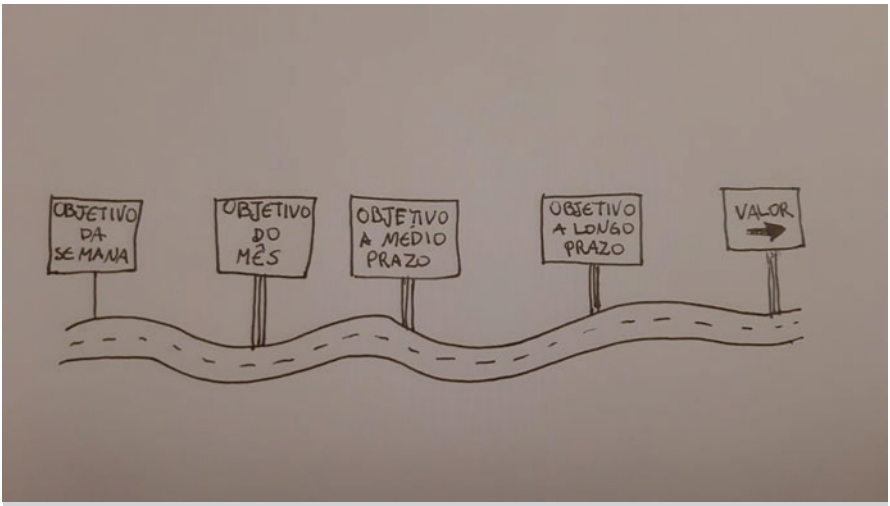

Fig. 2 Road of values. (Illustration by the author)

value. Some larger cities are further away, and others closer together, as goals that can be achieved this year or in the next few weeks. For example, the value dedication, you can have bigger goals like passing the vestibular to closer goals like studying three times a week to doing this exercise now.

Adapted from Firestone et al. (2019)

Chart 6: Setting Goals Based on Your Values

Select a value that is important to you based on your responses from the previous exercises and set *goals for the next 4 weeks*. Fill in the chart to define the value, objectives, specific actions, and possible barriers. Here are some examples:

Value	Goals for the next 4 weeks	Specific actions	Possible barriers	
			Internal	External
Connect with people	Go out or call my friends at least once a week	Call Bia, ask how she is, and listen carefully Go out with Marco on Friday to eat, spend time with him	Worrying about other things and letting go To think that I might be bothering you Fear of the person not wanting to spend time with me	Other commitments
Be dedicated	Study three times a week after school	Study this week Portuguese, mathematics, and history	Laziness Fatigue Thoughts that I've done too much today	Friends calling me out

Your chart:

Value	Goals for the next 4 weeks	Specific actions	Possible barriers	
			Internal	External

To deal with the barriers, do the airplane exercise and the imagination exercise of learning to listen to the passengers and staying toward your destination. Remember that just listen to the thoughts and feel the emotions and they will come and go, without you having to do anything about it. If value is really important to you, fears, difficult thoughts, and challenging emotions will show up because it is something you care about. The emotions are a sign that you are moving in the direction of your values. What you wrote in the internal barrier part will be the thoughts and feelings that will appear in important situations and mark a sign that it's time to put your values-driven actions into practice! Good luck and listen to your heart.

Adapted from Firestone et al. (2019)

Chart 7: Monitoring Progress

To track your progress in acting on your values, here is a journal template to record your achievements.

Value Journal

My most important values are:

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To realize myself in relation to these values, I will (write down goals for the next 4 weeks):

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Days	Specific actions aligned with the values	Did I? Answer "yes" or "no" to the actions you set out to do	How did I feel? Answer whether or not you have done the action

Adapted from Firestone et al. (2019)

Chart 8: Returning To

The "Living Your Values" program focused on *values*, that is, *what is most important and meaningful to* you and how you want to live your life.

In this program you learned how to:

- Check whether your actions are aligned with your values using the compass metaphor.
- Identify barriers and challenges to moving toward the life you have chosen by naming the passengers in the airplane exercise.
- Overcome barriers and challenges with the exercise by learning to listen to passengers and stay on track toward your destination.
- Identify important areas of life, the values related to them, and the success you have had in acting in these directions.
- Observe the characteristics of actions that are important to you in writing about the person you admire.
- Clarify the values that are most important to you with the values list and the long journey exercise.
- Establish long-, medium-, and short-term objectives in the direction of the values with the metaphor of the road and the cities.
- Set goals and actions for the next 4 weeks to live by your values using the values, goals, actions, and barrier chart.
- Track your stock progress toward values with the value journal.
- Adapted from Firestone et al. (2019)

Having some object or *wall of values* in your home is very useful for constantly reminding yourself of your values. It can be a song, a necklace or something you can take with you, a poem on the fridge, or collage of images or photos. The more you are in touch with your values, the richer and more meaningful your life will be. Choose how you want to act. Every moment is an opportunity to live how you truly want to live.

Adapted from Hayes and Smith (2005)

Conclusion

The purpose of ACT is to enrich life and to unfold one's individual meaning and values. This involves being open to difficult emotions and thoughts, among many challenges. Psychological flexibility constitutes this capacity to actively choose and intentionally act consistently with one's individually chosen values while opening up to the experiences of the inner world.

In our society, suffering is repudiated, while happiness is a trophy to be achieved. But happiness is not an end. How is each one happy? Doing what? Being what? What dreams do you have? What is deeply important? The answers to these questions merge with emotions, thoughts, and memories that will bring life's challenges. When the journey is smooth, it is easy to be the best version of ourselves. However, when we have barriers, fears, and difficulties, these same feelings and thoughts so difficult will mark the moment to act toward its value. We present here some techniques and practices to identify values and apply them in daily life, but the exact time to execute the actions guided by values will be the moment of pain and of suffering. Suffering has exactly this function, to warn us that an important situation is ahead. And we have two options: repeat some old habit and act.

Workshop descriptive material and the self-guided intervention were presented to encourage and foster these skills that make up psychological flexibility. The use of this approach in education collaborates with a cognitive and emotional development useful for the prevention and coping with psychological problems but mainly for the promotion quality of life.

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Compassion-Focused Therapy Intervention for *Vestibular* Exam for Students from Private High School in the City of São Paulo

Lina Sue Matsumoto Videira and Francisco Lotufo Neto

Introduction

People who want to enter a Brazilian university need to pass a very specific assessment test, in a very peculiar model called *vestibular*. There are a variety of entrance exams for admission to universities; however, when it comes only to public and free universities (federal or state), the level of difficulty of the exam is higher, and competition is much fiercer. Another form of access to Brazilian universities is through the National Secondary Education Examination (ENEM) initially aimed at evaluating the academic performance of students when they finish basic education, but it has improved and started to be used as a mechanism for accessing higher education, and since 2020, it can be carried out in print or digital mode. ENEM grades give access to the Unified Selection System (SiSU) and the University for All Program (PROUNI), to enter courses at federal or state institutions and to obtain scholarships of up to 100% in private institutions. The paradox of this Brazilian model is that the candidates who manage to pass this entrance exam and enter public universities are precisely the best prepared candidates and who, for the most part, attended private schools throughout their student life represent a better class privileged status of society (https://www.gov.br/inep/pt-br, downloaded in august, 10th, 2021).

The University of São Paulo which was created in 1934, known as USP, is a state public university, maintained by the State of São Paulo, Brazil. Due to its scientific productivity and pursuit of excellence, USP is part of a select group of world-class institutions. It has more than 58,000 undergraduate students, in 184 courses and distributed in 42 teaching and research units, and more than 30,000 enrolled in postgraduate studies, in 239 programs in various areas of knowledge, and currently, USP is responsible for more than 20% of the Brazilian scientific production, with students developing their activities in several campuses, distributed in the state. The

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admission to graduation at USP is through its own entrance exam, carried out by the University Foundation for the University Entrance Exam (FUVEST) and by the Unified Selection System (SiSU). When registering for the FUVEST 2022, the candidate will opt for one of the three types of admission. The first modality is the broad competition (AC – *ampla concorrência*), which are places available to all candidates, without any other requisites being asked. The second modality is the public school graduates (EP – *escola pública*), which are vacancies intended only for candidates who have completed high school in Brazilian public schools, regardless of income. The third modality is the black, brown, and indigenous students (PPI – *pretos*, *pardos*, *e indígenas*), which are vacancies intended only for self-declared black, brown, and indigenous candidates and who, regardless of income, have completed high school in Brazilian public schools. The candidate will compete only with candidates who have opted for the same competition modality in this year (https://www.fuvest.br/, downloaded in August 10th, 2021).

An incongruity of the Brazilian educational system is the fact that while well-regarded institutions at the primary and secondary levels are in the private sector, at the university level, it is public institutions that are seen as superior. Consequently, admission to public universities is a rigorous, competitive process. Poor students who cannot afford a private high school education perform worse in the *vestibular* than students from private schools. The inequitable distribution of access to higher education at USP, considered the largest and most prestigious Brazilian university, provides the reality of social and racial discrimination in the university admission process and captures the likelihood of being admitted to USP. University access in Brazil is a competitive process. Public universities are not only free but are also the most prestigious universities in the country. Different from other countries that use multiple criteria for admission, Brazil until very recently only used an objective grading exam *vestibular*, which has the following general features. Students must choose a single undergraduate major before taking the test and will compete against others who made the same choice.

The exam comprises of many sub-exams, each one evaluating knowledge in a specific subject, for example, mathematics, physics, chemistry, biology, Portuguese, history, geography, and a foreign language. In general, the *vestibular* consists of two stages. The first stage is common to all majors, and the second stage is more specific to each major. The different departments within the university that provides the undergraduate major courses can weigh the sub-exams differently in order to reflect their priorities. All candidates must pay a fee before taking the *vestibular*, which varies depending on the university. Some universities waive this fee for students based on financial needs. Once they take the exam, the various departments rank all their applicants by grade and reject those exceeding the number of seats for each major. Generally, students can have up to three choices of major. If they do not achieve specific grades, they are not accepted into their primary choice, they can be considered for their other secondary choices, if choices if the *vestibular* grade makes the cut for those majors.

The *vestibular* is not equally fair to all students. The Brazilian higher education system is an important channel for the persistence of inequality and that going to a

private high school versus a public high school matters tremendously when taking the exam. This creates a cruel paradox because given the highly competitive nature of this exam, it is hard to enter a public university and receive a free college education without having previously received a private high school education. The odds of a non-white attending school are smaller than that of white children, and when they do, they attend public schools, which are not as good as the private ones. As a result, they are less likely to pass the *vestibular* and attend public university. In addition, wealthier students can afford preparatory courses that are specifically designed to prepare them to take the exam. These prep courses, *curso pré-vestibular*, or just *cursinho*, can be very expensive, but having access to study in *cursinho*, it greatly increases the chances of passing the *vestibular*. Most importantly, attending private school and *cursinho* significantly increases students' likelihood of being admitted. This suggests that high-income students, due to their economic status, will experience a better quality of education, will score higher on the ENEM or *vestibular* exam, and will greatly increase their odds of being admitted at USP or at other public universities.

USP is the best university of Latin America; thus the characteristics of students admitted at this university might differ greatly from the ones admitted at other public universities in Brazil. The public educational system in Brazil is of poor quality and does not meet the rigorous requirements for admission in public institutions of higher education. Attending public school reduces the odds of being accepted in the most competitive degree of medicine at USP by an average of 88%. In the case of USP, in November of 2012, about 159,000 people registered for the *vestibular*, and only 10,982 students were selected at the USP (Valente, 2016).

In the first phase of the FUVEST 2019 exam, the most popular course in the country was, once again, medicine at USP. In all, there were 127,786 applicants competing for 8362 vacancies, in a list of 115.2 candidates per vacancy. Professor Renato Freire, director of FUVEST, gives a very important tip at this moment of great anxiety: "My advice is to focus more on emotional preparation than on academic. Now, it is time for the candidate to switch off a little, seek emotional balance, seek physical rest. The student must arrive physically and emotionally well" (Jornal da USP, 2018).

Adolescence is a very troubled phase, as the focus on studying for examinations to get into the university, the amount to study and the need to perform well and get into the chosen course were found to be the most important sources of stress for senior high school students. The *vestibular* is a very competitive examination which determines university placement, and often this exam's period is associated with high levels of stress in the candidates.

One study assessed senior high school students' mood changes during their preparation for this very important academic examination, the Brazilian *vestibular*. Students from senior high school, preparing for the vestibular, were invited to be participants in this study, in meetings at their school, in the presence of one of their teachers, and in a private high school in the city of São Paulo. A total of 222 students participated, and they answered the self-reported positive and negative affect schedule about their mood states, "during the last week," and to quantify the time they

spent studying, they answered the question "how many hours did you spend studying last week (including classes)?". The scales provided mood measurement in two levels: one level is a higher order consisting of two dimensions of the mood descriptor, the negative affect (includes non-specific symptoms experienced by both anxious and depressed individuals) and the positive affect (includes a depression cluster of symptoms that reflects anhedonia and the absence of positive emotional experiences); and the other is a lower level, consisting of 11 distinguishable affective states that reflect their specific contents of negative affective state (*fear*, *hostility*, *guilt,* and *sadness*), positive affective state (*joviality*, *self-assurance*, and *attentiveness*), and other affective states (*shyness*, *fatigue*, *serenity*, and *surprise*) that were considered neither positive nor negative. The students answered the scales three times: in March (start of the academic year), in August, and in late October (15 days before the vestibular), always at the beginning of routine classes, and they also quantified the time they spent studying (including their routine classes) in the week before each assessment (Peluso et al., 2010).

This longitudinal mood assessment performed during the year of preparation for the Brazilian university admission examination showed increasing mood disturbance in both male and female students. Both genders showed increasing scores, as the examination approached, on most of the negative scales, including negative affect, and no variation in positive affect and almost all the other positive scales. In conclusion, they found unexpected anxiety-related differences between male and female senior high school students, but the bases for these differences are not clear.

The study considered that mood changes were associated with the proximity of the *vestibular*, and these results indicate that these mood changes were characterized by fluctuation in negative affect but not positive affect. Among the lower-level negative scales, *fear* and *hostility* showed this pattern of results for females (*guilt* and *sadness* showed no variation), and all but *guilt* (which showed no variation, either) showed it for males. All these negative scale fluctuations were characterized by scores which increased as time went on. None of the positive scales showed a significant moment effect for the three points, or significant moment effect between points one and three, for female students.

For males, only *joviality* (which decreased as time went on) showed these results; nevertheless, the effect of moment explained only a small proportion of variance. Among the "other affective states" scales, *fatigue* significantly increased over time, and *shyness* showed no significant variation, for either gender. There was an increase in *surprise*, and *serenity* decreased over time for male students but showed no variation for females. This study has some limitations, as it had no control group, and the lack of a control group limits the strength of the study's findings. Self-report measures imply subjective data that can be distorted. The students assessed in this study are not representative of the whole Brazilian senior high school population. They are better prepared and, possibly, more confident that they will succeed in the *vestibular* than most Brazilian students, indicating that even well-prepared candidates present mood disturbances when exposed to the stress of important and demanding examinations. The conclusions of this study were the following: (1) mood changes are associated with the proximity of the examination, (2) these mood changes are

detectable months before the examination, (3) the mood changes are more intense among female students, (4) these mood changes are characterized by increased negative affect and no variation in positive affect, and (5) the mood changes associated with the proximity of the *vestibular* are also associated with the length of time spent studying (Peluso et al., 2010).

Compassion-Focused Therapy (Gilbert, 2014)

According to psychologist Paul Gilbert, the development of compassion-focused therapy (CFT) grew out of the increasing recognition that (a) the human brain is a product of evolution and in terms of Darwinian selection for function and so can many mental health problems; (b) the human brain is particularly shaped and evolved in a social environment and exists with interrelationships, making meaning with others, making social contexts central to the understanding of good health and mental health problems; (c) the relationships we have with ourselves underpin a wide range of mental health problems, including forms of self-criticism and shame; (d) the human brain evolved specially in cognitive competencies that influence and are influenced by social motives and emotions, which can play a fundamental role in the triggers and/or maintenance of mental health problems; and (e) compassion training can help people with physiological, psychological, and therapeutic benefits, including those people with severe mental health difficulties. The motivational systems for interpersonal relating have specific functionality and social motives related to mental heal problems.

The social ranking and competitive society involve motives and competencies to engage others in conflict interactions for resources such as territory, food, social position, and social rank. These will include competencies for monitoring the relative strengths and individual competencies and the skills and intentions of others. Therefore, social comparison is a very old issue on domains of inferior-superior and in humans is linked to pride-shame, assertiveness, and self-criticism. Competitive motives that are successful are often linked to assertiveness, confidence, excitement, social winning, and success but when failing or losing are linked with dysphoria and anxiety. Defeat states are associated with depression-like states, and constructed social hierarchies and ranks have huge impacts on psychological and physical health and well-being. These mental health problems can arise in consequence of the way these rank-focused, motivational systems operate in certain contexts and that it is the context as much as the intrinsic motivation that can be problematic.

Social mentalities are rooted in innate motivational systems which, when activated, organize a range of psychological functions such as attention, emotion, cognition, and behavior in pursuit of that motive or goal. The function and forms of our attention, thinking, emotions, and behavior are organized when we are pursuing a challenge such as *vestibular*, and we are orientated toward competitive goals, and the organization of these social motivational systems can create major individual differences with implications for social behavior and vulnerability to mental health

problems. The key to a social mentality is that the self is constructed in one way and "the other" is constructed according to the social mentality being pursued. CFT focuses on contextual and relational processing systems and recognizes that at times these motivation systems may be operating outside conscious awareness. Our reactions to social events depend on the context and the social mentality from which we are sensing and relating to the social world of other minds.

Understanding the impact that our own social signals have in the minds of others is important for adaptative social relating. An increase in materialism, individualism, and competitiveness at the expense of interest and concern for others may be linked to social and psychological problems, especially in younger cohorts. Therefore, the way in which one chooses and identifies with social roles can be very important. For instance, if the role is a desired role, freely chosen, something one wants to become combined with the feeling that one has the ability or competence to perform in the role, then this will have a different impact on behavior, emotion, and cognition than if one feels forced to (or ought) adopt a role for which one feels ill-prepared. Emotions are of course more than individual experiences because they also function as social communications, conveying information about one's values, social intentions, and orientation toward others in terms of safeness, threat, and needs. So, emotions influence not only the behavior of the experiencer but also those who perceive or are recipients of emotions. Thus, emotions are part of the dance of social communication that provides the basis for the co-regulation of each other.

CFT takes an evolutionary functional view to emotion – especially the affiliative emotions and their competencies. CFT focuses on three main evolved functions of emotions: (1) alert to threats and activate defensive strategies, (2) provide information on the availability of resources and rewards and activate seeking-engagement strategies, and (3) provide information on safeness, allow for rest and digest and relative non-action in the form of contentment and openness. The utility of these three emotion systems to understand the way they regulate each other and the functions of our emotions in an evolutionary approach is central in CFT.

The Efficacy of Compassion-Focused Therapy (Videira, 2018)

To evaluate the efficacy of group using CFT in patients with post-traumatic stress disorder (PTSD), we conduct a randomized controlled trial, blind study, with two arms, control group with supportive therapy (SUP-G), and experimental group with compassion therapy (CFT-G). That study was part of the first author master's degree in science at Psychiatric Institute at the Faculty of Medicine USP, with the orientation of the second author. After all the ethical procedures, patients answered self-evaluation scales in three different times, before group therapy (Time 1), after group therapy (Time 2), and at 3-month follow-up (Time 3). Eighty-seven patients were randomized and received eight weekly 90-minute sessions, and 61 completers were analyzed (SUP-G = 30 and CFT-G = 31).

The control group (SUP-G) consisted of eight weekly sessions and had no specific intervention at all, as the main procedure was to support the patients' interactions, managing anxiety to promote a good communication and give them voice during sessions, except for the activities scheduled for the first and last sessions, which were the same as the experimental group.

The experimental group (CFT-G) consisted of eight sessions also but was structured and focused on the training of compassion skills. The protocol developed was based on Paul Gilbert's theory CFT, trying to demonstrate the interrelation between compassion, shame, and self-criticism, either in the evaluation of the traumatic event or as a powerful trigger for the onset of PTSD symptoms; then instead of treating anxiety and fear, we choose to make interventions for compassion development. For this protocol we design a colorful material to help with psychoeducation about the basis of CFT theory and the core elements for emotion regulation (Fig. 1) and for compassion training (Fig. 2).

The threat-system (*red system*) is oriented to threat-focused protection and safety seeking, that is, activating or inhibiting and choosing the best behavior according to the situation, the fight-or-flight response. The *red system* provides abilities to detect/respond to threat rapidly and appropriately, associated with emotions of anger, anxiety, and disgust (called negative emotions). It is now recognized that this is our dominant emotional system and creates what is sometimes called the negativity bias, as we pay more attention to, process, and remember more easily negative than positive events, and there are evolutionary reasons for doing so. Threat emotions

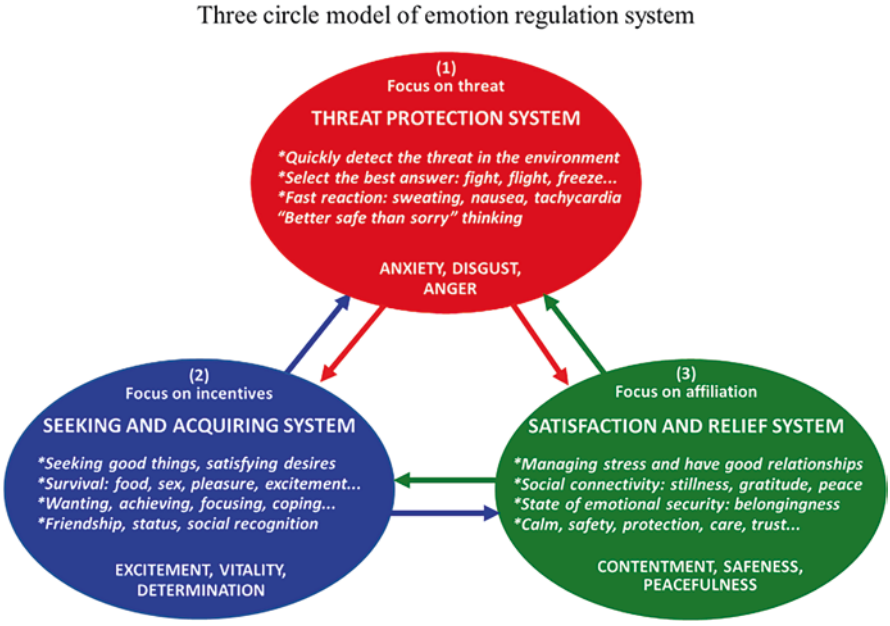

Fig. 1 Tree types of affect regulation system. Circle model of emotion regulation system

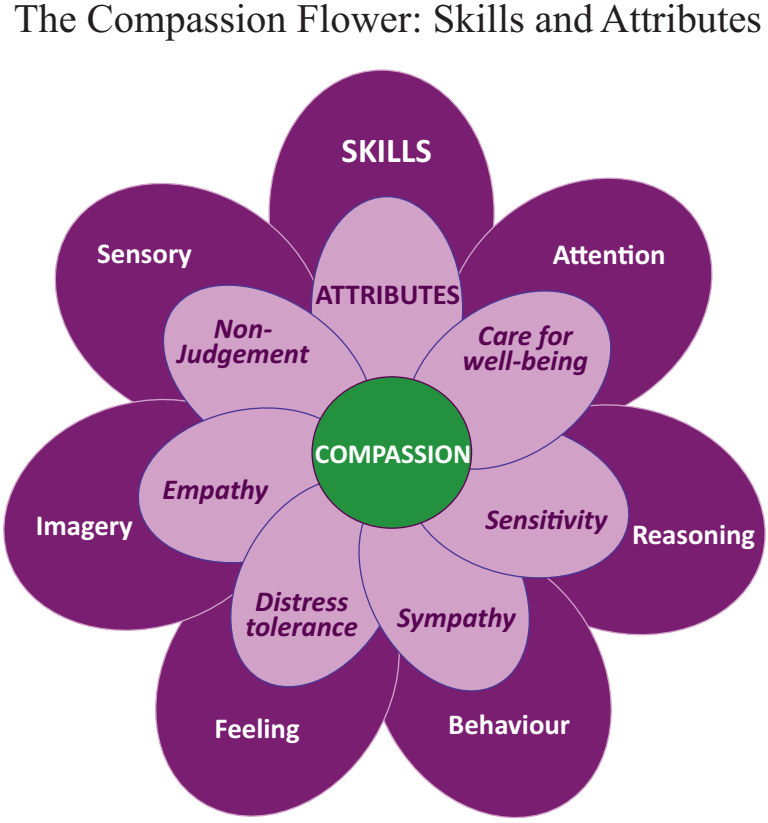

Fig. 2 The Compassion Flower: the two psychologies of compassion

can also arise when a motive is blocked, and people feel anticipatory anxiety when they are afraid and feel they may not succeed at something they are motivated to succeed at.

The drive system (*blue system*) is related to emotions that help us in seeking out good things, achieving and activating, giving us positive feelings, and energizing us for obtaining and enjoying new resources and success. This system is also involved in competitive drives, seeking dominance and social position. There is an increasing concern that capitalistic societies are overstimulating "seeking" and "wanting" "me focused" competitiveness and general sympathetic activation and possibly at the expense of affiliative and community ways of living. An excess on achievement and acquiring can increase vulnerability to certain states of depression, linked to problems in the *blue system*, especially when motives and goals get blocked or people feel defeated in being able to reach their goals, which create feelings of exhaustion, fatigue, and hopelessness – and the loss of drive.

The soothing system (*green system*) is related to resting and digesting, soothing, and safeness, to feelings of contentment and well-being, related to a very different

type of positive emotion that is more linked to serenity and peace. There is a bunch of emotions which are not based on activation (threat or doing and achieving) but on calming and soothing and feeling safe, peaceful, and content. So non-striving, accepting, and being in the moment can be associated with a sense of contented well-being that is different from the relaxation response, feeling more connected, less driven, less threatened, and more contented and at peace with themselves.

We used the main ideas from Paul Gilbert's theory that suggests that mental health problems can arise when these emotional systems get out of balance and can no longer regulate each other. For example, one can be too much in the *red system*, constantly feeling anxious/irritated and hypervigilant to problems or too much in the *blue system*, constantly feeling pressured to do or achieve goals, and often not feeling the sense of and feeling tired and lonesome. This could happen because the *green system* is not being used and needs special attention in order to activate the best qualities of us, to achieve affective-emotional balance, and to reduce anxiety and stress, promoting a warmth environment to practice the abilities and skills of compassion. To promote the connection and balance between these three systems, the *Compassion Flower* was designed to represent the interconnected engagement attributes and transformative skills of compassion training, as we hope that in a secure environment of warmth and love, the compassion will blossom.

The inner petals show the psychology for engaging with suffering and involve core elements that include six elements: (a) *caring for well-being* and motivated to notice, to turn into suffering, rather than turn away; (b) attention *sensitivity* to then look out for and be attentive to suffering; (c) *sympathy* to be emotionally connected, affected by suffering rather than dissociated from it; (d) *distress tolerance* and to learning to feel the emotions that are part of or associated with suffering; (e) *empathy* bridging to engage, hold, and tolerate suffering and take the perspective of somebody else or even the perspective of different parts of ourselves and our own feelings; and (f) *non-judgmental* approach to the whole process in dealing with suffering and compassion training.

The outer petals represent the necessary skills for alleviation and prevention of suffering that involve being able to (1) pay *attention* to what is helpful, demanding attention training and mindfulness, and refocusing to what is more important; (2) *reasoning* in a way that will be genuinely helpful, which involves perspective taking, re-attribution, and re-appraisal; (3) *behave* in ways that are helpful, doing daily helpful things for oneself or others, and engaging in appreciation or gratitude exercises; (4) enabling appropriate *feeling* such as affiliative connected ones, like kindness, or disrupted ones that are linked to emotions like anger or turning into anger at an injustice; (5) use *imagery* and meditation like practices to stimulate kinds of emotion; and (6) *sensory* work such as skin sensations, body posture, breathing practices, and different voice tones to affect emotion regulation and activate compassion.

The most important message in the *Compassion Flower* is to give the preparedness and willingness to discover, learn, train, and develop compassion; as only intention is not enough, we need the wisdom of compassion motivation to turn attributes and skills into action, as we did in these CFT groups as the results showed.

The statistical analysis showed robust results in both groups, with significant improvements in symptoms. In the control group, SUP-G, the results showed an increase of 21.08% in SCS self-compassion scale (0.5 points); a decrease of 42.71% in the total of CAPS-5 trauma scale (-24.4 points), 35.16% in DTS trauma scale (−31.8 points), 37.66% in BDI depression scale (−9.7 points), 28.57% in BAI anxiety scale (−7.34 points), 33.87% in BHS hopelessness scale (−3.5 points), and 24.33% in FSCS self-critical scale (−9.07 points); and also a decrease of 22.82% in OAS shame scale (−8.2 points). In the experimental group, CFT-G, we found significant improvements, with an increase of 22.26% in SCS self-compassion scale (0.52 points); a decrease of 54.10% in the total of CAPS-5 trauma scale (−29.77 points), 40.31% in DTS trauma scale (−33.93 points), 41.74% in BDI scale of depression (12.06 points), 32.48% in BAI anxiety scale (−8.22 points), 33.85% in BHS hopelessness scale (−3.54 points), and 20.16% in FSCS self-critical scale (−6.71 points); and also a decrease of 20.93% in OAS shame scale (−7.68 points).

The results presented so far demonstrated the efficacy of CFT-G as a promising treatment for patients with PTSD, as it appears to be safe, acceptable, and a promising intervention to promote emotional recovery. It is important to notice that self-compassion increased the same amount in both groups, even though the experimental group did have compassion training and control group didn't. We could infer that one doesn't need to explicitly teach it, as you can act compassionately. Moreover, it was based on a very simple low-cost protocol and therefore easy to use in the psychological and psychiatric clinic. Certainly, this innovative therapy, focused on the training of compassion skills, is a new treatment option for people who have experienced traumatic events.

Method and Interventions

The motivation for students to look for psychotherapy in the senior high school year (or before) is due to the rising pressure to have a good performance in the *vestibular* and the urgent necessity to manage stress and anxiety. Otherwise, the student will need to go to *cursinho* during the whole next year and try the *vestibular* again. Therefore, the pressure and the stress are rising more and more, as the years pass.

In our private clinical practice in the city of São Paulo, for example, it is not unusual that students trying to go to medicine course at USP must try the *vestibular* for several years and, therefore, study *cursinho* for 3 or 4 years consecutively. These students that continue to try the *vestibular*, pursuing their dream to study in the best universities, to be an engineer or a doctor, can have feelings of being left behind in live. For example, after some years of senior high, they are invited to graduation parties, weddings, or even baby shower parties from their colleagues, increasing the pressure and the stress of their decision. Therefore, it is also very important to address if the decision about the new profession, which depends on the choice of course and university, was a student's desired role, freely chosen, something he/she wants to become along with the feeling that he/she has the ability/skills/competence

to perform well in the role. These themes addressed in the psychotherapy process will make a great positive impact on behavior, emotion, and cognition, using student's inner motivation to perform well in the *vestibular*. Otherwise, if he/she feels forced to (or ought) adopt a role for which one feels ill-prepared, just to follow his/her parents' desired roles, this could represent an extra load of stress to a very complex moment in an adolescent life.

The reason to use compassion training instead of a more cognitive approach is well explained because these students from private schools are already well prepared academically, as they are studying for many years and have an expressive high-quality knowledge, and so we don't need to worry about the amount of academic preparation they already have. The main intervention we use is compassion training, as an antidote for anxiety pre-exam, using CFT theory to explain how to balance the emotional systems, in order to be fit physically and emotionally and well prepared for the challenge of the *vestibular*.

The most important intervention is to explain the rationale in the diagram shown in Fig. 1, explaining the three types of affect regulation system. The aim is to illustrate how one can regulate their own affective and emotional states and, doing so, be able to promote emotional health. The psychoeducation is about the three systems, trying to achieve personal autobiographical narratives, using the colors to guide this path to compassion motivation and training. We begin using the situation that brought the students in the search for help, talking about the challenge of the *vestibular*, and start the explanations about the *blue system*.

The *blue system* is all about the direction, drive, excitability, and vitality to give the student direction, determination, and impulse to search for desires (e.g., to be a doctor or engineer), pleasure (e.g., to accomplish a place in a good university, to have a good future in a professional career, and to give/return the family commitment in providing this academic journey), material goods (e.g., to achieve a good position and have financial rewards), and goods linked to self-esteem (e.g., to receive the social status of the profession and the high position in the social ranking between colleagues). Also, the *blue system* is where one can achieve good things, activate, and acquire new skills to get where one desires, but sometimes it could be exhaustive as one can run out of energy to proceed in that search for goods. That's when the students identify that it is almost impossible to stay only in the *blue system*, as they perceive they were gone into the red circle and started to feel threatening with anxiety.

The *red system* is related to give us protection, when we perceive any danger in the environment, and the function is to activate/inhibit behavioral reactions in the seeking for safety and protection. Related to emotions like anger, anxiety, disgust, and fear, the behaviors are related to fight/flight response, trying to escape from a situation, freezing in a situation, and simply being submissive in another situation.

Sometimes the threat is from the outside (family quarrel, bullying at school, teacher misunderstanding, and others), or it could be from inside our minds, with feelings and thoughts about insecurities, self-blame, self-respect, and self-worth. These insecurities are related to the performance in the *vestibular*, the fear of failure, and the shame and guilt; because of this failure, that could lead to the

hyper-activation of the *red system* and the disturbance and unbalance of the emotional and affective system. When this happens, the student can't solve it by her-/himself just because they didn't know how to regulate their own emotions, and they feel trapped between the *blue system* and *red system*, starting to feel exhausted, fatigued, and hopelessness. This is the chance that they are prone to try something new to feel more secure and confident that they're able to do well in the challenge of the *vestibular*. As most psychological therapies tend to work directly with feelings of fear and anxiety, addressing the *red system*, in order to try to change the negative emotions. Instead of the *read system*, we start doing compassion training, because we need to address and work with the *green system*, to activate the affiliative system trying to downregulate negative emotions because of the activation of feelings of compassion and belongingness. In this way, students are ready to understand the *green system*, how it works, and how it can help them.

The *green system* is the soothing system, where one can achieve security, satisfaction, and contentment and find feelings of peace, well-being, and quietness and the sensation that the emotional system is well-balanced, that is, the three-color system is in a good interaction and in harmony. This represents the presence of compassion in one's life, when the affiliative and belonging feelings make one feel the connectedness, and the focus of the *green system* is to bring feelings of compassion and peace of mind and to restore tranquility and confidence in oneself. It could seem a little bit strange at a first glance, especially with adolescent students, but the compassion motivation is a safe road to the success in life and not only in the *vestibular* exam.

To realize the interventions to balance the emotional and affective system, with compassion practice, we use the skills and attributes, as exposed in the *Compassion Flower*, to show the students the possibilities to practice compassion using specific skills and attributes, as shown in each petal of the flower.

We start explaining the *Compassion Flower*'s inner petals: the psychology for engaging with suffering that includes *caring for well-being* and not turning away in front of someone who is suffering (e.g., when facing this special situation, the *vestibular* challenge), having *sensitivity* and attention (e.g., the capacity to then look out for others that are also suffering with this situation, create the possibility to express emotions, and create a dialogue with family and friends), showing *sympathy* and be emotionally connected (e.g., be attuned to the feelings of others around, family, and colleagues, ask for help, share acts of kindness, and show compassion), learning *distress tolerance* and learning to feel the emotions that are part of suffering (e.g., remembering good moments during the previous scholar years, all the achievements, and the compassion motivation necessary in this moment of life), training *empathy* to engage and tolerate suffering (e.g., taking the perspective of family and friends or even part of inner self that miss the time of leisure or moments of the day with your company), and trying to have a *non-judgmental* approach to the whole process in dealing with suffering (e.g., understanding that this moment in life brings the challenge of the adult life, facing the *vestibular* and the new career chosen, trying to stay with compassion motivation, and not hyper-self-critical).

Using the *Compassion Flower*'s outer petals, we start to train the necessary skills in the road of compassion development and cultivation. Compassion training involves paying *attention* to what is helpful and refocusing to what is more important (e.g., the main focus is to be approved in the *vestibular*, but this journey is a long one, with months of preparation, and is necessary to save time to sleep well, to have a good meal, to exercise, to spend quality leisure time with family and friends, to be physically and emotionally fit for the exams), *reasoning* in a way that will be genuinely helpful (e.g., to have perspective taking to see the whole academic journey to reach this moment, to be able to make re-attributions or re-appraisal about one's value, and to try not to be trapped in an all-or-nothing thinking), trying to *behave* in ways that are really helpful and doing daily helpful things (e.g., doing good small things in a daily routine, having minutes in the morning for a good coffee with family members, engaging in appreciation for 1 min between classes, and writing gratitude exercises before bedtime), enabling appropriate *feeling* such as affiliative connected ones (e.g., being gentle with colleagues and family members, practicing kindness and compassionate attitude), use *imagery* exercises and meditation like practices (e.g., asking family and friends to stay quiet for a minute, searching eye-to-eye contact, trying to stimulate compassionate kinds of emotion), and the use of *sensory* and body work (e.g., trying to have a moment during the day to have a conscience shower, paying attention to skin sensations, paying attention to body posture during the studying hour, practicing breathing exercises before bedtime and/or between hours of study, training different voice tones with oneself/others to affect emotion regulation and activate the feelings of compassion).

Compassion meditation is also used as training for a good night's sleep during the preparation for *vestibular* and, as the simulation of the day of the exam, the challenge to be seated in the same position for hours and hours. Relaxation exercises and breathing with compassion are the keys for a good body sensation during these challenge times, as most of the students are going to more than one university and usually have several *vestibular* exams in the same year. For example, doing an imagery exercise, we can use one's imagination and feel the emotion of one's name in the approval list of FUVEST and the feelings of contentment and belonging. The intention with this kind of activities is the possibility to training compassion motivation to change behaviors in a daily basis, in order to achieve the desired results, that is, to pass in the *vestibular* exam.

Results

The best motivation to prepare students for the challenges of adult life and specifically to the *vestibular* exams is the gratitude we feel in the journey to the flourishment of a hole person and not only a new professional. This is a very particular intervention in psychotherapy and brings joy and enchantment.

During years of private clinical practice, these interventions have been shown very efficiently not only for the *vestibular* but also for the happiness of a new

growing adult. The shared moment when we see the approval list is always a special moment for the student and for the professional also. Sometimes they return to therapy, years later, after graduation, bringing other important life themes such as relationships, marriage, and maternity/paternity issues, showing that professional life is already well resolved.

Conclusions

The experience in the academic field, with the master's clinical trial using CFT group for PTSD, gives us the knowledge to bring the results into the private clinical practice. In fact, there is a two-way road, as much of the clinical experience using CFT with many patients in diverse situations (and the heritage of the first author from a Buddhist family) brought the idea of the master's project and taught us a lot about compassion and self-compassion.

From all we know so far, the activation of the *green system* and the skills of compassion training can give the empowerment of being able to live a life with emotional balance that leads to feelings of emotional well-being, contentment, and happiness.

Maybe the affirmation of the Nobel Prize, His Holiness Dalai Lama, given elsewhere in the social media, that says "If you want others to be happy, practice compassion. If you want to be happy, practice compassion." These words could be a divine advice for us all to be happy and make our *Compassion Flower* flourishing and the gift to live a life worth living!

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The Use of Functional Analytic Psychotherapy in a Case of Test Anxiety

Paulo Gomes de Sousa-Filho

Introduction

Anxiety disorders are some of the most common and debilitating mental health problems affecting one eighth of the total population worldwide (Shri, 2010). Experiencing anxiety by itself does not constitute a disorder. In fact, anxiety is a necessary warning sign of a dangerous or difficult situation. Without anxiety, we would have no way to anticipate difficulties and prepare for them.

Anxiety is a subjective feeling of uneasiness, discomfort, apprehension, or concern with fear accompanied by a series of autonomic and somatic manifestations (Shri, 2010). In Barlow's (2002, p. 64) definition, it is "a future-oriented mood state in which the person is ready or prepared to deal with upcoming negative events." This "apprehensive expectancy" can be generalized to various events or activities (as in the case of generalized anxiety) or specific to certain stimuli, events, or situations (as in the case of phobias, social anxiety, post-traumatic stress). Spielberger (1966) made an initial distinction between state anxiety, that short-term response as a response to perceived threat in the environment (e.g., physiological arousal), and trait anxiety, the individual differences in predisposition to experience anxiety symptoms. There is a relationship between the two types of anxiety, as people with higher levels of trait anxiety are more likely to experience more intense levels of state anxiety than people with lower levels.

Although anxiety is a common response to threat, it can become problematic when its presentation is excessive in relation to the level of threat posed and when it has a negative impact on everyday life. Having anxiety is normal and part of normal human reactions to stressful situations and real or imagined threats (phobias) caused by uncertainty, but it can become a problem if it is distressing or disabling. This is

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the case for a specific type of anxiety, anxiety that occurs during academic assessment contexts.

In this sense, a particular focus of this chapter is the factors associated with adolescent students' sensitivity to the contexts in which they are under assessment. Feeling nervous at the prospect of taking examinations is a fairly common situation among students, from elementary school to postgraduate studies. However, when feelings of anxiety and stress exceed a threshold before and during an assessment, it can have disastrous consequences for the student's life.

The so-called test anxiety has been present in the scientific literature since the 1950s and has been an important area of study since its inception (Bonaccio & Reeve, 2010). Matthews et al. (2006) defined test anxiety as "the negative affect, worry, physiological arousal, and behavioral responses that accompany concerns about failure or lack of competence on an exam or similar evaluative situation" (p. 175).

Due to the pressure to perform well, students experience a high level of stress and anxiety with their lives being significantly affected by their performance during exam periods, making this anxiety a widespread problem. In fact, many students have the ability to do well in exams but perform poorly because of their debilitating levels of anxiety. The biopsychosocial model (Loweet et al., 2008) highlights three different processes involved that are well known to many students, of different ages, during contexts of assessing their school performance: those symptoms that are felt at the physiological level such as increased sweating, palpitations, shortness of breath, tachycardia, tremors, and nausea; at the cognitive level such as difficulty concentrating, comparisons with others, negative thoughts, and thoughts of social concern for fear of being negatively judged by teachers and parents, among others; and at the behavioral level related to how the individual acts in assessment situations including both relevant tasks (e.g., focusing attention on the task) and irrelevant behaviors (e.g., skimming items, procrastination, and dodging the activity). These components strongly interfere with instrumental behavior for good test performance and are more intense in people with high test anxiety.

Emotionality and worry are two of the components of test anxiety that have been emphasized by several authors (Bonaccio et al., 2011; Damer & Melendres, 2011). Emotionality refers to the actual physical response that occurs during test anxiety; worry refers to the cognitions and thoughts that the student experiences during a testing situation. When present in balanced amounts, the physical and emotional effects of test anxiety can lead a person to perform better (Daly et al., 2011). In larger amounts, these components have deleterious effects, disrupting the performance of the assessment and leading the student to failure. Damer and Melendres (2011) emphasize that, in extreme cases, they may even represent health risks for people who cannot overcome test anxiety.

Anxiety present in assessment situations, when disabling, has been shown to be an important predictor of academic performance, and several studies have demonstrated its deleterious effect (Zeidner, 1998) influencing, also, in the motivation to learn and improve performance. Data regarding the prevalence of anxiety at times

of assessment, in which students feel worried and negatively excited when they are under assessment, are scarce in Brazil. In the USA test anxiety affects approximately ten million children. Students may begin to feel anxious about testing as early as kindergarten. Several different estimates exist with numbers ranging from 10% to 30% among high school and college students (Damer & Melendres, 2011; Peleg, 2009; Weiner & Carton, 2011). Approximately similar numbers were reported by Thomas et al. (2018), who found that about 25% of undergraduate college students are highly anxious in an academic assessment situation.

The anxiety presented when in an assessment context can lead to negative academic consequences. Some studies have suggested that higher levels of test anxiety may result in lower grade point averages in schools (Chapell et al., 2005). These negative consequences can lead to much more serious situations. A study by Wachelka and Katz (1999) showed that 20% of students with high test anxiety dropped out of school as a result of their academic difficulties. In addition to academic impacts, test anxiety has shown negative correlation with self-esteem (Peleg, 2009), as well as physical and mental health (Damer & Melendres, 2011). Damer and Melendres showed the existence of a correlation between test anxiety with depression and feelings of hopelessness. High levels of test anxiety were also associated with increased blood pressure with a negative impact on health (Conley & Lehman, 2011).

Several approaches and techniques have been used to mitigate the negative effects of test anxiety (Ergene, 2003), and cognitive and behavioral interventions have been the most widely used. These approaches have used both cognitive techniques such as cognitive restructuring and rational emotive therapy and behavioral techniques such as anxiety management training and systematic desensitization. The most effective interventions were those that helped the student study and teach organizational strategies as well as deal with the worry and anxiety they felt immediately before and during an actual testing session, i.e., a combination of cognitive and behavioral techniques. Ergene (2003) included five specific recommendations for a successful intervention: (a) provide study and test-taking skills, (b) provide the opportunity to watch someone else take a test, (c) teach participants' self-monitoring as well as self-control strategies, (d) work on paying attention to the task in front of the participant and not being distracted by irrelevant factors, and (e) teach relaxation strategies.

Among the various theoretical perspectives that have been applied to anxiety problems of students under assessment context, we highlight the approaches based on the philosophy of radical behaviorism, such as behavior analysis, which, as mentioned above, has contributed with well-known techniques by professionals from different backgrounds and, more recently, functional analytic psychotherapy, better known as FAP.

Behavior Analysis

Behavior analysis is a unique approach to understanding behavior for a number of reasons. For one, behavior analysis does not involve hypothetical constructs such as "mind," "cognition," "personality," or "psychiatric diagnosis" in its explanations (functional analyses) of behavior (Skinner 1953/2000). Another interesting aspect is that it is a comprehensive and coordinated discipline that, in its evolution, developed three components as well as a philosophy of science that provided an underlying conceptual framework for the associated scientific activity. The first component is the experimental analysis of behavior, which is the systematic context for research in psychology, both in and out of the laboratory. The second is the applied analysis of behavior, which is the systematic application of behavioral technology and principles to the world outside the laboratory. The third is the conceptual analysis of behavior, which is the philosophical and theoretical examination of the subject matter and methods of behavior analysis as well as other forms of psychology (Moore, 1999). The philosophy of science that guides behavior analysis is called radical behaviorism.

Radical behaviorism seeks to analyze the interactions between the individual and his/her environment and thus understand its object of study called *behavior*, which is understood as something the individual does in a given context, modifying it, which, in turn, produces consequences in his/her own behavior pattern (Skinner 1957/1978). Unlike most approaches to psychology, the focus of analysis is no longer on mental states, brain processes, or mediating entities, but on behavior and its function in a given context. Emotions, thoughts, and neurophysiological processes are understood and analyzed as behavior and thus susceptible to the effects of the environment (Skinner 1974/1993).

The relevance of philosophy to the practice of behavior analysis, and hence to FAP, is not always immediately apparent, especially to those with less exposure to the philosophical and theoretical underpinnings of applied behavior analysis. Often, the emphasis on practice with little theoretical/philosophical grounding makes it even less likely to be known to the growing number of behavior analysis practitioners.

We will present here, an overview of the relevance of philosophy for the daily practice of applied behavior analysis. We emphasize that philosophy is not only relevant to applied behavior analysis, but, in fact, it is fundamental to the application of the behavioral principles present in all approaches that have radical behaviorism at their philosophical roots. These basic assumptions, in turn, will serve as the lens through which the behavior analyst and the FAP therapist filter the data collected in their professional practice, and their world view of man and society is influenced by these assumptions, which guide their practice.

Skinner presented the conceptual basis of radical behaviorism in a congress, which originated the article *The Operational Analysis of Psychological Terms* (Tourinho, 1987). He called his proposal behaviorist because he considered behavior as his object of study. The behavior of an organism is everything it does,

including private and covert actions such as thinking and feeling. What makes radical behaviorism "radical" is the claim that a science of behavior can be a natural science of behavior, where behavioral events are natural events. Thus, a behavioral event must be understood and analyzed in relation to its past and present environment, as well as its evolutionary history, i.e., excluding internal states, intervening variables, or hypothetical constructs (Baum, 2011). Below, without claiming to be extensive, we describe the basic principles present in radical behaviorism that, in turn, guide the practice of both behavior analysis and FAP professionals.

Our Behavior Is Determined In nature an event does not occur at random. Water boils because its temperature has reached a point near 100 °C. The premise here is that an event occurs as a result of one or more previous phenomena. Determinism is a characteristic of the natural sciences, and since man is an integral part of nature, then its interpretation is based on a deterministic view. In this sense, feelings, thoughts, perceptions, as well as the anxiety of a student under the assessment context are not random, but determined by past events.

Behavior as Organism-Environment Interaction In radical behaviorism, behavior is everything a person does, including aspects traditionally seen as "mental," such as feeling, thinking, daydreaming, and dreaming, among others, differing from other approaches to psychology and even more so from common sense which, in general, understand behavior as something public, subject to direct observation. These behaviors should be explained from their interactions with their environment, which is a relationship between behaviors and environmental events. Because it is a relationship between natural events, behavior is not something that can be isolated. According to Skinner (1974–1993), the organism does not store experiences; it is modified by them. The behavior analyst as well as the FAP therapist must then understand the behavior and under what conditions it occurs. Consequently, the understanding of how student anxiety arises in the assessment context is done through interactionist reasoning.

Monistic and Materialistic Perspective An ever-present issue in psychology is with regard to mind-body dualism, a conceptual problem inherited from philosophy. The radical behaviorist view is that man is part of the natural world, acting in the environment and not on the environment, that is, he is an interactive part of it (Chiesa, 1994). Thus, both public and private behaviors occur in the same natural dimension. In this model there is no place for metaphysical entities that store contents such as the psychic apparatus, among others (Marçal, 2010). Thus, it makes no sense to seek the understanding of our student's anxiety during an assessment situation in non-physical aspects, since his suffering and his way of behaving are not determined, mediated, or controlled by anything that is not part of the physical world, including his private behaviors or subjectivity.

Selectionism (Phylogeny and Ontogeny) All life forms evolve naturally and continuously throughout their learning history and evolutionary development. This

happens at the individual level and at the species level. Ontogeny describes how the environment changes an individual throughout its life. For example, a marathon runner may be able to run for many hours without stopping without damaging his health. Environmental variables related to exercise behaviors have shaped this ability over the person's lifetime. Phylogeny describes the natural evolution of a species that includes the inheritance of survival characteristics passed from one generation to the next. For example, we humans long ago evolved to become bipedal (walking on two legs). The vast majority of human individuals ambulate in this manner. The preference for walking and the physical adaptation to it have been shaped by millions of years of evolution.

For Skinner, selection acts not only in phylogenesis (origin of the species) but also in ontogenesis (life history of the individual) and in the practices of a culture (Skinner, 1981). Thus, in ontogeny, it is by its consequences that the behaviors emitted by the person are selected or not. Reinforcing consequences increase the probability of occurrence, while punitive consequences decrease the probability of occurrence.

The selectionist reasoning regarding the student with test anxiety lies not in the behavior itself nor in how it occurs but in why it occurs, that is, in understanding how the behavior of that particular student was acquired and is being maintained. In other words, how the behavior of showing anxiety under the assessment context was selected and strengthened in his learning history?

Contextualist Perspective The predominant character of behavior analysis, or at least what is central and distinctive about behavior analysis, is contextualist (Hayes et al., 1988). Behavior does not occur in a vacuum, requiring a context to give it meaning, and context is the set of conditions in which the behavior occurs (Carrara & Gonzáles, 1996).

A contextualist sees each event as part of a larger whole, an interaction between an organism as a whole that is situated in a historical (learning history), and a situational (current antecedents and consequents) context (Hayes et al., 2004). For the contextualist, every action you perform now is closely linked to your history and the current situation you find yourself in. Thus, with regard to students under assessment context, we should investigate what events in their past and the circumstances surrounding their current situation have led them to feel anxious. The behavior analyst and FAP therapist are committed to studying the subtleties and realities of our complex histories, to understand the ways in which events, including feelings and thoughts, interact throughout people's lives to produce particular ways of being (i.e., behaving) today. Thus, understanding behavior (feeling anxiety) will only be possible by identifying current and past relationships between the anxiety response and the environment, excluding from analysis "isolated influences of parts of the organism involved in the action (glands, brain, or, even, mind)" (Carrara, 2001, p. 240).

These principles, much more than a set of techniques, are at the base of a conceptual lens that therapists use, considering that they need to make some assumptions

about the construction of problems and the nature of solutions to accomplish their work. They provide a path to follow while directing the gaze and guiding the activity of the behavior analyst and FAP therapist in their professional practice.

Functional Analytical Psychotherapy (FAP)

FAP is a contextual behavioral therapy and has a set of principles to conduct the therapeutic process strongly rooted in the assumptions of behavior analysis, radical behaviorism, and functional contextualism, having as the main objective of the construction of interpersonal repertoires such as intimacy, empathy, emotional involvement, assertiveness, and interpersonal connection, among others (Tsai et al., 2009). It places emphasis on the contingencies that occur during the therapeutic session, the therapeutic context itself, the functional equivalence between the clinical environment and the client's everyday situation, natural reinforcement, and modeling (Kohlenberg & Tsai, 1991). The FAP is a behavioral therapy that takes advantage of the learning opportunities that arise in the therapist-client relationship during the psychotherapy session and through natural reinforcement contingencies produces the desired changes (Kohlenberg et al., 2005).

FAP assumes that there is a parallel between the client's problematic behavior in the therapeutic context and the pattern of problematic responses found in his daily relationships that brought him to therapy. Thus, the therapist can issue contingent and natural consequences increasing the likelihood of more appropriate responses by the client (Kanter et al., 2006).

Therapeutic Relationship The focus of FAP is the therapeutic relationship, which is considered a real interaction in the here-and-now, in which there is a mutual influence between therapist and client, and which has the potential to evoke and change problematic behaviors of the client. In this sense, its major contribution to traditional behavioral therapy is the use of the therapeutic relationship as a way to promote changes in the patient's behavior. FAP makes the very relationship between the client and his therapist a process of change (Pérez Álvarez, 2004). This is achieved through an individualized analysis of the patient's problems, especially those that occur during the therapy itself, and the application of live interventions within the treatment sessions (Kohlenberg et al., 2005). A very important point of FAP is the idea of corrective emotional experience, the belief that through a therapeutic relationship with a positive other person, clients can learn new ways of interacting in the world.

The patient's behavior in the therapeutic context is of special importance in FAP, because it is understood as a valid sample of his real behaviors. This therapeutic interaction in the here-and-now may be functionally similar to the client's problems in everyday life. For example, a client who is demanding a lot from his wife in a way that harms his marriage may be demanding of his therapist; an unassertive client who has difficulty verbalizing her demands may passively accept the therapist's

demands in session. These behaviors are labeled in FAP terminology as "clinically relevant behaviors (CRBs)."

Clinically Relevant Behavior In FAP, the form of intervention is fundamentally based on what the client does and says in the clinical session itself which we call clinically relevant behavior (CCR) (Kohlenberg et al., 1993; Kohlenberg & Tsai, 1991, 1994). CRBs are the behaviors that cause distress and occur in the clients' daily life that caused him/her to seek therapy. These behaviors can be of three types. Type 1 CRBs are the client's problem behaviors that occur during the session and whose frequency therapy should attempt to decrease. CRBs1 are, by definition, related to problems presented by the client and often have avoidance and evasion functions, being under the control of aversive stimuli such as having difficulty expressing personal feelings or desires to the therapist. These client problems may involve thoughts, perceptions, feelings, and memories, which should always occur during the session.

CRBs2 are client improvement behaviors that occur during the session. The goal of therapy is to increase the frequency of CRBs2 and, consequently, decrease the frequency of CRBs1. These behaviors are rare at the beginning of therapy or appear with little strength and should increase in frequency during the therapeutic process. For the client who has difficulty expressing his feelings in his intimate relationships and this has been a problem in his daily life (CCR1), expressing and having feelings about the therapy or therapist would be a CRBs2.

The client's interpretation of his own behavior is also an important aspect of the therapeutic process. The client will always be interested in knowing why he acts the way he does (e.g., why do I get so anxious every time I take a test?). We call these behaviors CRBs3, and they consist of the interpretation of the contingencies that control their behavior, observations, and descriptions of their own behavior.

Kohlenberg and Tsai (1991) emphasize that RCCs are of ideographic and functional nature, that is, what is an RCC1 for one client may be an RCC2 for another client. These authors also call attention that for maximum therapeutic benefit to be achieved, the therapist must be attentive to the instances of CCR, evoking CCR and reinforcing CRBs2. The rationale is that from the moment we evoke a RCC in therapy, it constitutes a unique opportunity for a more natural learning in the here-and-now of the therapeutic relationship. The therapist responds contingently to the RCC in the sense of decreasing it if he observes an RCC1 or increasing it if he observes an RCC2. To decrease the frequency of RCCs1 and increase the frequency of RCCs2 and RCCs3, besides generalizing their occurrence outside the session, Kohlenberg and Tsai (1991) recommend that therapists follow five therapeutic rules.

FAP Rules In common sense, a rule has a connotation of something rigid, which necessarily has to be followed. In FAP, the rules are suggestions to guide the therapeutic process and, in general, promote positive changes in the client. FAP rules optimize therapeutic opportunities that in many moments may be neglected by the therapist. There is no obligation in the sequential use of the rules, and in fact, they can be applied simultaneously in an intervention.

Observe CRBs Rule 1 is to be aware of the occurrence of CRBs. This requires a refined awareness of the therapist in conducting an ongoing moment-to-moment functional assessment of the client's behavior. To observe CCR is to be aware of which behaviors constitute CCR1 and which are CCR2; it is to understand how these behaviors are being evoked and modeled in the here-and-now of the therapeutic relationship.

Evoke CRBs Rule 2 asks the therapist to structure the therapeutic relationship in such a way as to evoke CRBs by providing discriminative stimuli to do so. The FAP model requires a therapist to be present and to structure therapy in a particular way, focusing on issues of relationship and intimacy such as making oneself vulnerable, taking risks, and giving and receiving love, among others. This therapeutic structure demands efforts from the therapist to be bolder in evoking and reinforcing the client's target behaviors and not be passive in observing the RCC as they occur. In this sense, the therapist invites the client to increase awareness of these moments while encouraging him or her to present a different response. "This is where becoming a positive disruptive force for clients becomes a more deliberate, strategic, and collaborative act of courage and compassion" (Holman et al., 2017, p. 85).

Reinforce CCR2 Rule 3 is the center of the change mechanism in FAP. Using Rule 1, the therapist observes a more effective behavior or directly evokes it using Rule 2. Rule 3 happens when the therapist responds naturally (rather than arbitrarily) to the client's enhancing behavior (CCR2) with the goal of increasing its frequency or strength. In this regard, Holman et al. (2017) present some general guidelines that should be considered to maximize the therapist's response as follows: (1) respond in a socially natural but intense way, (2) emphasize safety and acceptance, (3) learn what works for a particular client, (4) speak with conviction, and (5) be authentic. Considering FAP's emphasis on natural reinforcement, Rule 3 posits that therapists "facilitate the development of genuine and intimate relationships with clients […] and allow their natural reactions to clients in the moment as well as their awareness of the client's case conceptualization to guide their expressed responses to the CCR" (Weeks et al., 2011, pp. 632–636).

Observe Their Effect Observe the potentially reinforcing effects of the therapist's behavior in relation to the CRBs (be aware of their impact). Rule 4 emphasizes the importance of the therapist's awareness of changes in the client's target behavior and how they relate to the contingent response the client emitted. This rule allows the therapist to assess how effectively they are following Rule 3 (Kanter et al., 2010).

Support and Generalize Provide functional interpretations of client behavior, and implement generalization strategies. Rule 5 is the moment when the therapist models the client's understanding of the functional relationships that control his behavior seeking to promote generalization of the gains made in the session to the client's daily life. The "out-to-in parallels" (daily life events corresponding to situations within the session) and the "in-to-out parallels" (improvements in the session cor-

responding to daily life events) are emphasized here. A FAP session, in general, involves a back and forth between daily life and the content of the session with multiple parallels of within-outside and outside-in.

Following the five rules does not mean using a technique or manipulating your client. "The rules are instead like signals that point to what matters when you are engaged in the therapy process" (Holman et al., 2017, p. 85).

Weeks et al. (2011) detailed a logical structure of the FAP specifying the use of the five rules during the therapeutic process. The therapist should initially observe the impact of the client's behavior on their own behavior, using themselves as a kind of barometer, which will help them in identifying RCCs. Following Rule 1, the therapist should provide outside-in parallels for the client to assertively confirm or disagree. Rule 2 calls for the therapist to evoke directly as soon as the client is open and receptive. The therapist should be prepared to respond to the client's CCR1, considering that the client may emit it, even if evoking CCR1 is not the focus, and to do so, should comment, block, and indicate an alternative to the client (CCR2). After Rule 3, the therapist should respond contingently to the client's emission of CCR2 with the objective of increasing its frequency and later, with Rule 4, verify its reinforcing effect by observing or asking the client directly. Finally, following Rule 5, the therapist will provide an in-out parallel in addition to relationship-based homework assignments, and the client will communicate his willingness to perform these tasks outside of the session.

Functional Analysis Haynes and O'Brien (1990) define functional analysis as "the identification of relevant, controllable, causal and functional relationships applicable to a specific set of target behaviors for an individual client" (p. 654). Clinical functional analysis is a hypothesis of the possible causes of a particular behavior or behavioral pattern. According to Skinner (1974/1993), functional analysis describes the analysis of the external variables of which behavior is a function. Thus, the dependent variable is the behavior of the individual, and the independent variables are the external conditions of which the behavior is a function. All behavior is under the control of a stimulus (or more than one) and is followed by a consequence that, depending on the individual and the context, tends to strengthen or weaken the behavior. Thus, identifying the variables and understanding the contingencies that control the client's behavior are the basic conditions for producing hypotheses about the acquisition and maintenance of a repertoire that causes suffering and will be targeted for change in the therapeutic process.

If at the center of FAP we have the therapeutic relationship, functional analysis operates as a guide that helps us understand what is happening during this process. The form of a behavior (its topography) is not the focus of functional analysis but the function of the response emitted by the person. In this sense, behaviors with the same topography (e.g., drinking alcohol) may have an approach function in one context (e.g., drinking to socialize with a group of friends) or an avoidance function in another (e.g., drinking to relieve anxiety about taking a final exam at university). Two topographically different responses may have the same function, such as

drinking to relieve exam anxiety and avoiding talking to friends during exams. In functional analysis, the focus is on finding the interaction between behaviors and their consequences.

A considerable part of the therapist's work is to look for functional similarities between the client's behavior outside the session and the CRBs that occur in the session, considering that these functional parallels are at the center of the PAF intervention. The consequences of the in-session intervention should be generalized to the client's daily life, and the outside-in and inside-out parallels act in this sense. The way the client's RCC presents in the session may be quite different from how it happens in his daily life, and the therapist should be aware of the functional similarities (e.g., client who verbally assaults his partner when she does something that makes him upset and who, when in therapy, when asked about the reasons for his delay, criticizes the therapist).

The client behaves throughout the session, and it does not make sense to do a functional analysis of everything he does. For a refined understanding of which behaviors should be targeted for reinforcement given the client's goals, the therapist makes use of a case formulation.

Case Formulation A clinical case formulation is "a conceptual scheme that organizes, explains, or gives clinical meaning to large amounts of data and influences treatment decisions" (Lazare, 1976, p. 97). Frank and Frank (1991) defined two components of a case formulation: (1) a plausible explanation for the patient's symptoms in the form of a conceptual schema that provides a justification for (2) the prescription of a procedure to resolve them. Thus, a case formulation includes:

- Symptoms or problems that need to be changed.
- A large amount of information that needs to be organized
- A conceptual scheme that provides an explanation
- Treatment decisions leading to specific procedures.

According to Tsai et al. (2012):

> The FAP conceptualization case goes beyond the diagnostic assessment and focuses on identifying and idiographically defining the RCCs in such a way as to maximize the possibility that the therapist will observe, evoke, and reinforce them in the session. The therapist's goal is to understand the client's interpersonal behavioral repertoires-how they function in the client's daily life and how they function in the therapy room. There is no one correct way to do this in FAP, but in general we distinguish between attempts to assess behaviors during the session and behaviors outside of the session. (p. 69)

Case conceptualization is fundamental for consistent therapeutic work being, in fact, a functional analysis of the client's RCCs (thinking, feelings, physical, verbal events). Functional analyses should also be carried out in relation to the therapist's behavior that is called T1 when they interfere negatively in the therapeutic process and T2 when they interfere positively in the treatment results.

The importance of the case conceptualization can be seen when we verify that it serves three purposes: (1) it provides an explanation of how the client's RCCs1 were already adaptive when they were selected and strengthened, i.e., it clarifies how the

client's life history resulted in his current problems while making room for new learning; (2) it highlights cognitive aspects related to the current problems; and (3) provides the therapist, a source for identifying RCCs while predicting how their occurrence may reveal itself in the therapeutic relationship, i.e., provides a means to observe RCCs as they occur in the session and provides a means to use these opportunities to model and reinforce moment-to-moment improvements (Kohlenberg et al., 2002).

Case conceptualization in FAP follows the following script:

1. Relevant history – This section includes a description of the relevant events in a person's life that are involved in the etiology of problems including recent experiences that contribute to the thoughts, actions, and meanings that may be implicated in maintaining the client's everyday problems. It includes sociopolitical factors that may affect your therapeutic relationship, such as age and age-related factors, disability, developmental (social and psychological), religion, ethnicity, socioeconomic status, sexual orientation, gender, and regional heritage (place where you were born and lived).
2. The problems of daily life – These are the problems you have to deal with on a daily basis, customer complaints.
3. Problematic beliefs – Interpretation or belief thought accepted as absolute truth and that hinders the person's adaptation.
4. Problem-maintaining variables – The variables in the environment that evoke and maintain behavior.
5. Virtues and strengths.
6. CRBs1 – The problems that arise in the clinical session. These would be the RCCs of type 1, and, as already indicated, they are functionally equivalent to the problems that occur in daily life.
7. CRBs2 – The goals within the session itself that the therapist would set for themselves. That is, CRBs of type 2 are the changes that are expected to be achieved in the clinical session.
8. Daily life goals – This is what you are trying to achieve and generalize to the client's life and the progressive changes they want to achieve, conceptualized by the therapist.
9. Goals of therapy.
10. Planned interventions – Strategies used by the therapist (techniques, experiences, experiential exercises, and homework exercises, among others).
11. T1s (therapist's problems in the session) and T2s (therapist's target behaviors in the session).

The following is an example of a clinical case conceptualization developed during the course of treatment. During the FAP practice, a great challenge for the therapist is present in seeking the balance between being in a genuine interpersonal process in which he/she places him/herself in a vulnerable way, engaging in functional analysis, and remaining conscious of the use of rules.

Conceptualization of a Test Anxiety Case

Monica is an 18-year-old student who sought therapy for intense anxiety about taking university exams. The diagnostic interview indicated that she suffered from specific phobia (exam phobia). She also suffered from anxiety and depressive symptoms. In her interview it became evident that Monica presented several difficulties: she could not attend classes or enter the room where they were held. She could not concentrate, study for exams, or even take an exam. She avoided going near the university and avoided anything relevant to the university. She was unable to decide whether she wanted to go on and graduate or not. She wanted to be perfect at everything and worried too much about other people's criticism, which affected her relationship with other students. She was unable to have fun and felt sad at various times. She started to avoid being with people, and later on she started to avoid crowded places where there were other students. She reported that she thinks her parents will never be happy for her and that she spends hours thinking about this, which drives her crazy.

As for her physiological complaints, Monica reported suffering from permanent headaches, insomnia, stomach pain, fatigue, loss of energy, sleepiness, and bruxism during sleep that resulted in pain. With this, little by little, Monica began to isolate herself and avoid social situations. The result of all this was that she felt anxious, disappointed, and melancholic.

Personal and Family History

Monica is the second daughter in the family. She has an older brother (now married) and a sister a year younger who entered law school at the age of 16. There seemed to be many problems in the family with her brother considered by Monica as rebellious and undisciplined. Monica reported many communication problems with her family, and her sister was the only person with whom she reported some communication. Her family was of low income, and, to make things worse, the financial situation of the family was very bad, so Monica could not decide if she should continue her studies or find a job to alleviate the financial difficulties. Although Monica felt suffocated because of all these problems, there seemed to be no way out, as her parents were ill, the father with diabetes and depression and the mother with posttraumatic stress disorder (PTSD) which made it difficult to leave home.

Monica felt very "good at everything" as a student. However, she felt that her family persecuted her because they knew everything she did. The situation when Monica sought therapy was as follows: her sister and father pressured her to continue her studies. Her father always told her that if she did not finish college, she would end up being a cleaner. "If you don't have a degree, you're a zero." Monica felt that her father counted on her in the sense that "he put me in the place of his son. I always felt I had to follow what he wanted. When he saw me crying, he would say

that I was weak and that I would not achieve anything like that," which led her not to show feelings. Aggressiveness was the only feeling that Monica expressed easily and with which she dealt with any situation that afflicted her. Her sister always criticized her, calling her irresponsible and "sensitive little." She also interfered in her academic life by trying to contact the teachers to ask them to be more tolerant with her, something which made her furious. Monica reported getting involved in conflicts with friends several times and noticed that they have been withdrawing from her. One aspect in which Monica did very well was in foreign languages. She was good at it and could study without anxiety. She considered foreign languages a hobby rather than a "real job." Surprisingly, her parents were not interested in her performance when it came to languages, so there was no pressure in that respect. Monica also enjoyed reading and writing poetry that she kept to herself.

From this brief account, it is very apparent in the story of Monica's family that her parents and sister put a lot of pressure on her and in relation to her studies. She was pressured and criticized for not being able to continue her studies. Considering this in combination with the rest of the "difficult" family environment, it is not surprising that Monica developed an anxiety disorder.

Once there is sufficient information, the conceptualization should be filled out and then presented to the client so that he can give *feedback*, agreeing or disagreeing with what was put there. The case conceptualization helps us maintain focus on the therapeutic goals as well as the detection of problematic behaviors in session and their improvement.

Monica's case conceptualization followed the following script:

1. Relevant history – female, heterosexual, brown, 18 years old, middle child (brother 7 years older, sister 1 year younger); father has diabetes and depression, and mother has PTSD from abusive childhood (daughter of violent alcoholic); grew up in a family environment that strongly punished displays of vulnerability and kindness.
2. Problems of daily life – Not sure whether to continue course; headache has been constant; on a checklist of concerns marked anxiety, lack of concentration, fatigue, hypersensitivity to rejection, perfectionism, procrastination, low self-esteem, shyness, hypersensitivity to criticism, stress.
3. Problematic beliefs – (1) I am nothing unless I have a degree; (2) I can't handle exams; (3) I have to fight to be accepted; (4) I always have to do everything perfectly well or others will look down on me.
4. Problem-maintaining variables – (1) avoidance in sharing emotional experience; (2) focus on problems; (3) difficulty in accepting positive feedback from others; (4) fear of criticism, which leads to social isolation, (5) lack of social support due to lack of friends.
5. Virtues and strengths – Well articulated and good verbal reasoning; great at foreign languages; good writer, writes poetry almost every day.
6. CCR1 (problem behaviors in session) – difficulty making eye contact; difficulty receiving positive *feedback* from therapist; avoids showing emotions; self-criticism; thinks therapy will not work.

7. CCR2 (session improvement behaviors) – make eye contact; receive positive *feedback* from therapist; increase expression of emotions; decrease self-criticism; practice self-compassion; develop assertiveness.
8. Daily life goals – Improve how you deal with anxiety; increase support system; socialize with other students; describe personal boundaries; assertiveness.
9. Goals of therapy – to extinguish or block CRBs1 and reinforce CRBs2; to build a trusting relationship with the therapist and generalize to significant others; to help the client achieve her daily life goals.
10. Planned interventions – FAP, desensitization, defusion practices, self-focused practices.
11. T1s (therapist problems in session) and T2s (therapist target behaviors in session – *T1* (feel uncomfortable with client's low assertiveness; therapist critical and demanding of you and client; focus on problem solving; daydreaming) and *T2* (express emotions; focus on the client's needs during the whole session; offer information about how the client affects me).

Examples of Logical FAP Interaction During the Session Using the Five Rules

Monica reported having no friends, and the few people who talk to her end up staying away because "I don't let them take advantage of me." She learned that by being aggressive she could avoid criticism, as it initially happened with her sister and some childhood friends. The result was a progressive withdrawal from her peers at school. Here follows the dialogue between the therapist (T) and Monica (C).

T: The fact that you're looking down and avoiding my questions makes me a little uncomfortable….
C: You take everything to a personal level, I'm actually not in the mood to be here and your questions bother me….
T: I understand that you don't feel like being here…. I wonder if this discomfort that I'm feeling is similar to the discomfort that your friends feel when you behave aggressively…. *(parallel in-out).*
C: Yes, they take it very seriously like you, they are very susceptible…. *(confirms parallel inside-out).*
T: Now that you've said that I feel troubled and sad, I really want to help you, and when you express yourself with such indifference, I feel there's a great distance between us….
C: … *(silence).*
T: Could you do something to let your guard down with me and be less defensive? *(evokes CCR).*
C: I don't know, I don't know what to say, I get distressed…. *(CCR2 expression of vulnerability).*

T: I understand that it's difficult to express what you feel…, now I have a completely different feeling…much more relaxed…and my desire to work with you is greater…. *(Rule 3 – reinforces).*
C: I swear I don't understand. I don't know why there's a part of me that behaves like that…. *(CCR2 expression of vulnerability).*
T: I understand, Monica, I know it's difficult…. *(Rule 3 – reinforces).*
T: How do you feel about what just happened? *(Rule 4 – check the reinforcing effect).*
C: I feel kind of stupid…, but also relaxed…. It's strange…. *(confirms the effect of reinforcement).*
T: The impression I have is that you started off defensive with me, and when I asked you to let your guard down, things changed completely. Now I see you relaxed and authentic…. *(Rule 5 – functional interpretation)*. I would like to ask you if you could do this with any of your friends with whom you often fight…. *(Rule 5 – promotes generalization).*
C: I don't know…it will be difficult, but I can try….

Monica reported, in the exercise of life history, that she felt sad most of the day, with difficulty sleeping and doing the activities she used to do. She says she is discouraged and feels she cannot make decisions in life. When researching the onset of symptoms, she reports that she has had this problem for a long time and adds that she has always lived the life planned by others, especially her father. The lack of assertiveness appears in this dialogue.

T: Monica, next week we'll have to change the time of the session because I have an appointment at that time.
C: Okay, what options can you offer me? *(CCR1).*
T: I can offer you a session 2 hours earlier, on the same day, what do you think?
C: Well, I'm going to have to cancel a plan I had, but that's okay…. *(CCR1).*
T: I'm noticing you're a little uncomfortable. Do you want to tell me something? *(Rule 2 – evokes).*
C: Um, no, why do you ask? *(CCR1).*
T: I noticed a gesture on your face and thought that something of what we talked about was bothering you….
C: Well, it's not a bother,…, it's all right, really…. *(CCR1).*
T: Could you try to be completely genuine and tell me what it was like when I asked you to change your programming? *(Rule 2 – evokes).*
C: I was a little upset because it is not the first time you ask me to change the schedule *(CCR2).*
T: I feel that our relationship is more sincere when you tell me the things that bother you in the session…. *(Rule 3 – reinforces).*
C: … *(silence).*
T: How do you feel about the conversation we just had? *(Rule 4 – check the effect of reinforcement).*
C: Well…. I feel a little uncomfortable, but I prefer this discomfort and say what I feel. *(CCR2).*

T: When you are honest with me, I feel much closer to you…. *(Rule 3 – reinforces).*
T: Could you try to be aware during the week of when this discomfort appears and choose between expressing what you feel or walking around and avoiding it like you did here with me? *(Rule 5 – generalization).*
C: Yes, I can try with my father and sister, that's what I have the hardest time talking about when something bothers me or when I don't agree with them.

Monica reported that the thought that her parents will never be happy with her accompanies her constantly. To deal with these intrusive thoughts, the FAP assumes that what we learn cannot be "unlearned," that is, we will not eliminate or change this thought, but change our relationship with it. Monica believes that she will only be respected if she is an excellent student and an outstanding professional. She also presents self-criticism, anxiety, worries, and intrusive thoughts, and, consequently, she has sleeping difficulties. The following dialogue deals with this issue.

T: What is it that you are not telling me that you feel is important but is hard to say? *(evokes CCR2).*
C: I keep thinking that it is important to be the first and that this is the only way they will respect me. *(CCR2).*
T: You're telling me that you have a thought "that it's important to be the first" and "that's the only way they'll respect you. What other thoughts come up when you feel that you have to be first and that it's only then that they'll respect you"? *(Rule 2 – evokes).*
C: I feel lonely, very lonely. Sometimes I think there is something wrong with me. *(CCR2).*
T: "There's something wrong with me." When that comes up, what other thoughts come up? *(Rule 2 – evokes).*
C: That I am a stranger, an idiot, and that I won't get respect from anyone. *(CCR2 – expression of vulnerability).*
T: Very hard those thoughts: "I'm a stranger," "an idiot," "no one will respect me." *(reinforces CCR2).* Monica, what feelings arise in those moments?
C: I get sad and feel guilty for not being able to change. *(CCR2 – expression of vulnerability).*

Bringing defusion into the therapy room is a good example of using a technique from another approach (acceptance and commitment therapy) respecting the philosophical principles cited above. In this case, it seeks to change the impact of thoughts and other private behaviors, rather than their content, trying to change the ways in which individuals relate to them (Hayes et al., 2006).

T: Monica, one way to notice thoughts before they go unnoticed is to label them for what they are. This can also be done with feelings, emotions, body sensations, memories, and mental images. Instead of saying or thinking "If I try to take the exam, I will faint," you can add a phrase and say "I am having the thought that if I try to take the exam I will faint." Shall we try this? Consider a situation that has

affected you lately. Focus on it and observe the thought that occurs at the same time. Do this for about 30 seconds. *(Rule 2 – evokes CCR).*

C: All right, I'm trying. I am remembering something that just remembering it makes me feel something in my stomach. *(CCR1).*

T: Now, put all your concentration on that thought, and try to believe it for 30 seconds. What happens? *(evokes CCR2).*

C: I feel very bad. It even made me want to cry. *(expression of vulnerability).*

T: Yes, it's not easy to bring that feeling. You're being very brave. *(Rule 3 – reinforces).*

T: Now rephrase in your mind in the sense of focusing that you are "having" the thought. Do that for another 30 seconds. The way to say it in your mind is "I'm having the thought that…." Notice what happens when you experience your thought in this way. Does anything change? *(evokes awareness).*

C: Yes…. I felt something like…less weight…something like that.

T: Let's try something else. You may rephrase that thought into the expression "I'm realizing that I'm having the thought that…." Do that for another 30 seconds or so.

C: Okay.

T: As you repeat that phrase and experience your thinking in that way, what happens? Observe the experience and tell me if it's different. *(increase in discrimination).*

C: Yes, quite different from the first one. I did not feel the slightest urge to cry. *(CCR3).*

T: Monica, maybe we could try that for a while, just label our experiences as they happen.

C: Uhum, I thought it was interesting.

T: How about you apply this process during the week? Apply labels to your thoughts, memories, body sensations, mental images, and desires. If you want, you can even say it out loud, is that OK? *(Rule 5 – generalization).*

How can the clinical problem the client describes appear in the here-and-now of the therapeutic relationship? This is a functional question that is always at the core of the analysis. Evoking behaviors within the functional class related to what Monica presents under contexts of evaluation during the therapeutic process is a challenge for the therapist. An intense and intimate therapeutic relationship is the way to achieve this goal, and the therapist should add new functions that generalize outside the therapy room by responding contingently during the sessions.

T: As I explained to you last session, I'd like to share this tool with you. It's important for what we're doing here.

C: I think I remember…. I want to tell you about the movie I saw yesterday.

T: I notice that I'm not as in tune as I would like to be, because you don't seem very connected to me or to what you're saying. Can you understand that? *(blocks and evokes CCR).*

C: I do not want to answer the test. *(CCR1).*

T: What is it that you're not telling me that you feel is important, but it's hard to say?

C: I don't know if I can answer that test.

T: Is what you feel now similar to what you feel when you have to take exams at university? *(parallel outside-in).*
C: Yes. I don't feel well. *(confirms the parallel).*
T: Yes, it can't be easy for you, and I know that what I'm going to ask you may be very difficult. Can you just try to answer the first question? *(evokes CCR1).*
C: Wow, even my breathing has changed (smiles)…, but I think I can. *(CCR2).*
T: I know how difficult it is for you to answer these questions. You have been very brave. *(Rule 3 – reinforces).*
C: I managed to answer the first two, but it is very difficult…it feels like I am going to faint. *(CCR2 and expression of vulnerability).*
T: Can you slow down now, take a deep breath, and connect with your body? Do you realize what has happened now? *(Rule 4 – check the effect of reinforcement).*
C: Yes (taking a deep breath)…. I didn't think I would make it.
T: You're being very brave. Can we try a few more times?

Here may be a good time to seek the generalization of the client's CCR2 to his daily life. In FAP this is potentiated with the use of homework, which should be based on functional thinking. It creates a context that evokes the target behavior in target contexts. Our objective is to evoke and provide an opportunity to reinforce CCR2. For Monica it was suggested to conduct a record of behavior relevant to therapy goals between sessions. Holman et al. (2017) suggest that "many potentially helpful target behaviors can be tracked in this way, including engaging in vulnerable self-disclosure, expressing emotions, offering or requesting feedback, making requests, or expressing needs…" (p. 229). Thus, a risk register was suggested with the aim of encouraging Monica to take some deliberate risks and experience the benefits of this action, as well as to experience negative consequences in new ways.

T: Monica, I would like to suggest an activity for you to do during the week.
C: Yes, it can be.
T: It's called risk register. You'll deliberately choose some risks to take during the week. Anything that you'd rather avoid could be a risk. Even saying good morning to the bakery clerk. You write down the risk, you choose from 1 to 10 how difficult the risk was and how it felt, what emotion came up, okay?
C: Sure, sounds interesting.
T: I also want you to write down at least one self-care activity, something you're going to do solely for your well-being. It can be anything that you do with only your enjoyment in mind.
C: Right. I've even thought of some things.
T: How can you be more aware and accepting of any feelings that arise during exercise?
C: I can do the mindfulness exercise you taught me.
T: Yes, perfect Monica.

Final Considerations

As therapy progresses, clients experience an increase in the emission of CRBs2 (improvements during the session) and a decrease in the emission of CRBs1 (daily life problems that happen in the session), and generalization of improvements to their daily lives is expected to occur. The interpretations that compare the interactions within the session with daily life increase the power of generalization, which also occur naturally from the client-therapist interaction.

FAP increases clients' ability to connect, give, and receive love by facilitating an intense, emotional, deep therapy experience, where client and therapist meet in a real, intimate relationship in which both come out transformed. In this sense, Tsai et al. (2012) emphasize that:

> FAP is about the transformative power of therapeutic love and interpersonal connection. FAP therapists strive to co-create intense and unforgettable relationships, to reflect what is special and precious about our clients by engaging in awareness, courage, love and behavior - the essence of FAP rules. As we take risks and speak our truths with compassion, we challenge our clients to be more vulnerable and authentic and show their best selves. (p. 129)

In the FAP therapy proposal, the client and therapist are stimulated, based on previous functional analysis, to take risks toward what they really need and want to develop. Vulnerability appears as an important tool in the context of the therapeutic relationship. In this way, clinical problems can be worked on directly or indirectly in sessions.

For the case presented, the client's difficulties related to anxiety symptoms occurred in the relationship with the therapist and could be observed and modeled in the here-and-now of the *therapeutic setting*. The FAP as a proposed technology in interpersonal psychotherapy is placed as a possibility for clinical performance of anxiety disorders.

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Dialectical Behavior Therapy Skills Training in the School Environment

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Introduction

Young people with severe emotional dysregulation can often engage in behaviors that risk their health, such as aggression toward others and themselves (Zapolski & Smith, 2016). These behaviors may be associated with negative consequences throughout their development, such as substance abuse, school refusal, risky sexual practices, and excessive use of electronics (Rathus & Miller, 2000, 2015). Being face-to-face with emotionally demanding adolescents is undoubtedly challenging, and may generate emotional distress in adults and peers. Thus, the school becomes an environment of great importance for the development of interventions at the level of prevention of mental health problems, since young people spend much of their time at school. This chapter will address how dialectical behavior therapy (DBT) can help students to have benefits in emotional regulation and quality of life from the DBT skills training applied within the school context.

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Emotional Dysregulation in Adolescence

Emotional dysregulation can occur at milder levels or manifest by the lack of expression of emotions. However, there are cases in which even physical restraint is necessary, which aims to protect this young person and other people around him/her (Melo et al., 2018). However, before we discuss this, we will focus on two factors that may be related to this type of behavior: emotional dysregulation and impulsivity.

According to Linehan (2010), emotional dysregulation is characterized by: difficulties in naming and dealing with their experiences and emotions, exaggeration in emotional responses, and lack of confidence. This results in instability at the behavioral, interpersonal, cognitive, and *self*-levels. It is known that the experiences that each individual goes through are experienced in a particular way, according to aspects related to temperament and interaction of the subject with the environment. In the case of emotionally unregulated individuals, there is an extreme sensitivity to emotions; these individuals do not perceive emotions as transient and feel threatened. Such interpretation of emotional responses directly influences how the subject feels, which often favors a perception of extremes, an "do or die" functioning (Melo et al., 2018). In view of this, they resort to ineffective and impulsive attempts to solve problems, as well as difficulties in controlling their behavior. This may be associated with confusion about who they are and changes in critical judgment that can lead to sudden changes regarding interests and life goals.

Rathus and Miller (2015) highlight some youth behaviors that can be classified as typical and others that cause concern (Table 1):

The behaviors that cause concern are a conduct of exaggeration, "for more or for less" by the adolescent. These aspects need to be noted from the beginning of their occurrence, for intervention (De Oliveira & Melo**,** 2020).

Method

The chosen methodology was narrative review, which seeks to reflect on a topic through a critical stance (Vosgerau & Romanowski, 2014). The following databases were consulted: Portal de Periódicos da CAPES *and Google Scholar*; books related to the topic were also used. We searched for empirical and theoretical studies, review studies, experience reports, and case studies in English and Portuguese. This survey was conducted using the descriptors: *Dialectical behavior therapy,* Dialectical behavior therapy *for adolescents, and* Dialectical *behavior therapy in schools*.

Table 1 Typical teenager features versus features that cause concern

Typical for teenagers	What stands out and causes concern
Increased moodiness	Intense, painful, long-term mood; mood-dependent risk-taking behavior, major depression or panic attacks; self-injury or suicidal thinking
Increased self-awareness, feeling "on stage", increased focus on body image	Unrealistic patterns; binge eating, purging or dietary restriction; obsessive. Negligent with hygiene.
Being more distracted	Multiple distractions to the point of not being able to complete homework or projects, lack of focus that interferes with work or daily tasks, regularly late for appointments.
Increase in conflicts with parents	Verbal or physical aggression, running away.
Experimenting with drugs, alcohol, or cigarettes	Substance abuse, drug sales, peer group substance users.
Decreased self-perception as someone vulnerable	Multiple accidents; encounters with firearms; excessive risk taking (e.g., subway surfing, drunk driving, or texting while driving), getting arrested.
Difficulty in adapting to new school environments	School refusal; lack of connection with school or peers; truancy, failure, or dropout.
Increased argumentativeness, idealism, and criticism	Rebellious questioning of social rules and conventions; causing problems with family members, teachers, or others who try to exercise authority over the adolescent.
Increased sexual maturation; sexual interest or experimentation	Risky sexual practices.
Getting stressed out over everyday issues	Becoming paralyzed with indecision.
Increased desire for privacy	Isolation from family; communication breakdown, routine lying, and hiding things.
Strong interest in technology	Many hours a day spent on the computer on high-risk websites; meeting partners casually online; revealing too much (e.g. overly personal posts).
Messy room	Spoiled food; dirty clothes covering the floor.
Changes in sleep cycle	Often staying up almost all night; sleeping almost all day on weekends; routinely being late (or missing school) due to sleep schedule cravings.

Dialectical Behavioral Therapy

Dialectical Behavioral Therapy (DBT) is an approach that focuses on building a life worth living. Initially, still during the 1980s, DBT was idealized by Marsha M. Linehan to treat chronically suicidal adult women and with self-injury behaviors without suicidal intentionality. In her studies, the author observed that most of these patients fit with *Borderline* Personality Disorder (BPD). Today, DBT is the first choice approach to treat patients with this disorder (Linehan, 2010). Individuals with BPD have an unstable pattern of interpersonal relationships, self-image, affect,

and marked impulsivity that is present in various life contexts. These individuals fear abandonment, which can be real or imagined, and also experience intense and inappropriate anger (American Psychiatric Association, 2014). Such symptomatology can be compared to a kind of emotional burn, since the person with skin burns reacts in an extreme way to the smallest stimuli. In BPD, any movement with the emotions can be extremely experienced.

It is also possible to present self-harm and suicidal behaviors, impulsive behavior, chronic feelings of emptiness, and even paranoid ideation or transient dissociative symptoms (American Psychiatric Association, 2014). Patients with this diagnosis are defined as difficult to treat precisely because of the mood instability and alternating extremes between idealization and devaluation that are present in the therapeutic *setting* (Linehan, 2018). Given this challenge, Linehan (2010) structured a treatment with elements from: cognitive-behavioral theory, dialectical philosophy, radical behaviorism, humanism and contemplative practices, and *Zen* Buddhism. The goal is for patients to be able to deal with their emotions, build healthy relationships, train and generalize adaptive problem-solving strategies, balancing strategies of acceptance and change (Behavioral Tech, 2015). Standard clinical treatment in the dialectical behavioral approach occurs as follows: Individual Therapy, Telephone Coaching for patients, Case Supervision Consulting for therapists, and Dialectical Behavioral Therapy group skills training, in addition to ancillary treatments that may or may not be needed such as inpatient staff, psychopharmacologist physician, nutritionist, *personal trainer*, among others (Linehan, 2010).

One of the great differentials of DBT treatment is the Skills Training. The creator of the approach understands that these subjects have gaps in their response repertoire and, therefore, need to learn tools that help expand the behavioral repertoire of responses to emotional and environmental stimuli. After an interview in which the skills training model and the theory related to aspects of emotional dysregulation are explained, the group DBT skills training begins, which according to the model proposed by Linehan (2018) occurs weekly. The author presents that there are other diagnostic groups with difficulties in regulating their emotions and therefore Dialectical Behavioral Therapy can also be used to train skills in patients with: Post Traumatic Stress Disorder (PTSD), Major Depressive Disorder, Bipolar Disorder, Chemical Dependency, and Eating Disorders, thus we can observe that skills training is a promising intervention for various populations.

The skills training group guides the participants teaching them to do more and better, seeking that each one protagonize their life story building a life worth living. The training is based on important aspects for DBT: polarities between acceptance *versus* change, validating the effort *versus* doing more to improve (Koerner, 2012). It is preferred to conduct the training in groups in order to allow learning from peers and interaction seeking validating relationships (Linehan, 2018).

The training is divided into modules which are related to each other, but are oriented toward specific objectives: to solve problems the modules of interpersonal effectiveness and emotional regulation are presented. The first focuses on the

achievement of relationship objectives while maintaining self-respect. The emotional regulation module addresses aspects of feeling better about the problem, through the study of: recognition, naming, understanding emotions, modifying emotional responses, and managing extreme emotions. To tolerate the problem, the modules of malaise tolerance are indicated, which address about tolerance and survival to crises, and also the module of mindfulness, which brings elements of observation, description, and participation without judgments (Linehan, 2018). Thus, the dialectical process of acceptance (mindfulness and malaise tolerance) and change (interpersonal effectiveness and emotional regulation) translate the balance and synthesis of opposites, postulated by the concept of dialectics within this clinical context in DBT.

Dialectical Behavioral Therapy for Adolescents

DBT is used for the treatment of suicidal adolescents, as adapted by Miller et al. (1997). The treatment is focused on the adolescent and involves the participation of parents, so that they can learn and train healthy strategies of interaction with their children. Problematic patterns of interactions between adolescents and their families are highlighted: excessive tolerance versus authoritarian control; pathologizing normative behaviors versus normalizing pathological behaviors; and promoting dependence versus forcing autonomy (Miller & Rathus, 2000). Thus, it is necessary that the cycle of family invalidation is broken by working with the family itself in skills training.

A manual was developed for skills training of adolescents with various diagnoses, based on the training proposed by Marsha M. Linehan. The skills training for adolescents includes five modules: Mindfulness, Interpersonal Effectiveness, Emotional Regulation, Distress Tolerance, and Walking the Middle Path. The first four modules seek to achieve the same goals as those presented by Marsha M. Linehan, with language and tasks adapted for the adolescent audience (Rathus & Miller, 2015). The Middle Way module aims to balance acceptance and change, working on both simultaneously, focusing on strategies of validation, active listening, attention to verbal and non-verbal reactions, non-judgment and tolerance, reinforcement, modeling, extinction, and punishment. The training aims to recognize the genetic predisposition and experiences that favor ineffective behaviors, focusing on the teaching of skills for emotion regulation and thus decrease extreme behaviors linked to emotional dysregulation; as well as strategies for validation of their own thoughts, emotions, and actions (Rathus & Miller, 2015).

The Dialectical Behavioral Therapy Skills Training in School – DBT STEPS-A

In 2016, the program "*DBT Skills in Schools: Skills Training for Emotional Problem Solving for Adolescents* (DBT STEPS-A)" was created to offer training in schools. This was the first DBT program outside the clinical setting (Mazza et al., 2016). Some advantages of the program are highlighted: the school as a place that promotes mental health where young people spend much of their time, the school structure that favors the implementation of the program, the school as a place where many situations occur in which emotional coping is necessary, and, finally, the need for parents' participation in this training (Dexter-Mazza et al., 2020).

Mazza et al. (2016) proposed the DBT program in schools (DBT STEPS-A), which is based on the Skills Training Developed by Linehan. It aims to enable young people to develop strategies for *Mindfulness*, Interpersonal Effectiveness, Emotional Regulation, and Tolerance to Distress. The skills taught in DBT STEPS-A are based on the biosocial theory of emotional dysregulation (Linehan, 2010) which proposes that a biological vulnerability associated with an invalidating family environment can result in emotional regulation deficits; which is likely to lead to confusion about one's own identity, impulsive behaviors, and relationship difficulties. According to this theory, biological vulnerability factors associated with an invalidating family environment may result in a lack of skills for emotional regulation, which leads to confusion about the self, impulsive behaviors, and interpersonal problems. This program, of preventive action, focuses on students taking these skills to their daily lives, increasing their chances of personal success.

It was formulated to be applied by teachers, psychologists, or other health and education professionals who work in schools and have experience in adolescent mental health issues. To be a trainer it is necessary that the professional knows the skills and preferably has had his life changed by the use of these strategies. The sequence of DBT STEPS-A meetings follows the structure of: mindfulness exercise, homework review, teaching new skills, and homework summary. This is the original format proposed in the training developed by Linehan. In addition, Mazza et al. (2016) put that this structure favors the planning and implementation in the classroom, as well as communicates to students what to expect in each module.

The program fits perfectly into the time structure of the schools: with meetings of approximately 50 min, for an average of 30 weeks of classes. The curriculum should be flexible to the school's reality, and may have more or fewer weeks of training. It should preferably take place during the same standard class time and be part of the socio-emotional education program aimed at young people in the final years of elementary school and young people in high school. The aim is to teach the participants skills that can be generalized throughout their school career. In each class, the coordinator has the intention that the student understands the skill through examples that relate to the reality in which he lives. So that the groups can have proximity, the ideal is that the classes are divided into small subgroups of up to 10 participants (Mazza et al., 2016).

In this program developed for the school context, it is not a prerequisite for participation that the young person has emotional dysregulation, impulsive behavior, or mental health diagnoses. The idea is to act on a preventive level, assuming that all people can do more and be better. Thus, it is expected that students will be able to better manage their emotions and behaviors (Mazza et al., 2016).

Zapolski and Smith (2016) conducted a study with a skills group for 80 young students from urban middle schools in the southwestern United States. Participants were referred by school staff for presenting behavioral problems in the school environment. These youth were trained over 9 weeks and 53 of them participated in the post-test. To measure the effectiveness of the program, participants completed pre-post measures assessing urgency traits, lifetime involvement in risky behaviors, and intentions to engage in risky behaviors at the first and last group sessions. There was a significant decrease in intentions to engage in risky behaviors and indicated reduction in impulsivity. Thus, the results indicate that this program may be effective in reducing health risk behaviors among school-aged youth. The DBT STEPS-A program has also been adapted for skills training with students in some other countries.

In 2018, a pilot study was conducted in Iceland that implemented DBT STEPS-A in a primary school. The program was facilitated by a teacher and a school counselor over five months. The study suggests positive results regarding participants' better emotional regulation and sense of well-being (Rósenbergsdóttir & Jóhannesdóttir, 2018).

In the Irish context, Flynn et al. (2018) applied a pilot study evaluating the DBT STEPS-A, with adaptations for the local school context, throughout the year 2017. There were 22 meetings in which 13 teachers from 8 schools in the South of Ireland were trained. Following this the program was to be replicated by teachers for young people in their final year of school, which was not carried out in all schools. The number of program modules completed varied between intervention sites and there was variation in the associated data. Thus, it was not possible to pool data for the intervention group across the eight schools and it was decided to conduct a comparison between two schools: one intervention and one control, were paired based on gender and the amount of intervention received. The study brings some suggestive results, signaling that participants in the group that received the intervention show significant improvements with regard to symptoms of depression, anxiety, and social stress. The results suggest that DBT STEPS-A needs to be adapted to each context and that it can indeed produce positive effects for adolescents who complete the intervention. Also in Ireland, Carey (2019) adapted and implemented the emotion regulation module in an urban post primary school in Limerick; participants perceived the interventions as beneficial and valued the group space.

In another study, Spina (2020) applied the DBT STEPS-A program to 34 sixth-grade students from a suburban school in the United States, comparing the results with those of 29 students who were part of the control group. The intervention lasted 11 weeks, each meeting lasting 40 min. Adolescents' self-reported use of skills, dysfunctional coping, and blaming others were assessed; the results were not statistically significant.

Ramange (2019) applied the DBT STEPS-A in Wales. The sample was targeted and participants were divided into three groups who received 11 weeks of interventions. Reductions in self-harm behaviors were found among participants, as well as improvements in mindfulness, relationships, and academic performance.

In Mexico the study participants were 89 young people between 18 and 25 years old, students of a private university in Mexico who volunteered to participate in the program. They were divided into four groups, 11 participants were part of the control group, having received no intervention. The results strengthen the idea that the implementation of DBT STEPS-A is carried out in a preventive way. It was also reported to benefit in relation to the reduction of self-injurious and suicidal behaviors. (Huerta-Hernández et al., 2020, 2021).

In Brazil, the DBT STEPS-A has not yet been applied. In 2018 Justo et al. conducted a study proposing a continuing education program of DBT-ST skills training for teachers. This was the first DBT skills training program in Brazil. In this study, 27 elementary school teachers from public schools in Rio Grande do Sul were included. The intervention occurred in four three-hour meetings and a follow-up meeting two months after the end of the training. Although the study had few participants, it was possible to promote the promotion of mental health at school, as well as to strengthen the importance of preventive programs in the school environment (Justo et al., 2018). It is important to emphasize the need for further studies in the school environment, which include more participants and can apply structured protocols of longer duration.

Adaptation for the Brazilian School Context

In Brazil, it is common for children and young people to study full-time, staying up to 12 h at school (Oliva et al., 2018). School prevention programs have been increasingly applied in the Brazilian school context, and here we can highlight the programs with a theoretical approach based on the assumptions of Cognitive-Behavioral Therapies. It is perceived that the Cognitive-Behavioral approach in school is useful to work with regard to cognitive, social, and emotional skills (Fava, 2016). Therein lies the need for each school to have a school psychology professional, who is responsible for having a broad view of the reality of that school, realizing the interactions between all members of the school community. The psychologist is qualified to implement training programs directed to other professionals working in the school, being responsible for training and supervising how is the progress of each project, which enables expansion of the proposed content, without losing sight of the necessary quality for each intervention (Fava, 2016).

Currently, the teaching-learning process in Brazilian schools focuses on the student and the performance of school psychology is still very focused on individual care and the preparation of psychodiagnoses. A systemic view is needed in the educational context (Viana, 2016). The law of the guidelines and bases of national education has since 1996 pointing us to new paths of action; one of these paths is

the directionality for the look of action of an integrative school psychologist, which brings together knowledge of teachers and students (BRAZIL, 1996).

According to Viana (2016) the school and educational psychologist needs to focus on strengthening and promoting the development of students, understanding aspects of behavior, physical and emotional development, autonomy, responsibility, and respect. Regarding his performance, he should be critical, mediating conflicts, conducting projects, articulating the acquisition of knowledge, articulating network actions with Social Work professionals, and being present in educational planning as a whole.

Interventions in the school context need to consider Law 9.394/1996 which establishes the guidelines and bases for national education (BRASIL, 1996). It is worth highlighting some aspects: school education should be linked to the world of work and social practice; teachers participate in the preparation and implementation of the political pedagogical project of the school where they work, basing their work plan on this project. The teacher is responsible for ensuring student learning, including in their proposals, aspects related to ethics, development of intellectual autonomy and critical thinking, adopting a look at the life project of that subject and for their emotional, cognitive, and socio-emotional training. This law also assigns some responsibilities to the education system, which should offer support to the teaching staff: professional improvement and studies must be constant, valued, and paid; a salary floor must be met with the possibility of functional progression based on title and performance.

Especially about the appreciation of teachers it favors the mental health of the teacher and consequently of their students, but little actually occurs in practice in Brazilian schools, what we observe is a search for improvisation, in which the teacher strives to give his best even when not offered adequate working conditions. That is when the teacher is motivated, because after a few years of teaching it is common to notice tired teachers who focus on meeting the formal content within the workload proposed for that subject. Viana (2016) states that the challenges beyond the educator's training are also linked to their professional valuation, the lack of inputs available in schools, including technology devices and appropriate methodologies for each reality.

In addition, every day school professionals live with mental health issues and they need to be trained to deal with it. Educators need to develop skills to deal with the diversities presented in the school context, which becomes a facilitating factor for the relationships with the school community, productivity, and harmony in the classroom (Fava, 2016). The school is a place of diversity, where there are students with the most varied characteristics and needs, such as anxiety, depression, difficulty to interact socially, difficulty of emotional expression. The emotional quality skills are directly related to learning and the gains are enhanced when all participants in the process are involved. Training programs for teachers have been developed to prepare them to deal with the difficulties inherent to the school context, such as the management of problems related to emotions and behavior (Fava, Marin, & Andreta, forthcoming).

Table 2 Skills described in the literature

Self-knowledge	Ability to know oneself, learning about one's characteristics, and abilities. Also learning about the need for change and acceptance in this regard.
Interpersonal relationships	Focuses on cooperation, that the child is taught to make social alliances, which facilitates interaction in groups.
Empathy	Knowing how to put oneself in the other's place, from the perspective of the other's gaze, being compassionate, and acting in a manner directed toward healthy, less self-centered social relationships.
Effective communication	Assertiveness when it comes to communication, saying what you think, and presenting your point of view without aggressiveness or passivity.
Dealing with emotions and feelings	Naming emotions, understanding the biological as well as social function and need for emotions; learning to cope with them.
Dealing with stress	Learn to deal with the anxieties of everyday life in a balanced way.
Problem solving training	This skill refers to learning to solve the problems that arise, analyzing the effectiveness of possible solutions.
Decision making	Pondering related to choosing appropriate solutions to solve each problem, aiming to solve it effectively.
Critical thinking	Reflection on what is learned, on how this adapts to reality and the lived context.
Creative thinking	It refers to the ability to think about the situations presented in a flexible way.

WHO (1997), Casel (2003, 2017), Marin et al., (2017)

In 1997, the World Health Organization (WHO, 1997) published a guideline for the implementation of life skills promotion programs, signaling the importance of these skills in school settings. Many authors have developed technical and recreational materials on these skills, which also appear as synonyms for social-emotional competencies. Table 2 shows some of the skills described in the literature.

These skills can and should be worked on transversally throughout the learning process of the group of students. Working in groups is extremely advantageous in the school context, because more students receive the intervention at the same time, and learning is maximized by aspects of group cohesion, learning by experience, and living with different people. For group work with children and adolescents, the structure should consist of playful activities adapted to the school and social context of that group, which facilitates the learning of the proposed contents (Fava, 2016). The aspect related to adapting the interventions deserves highlighting, the Brazilian population has characteristics of intense affectivity, lack of assertiveness, empathy, and lack of systematization, which hinders more objective interventions (Neufeld et al., 2021). In this way the authors place the importance of using manualized CBT, however, bringing examples close to the sociocultural reality of the assisted group itself. The Brazilian CBT therapist tends to be creative, authentic in his interventions and flexible regarding structure, use of protocols, and establishment of goals and agenda.

Martins (2003) states that the attitude of the facilitator should be open, following the historicity and being attentive to the needs of each school group. The author highlights the need for the school psychologist to leave the role of firefighter, which solves the problems that appear, and act in promotion programs and mental health prevention, being attentive to innovative practices. Thus, the ideal is to use the DBT STEPS-A after it has been translated and with adaptations that are really coherent to the Brazilian context, with the possibility of including videos, images, and examples that concern the reality of our students.

In Brazil the use of DBT is still extremely new, the first training held in Brazil by the team of Marsha M. Linehan occurred in the years 2015/2016. Based on this, Finkler et al. (2017) show how DBT has been studied and implemented in our country. The authors highlight the lack of studies focused on the Brazilian reality. This makes it difficult to obtain an overview of how the interventions are made and how therapists are incorporating the assumptions and practices of this approach in their daily lives.

Conclusion

DBT is a transdiagnostic approach that has a wide use in the context of clinical psychology, especially for more severe and complex cases (Melo et al., 2017). However, what programs like DBT STEPS-A seem to offer is a preventive applicability in the school context. Such prophylactic proposal makes perfect sense since the DBT skills, much more than skills for borderline patients, are skills for life and can be extremely beneficial for all individuals, with or without diagnosis that involve severe emotional dysregulation. Traditionally in the clinical sphere one has worked within a secondary (mental disorders) and tertiary (consequences of psychopathology) prevention perspective. The proposal offered by the DBT STEPS-A program is a valid attempt to act within a primary prevention context. Preventing today's youth from engaging in risky behaviors and developing emotion regulation skills can effectively lead to fewer patients with complicated psychiatric histories in adulthood.

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Applications of Rational Emotive Behavior Therapy for Students with Test Anxiety

Ann Vernon

Test Anxiety: An Overview

Cristina has been tossing and turning in bed for over two hours, ruminating about the major exam she has tomorrow. Willing herself to sleep has been to no avail, and as a myriad of thoughts race through her head about taking the exam, her anxiety increases. As the clock ticks away, Cristina worries that she won't be able to concentrate and give it her best effort because she will be too tired to think.

Niko paces back and forth in his bedroom, trying to memorize historical facts that he is certain will be on tomorrow's test. Everything seems to be muddled up in his mind and his brain feels like it is paralyzed. "What if I can't remember these facts? What if I fail the test? What if…" These thoughts consume him and he feels certain there is no way he can pass this test, which will only prove how worthless he is.

Cristina and Niko both suffer from test anxiety, a type of performance anxiety. Although many students experience some sort of anxiety before an exam, test anxiety is more than just feeling a bit anxious. Students with test anxiety actually experience dread and fear along with the anxiety, which can negatively impact their performance. Test anxiety affects students young and old—from elementary school through college and graduate school. Not only does test anxiety affect academic performance, but it also impacts mental health, reducing students' motivation, frustration tolerance, self-confidence, and self-concept. Parents and teachers may inadvertently ignore the negative effects of test anxiety, thinking that it is just something that students naturally experience in the academic setting. However, if it is not addressed, there is a price to pay because students with test anxiety usually score a half letter grade below their fellow students (Oxford Learning, 2018).

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It is estimated that 10 million children in North America experience test anxiety, with 16–20% of students reporting high anxiety and 18% reporting moderate test anxiety. Worldwide, the estimates appear to be very similar (Oxford Learning, 2018). High achieving students are the most likely to experience test anxiety because they expect perfect performance and put a lot of pressure on themselves to get exceptionally good grades. As a result, they become overwhelmed and their mind goes blank, both when studying for and taking an exam. On the other hand, students who don't understand the subject matter or who have procrastinated about studying for the test and are unprepared often have a mindset that they will fail, which can actually happen.

A number of factors contribute to test anxiety. From an academic standpoint, timed tests, poor study skills, lack of preparation, subject matter that is too difficult to comprehend, poor performance on previous texts, or very high expectations can result in elevated anxiety. Sleep deprivation can also be a contributor. From a mental standpoint, students who feel they will let their parents or teachers down if they don't get high marks experience greater anxiety, as do students who place unrealistically high expectations on themselves and tie their performance to their self-worth (Merrell, 2001).

Symptoms of test anxiety can be categorized as physical, emotional, and cognitive. From a physical standpoint, symptoms can include headaches, stomach aches, nausea, vomiting, or diarrhea. They may also include excessive sweating, shortness of breath or rapid heartbeat, or feeling lightheaded. In extreme cases, students may experience panic attacks. Emotional symptoms may include anxiety, fear, stress, feelings of self-doubt and inadequacy, anger and frustration, and a sense of hopelessness. Cognitive symptoms can include indecision, difficulty concentrating or remembering, and jumbled thoughts (Gotter, 2017).

Some additional signs of test anxiety include: going blank during a test even if the student has prepared for it; worrying about forgetting the information even though they know it, studying excessively for the test but still worrying that they will fail because they think they haven't studied enough, becoming frustrated and overwhelmed at the mere thought of taking a test, having difficulty concentrating and staying on task to study, procrastinating about studying for the test, doing well in class and on routine homework assignments, but failing or doing poorly on exams, and lacking confidence and assuming that they will fail.

Test Anxiety: An REBT Perspective

Anxiety, including test anxiety, is what REBT considers an unhealthy negative emotion because it interferes with goal attainment and results in maladaptive functioning (Hickey, 2019). From an REBT perspective, the objective is to replace unhealthy anxiety with a healthy negative emotion such as concern. While unhealthy anxiety can affect students' concentration and may cause them to underperform, concern results in more effective functioning. In order to understand how to change an

unhealthy negative emotion to a healthy negative emotion, we first need to look at what causes the anxiety.

Ellis (Hickey & Doyle, 2018) posited that it is not the event itself that results in unhealthy negative emotions and self-defeating behaviors. Rather, it is what we *think* about the event. For example, suppose two students have an important test to take tomorrow. David is very anxious, thinking that it will be so difficult that he will fail the test, which will mean that he will get a bad grade in the class, and that would be awful because if he doesn't maintain high grades, he won't be eligible to play on the soccer team. Erika is also anxious about the exam, but instead of thinking the worst, she tries to focus on studying and realizes that the more anxious she is, the worse she will perform. She reminds herself that she should just try and do her best and not think about the possible worst-case scenario.

What this comparison between these two students illustrates is the critical aspect of beliefs in the development and maintenance of unhealthy negative emotions such as anxiety. According to REBT theory, there are two types of beliefs: rational and irrational (Vernon & Bernard, 2021). Rational beliefs are true and are supported by evidence. They are flexible, logical, result in constructive behaviors, and help clients achieve their goals. Rational beliefs reflect preferences and result in healthy negative emotions such as disappointment, worry or concern, or sadness (Vernon, 2019). In contrast, irrational beliefs are unhelpful and illogical; they are untrue and are based on assumptions rather than on facts. Irrational beliefs are characterized by rigid, absolutistic thinking and result in unhealthy negative emotions such as depression, anger, anxiety, self-pity, worthlessness, and rage. They are also associated with acting out, withdrawal, avoidance, and procrastination (DiGiuseppe et al., 2014).

According to Hickey (2019), "most individuals with problematic anxiety engage in some form of awfulizing" (p. 4): it's awful if I fail; it's awful that I have to take tests; it's awful that I have to study for tests; it's awful that I have this anxiety. Furthermore, since there are uncomfortable physical symptoms associated with anxiety such as sweating, heart palpitations, nausea, stomach aches, or headaches, there is often an element of frustration intolerance: *I can't stand* feeling this way. In addition, people who experience test anxiety also engage in self-downing: I'm stupid because I can't perform well on tests; others will think I'm no good because I can't get good grades on tests; others won't like me if I fail this test; I must be a worthless person since others do well on tests and I don't; what's wrong with me? These examples of irrational beliefs are what cause some students to be highly anxious when taking an exam because they think they *must* get a high score and it would be the end of the world if they didn't. Students who don't place this demand on themselves want to do well, but realize it is just an exam and not the end of the world if they don't get high marks.

Given that test-taking is highly prevalent in educational settings, we need to find effective ways of helping test-anxious students overcome this problem. It is unrealistic to assume that teachers will stop using tests of some sort to measure performance, so we can't solve the problem by eliminating what some would consider to be the source. But in fact, taking a test isn't the source of the problem. From an REBT perspective, it is what students *think* about taking the test that creates the

problem. Therefore, the goal is to teach students to challenge/dispute the irrational beliefs associated with awfulizing, frustration intolerance, and self-condemnation and replace them with rational beliefs that will enable them to take a test and feel concerned (a healthy negative emotion) instead of high anxiety that can paralyze the student and result in poor performance.

Challenging Irrational Beliefs

There are four types of disputes that are used to challenge irrational beliefs: functional, logical, empirical, and philosophical disputes. The purpose of challenging irrational beliefs is not to *attack* the students' beliefs and make them defensive, but rather, to help them see that their beliefs aren't working for them—they are not helping them be less anxious in test-taking situations (Vernon, 2019). A functional dispute helps students look at how their thinking is helping them. "How it is helping you to think that you will fail the test?" "Is it helping you to think that you are an idiot just because you get highly anxious when taking an exam?" A logical dispute helps students question the logic of their thinking. "Does it make sense to worry yourself sick about taking a test?" "How logical is it to think that everyone will think you are a loser if they know that you get anxious when you take tests?" Empirical disputes help students carefully examine the evidence supporting their beliefs. "Where is the evidence that you are a worthless person because you get very anxious when you take tests?" "Where is the evidence that you will always experience this level of anxiety" The philosophical dispute is what is referred to as the *elegant* dispute because it challenges students to accept themselves and the situation/condition. "I realize that it can be uncomfortable when you get so anxious about taking a test, but is there any reason to think that you absolutely can't stand those bad feelings for an hour or so?" "It may be that you will always have some anxiety about taking tests, but is there any reason to think that you are a worthless human being because of this anxiety?"

The following dialogue illustrates the disputation process with Anna, a 14-year-old, who has a history of intense test anxiety. Despite the fact that she generally does fairly well on her exams, the anxiety prior to and during the exam causes her to feel sick to her stomach. Therefore, in in addition to worrying about the exam, she is afraid she will vomit in front of her peers.

Therapist: It's good to see you, Anna. How are things going?
Anna: Not so great. I have a big test tomorrow and I'm so anxious about it. It's a big part of my grade so I have to do well.
Therapist: Would you like to work on this anxiety in today's session?
Anna: For sure.
Therapist: Well, let's see what we can come up with to help you deal with your anxiety. To give me an idea of how anxious you are about this, can you tell me on a

scale of 1 (not anxious) to 10 (highly anxious) where you would rate your anxiety?

Anna: I'd say a 10. Even right now as I think about taking the test, I'm afraid I'm going to vomit.

Therapist: A 10 is really high. If I could wave a magic wand and change anxiety into a more manageable feeling, what might that feeling be?

Anna: I don't know. Maybe I'd just be a little worried or concerned, but not paralyzed by anxiety.

Therapist: That sounds like something to work towards. In order to accomplish that, we need to look at the thoughts that are causing your anxiety. Can you tell me specifically what is going through your head about taking this important exam?

Anna: Well, first I think that it would be awful if I fail it because then I would get a lower grade in the class.

Therapist: And what would that mean to you if you did fail the test and got a lower grade?

Anna: It would just mean that I'm stupid; I should be able to get a good grade, but I just get so anxious.

Therapist: Let's come back to that thought, but do you have other thoughts about taking this exam tomorrow?

Anna: I think that it would be awful if I get so anxious that I vomit in class, and that would really make me look like a fool in front of my friends. Other kids must not get anxious like me, so it makes me feel like some kind of a weirdo.

Therapist: And are there any other thoughts contributing to your anxiety?

Anna: That my mind will just go blank and I will just sit there and stare at the page and then time will be up and I haven't even answered a question.

Therapist: And suppose that happened, what would that mean to you?

Anna: It would mean that there's something wrong with me. I should be able to answer the questions. Why am I such a loser? Why can't I just be normal like everyone else?

Therapist: You just mentioned that you want to be normal like everyone else, and earlier you said that other classmates must not get as anxious as you do. If you are all taking the same exam, why do you think that you get more anxious than they do?

Anna: I'm not sure.

Therapist: Let me see if I can help you with that. When you think about the exam and you are highly anxious, you said you are thinking that you will fail, that it will be awful, that it would prove you are a loser, and so forth. Your classmates who aren't highly anxious must be thinking something else: what do you suppose they are thinking?

Anna: I guess they aren't thinking they will fail or if they did that it would be awful.

Therapist: Exactly. Would you like to work on your thoughts so that maybe you could think more like they do?

Anna: Definitely. I hate feeling this way.

Therapist: Let's start with your first thought. You said that it would be awful if you failed the test because you would get a lower grade in the course and that would prove your stupidity.

Anna, how does it help you to think this way? (Functional dispute)

Anna: It doesn't help at all. It just makes me more anxious.

Therapist: Let me ask you this: do you usually do poorly on tests or fail them?

Anna: No, sometimes I don't get a great grade, but I don't think I have ever failed a test.

Therapist: Then is it really logical for you to assume that you will fail? (Logical dispute)

Anna: No! I don't know why I think that way.

Therapist: If it doesn't help you to think that you will fail, and it isn't logical to think that you will since you never have, what would a more helpful thought be?

Anna: I guess I could think that I usually get a decent grade and that it doesn't help me to think I will fail.

Therapist: Right—and based on your past history, is there really any evidence to suggest that you will fail? (Empirical dispute)

Anna: No, not really.

Therapist: But when you *assume* that you will fail, I imagine that your anxiety is higher, which in turn can affect your performance, right?

Anna: Yes, absolutely.

Therapist: It sounds like it is unlikely that you will fail, but let's just suppose for a minute that you do fail the exam—do you really think that you wouldn't be able to stand it? (Philosophical dispute)

Anna: I suppose I could stand it—I just don't want that to happen.

Therapist: Right, but do you see the difference between not wanting to fail and thinking that you absolutely *must* not fail?

Anna: I guess so. When I think that I absolutely can't fail I put pressure on myself and become more anxious.

Therapist: Exactly. You also said that if you failed it would prove how stupid you were. If your best friend came to you and said that she was an idiot because she failed the exam, would you agree with her?

Anna: No, of course not.

Therapist:? Then what would you say to her?

Anna: That she's not an idiot just because she didn't do well on a test.

Therapist: Do you really believe that she wouldn't be an idiot if she didn't do well on the test?

Anna: Yes—just because she didn't do well doesn't make her an idiot.

Therapist: Then why would it make you an idiot if you didn't do well?

Anna: I guess it wouldn't.

Therapist: Right. Is there really any evidence to suggest that not doing well on an exam because your anxiety was high makes you an idiot? (Empirical dispute)

Anna: No, there isn't any evidence to suggest that.

Therapist: Let's do a little reverse role play. I am going to pretend to be you and you are going to "help me" get over these unhelpful thoughts, okay?

Anna: Sure.

Therapist: Anna, I just failed my math test. I am SO stupid. I don't know what is wrong with me.

Anna (role playing the therapist): Markus, where is the evidence that you are stupid just because you failed the test? Maybe you didn't study enough or were just having a bad day, but how does that make you a bad person?

Therapist: How did that feel to say that, Anna?

Anna: It actually felt fine.

Therapist: Great—I think it would be helpful for you to start saying that to yourself; that you are not stupid if you fail a test.

Anna: I agree. I can try.

Therapist: Let's look at something else, and that is that it would be awful if you failed the test and it would be awful if you vomited in front of your peers. Even though you told me that you have never failed a test and you haven't vomited in class, let's just assume for a moment that you had. What would that mean for you? (Philosophical dispute)

Anna: It would be awful.

Therapist: I agree it wouldn't be desirable, but can you think of anything worse?

Anna: Sure—there are lots of things that are worse.

Therapist: What is an example of something that would be worse?

Anna: It would be worse if my parents got a divorce or if my grandparents got really sick and died.

Therapist: And if we put a strip of tape across the floor and labeled one end *really awful*—a 10, and the other end *not too awful*—a 1, where would you place your test anxiety after identifying what could be worse.

Anna: I think it would be about a 6 or 7 when I put it in perspective like that.

Therapist: It does help to put things in perspective, but at the same time, you still have a problem to deal with. Let me ask you this: since you have never vomited in class, how does it help you to think about it happening tomorrow? (Functional dispute)

Anna: It doesn't help me at all. In fact, it just makes me more anxious and distracted so I can't concentrate on taking the exam.

Therapist: Exactly. I think you get the point—that your *thoughts* "make you" anxious, so if you change your thoughts, you can change your feelings. Of course, that is easier said than done and we still have some work to do on this, but is there something you learned today that will help you with your anxiety when you take the exam tomorrow?

Anna: I think the most important thing I learned is to stop putting myself down. I'm not an idiot; I just want to do well on my exams and my anxiety gets in the way.

Therapist: You are right—your anxiety gets in the way. But I also want to point out something else that you just said about wanting to do well. I bet that lots of your classmates *want* to do well, and if you thought that way, my guess is that you wouldn't be as anxious. But I think what you are really saying is that you *must* do well, and if you don't, it's awful and it means you are a loser. Is that right?

Anna: Yes, exactly.

Therapist: Is there something you could think to yourself before and during the exam that would be more helpful than what you have been thinking, about being a loser, assuming you won't do well, and thinking it would be really awful if you didn't?

Anna: I could think that I will do better on the test if I don't assume that I will fail or that if I do, I'm not stupid. I just need to do my best and not think the worst.

Therapist: That's a great start. As a homework assignment, I'd like you to write this thought and other thoughts you think would be helpful on notecards or in your phone. Review them before you take your test tomorrow and see if that helps.

Good luck! See you next week.

The A-B-C-D-E Model

This scenario illustrates the A-B-C-D-E model of REBT, developed by Dr. Albert Ellis to illustrate the basic constructs of the theory and the process of change (Hickey & Doyle, 2018). In this model, the A is an activating event, which can be something in the past, present, or future that triggers an emotional and behavioral reaction/consequence (C). Most people believe that it is the activating event that *causes* the emotional and behavioral disturbance, but in fact, two people can experience the exact same event and react differently based on what they are thinking. In the previous scenario, the A is taking a test and the emotional C is anxiety. The behavioral C is that the client gets so anxious she is unable to concentrate.

The next step of the model is to make the B-C connection (the connection between the beliefs and the emotional/behavioral consequence) so that the client clearly understands that thoughts create the feelings and behaviors, not the activating event. In the scenario, the therapist asks Anna why she thinks her classmates aren't as anxious as she is when they are all experiencing the same activating event, which is taking the test. Once the client understands her thoughts cause the emotional and behavioral distress, we move on to the D in the model, which is disputing. As previously stated, there are four types of disputes: functional, logical, empirical, and philosophical. The first three are the most commonly used disputes with children and young adolescents. The philosophical dispute may be too difficult for them to comprehend, depending on their level of cognitive development, because this dispute requires more abstract, hypothetical and logical thinking skills that children and adolescents don't acquire until they have transitioned into formal operational thinking, generally between the ages of 11 and 14 (Vernon & Chen, 2019). As the scenario illustrates, the therapist asks multiple disputing questions in an attempt to help Anna deal with her irrational beliefs related to self-downing, awfulizing, and frustration intolerance.

Disputing can be challenging with younger clients, so therapists need to repeat disputes in various ways, using different techniques. Because young clients are not as verbal as adults, therapists cannot simply rely on the verbal disputation process

illustrated in the case of Anna. Instead, they need to tailor disputes so they are more appropriate for the clients' developmental level. An important consideration in developing disputes and interventions is that children retain 5–15% of what they hear, 10–20% of what they see, and 40–50% of what they see and hear. When experiential methods are used, the retention rate climbs to 90%. For this reason, creative arts techniques such as games, visual arts, music, or activity-based experiential activities that incorporate visual, auditory, and kinesthetic approaches are most effective with children and adolescents (Vernon & Barry, 2013).

In the following section, I will describe several developmentally appropriate creative arts strategies that facilitate the disputing process. In some cases, these techniques are used in addition to the verbal disputation illustrated in the case study scenario with Anna. Other times, they might be stand-alone interventions, particularly if you are working with clients who aren't very verbal or who learn best through experiential activities that tend to be more impactful.

Test Anxiety Interventions for Children

Adios Anxiety

This experiential intervention introduces the concept of *rational coping self-statements*, which are simply statements that the client repeats to himself to promote coping with an event that is causing emotional distress (Vernon, 2019). These coping statements can be written down so they can easily be reviewed and referred to when needed. First, the therapist needs to make a hopscotch board using a bed sheet or a piece of very thick plastic. Once the client is standing on the first square, the therapist asks him to describe the thoughts he has about taking his reading test this week. As the client speaks, the therapist writes down these thoughts. When the client has nothing more to offer, the therapist explains that she will read the first thought that makes the client anxious about taking the test and he has to come up with something he could think or do to help him cope with this situation. The therapist may need to give an example, such as "I could take some deep breaths to help myself calm down, or I could think about how I am a good reader." After the client verbally provides a rational coping statement and the therapist writes it on a notecard for the client to keep, he can jump to the next set of squares on the hopscotch board (Vernon, 2002, p. 85). The game continues in this manner until the client jumps to the last square and says "Adios Anxiety!"

What If…

"What if" thinking is commonly associated with anxiety, and young children aren't very capable of differentiating between the probability and the possibility of something occurring. Therefore, their "what if" thinking often refers to the possibility versus the likelihood that it will actually happen. This experiential intervention involves a ball toss (a beach ball works well). After discussing what the client is anxious about, the therapist introduces the "What If" game. First, the client throws the ball to the therapist and verbalizes a "what if" statement relative to the anxiety she feels about an upcoming test. For example, the client might say, "What if I don't get a single answer right?" As the therapist throws the ball back to the client, he might say, "But don't you think it is possible that you will get some right if you study?" The game continues in this manner with the therapist modeling the possibility rather than the probability of a bad outcome (Vernon, original, unpublished).

Doom and Gloom Glasses

As referred to in the previous intervention, children often make erroneous assumptions that the worst will happen, in part because they may lack the cognitive skills to look at the problem comprehensively and logically. This intervention teaches young clients the difference between two ways of thinking. For this intervention, you will need a pair of dark classes and a pair of regular glasses with a clear lens.

Based on previous discussions with the client, the therapist can prepare several different activating events, such as having to study for a test, actually taking a test, having to trade papers with the child behind him while the teacher reads off the answers to the test, and so forth. The therapist will ask the client to put on the dark glasses, explaining that when he is wearing these, everything seems awful, impossible, and so forth. Then she asks the client to exchange those glasses for the clear ones. When the client is wearing these, his thinking is much more logical and realistic. The therapist invites the client to put on the dark glasses and reads a short scenario, such as: you have just finished taking your history test and the teacher asks you to exchange papers with the kid sitting behind you. What are you thinking as you are wearing these dark glasses?" After the client has finished verbalizing, the therapist asks him to put on the clear glasses and talk about the event from that perspective, where the thoughts will be more logical and rational. Debriefing should focus on the difference between thinking clearly and logically versus only thinking the worst (adapted from Vernon, 2006a, pp. 241–243).

Test Anxiety Interventions for Adolescents

Chain Reaction

This intervention helps clients realize how their thoughts create their feelings, which needs to happen before disputation can occur. You will need 15–20 blank strips of paper, a pen, and a stapler. After discussing an adolescent client's test anxiety, the therapist should take two strips of paper and write "taking a test" on each of them. Next, ask the client to take a strip of paper and write something that she is thinking about taking the test, such as "it'll be awful if my mind goes blank." Have the client do this repeatedly with different strips of paper until she has identified all of her thoughts. On the last strip, she should write the feeling she has when she thinks about these thoughts about taking the test. The next step is to take the event strip (taking a test) and staple it so that it becomes a circle. Then take the first thought strip and loop it through the event strip and staple it, making a second circle. She should do this with all of the thought strips to form a chain, ending with the feeling strip. The therapist then takes the other strip with "taking a test." He identifies a more rational thought, such as I want to do well, loops it through the event strip, and staples it to begin forming another chain. After several rational thoughts have been identified, he identifies a feeling, which would be concern or worry because the thoughts are rational. The therapist asks the client to read her chain and then the therapist reads his in order to initiate a discussion about the difference between the two types of beliefs and resulting feelings. The concrete image is very helpful in reminding clients that when they think rationally, they are not as anxious about taking a test (adapted from Vernon, 2006b, pp. 35–36).

Don't Soak It Up

One of the negative consequences of test anxiety is how it impacts self-acceptance. Students with test anxiety often feel ashamed or guilty because they experience such high anxiety. And as previously noted, these students have a tendency to engage in self-downing, thinking they are less worthy or stupid because they suffer from test anxiety which often interferes with successful performance on exams. This intervention addresses this self-downing. You will need a bucket of water and a large sponge. While the sponge is still dry, hand it to the client and ask how it feels (light, airy). Then invite him to dip the sponge in the water and then pick it up, asking how the sponge feels now (heavy, dense). Explain that when we put ourselves down for feeling anxious while taking a test, it is like "soaking up" all the negatives. Next, ask the client to share some of the negative things he says to himself about his test anxiety and as he talks, the therapist writes them down.

When the client has identified everything, the therapist reads these back to the client, one at a time. Explain that as you read each one, the client should dip the

sponge in water, and then bring it out and "wring it out" by identifying more rational/sensible things he could think in order to make the sponge lighter—not soaking up all the negative. Continue this strategy with each of the identified thoughts. Discuss the difference between "soaking it up" and "wringing it out" by thinking more rationally. This intervention is only viable after the client understands the concept of disputing irrational beliefs, and initially the therapist may need to demonstrate the "wringing out" process by dipping the sponge in the bucket and saying "I am so worthless because I get so anxious," and then wringing it out and saying "Being anxious has nothing to do with my self-worth" (Vernon, 2002, p. 77).

Let It Go

This intervention teaches disputation, but when coupled with an experiential technique and the "let it go" metaphor, it is especially effective. You will need several very thin strips of paper and several balloons. As the client talks about her text anxiety, the therapist asks her to identify specific thoughts and writes these on individual strips of paper. He then reads these back to the client to make sure he heard correctly. Next, he asks the client to rank order these thoughts, with #1 being the thought that makes them most anxious and 10 being the thought that they are least anxious about. The next step in the process is to start disputing the least anxiety-provoking thought and when the client feels that she can "let go" of that thought, she folds it over, stuffs it into a balloon, blows up the balloon, and ties it so the balloon doesn't deflate. The therapist then invites the client to toss the balloon into the air and let go of some anxiety. Repeat this procedure with the other identified thoughts.

An intervention that works effectively with students of all ages is relaxation, which is an essential method of reducing anxiety and fear. Merrell (2001) describes a progressive muscle relaxation and also an abbreviated relaxation technique to employ when there is not sufficient time to do the longer progressive relaxation. The steps in the abbreviated version are as follows: (1) find a comfortable place; (2) get into a relaxed and comfortable position; (3) sit quietly; (4) close your eyes; (5) focus on your breathing by drawing in deep full breaths and letting them out slowly, feel yourself relax as you breathe out and let go of your worries; (6) tense and tighten your muscles, group by group; let them relax and notice how calm they feel as you relax; (7) let your whole body relax and continue to breathe in and out in slow, deep breaths; (8) think about being in a favorite place and being very calm and relaxed; (9) do these steps for a few minutes and then sit quietly for a few minutes more (p. 143).

Conclusion

Test anxiety is a very prevalent problem that not only impedes academic achievement, but results in debilitating physical, emotional, and cognitive symptoms. Unfortunately, test anxiety often goes untreated. As discussed in this chapter, rational-emotive behavior therapy is an efficacious therapeutic approach that helps clients manage their anxiety by changing their thoughts.

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Mindfulness-Based Interventions for Anxiety and Stress in College Students: An Integrative Review

Karen Cicuto and Marcelo Demarzo

Introduction

The Mental Health of the University Student

Mental disorders have been increasing within the university. The prevalence of most emotional problems has increased in recent decades among college students. What before the 1990s was referred by them as the biggest problem (relationship problems) today has lost space to emotional and mental issues (Storrie et al., 2010), now they are being mainly affected by anxiety, stress, and depression (Beiter et al., 2015), in addition to other disorders such as eating disorders, psychosis, and obsessive-compulsive disorder (Storrie et al., 2010).

With important changes occurring in their lives and new demands of university life emerging, skills and competencies are required of the university student to handle these demands, which can be important stressors for the student (Ariño & Bardagi, 2018). Anxiety in academic situations may cause important consequences for student learning and well-being (Hjeltnes et al., 2015). Performance anxiety, for example, is described in DSM-5 as a subtype of social anxiety, and affects the individual's academic and professional life (APA, 2014). According to Beiter et al. (2015), the main concerns affecting college student's mental health are academic performance, pressure to succeed, and plans for after graduation. In addition, academic experiences and the perception of self-efficacy are also important aspects in the correlation with students'mental health (Ariño & Bardagi, 2018).

Even though they are experiencing emotional and mental difficulties most students do not seek help and one of the main reasons for this is the stigma associated

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with mental disorder. Thus, students have fear of being branded as weak, which could affect their careers in the future (Storrie et al., 2010). Ariño and Bardagi (2018) point out to the need to promote institutional actions aimed at empowering students to better manage their academic life, so that they are effective in their time management in a balanced way, not neglecting hours of sleep and leisure, in addition to being able to perform good study strategies. In addition, there is a great need to promote interventions that benefit the mental health of university students in order to prevent mental disorders such as anxiety disorders and excessive stress. Mindfulness may be a beneficial proposal in this sense.

Mindfulness

The term "mindfulness"is commonly understood as "full awareness" in medicine and psychology. Today, mindfulness practices used in health facilities are secular, although the concept of mindfulness was born in Buddhism and other contemplative traditions (Brown & Ryan, 2003; Demarzo & García-Campayo, 2015). Mindfulness is often described as a mental state characterized by intentionally bringing one's attention to the present moment, observing what is there curiously, non-judgmentally, and with acceptance, without trying to change anything (Kabat-Zinn, 2004), and is taught through a variety of meditative practices (Baer, 2003). Meditation practice is used with the aim of developing skills to evoke the state of mindfulness, which is also not exclusive or limited to meditation. Once the skills to achieve it are learned, attention can be regulated to achieve this state in many situations (Bishop et al., 2004; Brown & Ryan, 2003; Demarzo & García-Campayo, 2015).

Bishop et al. (2004) propose that mindfulness is defined, in part, as a form of self-regulation of attention that involves sustained and alternating attention and inhibitory control, thus being considered a metacognitive skill. Mindfulness can also be considered as a process of relating to experience in a different way: openly. By adopting a relationship of openness and acceptance with experience, including unpleasant feelings and sensations, it can lead to a change in the psychological context in which they are experienced, leading to a possible greater tolerance to them, decreasing the need to react to them quickly. Shapiro et al. (2006) suggest that mindfulness involves three components: intention, attention, and attitude. These are blended aspects of a dynamic, cyclical, and unique process that happens simultaneously, from moment to moment. Whereas Baer et al. (2006) propose mindfulness as a 5-factor framework: observing, describing, acting with awareness, non-judging, and non-reacting.

Mindfulness-based interventions (MBIs) have in their structure some elements and influences elements. They are contemplative mindfulness practices, science, medicine, psychology, and education. In general, MBIs aim to enable participants to recognize conditioned and habitual modes of response and behavior and to make changes in their relationship with their thoughts, feelings, and body sensations, as well as with external circumstances. The change in this relationship is based on

what is called *decentering*, in which the participant is trained to relate to thoughts or feelings as mental events, noticing how they come and go from the mind, and how each one has consequences in the next moments (Crane et al., 2016).

MBIs, in the format in which they are known today, applied to health, emerged in the United States of America, with the Mindfulness-Based Stress Reduction Program (MBSR), developed by Jon Kabat-Zinn in the 1970s, in Massachusetts, for chronically ill patients (Kabat-Zinn, 2004). From MBSR, several protocols for a variety of pathologies were born. MBIs have increasingly gained ground in healthcare as a complementary treatment for various disorders, such as depression and prevention of depressive relapse (Kuyken et al., 2016; Tickell et al., 2019; Van Aalderen et al., 2012), stress reduction (Kabat-Zinn, 2004), chronic pain, substance abuse (Goldberg et al., 2018), anxiety disorders (Ghahari et al., 2020; Hoge et al., 2013), and also for increasing quality of life (Godfrin & van Heeringen, 2010).

Some of the mechanisms of action of Mindfulness are already known, and the main ones are related to *decentering*, which occurs with the change of relationship with the experience, from getting in touch with it from a new point of view. It also reduces worry and rumination (Desrosiers et al., 2013).

Given the need to think about interventions that benefit the mental health of university students, and the benefits that MBIs have shown in the clinical field of mental health, we propose an integrative review on the effects of MBIs on the mental health of this population, especially regarding the stress and anxiety of these students.

The Present Study

This study is an integrative literature review that aimed to identify, analyze, and synthesize the studies on MBIs for anxiety and stress in college students. The integrative review allows the inclusion of several methods to synthesize knowledge and assess the clinical applicability of an intervention, in addition to pointing out gaps in the literature (Souza et al., 2010). It took place through the 6 phases of the development process described by (Mendes et al., 2008): 1a – identification of the topic, establishment of the hypothesis or research question; 2a – establishment of the inclusion and exclusion criteria of the studies, as well as of the sample, and literature search; 3a – definition of the data to be extracted and categorization of the studies; 4a – assessment of the studies included in the integrative review; 5a – interpretation of results; 6a – presentation of the review and synthesis of knowledge. The guiding question was: What are the effects of Mindfulness-based interventions on college students suffering from stress and/or anxiety?

In the period between March and April 2021, a bibliographic search was made through three main bases: PubMed/Medline, SciELO and LILACS, without restriction as to the year of publication of the articles. The descriptors used for the search were: MINDFULNESS, ANXIETY, STRESS, UNIVERSITY (or synonyms), and

STUDENTS, with the Boolean operators AND or OR between them. In the LILACS search, the filter that excludes articles in common with MEDLINE was used.

For article eligibility, the inclusion criteria were: studies assessing mindfulness-based interventions for anxiety and/or stress in college students. Exclusion criteria were: case studies; studies in which stress or anxiety were not the primary outcomes; studies in which mindfulness interventions were not "multimodal"; reviews that were not specific to mindfulness interventions; studies on specific groups; studies in which populations were mixed, not being only college students; studies in which there was no mindfulness-based intervention; and studies in which the mindfulness intervention was not interactive.

After crossing the keywords, a total of 539 articles were obtained, 192 from PUBMED, 334 from LILACS, and 13 from SciELO. Duplicate articles were excluded, and the remaining articles were screened by reading the titles and abstracts. Then, the pre-selected studies underwent a second screening, through an evaluation of their methodology according to the inclusion and exclusion criteria, resulting in a final sample of 26 studies, as shown in the flowchart in Fig. 1.

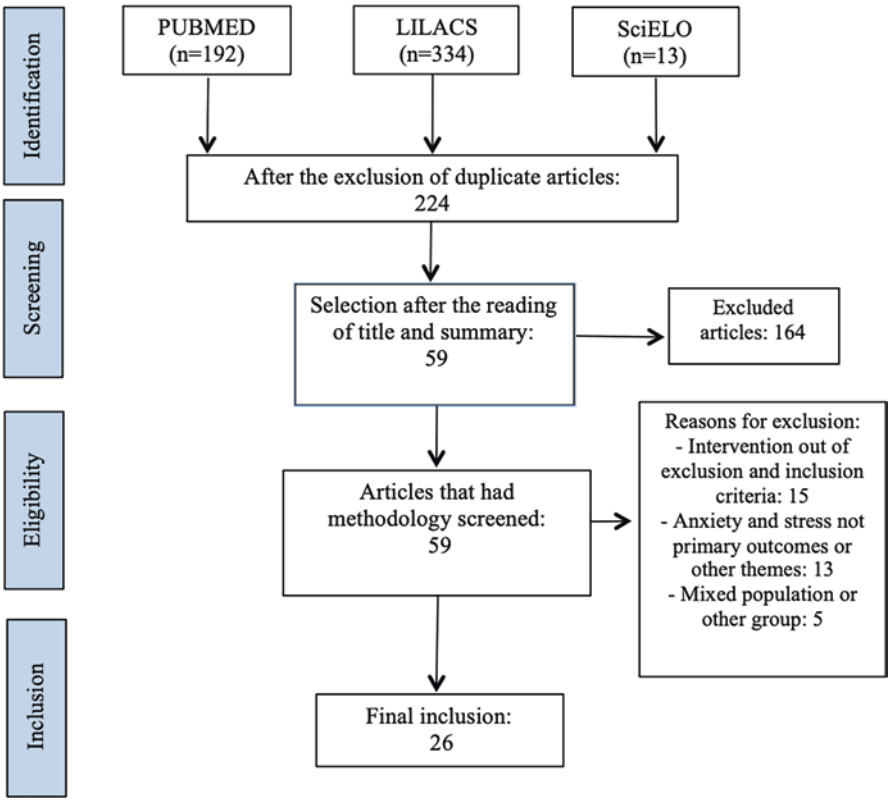

Fig. 1 Flowchart of the selection of articles

To synthesize the data obtained in the studies, the proposal of Ursi (2005) was followed in the extraction of data.

What Are the Results of the Studies?

The studies selected for this integrative review were published between the years of 2008 and 2021. Most of them (55%) are randomized controlled trials, 15% are controlled and non-randomized clinical trials, 4% are meta-analysis, and 7% are systematic reviews. The percentage of study types is shown in Fig. 2. Regarding the experimental studies, 25% had only active control groups, 29% of them with active and passive control groups, 25% only with passive control groups, and 21% had no control group.

To facilitate the visualization of the results, Table 1 was built with a summary of the methodology, variables, and main results of each study.

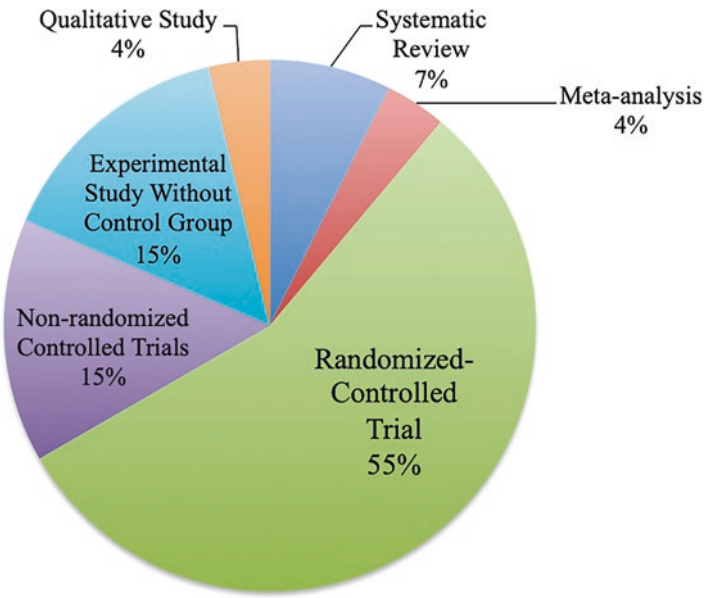

Fig. 2 Types of study

Table 1 Main results of included studies

Authors and year	Type of study	N	Goal	Interventions evaluated	Variables investigated	Summary of the results
Dawson et al. (2019)	Systematic review and meta-analysis	51	To investigate the evidence of the effects of mindfulness on physical and mental health in college students.	MBIs	Stress, anxiety, depression, well-being, rumination, mindfulness, self-compassion, blood pressure, sleep, life satisfaction, resilience, worry, and thought management	Compared with passive control – And when measured immediately after the intervention – MBIs improve stress, anxiety, depression, well-being, rumination, and mindfulness – With small to moderate effects, with no improvement in blood pressure, sleep, life satisfaction, resilience, worry, and thought control. Evidence for self-compassion is inconclusive.
Chiodelli et al. (2020)	Systematic review	19	Describe how MBIs are given at the university, systematize their results, and indicate possible limitations.	MBIs	Anxiety, stress, and depression, among others.	Increasing number of studies in the area. MBIs prove to be beneficial to mental health of the university student, regardless of its duration. Most studies investigated depression, anxiety, and stress. MBSR had greater empirical support of its effectiveness.

Cuevas-Toro et al. (2017)	Pilot experimental study without control group.	115	To evaluate the effects of a brief mindfulness program adapted to the classroom context.	Brief Mindfulness intervention – 7 sessions, 2 per week, a few minutes before class.	Level of mindfulness, experiential avoidance, anxiety, and life satisfaction	Increase in the level of life satisfaction and anxiety – State. The increase in satisfaction was due to the increased level of mindfulness, which coincided with the exam period. They conclude that a brief mindfulness intervention can benefit life satisfaction even in a period of anxiety such as the exam period.
Azevedo & Menezes (2020)	Quasi-experimental longitudinal study	13	To verify the effects of MBCT on stress, self-efficacy, and mindfulness in undergraduate students.	MBCT	Perceived stress, general self-efficacy, and mindfulness.	Perceived stress was reduced and there was an increase in perceived general self-efficacy and mindfulness. Reduced stress is related to increased general perceived self-efficacy and mindfulness; and increased self-efficacy is related to increased mindfulness.
Gallego et al. (2014)	Controlled clinical trial	125	To evaluate whether mindfulness can bring significant changes in symptoms of depression, anxiety, and stress in college students when compared to a physical activity intervention and passive control group.	Adapted MBCT Physical activity Passive control	Stress, anxiety, and depression.	Mindfulness showed more significant results in decreasing anxiety, stress, and depression compared to the other two groups.

(continued)

Table 1 (continued)

Authors and year	Type of study	N	Goal	Interventions evaluated	Variables investigated	Summary of the results
Falsafi (2016)	Randomized controlled clinical trial.	90	To compare the effects of two interventions – yoga and mindfulness, and also a passive control group, on levels of depression and anxiety in college students.	• 8-week mindfulness training • Mindfulness and compassion practices. • Yoga • Passive control	Depression, anxiety, stress, level of mindfulness, and self-compassion.	Both Mindfulness and yoga were beneficial in decreasing symptoms of depression and anxiety when compared to the control group. Self-compassion only increased in the mindfulness group. Both depression and anxiety continued to decrease in the mindfulness group between post- and FUP; in yoga they remained the same.
Firth et al. (2019)	Randomized controlled clinical trial	92	To understand the possible mediation of mindfulness on self-efficacy, academic performance, and coping skills with pain, and subsequently pain-induced stress.	1 – Mindfulness 2 – placebo – Listening to music 3 – Stay silent or look at a picture of a balloon for 5 min.	Positive and negative affect, perceived stress, life satisfaction, mindfulness, self-efficacy.	Both mindfulness and placebo decreased stress when compared to no intervention. The longer mindfulness intervention did not improve self-efficacy. It partly decreased stress.
Dvořáková et al. (2017)	Randomized controlled clinical trial	109	To evaluate the effectiveness and feasibility of a mindfulness training on the health and well-being of first-year college students.	1 – L2B – Learning to breathe and waiting list (passive control)	Depression, anxiety, life satisfaction, mindfulness, self-compassion, social connectedness, compassion, sleep quality, alcohol use, acceptability of the program	Decreased levels of depression, anxiety, and increased levels of satisfaction with life.

Sears and Kraus (2009)	Randomized controlled clinical trial	57	To evaluate cognitive distortions and coping styles as mediators in the effects of mindfulness on anxiety, negative and positive affect, and hope in college students.	• Passive control; • Brief meditation intervention focused on mindfulness; • Brief meditation intervention focused on loving kindness; • Long meditation combining the two.	Anxiety, positive and negative affections, irrational beliefs, coping styles, hope	The long meditation intervention mixing the two types (attentional and loving kindness) showed better results, significantly reducing anxiety, negative affect, and increasing hope. Changes in cognitive distortions mediated these changes.
Bai et al. (2020)	Randomized controlled trial	52	To evaluate the effects of an 8-session intervention on first-year college students'daily experience of stress and emotion regulation.	• Passive control – Waiting list • 8 mindfulness sessions – Just breathe (L2B adaptation) – 6 weeks.	Family and occupational stress, negative emotions, rumination, interference of thoughts with activities.	The control group had an increase in family-related stress, while the mindfulness group remained stable. The responses of emotional regulation to stress related to studies and work did not differ in the groups.
Demarzo et al. (2017)	Quasi-experimental controlled study, with 6-month follow-up	141	To evaluate the effectiveness of an 8- and 4-week program for wellness improvement – non-clinical population.	• 8 weeks, • 4 weeks, • Passive control	Mindfulness, self-compassion, positive and negative affect, anxiety, depression, and resilience	Regarding anxiety, the short intervention shows small but better results than the control group. The long intervention shows significantly better results. Both programs increase levels of mindfulness and positive affect.

(continued)

Table 1 (continued)

Authors and year	Type of study	N	Goal	Interventions evaluated	Variables investigated	Summary of the results
Bergen-Cico et al. (2013)	Quasi-experimental controlled study	119	To evaluate the potential mental health benefits of participating in a brief (5-week) mindfulness intervention based on MBSR added to a course.	• Short MBSR (5 weeks) • Control group with theoretical classes of the same time and duration	Mindfulness, self-compassion, and anxiety	Increase in the level of mindfulness and self-compassion. There was no significant reduction in anxiety. They think that to decrease anxiety more practice time is needed.
Dundas et al. (2016)	Controlled clinical trial	70	To evaluate whether the MBSR improves assessment anxiety and academic anxiety	• MBSR • Passive control	State and trait anxiety, academic self-esteem and self-esteem, and self-efficacy	Test anxiety dropped during intervention and continued to drop after intervention. Decrease in trace anxiety but not in state.
Galante et al. (2017)	Randomized controlled clinical trial	616	To assess whether providing mindfulness courses to college students would help them have greater resilience to stress.	• 8 weeks of Mindfulness + mental health support as usual • Just mental health support as usual	Psychological stress and well-being.	Mindfulness reduced stress immediately after the course. Stress increased in the control group throughout the academic year, while in the mindfulness group the decrease was obtained after the intervention and was the same during the exams. Mindfulness also improved well-being during exams compared with usual.
Galante et al. (2020)	Randomized controlled clinical trial	616	To evaluate, after 1 year - follow-up – Whether a mindfulness intervention benefited the stress resilience of college students.	• 8 weeks of Mindfulness + mental health support as usual • Just mental health support as usual	Psychological stress and well-being.	Psychological stress and mental well-being improved in the mindfulness group compared to the usual support group. The effects were somewhat smaller than during the examination period.

Greif & Kaufman (2019)	Quasi-experimental study	24	To determine the feasibility of a procedure to identify the relationship between preexisting traits and immediate to meditation mindfulness in college students	• A short mindfulness practice	Mindfulness, anxiety, cognitive tests of attention and executive functions.	Anxiety – State decreased after practice. Increased mindfulness-body awareness at post associated with higher levels of mindfulness-trait at baseline.
Hall et al. (2018)	Randomized controlled clinical trial	101	To investigate whether low-intensity mindfulness interventions can benefit the psychological health and sleep quality of college students.	• Passive control; • Mindfulness only; • Mindfulness and reminder by text message; • Mindfulness and text message with image of favorite animal.	Depression, anxiety, stress, and sleep quality.	After week 4 after the beginning of the intervention, there was improvement in anxiety, stress, depression, and sleep for all mindfulness groups compared to the control. This was maintained until week 7.
Hjeltnes et al. (2015)	Qualitative study	29	To qualitatively investigate the subjective experience of college students who participated in an MBSR course for academic anxiety.	• MBSR	Academic anxiety	Five patterns of most relevant themes emerged: (1) finding a source of internal calm; (2) sharing a human struggle/difficulty; (3) staying focused in learning situations; (4) getting out of fear and being curious in academic situations; (5) having more self-acceptance in difficult situations.

(continued)

Table 1 (continued)

Authors and year	Type of study	N	Goal	Interventions evaluated	Variables investigated	Summary of the results
Kim et al. (2020)	Randomized controlled clinical trial	247	To evaluate the daily trajectories of college students regarding stress, anxiety, depression, happiness, and mindfulness, comparing two interventions: mindfulness and stress management.	• Online mindfulness intervention and brief – 5 days • 20 to 30 min per day • Stress management intervention.	Depression, anxiety, stress, mindfulness, and happiness.	Equal linear decrease in both groups regarding anxiety and stress. Depression decreased only in stress management, and in mindfulness it remained stable. The increase in happiness happened only in mindfulness.
Seppälä et al. (2020)	Randomized controlled clinical trial	131	To examine the effects of 3 interventions on the mental health of college students: SKY campus happiness ("SKY"); foundations of emotional intelligence ("EI"); MBSR.	• SKY • EI • MBSR • Passive control group	Depression, stress, mental health, mindfulness, positive affect, and social connectedness.	MBSR did not benefit any of the variables compared to the other interventions. The SKY intervention benefited depression, stress, mental health, positive affect, mindfulness, and social connectedness. EI benefited mindfulness.
Sousa et al. (2021)	Randomized controlled clinical trial	40	To evaluate correlations between trait mindfulness and outcomes, and to compare the effects of a mindfulness intervention with an active control group.	• Brief mindfulness intervention – 30 min for 3 days • Active control – coloring	Mindfulness state and trait, anxiety state and trait, positive and negative affect, perceived stress, and cortisol.	Mindfulness group decreased state anxiety and perceived stress, and increased state mindfulness. Both groups decreased positive affect and cortisol. No change in positive affect.

Voss et al. (2020)	Randomized controlled clinical trial (restricted randomization)	73	To evaluate the effects of an MBI on participants' autonomic regulation – decreased stress.	• Mindfulness-based Student training Program (MBST) based on MBSR – 8 weeks 90 min per session plus a 5 hr. intensive session • Passive control group.	Electrocardiogram; plethysmography; respiratory activity.	The intervention positively influenced the autonomic regulation in relation to stress reduction. Some parameters changed in the intervention group and remained the same in the control group.
Shapiro et al. (2008)	Randomized controlled clinical trial	44	To assess whether increasing the level of mindfulness can mediate positive effects on psychological variables.	• MBSR • Eight point program (EPP) – waiting list control	Mindfulness, stress, rumination, forgiveness, and hope.	Both interventions improved college students'levels of mindfulness and attention. Increased levels of mindfulness significantly mediated decreases in perceived stress and rumination.
Svetlák et al. (2021)	Experimental study without control (open trial)	692	To evaluate the feasibility of an online mindfulness program for college students and its effects on perceived stress, negative affect, self-compassion, quality of life, emotion regulation strategies, and mindful skills.	• eMBP – Based on MBCT – 8 weeks for stress reduction – mixes interactive and online intervention, reminders, and support. 8 weeks	Mindfulness, subjective emotional balance, perceived stress, self-compassion, emotional regulation, subjective quality of life.	Decrease in perceived stress with moderate to large effect size. Decrease in perceived stress reactivity; increase in positive emotional experience, and decrease in negative (medium effect size), increase in self-compassion, increase in subjective mindful experience.

(continued)

Table 1 (continued)

Authors and year	Type of study	N	Goal	Interventions evaluated	Variables investigated	Summary of the results
Oman et al. (2010)	Randomized controlled clinical trial	44	To evaluate the effect of two interventions on levels of stress, rumination, forgiveness, and hope in college students – Follow-up results	• MBSR • EPP (eight point program – concentration meditation – use of mantras) • Waiting list control	Mindfulness, stress, rumination, forgiveness, and hope.	There were no significant differences between MBSR and EPP outcomes, both decreased stress, which was maintained at follow-up (of 8 weeks). Compared to controls, MBSR and EPP benefited stress, forgiveness, and minor benefits for rumination.
Long et al. (2021)	Randomized controlled clinical trial	208	To test the effects of a "mindfulness-based coping enhancement" program on stress management, emotional regulation, coping, and well-being in college students.	• Be REAL (resilient attitudes & living) • Passive control group	Mindfulness, perceived stress, emotion regulation, executive function, coping strategies, self-compassion, social connectedness, and well-being.	Compared to the control group, students who participated in the mindfulness intervention showed increased levels of mindfulness, self-compassion, happiness and resilience, improved executive functioning, better coping strategies, less perceived stress, and increased social connectedness. Most of these changes were maintained at follow-up.

Note: *MBCT* Mindfulness-Based Cognitive Therapy, *FUP* Follow-up

What Do These Results Tell Us?

This study aimed to assess the effects of mindfulness-based interventions on the mental health of college students, especially regarding stress and anxiety levels. According to the initial hypothesis from this study, the results point to the benefits of the practice on the mental health of this population.

The number of studies in the field of mindfulness and mental health, and of mindfulness for college student health has grown and show benefits of the intervention in health, regardless of its duration (Chiodelli et al., 2020).

The results of most experimental studies assessed by this integrative review are similar to the results found by Dawson et al. (2019) in their systematic review and meta-analysis, with a significant decrease in stress and anxiety, as well as benefits found for other variables, such as improvement in depression, well-being, and mindfulness. In the studies that followed the sample for longer for further evaluation and showed that mindfulness interventions were related to a decrease in stress, having similar results to the comparison intervention or not, their results remained significant in the follow-ups, suggesting that the practice may benefit the management of stress in the long term (Falsafi, 2016; Long et al., 2021; Oman et al., 2010). Most studies that assessed perceived stress showed a decrease in this variable, including physiological changes as seen in the study of Voss et al. (2020).

With regard to academic anxiety, results point to positive effects on stress during exams and also a lasting effect of the intervention seen at follow-up (Galante et al., 2017, 2020). Furthermore, a significant decrease in exam anxiety was seen during the intervention and continued to decrease after the intervention (Dundas et al., 2016). These are promising results given the distress caused by academic and performance anxiety and its outcomes on students'academic and professional lives (APA, 2014).

From the 26 studies included in this review, anxiety and stress variables were not benefited or worsened in only 3 of them (Bergen-Cico et al., 2013; Cuevas-Toro et al., 2017; Seppälä et al., 2020). In the study of Cuevas-Toro et al. (2017), there was an increase in state anxiety, however, data collection coincided with the exam period, and the study did not have a control group to assess whether students who did not receive the intervention would also increase their level of anxiety. In addition, the authors show that there was an increase in the level of life satisfaction, even with the worsening of anxiety in the period of tests, which suggests benefits of the intervention. On the other two studies, mindfulness interventions only did not have significant results when compared to another intervention, but there was no associated worsening to the intervention (Bergen-Cico et al., 2013; Seppälä et al., 2020). Bergen-Cico et al. (2013) suggest that to promote a significant effect on anxiety the mindfulness intervention should be longer. In the study by Demarzo et al. (2017) the longer intervention also showed significantly better results on anxiety when compared to the shorter one. This was also the case in the study by Sears and Kraus (2009) in which the longer intervention (with longer practices) and which mixed elements of mindfulness and compassion, also had better results for anxiety when

compared the interventions brief ones. This is perhaps an important result to take into account when considering the clinical applicability of this type of intervention. Although in the study by Chiodelli et al. (2020) the results suggested that shorter interventions also benefit students'mental health, perhaps for anxiety the interventions should be longer.

Although some studies justify the effectiveness of mindfulness interventions due to the mediation of increased mindfulness levels (Azevedo & Menezes, 2020; Shapiro et al., 2008), this mediation cannot be seen in all studies, for example in the study of Bergen-Cico et al. (2013). In addition, few studies have sought to explain the mechanisms of action of mindfulness-based intervention. We hypothesize that the improvement in anxiety and stress levels in college students found in this study are not only related to the increased level of mindfulness promoted by the intervention, but also to the decrease in rumination and worry, mechanisms of action indicated as mediators of the effects of MBIs on depression, anxiety, and stress (Desrosiers et al., 2013), variables that were not included in most studies.

Conclusion

This study found evidence pointing to an important benefit of the use of mindfulness-based interventions for university students'mental health, especially regarding lower stress, increased well-being, lower test anxiety, and general anxiety. Mindfulness-based interventions can be important allies in the mental health care of students within the university. It is suggested that MBIs be introduced in the curricula at universities as a form of mental illness prevention and health promotion for the university population.

Limitations

It is important to highlight that the studies included in the integrative review have limitations, such as the methodology used, some did not have a control group, most did not perform follow-up, many did not mention the blinding of the evaluators, and the restricted number of participants. Studies with a better methodology are suggested, especially those that include active and passive control groups, double blinding, and medium and long-term follow-up.

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Schema Therapy for Adolescents with Test Anxiety

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Anxiety and Test Anxiety

In recent years, a significant increase of anxiety levels in the overall population has been drawing attention. Anxiety has affected approximately 3.4% of the world population (WHO, 2017). When it comes to the Brazilian reality, these numbers reach 8.3–9.3%, and that is why Brazilians are considered one of the most anxious communities worldwide (WHO, 2017). It is also known that aspects involving anxiety can be found in almost any population age group (Thiengo et al., 2014).

Anxiety can be considered a complex response from individuals, in which there is cognitive anticipation of events with potential risk of harm (American Psychiatry Association, 2014). It can also be understood as a delicate combination among emotional, cognitive, behavioral, and biological factors that, when considered within an evolutionary perspective, may lead individuals to maintain their attentional focus on future events, preparing them for fight-or-flight responses (Barker et al., 2018).

The biology of anxiety encompasses both the sympathetic nervous system and the hypothalamus-hypophysis-adrenal (HHA) axis, which triggers important changes in the individual's global physiology (Margis et al., 2003; Kauer-Sant'Anna et al., 2011; Gunnar, 2007; Rotta et al., 2016). These changes have a direct effect on one's attention and, when experienced chronically, they tend to affect the hippocampus, leading to memory deficits and reduced neuroplasticity – both issues involved in learning problems (Izquierdo, 2011).

One group that may be affected by these issues are adolescents, once they are in a stage of life marked by several biological, behavioral, and social changes, factors that greatly influence the increased risk for emotional difficulties, including those related to anxiety. It is also during these years that young people typically show a

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motivation decline toward their studies and school performance. At the same time, anxiety has a considerable prevalence during this phase, which may also impact the school performance of these young people (de Lijster et al., 2018; Rasing et al., 2017).

Adolescents with anxiety symptoms commonly show performance impairments when compared to their peers (de Lijster et al., 2018; Rasing et al., 2017). Several studies demonstrate that high anxiety levels are related to lower academic performances (von der Embse et al., 2018). In addition to these data, a community study identified a connection between anxiety and school dropout, by considering fears, worries, and somatic complaints as an influence for low academic attendance (Egger et al., 2003).

Thus, one common concern of students is when it comes to tests. These excessive worries about a negative result in evaluative situations are directly correlated to psychological, physiological, and behavioral reactions (McDonald, 2001). It is estimated that 15–22% of teenage students have high levels of test anxiety (Thomas et al., 2017).

Faced with evaluative situations, students use coping strategies to deal functionally with stress and anxiety, seeking to modulate this discomfort (Skinner et al., 2013). According to Calais and collaborators (2003), adolescents' coping skills may be considered more important than their academic performance itself. Therefore, identifying the different characteristics of test anxiety and individual coping needs is essential for the development of intervention strategies for this group of individuals (Serrano-Pintado & Escolar-Llamazares, 2014).

From this perspective, cognitive techniques have been proving to be effective resources to help this group regarding their cognitive challenges. This can be achieved through relaxation techniques (Wernder-Seidler et al., 2017; Putwain & von der Embse, 2021), cognitive restructuring (Garnefski & Kraaij, 2018; Grist et al., 2019; de Hullu et al., 2017; Putwain & von der Embse, 2021; Yusufov et al., 2019), systematic exposure/desensitizing (Putwain & von der Embse, 2021; Wernder-Seidler et al., 2017), as well as meditation and mindfulness resources (Putwain & von der Embse, 2021; Wernder-Seidler et al., 2017; Yusufov et al., 2019). Among the several psychotherapies that show robust results for the different clinical demands, Schema Therapy (ST) is a viable and promising possibility when working with adolescents with test anxiety.

Schema Therapy

Schema Therapy (ST) is a cognitive-behavioral psychotherapy developed by Jeffrey Young (Young, 1999; Young et al., 2008), which has an integrative epistemological basis (Edwards & Arntz, 2012). ST was developed aiming at the treatment of groups with personality disorders, refractory psychiatric disorders, and patients with low

clinical improvement. Currently, this psychotherapeutic model evidences its clinical effectiveness in the treatment of personality disorders (Bamelis et al., 2011; Gude & Hoffart, 2008), especially the borderline personality disorder (Farrell et al., 2009; Giesen-Bloo et al., 2006; Nadort et al., 2009). There is also evidence of the use of this approach with depressed mood disorder (Carter et al., 2013), eating disorders (McIntosh et al., 2016), and post-traumatic stress disorder (Cockram et al., 2010).

Within the ST theory, it is postulated that the interaction between individuals' temperament, recurrent toxic/traumatic childhood experiences, and failure to meet core emotional needs (need for secure attachment with others; autonomy and competence; realistic boundaries and self-control; freedom of emotional expressions and needs; and spontaneity and play) results in the development of Early Maladaptive Schemas (EMS). EMS are stable theoretical structures that store the individuals' thoughts, memories, emotions, desires, and physiological sensations. In its theory, there are eighteen EMS's, which, in the original conception of ST, were divided into five schematic domains (Young et al., 2008) but are currently cataloged into four domains. These eighteen schemas and their positioning within the current model of ST (Bach et al., 2018) are displayed in Table 1.

Since EMS are stable, self-perpetuating structures and present difficulty in changing their content (Riso et al., 2006; Young, 1999), studies point out that they have a relevant role in the emergence of severe symptomatology and psychopathology (Basso et al., 2019; Shorey et al., 2014). In addition to EMS, another significant concept within ST is that of Schema Modes. These Modes are specific sets of EMS's and coping styles that are activated at a given moment and can be either adaptive or maladaptive (Bamelis et al., 2011). In other words, it is the characteristic way through which an individual presents himself/herself in a given context, encompassing his/her affections, cognitions, and behavioral strategies (Young et al., 2008). Table 2 presents examples of schema modes, their expressions, and their categories.

Table 1 Conceptualization of schematic domains and initial maladaptive schemas

Schematic domain	Early maladaptive schemas
Disconnection and rejection	Emotional deprivation, social isolation/alienation, emotional inhibition, defectiveness/shame, mistrust/abuse, pessimism
Autonomy and performance impaired	Dependence/incompetence, failure to achieve, subjugation, abandonment/instability, enmeshment, vulnerability to harm
Excessive responsibilities and standards	Self-sacrifice, unrelenting standards, self-punitiveness
Impaired limits	Entitlement/grandiosity, approval seeking, and insufficient self-control

Source: Adapted from "*A new look at the schema therapy model: organization and role of early maladaptive schemas*" (Bach et al., 2018)

Table 2 Typology and conceptualization of schematic modes

Types of schema modes	Expression of schema modes	Schema modes
Dysfunctional child modes	Modes in which the individual presents emotion-based responses to their unmet emotional needs.	Vulnerable child, angry child, undisciplined/ impulsive child.
Dysfunctional coping modes	Modes based on individuals' behavioral responses/strategies to avoid contact with the child modes. Their responses may be resignation, avoidance, or hyper-compensation.	Resignation, avoidance, and hypercompensation.
Dysfunctional internalized voices/parenting modes	Modes that are represented by negative internalizations (thoughts) are usually directed to the individual him/herself. They are commonly internalized messages from caregivers. They can be punitive, critical/ demanding, or guilt-inducing messages.	Critical/demanding, punitive.
Healthy modes	Modes that respond adaptively to the context in which they are embedded.	Healthy adult, happy child.

Source: Adapted from "*The schema mode model for personality disorders*" (Fassbinder et al., 2014) and "*Schema Therapy for Children and Adolescents: A Practitioner's Guide*" (Loose et al., 2020b)

Schema Therapy for Children and Adolescents

The Schema Therapy (ST) approach is gaining notoriety, being widely implemented to several disorders nowadays (Shorey et al., 2014). Recently, ST has been adapted for the work with children, adolescents, and their parents (Loose, Graaf, Zarbock, & Holt, 2020d). Many tools and techniques used in ST with adults also work as important approaches when working with younger people. Therapists are tasked with understanding the emotional complexity of children, adolescents, and their caregivers, thus helping them understand their own feelings and difficulties more clearly. For this, it is necessary to consider the patient's stage of development because, when working with adults, therapy is directed to EMS and modes that are already structured, for their personality is already more developed in comparison to children and adolescents (Loose et al., 2020c; Millon et al., 2004).

In ST with children and adolescents, it is common to use schema modes to signal emotions, behaviors, and cognitions. This way, there is a greater understanding of these structures and identifying EMS's becomes a simpler task. In addition, working with Modes enables the patient to understand that being in an emotional and functioning state does not necessarily characterize something immutable. Showing this perception helps flexibilization and provides an opening for change (Loose et al., 2020c).

It is worth mentioning that, when working with Schema Modes in a population of children and adolescents, some changes regarding the work with adults are important. For instance, it is fundamental to adapt the nomenclature of some Modes. In the case of the Healthy Adult – name used in the clinic setting with adults –, we

can adapt it for young people and use the Wise/Competent/Intelligent Mode. By this, we mean that, when connecting to oneself, the young person can usufruct of characteristics that seek to regulate the modes' expression in a healthy way, developing cognitive, behavioral, and emotional repertoire to manage the other modes in conflict situations (Loose et al., 2020c).

Following the need of adapting the ST model for young people, there are four main intervention strategies for working with children and adolescents, which take into account their development and their basic emotional needs (Loose et al., 2020b). The first one is the Limited Reparenting, being followed by cognitive techniques, experiential techniques, and behavioral interventions.

Limited Reparenting is defined by Young et al. (2008) as the therapist's systematic approach to meeting the patient's basic emotional needs within the limits of the therapeutic setting. This stance permeates the whole therapeutic process with children and adolescents, and the treatment is even more meaningful when aligned to the work with parents.

There is also the application of cognitive techniques, which are essential for the questioning of Schema Modes, for the evaluation of consequences, and for the development of adaptive strategies. Experiential techniques, on the other hand, are used with the goal of making the patient more aware of his/her emotional needs, thus being more capable of expressing them in an appropriate manner. Finally, behavioral interventions help breaking previously established behavioral patterns (Loose et al., 2020b).

Schema Therapy Applied to Adolescents with Test Anxiety

As previously mentioned, the main focus of ST is the treatment of individuals with chronic and personality psychopathologies. However, there are studies pointing out that this psychotherapeutic approach also has good results when applied to individuals who suffer from anxiety disorders (Cockram et al., 2010; Hamidpour et al., 2011; Peeters et al., 2021). In the literature, studies have also shown that EMS's may be related to anxious symptomatology (Calvete et al., 2013; Cámara & Calvete, 2012; Hawke & Provencher, 2011).

Regarding the academic context, some studies assess EMS's correlated with anxious symptomatology. The validation study of the *Young Schema Questionnaire-S3* by Lee et al. (2015), which used a university sample, showed that the EMS's of Mistrust/Abuse, Social Isolation/Alienation and Vulnerability to Harm were more correlated with anxiety. The research of Cámara and Calvete (2012), also using a sample from higher education students, obtained results showing that EMS's of Vulnerability to Harm and Dependence/Incompetence significantly predicted anxious symptoms. When the study sample was composed of high school students, in the correlational study of Shariati et al. (2014), the results also showed correlations between EMS's and anxiety.

Another study, seeking to assess the mediating role of anxious automatic thoughts in adolescents with social anxiety, presented a sample with results of connections between EMS's and the different patterns of automatic thoughts (Calvete et al., 2013). Moreover, professionals should consider the great heterogeneity of EMS's presented in the research, and the lack of specific studies assessing the context of test anxiety and this evidence. A suggestion would be to observe the profile of young people with anxious symptoms in evaluative tasks in order to understand and apply the ST in a more congruent manner.

Test Anxiety and Schema Therapy – Understanding and Clinical Approach

Fear and Anxiety Thoughts About Tests-Associated EMS

As previously mentioned, test anxiety is characterized by psychological, physiological, and behavioral reactions related to concerns of a possible negative outcome regarding poor performance in an evaluative activity (Gonzaga & Enumo, 2018; McDonald, 2001). These reactions elicited by the testing context will vary significantly among individuals. A common representation for these individuals is thoughts

Table 3 Initial maladaptive schemas and relationship with anxious cognitions for tests

Early maladaptive schema	Schema description	Presentation in test anxiety
Failure	Belief that the individual will fail and/or of being worth less in comparison to peers.	Individual has thoughts that they will fail the test, or that they did poorly after taking it. It does not consider evidence in its interpretation.
Dependence/ incompetence	Belief that one is unable to perform activities without the support of others.	Individual believes he/she will be unable to do well on the test without help from others.
Approval seeking	Individual gives an excessive emphasis to getting attention and recognition from others, putting his/her directions on the background.	Individual presents thoughts of needing to obtain results to be recognized by others.
Unrelenting standards	Belief that one must meet extremely high standards (internal or external), usually to avoid criticism.	Individual becomes anxious about the outcome of the test. There is the presence of cognitive distortions of the "dichotomous thinking" type.
Pessimism	Persistent and universal focus on the negative aspects of life, minimizing the positive ones.	Individuals present extremely negative thoughts about their performance, which may not correspond to the reality.

Source: Developed by the authors. Data on Initial Maladaptive Schemas, adapted from "*Schema Therapy: A guide to innovative cognitive-behavioral techniques*" (Young et al., 2008)

about the fear of failing these activities (Gonzaga & Enumo, 2018). When assessing these cognitions of aversion to failure through the prism of ST, it is possible to think of some EMS's that may be related to them, such as Failure, Dependence/Incompetence, Approval Seeking, Unrelenting Standards, and Pessimism. Table 3 presents a brief explanation of these EMS's and how they may be related to test anxiety.

As shown in the table above, EMS's that are related to test anxiety are found in different Schema Domains, and this can be considered of great clinical relevance. Each different domain is associated with different basic emotional needs, entailing the professional's posture within the limited reparenting process (Young et al., 2008).

In addition to the role of the therapeutic relationship as a factor for change, the professional will use cognitive, experiential, and behavioral techniques to deal with the patient's difficulties (Young et al., 2008). The cognitive techniques used in the process of ST, aimed at dealing with anxious cognitions, are similar to those of the Classical Cognitive Therapy. The therapist may perform a psychoeducation of EMS's, search for evidence to confirm or refute the Schemas, consider advantages and disadvantages to the Schema, and make Schema activation records (Young et al., 2008).

Another key point for treatments is the use of experiential techniques in ST (Weertman, 2012). When working with the anxious cognition type and associated EMS's, some techniques that have records of being well implemented in the ST setting can be theorized of being used. One of these is the use of dialogues among the Schema sides. Through this technique, the patient will establish a chair dialogue (similar to the work of the transformational chairwork) between his/her healthy side and the side pertaining to the Schema. Mental images for the future are also options. Finally, another relevant way of working with these clients is through the work with the behavioral pathway, which aims at breaking established behavioral patterns and developing new habits and more adaptive behavioral strategies (Young et al., 2008).

Schema Modes in Test Anxiety – Therapeutic Approaches

Although the focus is on treating young people with ST, it is essential to note that the ST treatment is also based on the use of Cognitive Behavioral Therapy (CBT) strategies. Thus, professionals should be aware of the intervention model in anxiety, as postulated in previous researches. Here, our goal is to reconcile concepts, knowledge, and studies in an innovative way, theorizing a model that will possibly help children and adolescents dealing with anxiety during tests.

Apart from already being in a period of great physical and emotional changes, it is essential for psychotherapy to help adolescents find alternatives in an agile manner. Even though the clinical conceptualization and the Schema evaluation are important points for the treatment, being a responsibility of the professional, it is also crucial to optimize and facilitate the psychotherapeutic process in ST with young people. Thus, using the Schema Modes concept is a very suitable alternative

for such goals. After all, conceptualizing Modes as a state in which the person is at a certain moment, with the possibility of changing, provides a more accessible understanding to the patient (Loose et al., 2020c).

The initial step of the Mode work in ST for a population of adolescents with test anxiety is based on the assessment and conceptualization of the individual's symptoms and complaints. The coping strategies commonly used by adolescents with test anxiety are also fundamental to be understood. One can perceive a heterogeneity in the responses employed, which results in different outcomes (Gonzaga & Enumo, 2018; Skinner et al., 2013; Torrano et al., 2020). Planning, help-seeking and comfort-seeking behaviors, self-encouragement practices, and commitment are among the strategies that usually have the best outcomes for this population. On the other hand, strategies related to the worst outcomes are avoidance, giving up/surrending, confusion, self-blaming, and projection (Skinner et al., 2013).

The coping strategies used by children and adolescents with test anxiety allow the clinician to create a connection of these coping behaviors to some Schema Modes. It is important to note that the distinction in defining the Schema Mode is related to the meaning of the action, not only the action itself (Young et al., 2008). For example, an adolescent who quits a test may be in an Avoidance Coping Mode to avoid contact with the feeling of helplessness through his/her Schema activation. However, another young person may have the same behavior but, due to being in contact with his/her emotions, he/she ends up having help-seeking or attention-seeking behaviors (inappropriate search for a basic emotional need not properly met), which could characterizes a Child Mode. This distinction is crucial for clinical work, once the professional's posture and interventions are different for each type of Mode.

Taking into consideration the behavior expressions performed by these young individuals, a clinician would be able to characterize it as maladaptive coping strategies (Skinner et al., 2013), thus being able to relate them to three Schema Modes groups: Child Modes, Maladaptive Coping Modes, and Internalized Parent/Voice Modes. Similarly, it is possible to characterize the attitudes leading to positive outcomes as a result of the Smart/Intelligent Adolescent Mode, characterized by appropriate external expressions towards the situations to which the young person is exposed. This Mode seeks for the individual's needs and has adaptive coping strategies (Loose et al., 2020c). It should be further noted that it is always the clinician's job to distinguish the behaviors presented by patients, so the clinical approaches are appropriate and clear.

Based on this perspective, one can also theorize about Schema Modes and their connection to anxious thoughts. As previously described, individuals with test anxiety usually present concern cognitions toward their results (Gonzaga & Enumo, 2018; McDonald, 2001). The Vulnerable Child Mode, for instance, is characterized by dysphoric feelings of sadness, anxiety, and hopelessness. When in this Mode, the individual may feel overwhelmed and unable to act. It is also in this Mode that young people may present cognitions involving concerns, fear of failure, and incapacity. The therapist's goal with this Mode is to lead the patient to validate his/her

emotions and search for adaptive strategies to meet basic emotional needs (Loose et al., 2020c).

However, when anxious cognitions exhibit a rigid content, with inflexible high standards over the performance, it is possible to conceptualize such thoughts as demonstrations of a Demanding/Critical Voices/Parents Mode. This Mode is characterized by the individual's internalizations, which set high and inflexible demands, often related to performance (Young et al., 2008). In order to deal with such structure, the psychotherapist needs to "face/challenge" the Mode, questioning it and demonstrating its inadequacy and lack of adaptability. Another possibility is the work with the patient's parents, with the aim of making expectations more flexible and valuing commitment. The same may also be necessary to be worked with the patient itself (Loose et al., 2020c).

From the Treatment

After clinically assessing the patient's complaints and organizing the symptomatology in the ST language, the work is initiated through the three access channels proposed by psychotherapy (cognitive, experiential, and behavioral) (Loose et al., 2020a, b, c, d; Young et al., 2008). When working with children and adolescents in ST, sequential steps for intervention are proposed:

1. to identify the Modes available;
2. to access the Child Modes (in order to validate and meet emotional needs);
3. to determine each Mode's function and carry out dialogues between these structures;
4. to strengthen the Adaptive Modes and weaken the maladaptive ones, and;
5. to generalize the therapeutic gains outside the *setting* (Loose et al., 2020b).

Therefore, the cognitive work initially starts with the psychoeducation of the model for the client, making him/her aware of the structures belonging to his/her conceptualization and start to question the validity of its functioning. To do so, the techniques employed must respect the patients' individual characteristics, such as needs, understandings, and abilities. However, techniques such as searching for evidence for the Modes' cognitions, analyzing the pros and cons of the structures, and using Mode Maps are applied to the individual at this stage (Loose et al., 2020b). The search for evidence and the analysis of advantages and disadvantages are common to CBT (Friedberg et al., 2015), whereas using Mode Maps is a therapeutic strategy of ST. Through the Mode Map, it is possible to present the case conceptualization to the patient in a more accessible manner, aiming at his/her comprehension of the interaction among his/her thoughts, behaviors, emotions, and basic emotional needs (Simeone-DiFrancesco et al., 2015).

When working with children and adolescents, this technique can be adapted, depending on the age of the individual. It is also common to work with drawings and figures for the Map construction with young people (Loose et al., 2020b). Figure 1 presents a possible Mode Map of a teenager.

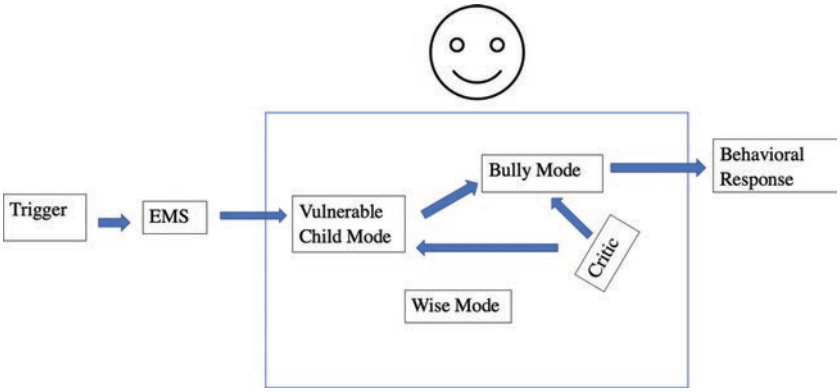

Fig. 1 Example of a Mode Map of a teenager. (Source: Adapted from "*Schema Therapy for Children and Adolescents: A Practitioner's Guide*" (Loose et al., 2020d))

Moving forward with the treatment, the therapeutic emphasis becomes the individuals' emotional aspects (core to the clinical process), explored by experiential techniques (Loose et al., 2020b; Young et al., 2008). In addition to being a differentiator from classical CBT, these techniques will elicit emotional responses that are key to the patients' clinical change (Young et al., 2008). When working with Schema Modes, two types of experiential techniques receive greater prominence: imagery exercises and techniques using chairs (*Chaiwork*) (Simpson & Arntz, 2020; Weertman, 2012).

Imagery exercises are widely disseminated techniques used for various contexts within ST (Hayes & Wijngaart, 2020; Simpson & Arntz, 2020; Young et al., 2008). In the psychotherapy work with children and adolescents, however, there is no robust evidence on its use due to the idiosyncrasies of this population and the cognitive development process of young people should also be considered (Loose et al., 2020b). Therefore, when in a therapeutic process with adolescents with test anxiety, the young person's metacognitive skills should first be carefully analyzed before applying any imagination technique. Taking this into consideration, imagery exercises of less emotional activation can be theorized as possible interventions. One example can be the "Safe Place" exercise (Young et al., 2008). This exercise consists in the formulation of a mental image by the individual, where he/she feels safe and stable. The technique seeks to assist patients with emotional regulation in an adaptive way (Young et al., 2008). Applying this technique to children and adolescents with test anxiety may promote regulatory strategies in moments of concern, confusion, and self-blame.

In addition to mental imagery techniques, there is a prioritization for therapeutic approaches aiming at a dialogue among Schema Modes (Loose et al., 2020a). Historically, this work has taken place through *chairwork* techniques (Kellogg, 2012; Young et al., 2008). When working with young people, there is also an emphasis/possibility to the use of puppets and other devices to carry out these activities (Graaf et al., 2020). With these tools, the dialogue between the "sides of the

John is a 16-year-old adolescent who presents anxious symptoms related to tests. John has an avoidance behavior towards evaluative activities and always tries to avoid going to school when he has to take tests. By not taking the tests, his grades are insufficient, thus reinforcing his feeling of inability. John has been in therapy for a few months and started working with ST.

John (J): You know... There was a test yesterday and I ended up not going to school again...

Therapist (T): Okay, John. What happened? Was it the avoidant side (Avoidance coping mode) that came up?

J: Yeah. I guess so. I was pretty anxious thinking about the test and then I didn't go to school.

W: Right, John. I think it's evident that it's that side of you we have been working on.

J: Yes...

T: John, I'd like to propose a slightly different activity. I'd like us to talk about this avoidant side. Do you see that chair next to you?

J: Yes.

T: I want you to imagine that sitting on that chair is your avoidant side, and sitting on the chair that you're sitting on, will be your wise side. What I'm going to propose to you is that these two sides talk about the behavior of not going to class. I also want you to reference each of these sides in second person (you) when you talk to the Mode. Is that okay?

J: I think so.

W: Good. I'm going to ask you to go over to that chair and talk from the avoidant side.

John gets up and switches chairs.

J: (avoidant side) You claim to be smart and that you'll take care of your studies, but at the end of the day I'm the one who ends John's anxiety.

W: Okay John, you can switch chairs and answer from the wise side.

John switches chairs.

J: (wise side): I understand that you're trying to protect John from anxiety, and you've managed to do that very well. But there are many problems with this behavior. His grades keep dropping, John can't do his therapy practice, and his anxiety gets worse every time he misses a test. I don't think this is working well at all.

Fig. 2 Schematic Modes dialogue exercise between the Avoidance Mode and the Wise Mode

W: Good. John. Looking at these sides now, how strong, on a scale from 0 to 100, are the avoidant side and the wise side?

J: The avoidant side is 45 and the wise side is 55.

W: Right, good. Does the avoidant side want to respond to the wise side?

J: Yes.

John switches chairs.

J: (avoidant side) You talk very nice, but how can you prove that anxiety won't show up? How can you attest that it is going well?

John stands up and goes to the other chair.

J: (wise side): I didn't say anxiety won't show up. It will, but he can deal with it. Regulate it. Anxiety is normal. And I know strategies to manage it. About the test, I don't know if he will do well, but I do know that he will do better than not taking it. John always studies, there's no reason to think he'll always fail.

W: Very good. What's the strength of each side now?

J: Avoidant: 10. Wise: 90.

W: Very good. Does the avoidant side want to respond?

J: No. He's out of arguments.

W: Cool, John.

The session would continue by assessing the exercise, the basic emotional needs and by training anxiety management strategies.

Fig. 22.2 (continued)

individual" is transformed into something experiential and egodystonic, thus enabling stronger emotional activations and changes (Young et al., 2008). One of the major emphases to the Modes Dialogue techniques are the interactions between the different parts of the *self*. With Maladaptive Coping Modes, for instance, there will be a search for negotiating healthier strategies by the Wise Mode. On the other hand, with the Internalized Modes there is a confrontation toward these structures, and with the Child Modes there is an attempt to supply basic emotional needs.

Young people suffering from test anxiety may present maladaptive coping strategies, particularly involving avoidance, giving up/surrending, and projection. In the Modes Dialogue techniques, the patient's Wise Mode is expected to "negotiate" with his/her Coping Mode by means of different strategies of greater adaptability

(Graaf et al., 2020; Kellogg, 2012). Figure 2 shows the application of a Modes Dialogue technique with a teenager who uses an Avoidance Coping Mode, such as avoidance, in an evaluative situation.

Connected to the work through the cognitive and experiential channels, behavioral techniques also play an important role in psychotherapy. Within ST, we understand that behavioral interventions seek to break previously defined behavioral patterns while maintaining the therapeutic gains (Young et al., 2008). Therefore, young people with test anxiety, in the psychotherapeutic process, will use techniques that are commonly seen in classical CBT. Interventions such as diaphragmatic breathing, study organization, and gradual exposures may be potential attention focuses for the clinician.

Conclusions

Test anxiety may bring forward relevant problems and symptoms in adolescents, especially those with poor coping strategies. There are researches about interventions with this population by using CBT (Brown et al., 2011; Sportel et al., 2013) and other approaches (Serok, 1991). However, due to the emotional aspect associated with these problems, there is room for therapeutic approaches that have a greater emphasis on this area. In this case, ST may be presented as a possible psychotherapy to face such demands.

Nevertheless, in order to establish ST as a therapeutic choice for adolescents with test anxiety, studies on the effectiveness of ST for children and adolescents should be further developed. Currently, we can conclude that, based on the theory of ST and ST for children and adolescents, there are indications that this may be a promising psychotherapeutic approach for this population, especially for individuals with comorbidities and characterological difficulties.

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Online Care for Adolescents and Young Adults with Anxiety During the Aftermath of the COVID-19 Pandemic

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Mental Health in the Pandemic of COVID-19 and Online Care

The pandemic of COVID-19 has drastically affected the routine of people around the world and the mental health of individuals at different levels. Chinese studies have shown that there has been an increase in symptoms of anxiety and depression (Xiang et al., 2020). A survey conducted a few months after the pandemic started with more than 9500 people from 11 countries showed a prevalence of 48.6% and a new incidence of 17.6% for at least one mental disorder such as post-traumatic stress, depression, anxiety, and panic disorder (Georgieva et al., 2021).

If, on the one hand, the factors associated with the development of psychological symptoms in adults are due to social isolation, fear of infection by the virus, and of losing family members, in addition to the economic impact, on the other hand, in the case of adolescents and college students, some peculiarities must be taken into consideration in the mental health impact of the pandemic. Restricted social connections, exposure to constant negative news, the closing of schools and universities, and the extended period of online classes, especially in the Brazilian reality, can impact mental health in several ways. A large longitudinal study with almost 750,000 Chinese university students showed that 45% of participants reported mental health problems (Ma et al., 2020; Zhang et al., 2020). Results showed that massive media exposure and perceived little social support increased the risk of depression, anxiety, and acute stress. News about death impacted sleep quality and was related to increased aggression among college students. However, engaging in a routine of physical activity resulted in essential benefits for improving affective

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state. In Brazil, a study with more than 650 medical students showed that 62.8% of participants showed signs of suffering related to mental health, and identified, among other risk factors for the symptoms, being in the first two years of the course, difficulty in concentrating, concern with the delay in graduation and poor adaptation to online learning (Teixeira et al., 2021).

According to Mudenda et al. (2020), the mental health of adolescents and college students is directly related to academic performance. In the context of the pandemic, the participation in online classes, the performance of assignments, activities, seminars, and tests over the Internet, in addition to difficulties with the connection, may have directly affected the students'performance and learning and, consequently, trigger the emergence or worsening of psychological problems. The authors emphasize the relevance of monitoring mental health professionals for students, including within the institutions themselves.

One of the strategies to support mental health problems during the pandemic was the use of online interventions. The best known of these is online psychotherapy, which refers to psychological care delivered via videoconference, following the model of face-to-face psychotherapy. Due to the need for social distance during the pandemic, clinical psychologists were forced to abruptly change their face-to-face care to online care, even without previous experience. Although many professionals eventually conducted appointments through the Internet, especially in the face of specific needs, such as travel, change of country of the therapist or client, or problems in language adaptation, for example, the practice was not adopted by all. However, this modality of psychotherapeutic care is not a novelty, as it has been performed and widely studied in other countries for years regarding its effectiveness for different psychological conditions (Winda et al., 2020), the potential formation of the therapeutic alliance (Ribeiro et al., 2021), and different populations including children, adolescents and young adults (Spence et al., 2011).

There are different forms of web-based interventions: self-administered, asynchronous, and synchronous. Self-applied and asynchronous interventions are interventions in which there is no contact with a health professional or when contact is not simultaneous. This is the case for interventions via email, text message, or the use of online platforms. In general, they offer interventions for a given clinical condition and are developed based on effective treatments in person and are adapted and evaluated for the virtual context. The interventions can be self-applied when the individual himself accesses the platform, performs the proposed tasks and activities, and receives personalized feedback on his progress. Among the main advantages of these interventions is offering treatment to many people who usually would not reach conventional treatment, mainly for geographical and stigma reasons. In addition, they are available for access at any day and time. For Andersson and Titov (2014), web-based psychological interventions offer the opportunity to access evidence-based treatments, monitor the client's progress, and are cost-effective.

In synchronous interventions, the contact with the psychologist happens simultaneously, such as by telephone, chat, audio, or videoconference. Telephone interventions, although not Internet-based, have been used for decades as telehealth strategies, mainly in the United States. With the advent of the Internet in the 1990s,

interventions were directed to the computer and later to videoconferencing, using cameras and different types of software for online care (Santana et al., 2020).

Psychologists' interest in videoconferencing interventions has significantly grown since the pandemic of COVID-19. A survey conducted in the USA showed that 39% of the 768 psychotherapists interviewed reported performing psychotherapy online before the pandemic and there was an increase to 98% after the pandemic. Child and adolescent care in this modality more than doubled in this period (Sampaio et al., 2021).

In addition to specific training, psychologists must base services on scientific support and the ethical guidelines of their country. The American Psychological Association (APA) regulated emerging clinical psychology services via the Internet and teleconferencing in 1997. Since then, the APA has made available guidelines for American therapists that, in a sense, may be a reference for therapists in other countries. According to the APA, therapists have an ethical obligation to help clients even during a crisis, as in the case of the COVID-19 pandemic, since crisis can accentuate symptoms of anxiety, depression, or substance use. Although training for online care is essential in the United States, APA's code of ethics encourages psychologists to be flexible in emergencies, even if they have not received appropriate training (APA, 2017).

In Brazil, the Federal Council of Psychology (CFP) has been discussing since the 1990s the realization of psychotherapy using the Internet, which culminated in the resolutions of 2000, which established the National Commission for Accreditation and Supervision of Psychology Services over the Internet; of 2005, which prohibited the provision of psychological services whose means were not regulated or recognized by the CFP, including the Internet; of 2012, which allowed the provision of psychological services performed by technological means of communication at a distance as long as they were specific, informative, and focused on the proposed theme, based on psychological counseling in up to 20 sessions; and, finally, in Resolution 011/2018, which regulated the provision of psychological services performed through information and communication technologies. After a previous registration with the Regional Council of Psychology and its authorization, synchronous and asynchronous psychological services are allowed in a platform called *e-psi.* The Resolution specifies that the care of children and adolescents must have the express consent of at least one of the legal guardians and the technical feasibility of the psychologist for this modality. In addition, it considers inadequate online care in crises. However, in the face of the COVID-19 pandemic, the CFP released Resolution 04/2020, which allows for care during the crisis arising from the pandemic (Brazil, 2018, 2020).

Despite the ethical and regulatory issues of online psychological care, the proposed intervention must be empirically supported, providing conditions so that, together with professional expertise and the client's needs and preferences, the psychologist can act on the tripod of evidence-based practice. Specifically regarding Internet-based care for adolescents and young adults, one must consider the peculiarities and needs of this phase of life: the symptoms of stress and anxiety related to academic life during and after the pandemic. In this sense, in the following

sections, we will present an intervention model for anxiety related to academic context for adolescents and young adults, based on Beck's cognitive model of anxiety. In addition, we will present some strategies for good practices in videoconferencing care with this population. Later in this chapter, we will address the effectiveness of Cognitive-Behavioral Therapy (CBT) for anxiety disorders, one of the most studied in relation to psychotherapy in online modality.

Cognitive Model of Anxiety

Aaron Beck's cognitive model of anxiety (Clark & Beck, 2012) is basically characterized by the scheme: *triggering situation → anxious evaluation (thought) → anxious feeling*, in which people with high anxiety perceive events as a threat of intense severity while seeing themselves with few possibilities for coping and low levels of security.

Clark and Beck (2012) highlight the importance of a detailed case formulation aimed at planning the treatment focused on target symptoms of anxiety. According to the authors, diagnostic assessments using inventories and semi-structured interviews are necessary, as well as an in-depth examination of the case with daily records filled in by the patient and clinical observation of the following points: situations that trigger fear (e.g., environmental triggers); apprehensive thoughts (e.g., believing that something unpleasant is going to happen); perception of autonomic arousal (e.g., blushing and judgments about this sensation); fear inhibition responses (e.g., avoidance or freezing); and cognitive processing errors (e.g., paying attention only to the threat).

Furthermore, Clark and Beck (2012) point out that the case formulation of anxiety assesses the secondary cognitive processing that is understood as more elaborate arising after the primary activation of fear. Thus, the therapist should collaboratively detect the components of this secondary processing in the patient as the following: assessment of coping skills; deliberate safety-seeking behavior; a constructive and reasoned way of coping; excessive worry; and, finally, threat reassessment, collected at the end of the case conceptualization process, when the patient reassesses his/her anxiety at a time when he/she has already calmed down. The goal of therapy is to generalize this calmer, more balanced, and realistic interpretation of the threatening situation to most life situations (Clark & Beck, 2012).

The intervention plan of the cognitive model of anxiety considers all the information raised during the case conceptualization, which is continuous throughout treatment to provide interventions adapted to the patient's particularities (Clark & Beck, 2012). The cognitive interventions seek to make anxious thinking more flexible and include psychoeducation about symptoms, identification of apprehensive thoughts, search for evidence, challenging catastrophic thinking, identification of cognitive errors, empirical hypothesis testing, *mindfulness,* and acceptance (Beck, 2013; Clark & Beck, 2012). On the other hand, behavioral interventions aim to activate coping and test patients' skills by proposing behavioral prescription,

self-monitoring, gradual exposure, relaxation, and breathing techniques (Beck, 2013; Clark & Beck, 2012).

CBT for anxiety in children, adolescents, and youth has proven consistent with Beck's cognitive model of anxiety, demonstrating its applicability in various age groups (Gormez & Stallard, 2017). However, the care provided to children and adolescents has peculiarities that the therapist should be aware of, such as the patient's lower autonomy and greater family involvement in the treatment, since there is still a dependence on the caregivers (Friedberg & McClure, 2019). In addition, the therapist should be aware of the specific characteristics of biopsychosocial development of different age groups to ensure motivation, engagement, and understanding of therapeutic work goals and tasks (Assumpção et al., 2017).

Regarding anxiety in children and adolescents, it is expressed through uncontrollable worry about studying, sports, and peer relationships (Gormez & Stallard, 2017). A nationwide survey conducted in Ireland on the effectiveness of the *FRIENDS* program (Henefer & Rodgers, 2013), a World Health Organization (WHO, 2004)-recognized anxiety prevention intervention, assessed schoolchildren's anxiety with validated structured questionnaires and an open-ended question, "what else are you afraid of?" The content analysis of the answers found four main themes: tests and schoolwork; bullying; loss and death; other fears. It is noted that school content is typical in young students'anxiety and care protocols have proven to be adequate to treat such complaints (Gormez & Stallard, 2017; Henefer & Rodgers, 2013).

Online Interventions for Children and Adolescents

There are some validated and effective computer- or Internet-based CBT protocols for anxiety and depression in youth, from children to young adults aged 25 years, such as the *BRAVE-ON-LINE* and *Camp Cope-A-Lot* programs. The protocols have interactive and playful treatment resources (Ebert et al., 2015; Pennant et al., 2015); however, none of them adapt to the Brazilian reality so far. Other CBT protocols for anxiety in children and adolescents (not Internet-based) are also well cited in the literature, such as *FRIENDS*, *Coping Cat*, and Children's Regulation Therapy, a Brazilian protocol for anxiety and depression, all of which have several intervention techniques in common: anxiety psychoeducation, cognitive restructuring, relaxation, anxiety regulation, and problem-solving (Antoniutti et al., 2019).

In a meta-analysis conducted to compare therapy modalities for children, adolescents, and youth with anxiety, Sigurvinsdóttir et al. (2020) pointed out that protocols have between 9 and 16 sessions and summarized the following basic principles of CBT for anxiety: (1). recognize feelings and somatic reactions of anxiety; (2). clarify anxiety-provoking thoughts; (3). develop coping skills; (4). respond to behavioral training strategies with gradual situational or imagined exposure.

In order to exemplify how online care is delivered through anxiety CBT for students between 12 and 17 years of age, the following is a 16-session assessment and

intervention plan based on some of the methods mentioned above. The effectiveness of some of these protocols will be discussed later in the text.

Online Intervention for Students with Academic Anxiety

Session 01: Conduct an interview with the kid's parents and make a work contract with them based on Friedberg and McClure's (2019) recommendations for case conceptualization, gathering information about the chief complaint, social, school, and medical data.

Sessions 02 and 03: Make a work contract and conduct a structured interview with the patient using DSM-5 structured diagnostic interview for anxiety disorders (First et al., 2017).

Sessions 04: Videoconference with family for feedback of the initial formulation. Psychoeducation on physical, cognitive, and emotional aspects of anxiety, guiding its recognition and acceptance. Reading indication, text sent by email, "Understanding your anxiety" (Greenberger & Padesky, 2017).

Sessions 05 and 06: Familiarization with daily records of thoughts, feelings, and behaviors in the face of challenging situations, noting internal and external triggers of fear, apprehensive thoughts, physiological symptoms, avoidance and safety-seeking responses, and assessment of own coping capacity. Emailing worksheets to patients to complete as homework and discussing them during the session (worksheets suggestions in Clark & Beck, 2012; Friedberg & McClure, 2019; Gauy, 2011; Gauy, 2020; Greenberger & Padesky, 2017).

Sessions 07, 08, and 09: Training for relaxation with breathing exercises (e.g., diaphragmatic), one-minute meditation, imagination (e.g., imagine yourself on a beach and mentally visit the five senses at that location), and progressive muscle relaxation. The exercises can be practiced during the session and passed on in handouts and instructional audios by email (see relaxation techniques in Leahy et al., 2013).

Sessions 10, 11, and 12: Secondary assessment of anxiety, reflecting on constructive coping strategies and realistic threat reassessment. Recording elaborate responses to anxiety, cognitive (e.g., seeking realism in worries) and behavioral (e.g., trying to relax and breathe), using worksheets sent by email and previously completed by the patient before the session. Also, collaborative generation of problem-solving and helpful ideas, using videoconference chat to write them down (example of Friedberg & McClure's, 2019, "Responding to fear" exercise). Reading examples of constructive responses to anxiety and sending them via messaging app (see Table 5.3 of constructive responses in Clark & Beck, 2012, p. 159).

Sessions 13 and 14: Behavioral experiments and situational or imagined gradual exposure. For the behavioral experiment, the patient tests the veracity of their worries by comparing them to the facts that actually happen and whether they are really bad (ex. technique: diary record of the experiment by Friedberg &

McClure, 2019). Exposure can be done first in an imagined way, using systematic desensitization, and later in vivo exposure, with prior use of "fear ladder" and SUDS – Subjective Unit of Discomfort (Friedberg & McClure, 2019; Petersen & Wainer, 2011). All behavioral exposure steps can be written together in the video conferencing chat and sent by message at the end of the session.

Sessions 15 and 16: Reward exposure efforts and debriefing on skills acquired in therapy. Completing courage and coping sheet detailing what you coped with and for how long can be in writing or photo of coping outcome (ex. technique: "Courage Badge" by Friedberg & McClure, 2019). Developing coping cards with the skills developed in psychotherapy can be created together or as homework on shared tools for creating images, drawings, or slides.

After the intervention sessions, a new evaluation of the symptoms is suggested to verify changes in the functionality of the patients. It is essential to give feedback to the parents on the progress of the therapeutic process and hold periodic sessions with the adolescent to maintain the skills developed.

Good Practices for Conducting Therapies in the Online Modality

As presented in the previous sections, online interventions are an alternative for several mental health issues, including anxiety-related problems in children, adolescents, and young adults. However, it is not enough to transpose the reality of face-to-face care to online care since the latter has some peculiarities and limitations. There is restricted access to the patient's bodily expressions in interventions over the Internet, even videoconference. It is impossible to identify a repetitive movement of the legs, which can help the therapist identify the level of anxiety, fear, and tension during a given intervention, for example. Increasing the request and provision of feedback can lessen the impact of reduced access to the patient's nonverbal expressions. To minimize these limitations, we suggest increasing the usage of questions that check patients' emotions and thoughts throughout the intervention, such as: "How do you feel about this? From 0 to 10, how much does thinking about it cause you anxiety?" In addition, the therapist should be more attentive to changes in facial expressions, which may provide important clues about the young person's mood changes.

The online therapeutic setting confers some particularities that need attention. The quality of the sound or delays in the video due to the low quality of the Internet connection may mask the duration of the silence or the patient's avoidance, expressed by the difficulty of maintaining eye contact through the screen. It is common in the treatment of children and adolescents since many have difficulty expressing themselves in therapy. Playful resources can be used, such as websites, videos, and series that interest the patient to aid dialogue and activities. Another issue related to the setting is that some patients try to conduct the session concomitantly

with household chores, other people's presence, and interactions with animals, which compromises the confidentiality, privacy, and attention to the therapeutic process (Dolev-Amit et al., 2020). It is common for parents to want to participate in the session to follow what is being performed with children and adolescents. It is necessary to guide the patient and parents about the privacy of the psychotherapy session. Strategies can be used, such as using ambient sound outside the session location and holding the session when there is less traffic at home. Conducting the session in public places should be avoided for young people since they can be a source of distraction, interfering with the entire processing of the therapeutic content, in addition to running into the issue of confidentiality and privacy.

In this way, the therapeutic contract has an even more critical role concerning online psychotherapy. At the beginning of the treatment, it is suggested that agreements be made to allow the sessions to take place in appropriate circumstances, preferably similar to the face-to-face modality. There must be clarification and agreement between patient and therapist about the necessary settings for conducting sessions online, such as environment, Internet connection, and privacy. It is also crucial that the therapist checks whether the conditions are being respected at the beginning of each session (Dolev-Amit et al., 2020).

Some patients may have difficulties complying with these agreements. In these cases, the therapist should help the patient to solve these problems. Simple guidelines can solve some of these problems, such as using a network cable instead of *wi-fi* or holding the session in the environment closest to the Internet modem to increase the stability and quality of the connection. Conducting sessions in alternative environments such as cars and underutilized rooms and headphones are possibilities to ensure confidentiality and privacy.

The limitation of perception of nonverbal expressions is not only a challenge for therapists. Patients also have difficulty in identifying the corporal expressions of professionals. Therefore, in online psychotherapy, the therapist must have a more active posture, through more open and overt expression, mainly by verbalizing empathy, interest, involvement, and attention. This posture can be accomplished through reflective listening or exaggeration of expressions, such as eyebrow arching and marked changes in intonation and voice speed (Fisher et al., 2020).

The whole therapeutic context of face-to-face sessions provides the patient with a physically and emotionally safe environment: a quiet, comfortable environment with the physical presence of the therapist. In this sense, in online interventions, it is necessary to develop strategies to compensate for these absences and help the patient develop a sense of security in other ways. One of them is to create an environment that resembles a face-to-face therapeutic *setting*. In this sense, the therapist must be aware of his distance from the screen, not positioning himself too close, not to seem invasive, and not too far away so as not to seem distant or small. The therapist's gaze should be directed at the camera so that the patient perceives him or her as in face-to-face care. Finally, for the therapist to observe the patient's reactions while looking at the camera, it is necessary to position the patient's video box as close as possible to the camera (Geller, 2020).

Effectiveness of Cognitive-Behavioral Therapy for Anxiety in Children and Adolescents

There is a body of evidence supporting the effectiveness of CBT for children and adolescents, and it is considered the gold standard of treatment (Banneyer et al., 2018). A meta-analysis conducted by Wang et al. (2017) evaluated the effectiveness of CBT for children and adolescents aged three to 18 years with a diagnosis of anxiety disorder and compared it with pharmacotherapy. The authors evaluated the results of 115 studies with 7719 patients. Of these, two randomized clinical trials compared CBT with medication. CBT was more effective than fluoxetine in improving primary anxiety symptoms and more effective than sertraline in remission of the disorder. In the network analysis performed by the authors, considering all the studies found, there was no significant difference between CBT and any medication. CBT significantly reduced primary anxiety symptoms, improved responsiveness, and remission compared to a waiting list and no treatment.

In Banneyer and colleagues' study (2018), the authors reviewed recent research findings on childhood CBT for anxiety disorders and pointed out the use of the CBT label for programs involving different treatment components and principles. The authors point out that exposure is the most used component, followed by cognitive techniques, relaxation techniques, psychoeducation, and modeling. Some studies have looked at third-wave approaches, such as acceptance and commitment therapy (ACT), which incorporates CBT techniques in addition to mindfulness and acceptance. The authors point out that both have similar mechanisms. The study also indicates gains with the addition of some components to CBT, such as inhibitory learning principles, parental involvement, case formulation approaches, and the use of technology.

Effectiveness of Online Cognitive-Behavioral Therapy for Children and Adolescents

Anxiety disorders are the most common disorders among children and adolescents, affecting up to 32% of young people. However, a large proportion of this population does not have access to specialized services (Merikangas et al., 2010). In this sense, technology-assisted treatment methods are promising to improve treatment and increase access to services. The study conducted by Carpenter et al. (2018) aimed to examine the preliminary utility of family CBT by videoconferencing for anxious youth aged seven to 14 years. A total of 13 families participated in 16 weekly family CBT sessions, which included psychoeducation, relaxation training, promoting awareness, and the ability to restructure automatic negative thoughts, problem-solving, and graded exposure tasks. Results suggest baseline primary anxiety diagnosis severity, global functioning, and anxiety symptoms patients' mothers reported improved significantly between treatment initiation and after the 16 sessions. In

addition, treatment adherence was high, with a completion rate of approximately 85%.

However, studies indicate that computerized self-guided CBT treatments increase the likelihood of adherence to the intervention by children and adolescents due to the pleasure generated in performing the tasks, which influences patient engagement (Conaughton et al., 2017). Thus, self-guided interventions stand out for children and adolescents when compared to synchronous and asynchronous interventions. A meta-analysis by Grist and colleagues (2018) investigated the current evidence of the effect of interventions through technologies for children and adolescents with depression and anxiety. Thirty-four randomized clinical trials with 3113 children and adolescents up to 18 years of age who received interventions through the technologies for depression and anxiety of mild to moderate severity were analyzed. Most of the interventions were computerized and Internet-based CBT. They were also those with the most significant effect sizes. The remaining interventions focused on attention bias modification training, cognitive bias training, and other interventions with problem-solving and video games that use neurofeedback, biofeedback, and emotion regulation training.

The CBT-based programs used for anxiety were (1) *BRAVE-ON-LINE*, a program based on the psychosocial determinants of childhood anxiety, and evidence-based cognitive-behavioral interventions for childhood anxiety. Among the management strategies worked on is the recognition of physiological symptoms of anxiety, relaxation strategies, cognitive restructuring, graded exposure, problem-solving techniques, and self-enforcement of "courageous" behavior (Spence et al., 2008); (2) the *BiP-OCD* has exposure and response prevention as the principal treatment component, delivered through texts, films, animations, and exercises. The program also encompasses psychoeducation about obsessive-compulsive disorder (OCD), cognitive strategies, problem-solving, and relapse prevention (Lenhard et al., 2017); (3) *Cool Teens,* a computerized program that teaches CBT techniques for anxiety management with a focus on cognitive restructuring and graded exposure, using various multimedia formats (text, audio, illustrations, cartoons, and live video) to present information, examples, activities, and homework in an engaging manner (Wuthrich et al., 2012); (4) the *Think, Feel, Do is* a *CD-ROM*, designed to be facilitated by a professional, which through diverse multimedia such as sounds, photos, cartoons, music, quizzes, and exercises works on psychoeducation, recognition and management of emotions and thoughts, and problem-solving techniques (Stallard et al., 2011). Currently, the author of *Think, Feel, Do* and his colleagues have been working with interventions for sleep and anxiety problems in adolescents via software that can be accessed on digital platforms over the Internet (Cliffe et al., 2020).

The ones used for depression were (1) *CATCH-IT*, which aims to reduce dysfunctional thoughts, dysfunctional behaviors, and interpersonal interactions that increase the vulnerability to depressive disorders. In contrast, it works by promoting pleasurable activities, optimistic appraisals, problem-solving, and social support involvement (Van Voorhees et al., 2009); (2) *SPARX*, a treatment in the form of an interactive game whose aim is to restore balance in a fantasy world plagued by

negative thoughts. CBT principles are introduced and practiced through challenges, educational interactions with a guide, and real-life homework assignments (Merry et al., 2012); (3) *Stressbusters*, a program that uses interactive presentation with videos, animations, case vignettes, quizzes, charts, and printouts to work on behavioral activation, emotion and thought recognition and management, problem solving, social skills, and relapse prevention (Smith et al., 2015); (4) *The Journey*, is similar to a fantasy game in which each magical land has its content linked to a theme, such as identifying the relationship between behaviors and feelings, behavioral activation, problem solving, cognitive restructuring, relaxation techniques, and relapse prevention (Stasiak et al., 2012); (5) a CBT program that was not named, self-guided, with therapist support that addresses a conceptualization of depression, method of self-observation and self-assessment of negative automatic thoughts and negative emotions, thought modification, and problem solving (Wannachaiyakul et al., 2017).

The study found an average program completion rate of 64% in the intervention condition. Analyses indicated that the technology interventions produced a moderate overall effect size. Furthermore, effect size did not vary significantly by participant age. In contrast, the level of contact with the therapist influenced the effect. That is, the greater the contact, the greater the effect size. In this sense, the results indicate that technology-based interventions for children and adolescents with depression and anxiety are a possible, effective, and low-cost alternative when face-to-face treatments are not available or feasible.

Conclusions

Given the situation presented in the pandemic of COVID-19, the development and worsening of symptoms and anxiety disorders in children, adolescents, and young adults worldwide were observed. Most of these symptoms were related to the academic environment, resulting from long periods of online classes, exams, and assignments using the Internet, and the withdrawal from social interaction with friends. On the other hand, online interventions have become the primary means of psychological support. This chapter aimed to present an intervention proposal for academic anxiety, i.e., symptoms or anxiety disorders developed due to school difficulties in the pandemic phase of COVID-19.

The intervention proposed here was not developed exclusively for academic anxiety but presents theoretical support from Beck's cognitive model of anxiety, whose intervention protocols have been widely studied for their effectiveness for anxiety disorders in children, adolescents, and young adults.

Although most studies are for face-to-face psychotherapy, there has been growing interest in online interventions for anxiety and depression in recent years. The effectiveness of several intervention models – such as those presented in the results session – associated with the particularities of Internet interventions with young people – which can facilitate access, engagement, and use of playful resources of

the Internet itself – provide good support for clinicians to use computerized or online psychological interventions for young people. The results may indicate that online interventions can be adopted even as an educational policy and can be performed individually or in groups when schoolchildren demand care on a common theme, such as stress management and academic anxiety.

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Part III
Academic Anxiety and Teachers Interventions

Emergency Remote Education in Brazil in the Context of the COVID-19 Pandemic: Dialogues on Teaching Practice

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Introduction

In 2020, an unprecedented scenario was installed on a global scale, changing the way society works in the political, economic, and educational sectors, among others. From the confirmation of the pandemic of COVID-19, international organizations (such as the World Health Organization) recommended social distancing, the use of masks, and hand washing with alcohol gel, among other actions, to contain the virus and reduce the speed of spread of the disease. These were the main and most immediate health measures to be adopted, in order to preserve life. In this context, it was necessary to adapt the way to perform activities in society, especially those related to work. In this chapter, we will focus on the educational sector with a view to teaching work.

In Brazil, the Ministry of Education and Culture (MEC) through the Portaria n. 343/2020 (amended by Portarias n. 345/2020 and n. 395/2020) and the Medida Provisória (n. 934/2020) authorized public and private educational institutions to conduct their activities in the remote modality through digital platforms. This process was named Emergency Remote Education – ERE (Bernardo et al., 2020). Therefore, from this authorization, public and private institutions have continued to perform their educational activities using digital platforms to transpose the face-to-face teaching to the digital one. However, an abrupt disruption of traditional forms of decision-making within the school context could not fail to raise a series of doubts, uncertainties, and insecurities. This, ultimately, led all involved in the educational process to wonder whether it would be possible to "survive" such chaos.

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Table 1 Axes of analysis of the literature on the subject

Axes	Analysis type
Organization of teaching work	Observation of the reorganization of teaching work in emergency remote education (ERE) from the surveys collected in 2020 and 2021 in Brazil
Infrastructure	Access to technology/internet
	Faculty support policies (technological equipment edicts)
Teachers' health	Aspects related to the health of teachers in the context of the COVID-19 pandemic

Note: Prepared by the authors, 2021

This scenario motivated a look at the importance of the educational environment for society, giving a new meaning to the teacher figure in the spotlight to the centrality of their praxis for the effectiveness of teaching itself and for the objective working conditions of education professionals. Still, in a paradoxical perspective, the teachers have publicly positioned themselves against the reopening of educational institutions supporting international health measures. However, they have tread an arduous path in searching for alternatives to help students reach learning paths, even in the face of structural difficulties.

Within this perspective, in this chapter, we review the data from studies about the working conditions of teachers in Brazil through a theoretical review, emphasizing the three principal axes of analysis of this research: organization of teachers' work, infrastructure, and teachers' health indicated in Table 1.

Organization of Teaching Work in Brazil

The scenario installed with the pandemic of COVID-19 impacted educational institutions, especially in the organization of teaching work that, supported by national legislation and recommendations of international bodies, had to review their practices with the uses of digital educational platforms. The International Labor Organization (ILO) document "COVID-19 and the education sector" points out that on April 13, 2020, the activities of schools and universities were closed in 192 countries. The decision was "interrupting classes for about 1.58 billion students (91.4% of enrollment) and encouraging almost all education systems to implement distance learning solutions" (OIT, 2020, p. 1). According to the OIT report (2020), this decision had an immediate impact on the work of more than 63 million teachers throughout the education sector, affecting all levels of education equally (OIT, 2020).

Due to the transposition of classes from face-to-face modality to virtual environments, both teachers and educational institutions had to creatively seek alternatives to the traditional classroom in the information and communication technology (ICTs). The use of videoconferencing and online teaching platforms began with the sharing of learning materials and worksheets through schools' intranet and messaging platforms (OIT, 2020).

In Brazil, Emergency Remote Learning has provoked many initial questions about its configuration and operation due to the similarities with Distance Education (DE). For Bernardo et al. (2020), remote learning differs from DE because "this modality presupposes a type of contract, a structure (with templates, studio recording, specific materials, tutors, among others)" (Bernardo et al., 2020, p. 17). In addition to these issues, research point to the differences of applicability of emergency remote learning in public and private institutions, as we will see below.

From the perspective of private higher education, for example, according to the Brazilian Association of Maintainers of Higher Education (ABMES, in Portuguese), the difficulties of adaptability of face-to-face teaching to the remote modality were reflected in the global scenario and were the basis of the document *Covid-19 and Higher Education: de los efectos inmediatos al día después* developed by the International Institute for Higher Education in Latin America and the Caribbean (Unesco-Iesalc). This document presented a plan for the development of teaching activities involving pedagogical continuity through distance education, the resumption of face-to-face activities according to the recommendations of international health agencies, and the creation of a hybrid teaching model including face-to-face and virtual activities (ABMES, 2020).

According to Castioni et al. (2021), in the public sector, universities had as background a paradoxical reality. On the one hand, "the historical rejection of the distance modality, its low use among them, and its negative association with the massive offer of the private sector." On the other hand, "a precarious knowledge about the social conditions of their students, associated with the difficulty of making individual contact with them" (Castioni et al., 2021 p. 3).

According to Cunha et al. (2020), in the early grades and elementary school, students were advised that online activities require supervision and mediation of an adult. In the other grades (middle school and high school), due to students' autonomy, the monitoring and guidance of a mediator can be dismissed. For the authors, among the strategies of the state secretaries in detriment to the activities suggested by the National Education Council are:

> live or recorded online classes (video lessons) broadcasted via open TV, radio, social networks (Facebook, Instagram, WhatsApp, YouTube), pages/websites of the secretaries of education, virtual learning environments or digital/online platforms, such as Google Classroom and Google Meet, in addition to other applications; availability of digital materials and various activities on networks (Cunha et al., 2020, p. 29).

The difficulties encountered at the time of the implementation of remote teaching were reflected in national research that aimed to highlight the reality of teachers in this process. For example, in the research report entitled "Conditions of remote teaching work at Unicamp in the context of the COVID-19 pandemic" coordinated by Adunicamp (2020) from the Brazilian State University of Campinas (UNICAMP), the authors present an analysis of data from a questionnaire answered by the academic community of the same university. Among the axes analyzed are the individual working conditions of teachers and the difficulties and learning in the context of remote teaching at the university. For the authors, the research aimed

to support the understanding of issues that deserve confrontation to preserve teachers' rights and quality of working conditions regarding the actions taken to implement remote teaching.

In the research "*O trabalho remoto/home-office no contexto da pandemia COVID-19 - Parte II*" (Bernardo et al., 2020) conducted by the Study Group on Work and Society (GETs/UFPR) and the Network for Interdisciplinary Studies and Monitoring of Labor Reform (REMIR), the authors analyze the configurations of teaching work in the context of the COVID-19 pandemic. Although several sectors have been affected by the current context, the research shows that the teaching category was one of the most impacted, especially in the organization of work. In summary, in both sectors (public and private) and at different levels of education, the reality of the organization of teaching work was based on issues related to labor relations, (re)organization of teaching practice, reduction or suspension of work contracts, expansion and reduction of working hours, training of virtual platforms, and difficulties with infrastructure. The theme of the infrastructure of educational environments for the use of technologies in remote teaching, as well as the use of these technologies by teachers, will be addressed in the next section.

Infrastructure of Brazilian Educational Environments

Defined in the Houaiss dictionary as "equality of rights," equity is certainly an essential element to consider in the analysis of the implications brought to Brazilian education in the establishment of Emergency Remote Education caused by the new coronavirus pandemic. However, a country marked by social inequalities such as Brazil would hardly be able to promote public educational policies capable of ensuring, in an equitable manner, the necessary conditions for students and teachers to continue performing their academic and professional activities during social isolation.

Even so, given that "technologies became the main potential references for initiatives aimed at maintaining the educational connection" (Arruda, 2020 p. 264), each of the teaching segments of the private and public systems articulated themselves so that the negative effects of the pandemic were mitigated. However, as expected, the socio-economic disparity underlying the Brazilian social constitution exposed the scarcity of a sufficiently adequate infrastructure that would prevent the recrudescence of the disparities seen in the field of Education.

Taking as scope particularly the reality of higher education, Appenzeller et al. (2020) discuss the impacts of the pandemic in the med school at UNICAMP. The authors make it evident that besides the effort to establish the necessary adaptation of teaching to the remote format, it was essential to consider the equitable conditions of access to technological tools by students. Without, it would not be possible to think about the pedagogical process.

Within this perspective, the authors report how the university faced the issue by acting from two spheres: (i) one that promoted the technical training of the faculty

so that they could take advantage of the digital tools to continue the exercise of teaching in a qualified way; (ii) and another one was in charge of mapping the needs of students and promoting alternatives so that they could develop their studies. In this case, policies of availability of mobile internet data packages and the loan of notebooks and tablets helped students continue their studies.

Given the need to adapt the institution to the emergency remote education, in a research on the impacts of the pandemic in higher education and the measures adopted by UNICAMP, Amaral and Polydoro (2020) stated that "ensuring equity of access is a key factor in allowing the continuity of the teaching-learning process in the transformation of in-class study in the emergency remote education." According to the authors, special attention was given to students and faculty members to keep academic activities, and normative adaptation measures of academic regulations include extending the term for course completion and replacing grades with concepts.

Therefore, teachers were required to contribute to the "mastery of educational, technological tools and resources, as well as new forms of assessment, mediation, and facilitation of learning" (Amaral & Polydoro, 2020, p. 54). In addition, the university instituted a Psychological and Psychiatric Support Service. In turn, the students (a group of seven hundred academics) were lent tablets, notebooks, and SIM cards to could continue their academic activities. They were also granted study grants and the conversion of the transport aid to the so-called "Emergency benefit for non-contact activities."

Castioni et al. (2021), in turn, in the analysis regarding the impacts of the COVID-19 pandemic in Brazilian federal universities, make it evident, at first, the differences between how the public and private sectors dealt with the suspension of face-to-face academic activities. If, on the one hand, the private system was not discouraged by the context, continuing its activities through distance learning, the public sector showed different reactions. According to the authors, there were cases in which the academic activities continued with face-to-face classes; for others, the suspension of the academic calendar for a certain period was the adopted alternative.

It is interesting to note, in the justifications offered by public higher education institutions, that social differences and, therefore, difficulties of access to technology by students were decisive in establishing the measures adopted. Turning the look specifically to how public universities forwarded their pedagogical actions, the authors recognize that these institutions "were forced to rethink their activities," and those units that had already instituted e-learning teaching methodological practices proved to be better.

According to Castioni et al. (2021), the difficulty of access to technological equipment is not seen as a plausible justification for the suspension of academic activities. The problem of internet access among students of higher education is relatively small and localized, reaching about 2% of the students of higher education courses (Castioni et al., 2021 p. 15). It is a fact that the need for emergency remote education makes social inequalities explicit.

From research concerning the challenges of the change to the Emergency Remote Education experienced by Brazilian undergraduate courses, we are led to think

about the dimensions of the difficulties these challenges imposed on public basic education schools, to which little (or almost no) support was allocated. If it is a fact that undergraduate students face difficulties in self-regulation of learning, as Amaral and Polydoro (2020) point out, what to say about children and young people in Primary and Secondary Education? If university teachers who had support from the university with technological resources pointed out as a difficulty the reduced domain of the Digital Technologies of Information and Communication – DTICs, what to say about the teachers of Basic Education that in its vast majority could not count on this support network?

As indicated by Arruda (2020, p. 259), China, the first country to struggle with the catastrophic effects of the spread of the SARS-CoV-2 virus, "promoted a massive investment network that involved large technology companies in providing access to content and communication platforms to teachers and students." In comparison, through the Ministry of Education, Brazil presented "diffuse proposals," delegating to the states the responsibility for decision-making concerning basic education.

Thus, different initiatives were implemented, such as the use of social networks and digital platforms such as WhatsApp, Facebook, and Google Classroom, among others, and the transmission of classes through open TV channels. However, the high social inequality verified in the Brazilian territory, added to the lack of infrastructure capable of promoting the expansion of access to ICTs in the school space, contributed to widening the gap between public and private schools. The latter quickly managed to find alternatives to continue their educational activities (Oliveira et al., 2020), investing in digital tools and teacher training courses. Public schools often found themselves at the center of political disputes that made the adaptation process lengthy, further harming thousands of students.

This is what Monteiro (2020) makes evident when focusing on the analysis of the state of Minas Gerais, Brazil. According to the author, private schools adapted what they were doing and continued with their activities, as they had already incorporated the ICTs in the educational process. On the other hand, the public schools of Minas Gerais went in another direction. The difficulty of access by teachers to the Internet, and the lack of financial conditions of families to provide computers and Internet to their children brought to light the contradictions that affect the Brazilian educational system.

These contradictions were mapped in the study by Rondini et al. (2020). It was evidenced that, added to the non-effective use of ICTs in Brazilian schools, there are both the teachers' lack of domain in relation to technologies, and problems related to infrastructure. As a result, the differences between the private and public sectors are accentuated. As indicated by the authors, while private school teachers have achieved considerable success in incorporating technological devices into their teaching practices in the period of emergency remote education, since they already had resources and digital platforms, public school teachers ran into the consequences of social inequalities that ended up compromising the development of the learning process of their students. This is because these students face the scarcity of

sufficient resources to monitor the virtual classes, as well as to perform online activities (Rondini et al., 2020).

As seen in this section, there are significant differences between actions undertaken in higher education institutions and those more related to basic education schools. However, if it is possible to find a common thread that unites them, we could say that it is the challenge of infrastructure, which affects the guarantee of equity.

In addition to the structural problems, various factors related to the conditions and organization of the teaching work contribute to the emergence of health problems and the consequent impairment of these workers' quality of life (Fernandes et al., 2009). In this sense, in the context of the crisis, the current fast-paced work developed by teachers has had important repercussions in public health due to the increased illness and leave of these professionals, which makes it necessary to take a careful look at this factor. Thus, we will discuss it in the next section.

A Look at the Health of Teachers

The working conditions and circumstances under which teachers devote their physical, cognitive, and affective capacities to achieve the objectives of the teaching practice can generate overstrain or overexertion of their psychophysiological functions. Thus, if there is no time for recovery, clinical symptoms are unleashed or precipitated, leading to absence from the work environment. It should be noted that, over the past decades, the discussion about the teachers' quality of life has been the subject of several studies in the area of public health in Brazil (Gasparini et al., 2005).

In parallel, stress and quality of life are increasingly being studied in Brazil, the European Union, the United States, and other countries, mainly due to the high incidence and prevalence of diseases related to the workers' mental health, leading to illness and generating high costs to the public health due to low productivity, medical leaves, and absenteeism (Areias & Comandule, 2006). From this perspective, disorders related to the voice, the musculoskeletal system, and mental health, which were indicated as limiting factors of the teachers' well-being, were also included in Fig. 1 (Araújo & Carvalho, 2009; Gomes & Brito, 2006; Silva et al., 2020).

In a study proposed by Asmundson and Taylor et al. (2020), individuals with a high degree of anxiety were more likely to misinterpret body sensations or symptoms of COVID-19. In turn, increased anxiety can impact behavior and decision-making ability. In addition, an increase in stress symptoms related to fear of contamination is also observed in different countries and to factors related to economic and social instability (Ornell et al., 2020; Mishra et al., 2020).

In research entitled "Monitoring the evolution of post-traumatic symptomatology, depression, and anxiety during the pandemic of COVID-19 in Brazilians," Calegaro (2020), in a previous disclosure of results, inferred that sanitary measures and the consequent socio-economic changes induced an increased demand for

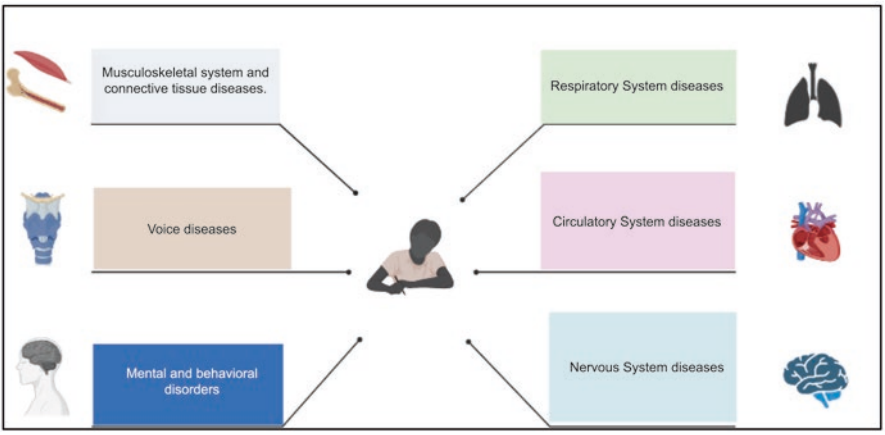

Fig. 1 Main diagnostic groupings of teachers' leave in Brazil
Note: Prepared by the authors with information extracted from Araújo and Carvalho (2009), Gomes and Brito (2006), Silva et al. (2020), and Monteiro and Souza (2020)

actions directed to mental health for the population, highlighting the importance of specific care for groups of greater vulnerability.

According to Moreira and Rodrigues (2018), mental health disorders and diseases are directly determined by how the world of work is composed in modernity. Marked by management models that require constant changes, this world of work is engendering a professional environment contaminated by a great deal of pressure to establish a standard of efficiency to be achieved by all educators. In this same direction, Chan (2003) also argues that exploitation and unstable working conditions cause damage to the health of teachers and educators.

In higher education, teachers often fall ill due to their inability to achieve the objectives proposed by the institution and because of the various pressures related to the handling of technologies and class recordings. Studies show that digital technologies need to transcend education and knowledge dissemination, and spaces for participation, dialogical reflection, and the development of clinical, critical, and differentiated reasoning should be created (Mckimm et al., 2020).

Considering that the pandemic of COVID-19 brought significant instability to the educational scenario, it is not surprising that the closure of schools and universities aggravated the rate of negative emotions experienced by teachers. Among mental health-related disorders, anxiety showed high prevalence and incidence in the context of the pandemic (Rajkumar, 2021; Li et al., 2020).

Nevertheless, the research proposed by Araújo et al. (2020) suggests the teaching illness expressed by uncertainties, stresses, anxiety, and depression, leading to the professional burnout syndrome. In line with this factor, a Chinese study revealed numerous teachers are mentally ill from COVID-19 due to mild depressive disorder, bipolar affective disorder, generalized anxiety, adjustment disorder, and burnout syndrome or professional burnout syndrome (Wang & Wang, 2020). This reveals the impact of COVID-19, either by the news about morbidity and mortality or the

pressures associated with digital technology in higher education institutions. Thus, causing mental illness in university professors by overloading themselves with marriage, motherhood, and other assigned functions (Silva et al., 2020).

In this same scenario, Brazilian students were also impacted by the pandemic and the school community, whether in the basic school or university environment. In this context, educational and intervention measures in all groups were important to the extent that they were responsible for disseminating and disclosing information with strategies that aimed to minimize the consequences of the pandemic in this group.

In Brazil, the use of digital media for disseminating scientific knowledge on mental health was fundamental to the access to information by teachers and students. Some initiatives were carried out to mitigate the impact caused, including the educational sector. In this direction, the University of São Paulo of Ribeirão Preto (FFCLRP), Brazil, in work proposed by Corradi-Webster et al. (2020), developed the "Guidebook to support the mental health of the teacher during the pandemic of COVID-19" to provide information to teachers of basic education on how to minimize the changes caused by the new routine.

In the same direction, Munhoz et al. (2021) and Enumo et al. (2020) developed booklets and videos, in addition to podcasts on various topics and subjects, strategies for coping with stress based on scientific dissemination aimed at the population's well-being and contributions to mental health. However, it is essential that educational managers are attentive to intervention measures that enable teachers to use technologies in students'teaching and learning processes. However, multiprofessional spaces should also be created for the care of teachers who offer support focused on the mental health of these workers so that they can share their anguish and minimize the whirlwind of feelings that permeate their lives in the context of the pandemic.

Concluding Remarks

The context of the COVID-19 pandemic and its implications for the education sector have been the backdrop for the reflections promoted in this chapter. Researchers from around the world have turned their attention to emergency remote education to understand the transformation of education, as well as the approaches to the transition to the digital environment, the implementation of technological resources, and the adequacy of methodological practices that have emerged globally.

In addition, discussions about the teacher's health have been expanded, and, despite the scarce literature on this topic, many axes can be explored and addressed. However, it is clear the responsibility of the entire educational community and the need for public policies focused on this issue. Specific intervention experiences were significant. However, it is necessary to focus on care for the long-term scenario, seeking the engagement of all those involved in the educational system aiming at the teachers' well-being and quality of life.

In function of the immunization progress of the population in Brazil, little by little, schools have returned to face-to-face activities, but without giving up the practices concerning the remote modality. Because of that, both remote teaching and hybrid teaching (part face-to-face, part remote) continue with diversified applicability, impacting work organization and teacher's health.

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Cognitive-Behavioural Intervention for Test Anxiety: Could Teachers Deliver the STEPS Program and What Training Would They Require?

David W. Putwain, Reinhard Pekrun, Emma Rainbird, and Christine Roberts

Introduction

The fears and worries experienced by students before, during, and after testing, referred to hereafter as test anxiety, can be damaging for educational achievement, wellbeing, mental health, and physical health. Effective interventions need to be made widely available to minimise the harmful consequences of test anxiety. In this chapter, we begin by defining test anxiety followed by a brief discussion of its negative impacts, before reviewing the evidence for test anxiety interventions. We describe one intervention specifically designed for adolescents aged 14–19 years, namely STEPS (Strategies to Tackle Examination Pressure and Stress), studies that have evaluated the effectiveness of STEPS, and the development of an updated version (STEPS 2.0). We then review the evidence for teacher-delivered psychological interventions in schools, and conclude the chapter with a consideration of the training elements required for teachers to be able to deliver STEPS 2.0.

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What Is Test Anxiety?

Test anxiety refers to affective and physiological responses ('tension', e.g., panic, feeling dizzy, and heart beating very fast) accompanied with thoughts dwelling on failure ('worry'), and cognitive interference (e.g., 'going blank' during a test), that result from appraising a performance-evaluative situation as highly threatening. The 'threat' in question was originally defined by Spielberger (1966) as 'ego threat'. That is, failure, and its possible consequences, is judged to be damaging to one's self-esteem, self-image, or self-view (see Leary et al., 2009, for alternative uses of the term 'ego threat'). Failure could, for example, damage one's aspirations, one's view of being an 'achiever' or an 'academic person', or result in negative judgements from important others (Banks & Smyth, 2015; Putwain, 2009).

Emotions are widely considered to also include a motivational element (Scherer, 2009), which in the case of anxiety is avoidance of the anxiety-provoking event or object (Clark & Beck, 2010). In test anxiety, avoidance often manifests as behaviours which can protect one's self-esteem against failure (see Covington, 2009). One possibility is effort invested to avoid failure (e.g., Pekrun et al., 2004). However, avoidance behaviours can also include forms of self-sabotage such as procrastinating about test preparation and disengaging from one's studies (a 'strategic' withdrawal of effort). In these circumstances, a ready-made reason for failure ('I didn't try hard enough') has been created that directs attention away from negative judgements about one's competence (De Castella et al., 2013; Jackson, 2017; Martin et al., 2001, 2003). This may provide a reason for failure that protects self-esteem against being seen as incompetent, but paradoxically increases the likelihood of failure due to missed opportunities to improve one's knowledge and skill, practice test questions, and so on.

Why Is Test Anxiety an Issue of Concern?

Test anxiety is an issue of concern for two reasons. First, there is a longstanding body of evidence showing that higher test anxiety is associated with lower academic achievement (for meta-analyses see Hembree, 1988; von der Embse et al., 2018). Importantly, studies have shown the negative correlation between test anxiety and test performance remains after controlling for prior achievement (Pekrun, 1991, 1992; Putwain et al., 2015) and ability (Putwain et al., 2013). It is not simply the case that students with low achievement or ability are more anxious about tests.

Second, test anxiety is related to poor mental health and wellbeing. Highly test anxious students report higher symptoms of emotion disorders (i.e., anxiety disorders and depression) than their low-test anxious counterparts (e.g., Weems et al., 2015) and meet diagnostic thresholds for anxiety disorders (e.g., Herzer et al., 2014; see Pekrun & Loderer, 2020). Highly test anxious persons also show lower subjective wellbeing, comprising positive affect and life satisfaction, after controlling for

prior subjective wellbeing (Putwain et al., 2021; Steinmayr et al., 2016). Relatedly, and sadly, an analysis of English Coroner's reports over a sixteen-month period in 2014–2015 found that examination pressures were specifically cited as a cause of adolescent suicide in 15% of cases (Rodway et al., 2016). Test anxiety should not, therefore, be treated lightly. It can negatively impact achievement, mental health and wellbeing, and physical health, alike (e.g., Conley & Lehmann, 2012; Glaser et al., 1986).

Test Anxiety Intervention

Fortunately, two meta-analyses have shown that test anxiety is responsive to intervention. The first, comprising 562 studies in total from 1950 to 1986, included 137 intervention studies (Hembree, 1988). Intervention approaches included behavioural, cognitive, cognitive-behavioural, study-skills training (alone or in conjunction with behavioural/cognitive approaches), and test-taking skills training. All intervention approaches were successful in reducing test anxiety compared to participants receiving no intervention. The two most successful approaches for participants in the later stages of secondary education were study-skills training with behavioural intervention or cognitive-behavioural intervention. The second, comprising 56 studies from 1974 to 1998, included the aforementioned approaches as well as stress inoculation training and hypnotherapy (Ergene, 2003). All intervention approaches successfully reduced test anxiety and cognitive approaches combined with study-skills training resulted in the largest reduction of test anxiety. Ergene (2003) noted that relatively few intervention studies were specifically focused on children or adolescents. Of the 56 studies he reviewed, there were only 12 using samples of K-12 students from elementary or secondary school.

However, a narrative review from 2000 to 2010 (von der Embse et al., 2013), and a systematic review from 2011 to 2018 (Soares & Woods, 2020), of test anxiety interventions specifically focused specifically on children and adolescents further underscored the findings of the meta-analyses. Cognitive, behavioural, and cognitive-behavioural, interventions, and study-skills training (often combined with one of the aforementioned approaches) were successful in reducing test anxiety. Emphasising the paucity of intervention evaluation studies focused on children or adolescents, only 10 studies were identified by von der Embse et al. (2013) and a further 11 by Soares and Woods (2020).

The findings summarised in these meta-analyses and reviews offer considerable hope for persons who experience high levels of test anxiety that they can learn skills to help manage their anxiety effectively. In addition, practitioners, and commissioners of interventions, can be confident in the availability of evidenced-based interventions for test anxiety that have undergone rigorous evaluation. It is a concern, however, that there are still relatively few interventions available for K-12 students, and that more high-quality evaluations for test anxiety intervention are needed.

Adolescence, particularly, is a time when many students in secondary school are exposed to high-stakes tests that can have a profound influence on their subsequent life trajectory in education systems throughout the world (see Morris, 2011). Adolescence is also a developmental period characterised by sensitivity in limbic and cortical regions of the brain involved in stress responses (Romeo, 2013). The combination of pressured testing during a period of heightened stress reactivity leaves adolescents vulnerable to heightened test anxiety. Moreover, episodes of anxiety tend to re-occur throughout one's life when first experienced during childhood or adolescence (Garber & Weersing, 2010). It is, therefore, absolutely critical for the positive mental and physical health of adolescents that interventions for test anxiety focused specifically for this population are developed, subjected to rigorous testing, and made widely available to those who need them.

Strategies to Tackle Examination Pressure and Stress (STEPS)

In response to the relative paucity of evidence-based psychological interventions for test anxiety in school-aged populations, Putwain et al. (2014) developed a brief cognitive behavioural intervention (CBI), namely Strategies to Tackle Examination Pressure and Stress (STEPS). STEPS was designed as a multimodal CBI intervention, based on the principles of the Self-Regulatory Executive Function (S-REF) Model (Wells, 1997) adapted to test anxiety by Matthews et al. (1999), and evaluation anxieties more generally, by Zeidner and Matthews (2005). The original version of STEPS comprised six sessions each lasting for approximately 40 min. Session 1 was focused on identifying triggers for test anxiety, Session 2 on identifying and challenging cognitive biases, Session 3 on relaxation strategies, Session 4 on study skills, and Session 5 on visualisation. Session 6 was a review of the intervention and a reflection on which strategies were effective, and equally importantly, when and how these strategies could be employed in order to manage test anxiety.

Each session included the following elements. (1) Psychoeducation in order to instruct students about underpinning principles of STEPS. For instance, in Session 1 STEPS participants are presented with a model of test anxiety in order to understand potential triggers. (2) Reflection exercises that allowed STEPS participants to personalise psychoeducational instruction. (3) Short informal quizzes with immediate feedback, and minimum pass requirement, to reinforce psychoeducation. (4) Direct instruction on anxiety management approaches. For instance, in Session 3, participants were instructed how to engage in diaphragmatic breathing. (5) Practice of anxiety management techniques within the session. (6) Short video clips of adolescent students talking about their own experiences of test anxiety and managing test anxiety using the strategies included in STEPS. (7) Follow-up tasks to practice the anxiety management strategies covered in a particular session. These were specifically not referred to as 'homework' to avoid possible contamination of existing negative views of school homework being transferred to STEPS follow-up tasks.

STEPS was originally envisaged as a self-help tool that students aged 14–19 years could complete on their own. Accordingly, STEPS content was programmed on the presentation software Articulate (Articulate Global Inc.). This allowed for an interactive format, the inclusion of quiz-based reinforcement, the inclusion of text- and visual-based instruction, and the inclusion of video clips with sound, within a single format. This allowed students to proceed through each session at their own pace, and the standardised presentation ensured high fidelity. There was no guarantee, however, that students would deeply engage with that material.

Putwain et al. (2014) conducted an evaluation of STEPS with 3225 adolescent participants in the final 3 years of secondary schooling (mean age 14.9 years). Participants were randomly allocated to intervention (to complete STEPS at home or during a designated lesson at school) or inactive control groups. The completion rate was poor. Only 13.7% of intervention group participants completed all six STEPS sessions, and 60% completed none at all, making an intention-to-treat analysis ineffectual. An alternative analytic strategy was to compare participants who did complete STEPS to the control group and to a sample-size matched group randomly drawn from intervention participants who had completed no STEPS sessions.

At pre-intervention, there were no statistically significant differences between intervention group participants who completed STEPS and control group participants, or intervention group participants who did not complete STEPS. At post-intervention highly test anxious participants who completed STEPS reported significantly lower test anxiety scores than control group participants (tension $d = -0.53$; worry $d = -0.63$;) and those in the intervention group who completed no sessions (tension $d = -0.49$; worry $d = -0.89$). Although these results were encouraging, and point to STEPS being an effective CBI for test anxiety, the comparisons are analogous to those used in quasi-experimental designs. That is, the intervention and comparison groups were no longer randomly allocated and results must be interpreted with caution.

Due to the poor completion rate, a likely result of low student motivation and/or self-regulatory skills, we subsequently switched STEPS to a mode of delivery whereby a facilitator (a trained assistant psychologist) led a group of six to eight students through the intervention. Two evaluations of STEPS as a facilitator-led intervention have been conducted as randomised controlled trials (RCTs). In the first of these studies, 56 highly test anxious participants in the final two years of secondary schooling (mean age 14.7 years) were randomly allocated to intervention or control-list wait groups. Intervention group participants showed statistically significant declines in the tension ($d = -1.14$) and worry ($d = -0.76$) components of test anxiety after completing STEPS, compared to the wait-list controls whose tension scores showed a negligible decline ($d = -0.08$) and worry scores remained unchanged.

Additional follow-up measures were taken at a third time-point after the wait-list controls had completed STEPS. Participants in the wait-list control group showed similarly sized declines in tension ($d = -1.14$) and worry ($d = -0.79$) after completing the STEPS sessions. This third time-point of measurement also served as a short-term follow-up ($\approx$ 7 weeks after completing STEPS) of participants receiving

the intervention first. This group showed small increases in tension ($d = 0.09$) and worry ($d = 0.20$), but importantly scores remained similar to wait-list control group participants who had just completed STEPS.

In the second RCT, 161 highly test anxious participants in the final two years of secondary schooling (mean age 14.1 years) were randomly allocated to intervention or control-list wait groups (Putwain & von der Embse, 2021). After completing STEPS, test anxiety showed a large statistically significant decline in the intervention group participants ($d = -0.86$) compared to a moderate statistically significant decline ($d = -0.62$) in wait-list controls. In addition, participants also completed measures of generalised anxiety disorder (GAD) and panic disorder (PD). After completing STEPS, participants in the intervention group showed statistically significant declines in GAD ($d = -0.43$) and PD ($d = -0.54$) whereas the wait-list control showed no statistically significant changes.

The completion rate for all six sessions was 82% in Putwain and Prescod (2018) and 91% in Putwain and von der Embse (2021), demonstrating the effectiveness of moving from self-help to facilitated intervention delivery. In addition, anonymous post-STEPS feedback has been collected from 102 secondary school students aged 14–16 years, who were not participants in a formal evaluation study, from 2016 to 2019 (Putwain & Symes, 2020). Students reported feeling that they were in a better position to control their test anxiety before and during a test, after completing STEPS, and that they had learnt useful anxiety management skills that could be employed during a test. In combination, the findings of these studies show that STEPS is an effective intervention for test anxiety.

STEPS 2.0

Over 2020 and 2021 we developed a revised version of the intervention (STEPS 2.0). This revision was largely necessitated by support for Adobe Flash Player (used in the Articulate software to present STEPS) being withdrawn on 31st December 2020, rendering the original version of STEPS obsolete. Many of the elements in STEPS 2.0 remain the same as the original version. Notably, we chose to remain with the Articulate software (more recent versions rely on alternatives to Flash Player) as it allows for a professional presentation of STEPS sessions in a standardised format which can assist intervention fidelity. The order and foci of the six sessions remain largely unchanged and are intended to be completed in approximately 45–60 min each. This is slightly longer than intended in the original self-help version of STEPS and based on experience of facilitators delivering in a face-to-face context with small groups.

The development of STEPS 2.0 provided the opportunity to incorporate feedback from facilitators and students accumulated over an eight-year period. Two substantive presentational changes were made. First, text-based presentation of psychoeducational elements was reduced and replaced with visual modes of presentation accompanied by a group activity. In order to support facilitators in leading

group activities, as well as assisting intervention evaluations (Truijens et al., 2019), an accompanying manual was also developed. The manual explains to facilitators the objectives for each of the six sessions, the aims for each slide on the Articulate presentation, and how to lead group activities. Like the original version, STEPS 2.0 includes a student booklet that explains the self-reflection and follow-up tasks, and provides space for students to keep a record of their reflections and experience of the follow-up tasks.

Second, the film clips of the adolescent students talking about their experiences of test anxiety and test anxiety management in the original version of STEPS polarised the opinions of participants. Some found it immensely reassuring to hear peers describing experiencing similar worries and anxieties to themselves. Others found the videos as contrived and unhelpful. Although the film clips used volunteers aged 16–18 years old, and were unscripted, it is likely that the experience was novel for many and may have contributed to the lack of a 'natural' feel to the clips. Accordingly, we chose to omit film clips from STEPS 2.0.

The only substantive change to content was in Session 4 where we incorporated insights from research on self-regulation of learning (Zimmerman et al., 2017) into the study skills training. Specifically, in the psychoeducational element of Session 4, we show STEPS participants how the stages of self-regulated learning can be used in test preparation: (1) Setting goals for revision, (2) undertaking the revision, (3) evaluating the effectiveness of revision through testing oneself, and (4) setting new goals for revision based on the feedback from the third stage. Information is included on how to make each of these stages effective. Students are shown, and asked to reflect on different visual, auditory, and textual forms of revision.

Teacher-Delivered Interventions in School Settings

Psychological interventions for K-12 students, including CBIs, are typically undertaken in primary healthcare settings by qualified and trained psychologists, therapists, or counsellors. The timing, location, and potential cost of interventions can be a barrier to children, adolescents, and parents accessing interventions (Barrett & Pahl, 2006). Schools may be an advantageous setting for intervention as they offer unparalleled access to children and adolescents and, therefore, have the potential to substantially increase access to intervention (Masia-Warner et al., 2006; Owens et al., 2014). The available evidence shows that interventions delivered in schools can be effective in reducing anxiety.

A meta-analysis of 49 school-delivered interventions for all types of anxiety disorder, 46 of which used CBI, showed a reduction in symptoms at post-intervention ($g = 0.20$), 6-month ($g = 0.23$), 12-month ($g = 0.23$, and > 12 month ($g = 0.13$) follow-up, compared to no intervention, wait-list, or school-as-usual controls (Werner-Seidler et al., 2017; g is the standardised mean difference between the intervention and control group). Furthermore, there was no statistically significant difference between interventions delivered by trained school staff ($n = 19$ studies; $g = 0.18$)

and those external to the school (n = 30 studies; g = 0.17). Importantly, teachers have been shown to be as effective as psychologists in the delivery of school-based anxiety interventions (Lowry-Webster et al., 2003) when training includes key implementer characteristics elements (e.g., knowledge of underpinning theoretical models).

These findings show that interventions can be effectively delivered in the school setting. Furthermore, teachers, and other school staff, have the potential to deliver such interventions. However, school systems do not typically work to support the delivery of interventions, and sustainability can be limited through a lack of consideration of how interventions fit with school values and policies (Fixsen et al., 2010). Nevertheless, notwithstanding the already heavy workload of teachers (e.g., Walker et al., 2019), the position of teachers within a school ecology, along with their understanding of school systems and first-hand knowledge of students, may be advantageous in organising the delivery of anxiety interventions in a sustainable fashion.

Insights from implementation science provide informative recommendations for how to navigate barriers to successful and ongoing implementation of interventions in schools. The support and understanding of school leadership is critical, and thus the attitudes, values, and beliefs of administrators, managers, and stakeholders (e.g., school governance) must be addressed (Fixsen et al., 2010). School leadership must be involved in the planning of intervention, and initial training and ongoing implementation support is required for persons delivering the intervention thereafter (Forman et al., 2009). In the final section of this chapter, we consider what initial training teachers, or other school staff without specialist expertise, would require in order to successfully deliver a test anxiety CBI in a school setting.

Initial Training Required to Deliver CBI for Test Anxiety

In this section we propose a structure for providing the initial training required for teachers, or other school staff, to be able to successfully deliver a CBI for test anxiety. Our proposal is based on the core competencies required to deliver effective CBI for anxiety (Roth & Pilling, 2007). We focus specifically on the STEPS intervention, to demonstrate the link from training elements to specific intervention elements. However, the structure we present could be easily transposed to other test anxiety CBIs. Training is broken down into three areas: (1) The theoretical background to test anxiety, (2) the theoretical background to CBI, and (3) the therapeutic practice skills required to facilitate small group intervention. In common with effective practice-based training, the description of the following areas should be accompanied by learning outcomes, vignettes, self-reflective exercises, and summative assessment of knowledge (Blanchard & Thacker, 2012).

Underpinning Theoretical Knowledge of Test Anxiety

Teachers, or other school staff, may have limited theoretical background knowledge of test anxiety, or knowledge largely informed by anecdote. In order to provide a relatively brief, but sufficient, understanding of test anxiety, training should include the following four elements.

Differentiating Between Stress and Anxiety

The terms 'stress' and 'anxiety' can be used interchangeably in everyday parlance. In CBI, however, it is important to be more precise with terminology to avoid conflating the different meanings of the two terms. In appraisal models, stress refers to the balance between perceived demands and resources (e.g., Blascovich, 2008; Lazarus & Folkman, 1984). When resources are perceived to outweigh demands, the resulting challenge state can include positive emotions, greater motivation and effort, and enhanced performance. When demands are perceived to tax or outweigh resources, the resulting threat state can include negative emotions, avoidant motivation and effort, and lowered performance. A threat state can include but is not limited to anxiety (see Pekrun's, 2006, 2021, control-value theory for types of emotions that can result when resources do not meet demands). This first element should conclude by presenting the various affective, cognitive, affective, physiological, and motivational signs, or indicators, of test anxiety.

Understanding How Students Can Be Affected by Test Anxiety

In order to provide a context for why CBI for test anxiety is required, it is necessary to show: (1) the typical proportion of students who are experiencing high levels of test anxiety; (2) the impact of test anxiety on learning, achievement, and test performance; and (3) the impact of test anxiety on wellbeing and mental and physical health. Estimates using samples from the United States and England suggest between 10% and 30% of adolescents aged 15–18 years experience high levels of test anxiety (Putwain, 2020; Putwain & Daly, 2014; von der Embse et al., 2014). It would likely be instructive to share these figures along with demographic differences. Training should also show how anxiety can interfere with information processing both before and during tests and could be demonstrated using Stroop or dual processing tasks. This section should conclude by drawing the links between test anxiety and the risks for lower wellbeing and mental and physical health.

Understanding Test Anxiety Processes

Various contemporaneous theories and models detail the processes involved in test anxiety. These include the biopsychosocial model (Lowe et al., 2008), control-value theory (Pekrun, 2006), and the cognitive-behavioural model (Segool et al., 2014). The S-REF Model underpinning STEPS represents three interrelated systems (executive processes, self-knowledge beliefs, and maladaptive-situational interactions) that combine to result in elevated state anxiety, distress, and cognitive interference. An understanding of the processes that result in high levels of test anxiety can inform those delivering CBI why certain individuals become highly anxious in tests (and other performance-evaluative situations) and provide insight into how intervention can alter, or disrupt, these processes to manage anxiety more effectively.

Understanding that Test Anxiety Is Amenable to Intervention

To conclude the first area of training, it is necessary to show that test anxiety is malleable and that highly test anxious persons can acquire the skills to effectively manage anxiety through CBI. A presentation and discussion of the results of CBI evaluation studies for anxiety in general, and test anxiety in particular, can provide a brief introduction to CBI. Understanding that a high level of test anxiety is, although often enduring, not inevitable, will increase confidence in the importance and appeal of CBI. By way of an introduction to STEPS, for instance, results of the aforementioned studies by Putwain et al. (2014), Putwain and Prescod (2018), and Putwain and von der Embse (2021) could be shown and the key elements of intervention (i.e., what is covered in each of the six sessions) highlighted.

Underpinning Theoretical Knowledge of CBI

It is unlikely that teachers, or other school staff, will have a detailed understanding of the underpinning principles of CBI and the associated intervention techniques. Training for test anxiety CBI should, therefore, equip facilitators with the requisite background knowledge and skills to successfully and confidently implement an intervention, based on the following three elements.

General Principles of CBI

To introduce the general principles of CBI a model such as Williams and Chellingsworth's (2010) 'five areas' (see Fig. 1) can be presented and explained to show how emotion, cognition, physiology, and avoidance behaviour are mutually and dependently related; that changing any one of these areas will impact on others. This model can also be used to show how situational influences on emotion, physiology, and behaviour, are mediated by cognition. Other important elements of CBI to cover are the use of homework, or follow-up tasks as they are referred to in STEPS, and not avoiding making assumptions about the underlying reasons for high test anxiety in specific students. It is equally important for the facilitator to avoid pre-judging which intervention elements are likely to be successful. What might have been a successful strategy for themselves, their friends and peers, and other students, will necessarily be successful for students participating in CBI (Clark & Beck, 2010). This element should conclude with how to identify students for CBI and the importance of evaluating CBI.

Cognitive Intervention: Theory and Techniques

Cognitive intervention techniques are central to CBI, including STEPS. Training should include background and worked examples of core beliefs, the cognitive triad, negative automatic thoughts, and cognitive biases (see Beck et al., 2005; Clark & Beck, 2010). This should be followed by a discussion of intervention strategies

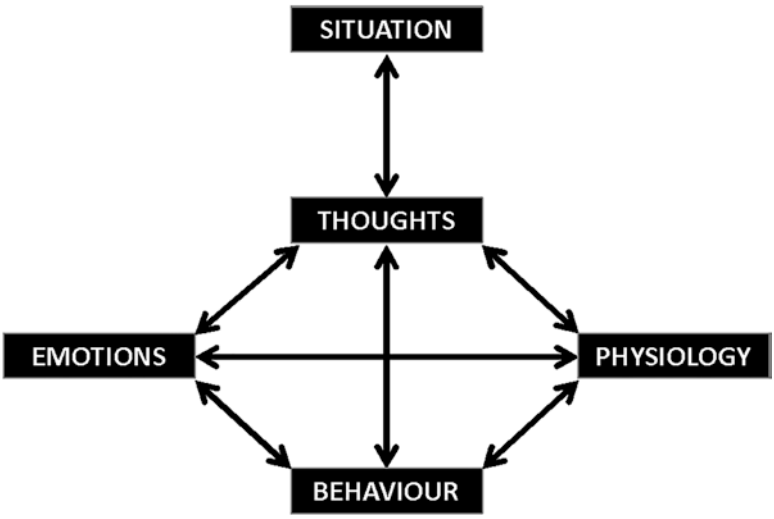

Fig. 1 The five areas of cognitive behavioural intervention

that can be used to challenge negative automatic thoughts. The A-B-C model of events, beliefs, and consequences (see Ellis & Ellis, 2019) would be a useful paradigm to demonstrate how to challenge negative automatic thoughts.

Emotional and Behavioural Intervention

STEPS includes relaxation strategies commonly used in CBI, namely progressive muscle relaxation, diaphragmatic breathing, and guided visualisation (Beck, 2011). Teachers, and other school staff, may have prior experience of these techniques as they can be commonly found in self-help books, on the internet, and in yoga classes. What is important is that the person leading the CBI becomes proficient in these techniques if they are to effectively instruct others in their use (Crane et al., 2010). Behavioural intervention is approached in STEPS through study strategies. Teachers may also have experience of instructing students in test preparation strategies, although knowledge of the effectiveness of specific strategies may be limited (e.g., Morehead et al., 2016). Teachers may not, however, be familiar with the principles of self-regulated learning, although we anticipate that an experienced teaching professional would be able to understand and implement these without difficulty.

Therapeutic Practice Skills Required to Facilitate Small Group Intervention

Staff working in school settings, such as teachers, may be highly experienced in working with adolescents and already have pre-existing relationships with students. Experience and pre-existing relationships could be both a help and a hindrance to the effective facilitation of STEPS. For instance, assumptions about the causes of test anxiety arising from previous experience of working with students may be a hindrance and prevent the exploration of alternate reasons. However, if a facilitator had previously built a trusting and supportive relationship with a student, that could help the development of positive relationships with a STEPS group. In addition, the facilitation of a CBI requires therapeutic skills that teachers may be less familiar with. The following four elements, common to all forms of CBI delivery (see Roth & Pilling, 2007), have proven useful to the smooth and effective delivery of STEPS sessions, and should be included within training.

The Importance of Freely Exercised Choice

Adolescence is a period of development characterised by a growing need for respect and autonomy. Interventions that afford a degree of autonomy, and include respectful interactions with adults, are likely to be more successful (Yeager et al., 2018). Accordingly, it is critical to ensure that students understand that they can choose to freely participate in STEPS, and that STEPS is not something that a student's school requires them to undertake. It is entirely understandable that some students might be unsure whether they want to participate or not. Students can be offered the option to try the first session, or even the first two sessions, before choosing whether to commit to all six sessions. Some students will choose to discontinue, but engagement in STEPS will be higher for those that choose to continue with the remaining sessions.

Creating a Safe Psychological Environment

In order to help establish an environment in which students are able to benefit from intervention, it is necessary to establish boundaries at the outset with regard to confidentiality, respect, and being non-judgemental (Waterman & Walker, 2013). STEPS sessions are confidential in that what is discussed in the group is not discussed with anyone else outside of the session. The limits of this confidentiality must be clarified, however; that if students disclose anything related to illegal activity, or that might involve a safeguarding issue, the facilitator is required to inform others at school. STEPS sessions are conducted in a respectful manner in that group members listen to what others have to say and do not talk over them. Furthermore, STEPS group members do not judge, criticise, or mock, others in the group. Students are either informed of these boundaries or asked to generate their own, which can encourage greater engagement, but need to be reminded of them at the beginning of each session.

If students become comfortable in a STEPS group, it is possible that they may choose to disclose something unrelated to test anxiety, for instance about bullying, self-harm, eating disorders, or problems at home. It is important that this discussion is closed down as quickly and sensitively as possible. This is partly as facilitators may not have the requisite training, skills, and supervision for these issues, and partly to keep the STEPS sessions focused on test anxiety. A student could be asked to talk to the facilitator after the session who can continue to support the student if they have the appropriate training, skills, and supervision. If not, the facilitator should refer to the appropriate person for safeguarding at school, as appropriate.

Building Rapport and Positive Relationships

The success of STEPS depends as much on the group being able to form positive relationships with each other and the facilitator in a relatively short space of time as on the actual anxiety management skills included in STEPS. Giving students choice and establishing rules helps to set the scene for positive relationships. These can be further developed through the facilitator adopting three key therapeutic skills (Cook-Cottone et al., 2015). First, the facilitator needs to develop and communicate empathy. That is, the facilitator needs to see and imagine the world as the students are seeing it. One way to do this is to verbally summarise student's thoughts or feelings, either individually or for the whole STEPS group, and to do this regularly.

Second, to build rapport, students have to know that they are valued; the facilitator needs to communicate to students that they are liked. There is a possibility for role conflict if teachers are also involved in the assessment of work of students in a STEPS group. Careful thought should be given to matching a facilitator with groups of students; persons with a wellbeing or pastoral role within a school may be best placed to lead STEPS sessions. Initial impressions do count and the facilitator needs to present themselves as a friendly, helpful professional. Third, the facilitator needs to demonstrate credibility. Students need to know that the facilitator is knowledgeable about test anxiety and how it can be managed in order to have confidence in STEPS and the techniques that are being introduced. Credibility is achieved partly through undertaking the type of training described here and partly through gaining practice and in delivering STEPS, and reflecting on one's practice. The facilitator acts as an important role model for the STEPS group, and the students will follow their lead and cue. If the STEPS facilitator can demonstrate empathy, rapport, and credibility to the group, then the students will emulate these. These skills can be practiced in training through role play.

Facilitator Style

As much as is possible, within the power dynamics in a school setting, an 'equal footing' approach should be adopted so that the group facilitator and students are seen as equally contributing to a common goal. The style aimed for is called 'collaborative empiricism' (Beck, 2011). That is, the facilitator and students trying things out like a group of experimenters to see what works best. Not everything will work, but the idea is to keep trying things out until you find out what works best for particular individuals. This is important because it acknowledges that while some elements of STEPS as a multi-modal intervention may work more successfully for some persons than others, it is important for STEPS participants to keep trying.

The facilitator has to develop an unconditional positive regard for students (Cook-Cottone et al., 2015). That is, they should never disapprove or judge the things that students do or say, but to try to understand, and communicate that they

understand, the reasons why students may feel or behave in a particular way. Students may have a negative view of themselves, or of their academic ability. Anything that can be done to 'undo' the negative view the student has of themselves is important and communicating unconditional positive regard is one way to achieve this.

Conclusion

In this chapter, we argue that test anxiety among adolescents should not be taken lightly; educational achievement, wellbeing, and mental and physical health can be undermined by high levels of test anxiety. Even when high test anxiety is persistent, CBIs have fortunately shown it is possible for adolescents to acquire skills that can be used to manage test anxiety effectively. One such brief intervention, STEPS, has been shown to reduce test anxiety, and also GAD and PD. It is possible that school staff without prior psychological expertise would be able to deliver STEPS, or other brief CBIs, if provided with the appropriate training. If interventions, and the associated training, were made available to school staff at a reasonable cost, there is great hope of considerably broadening access to intervention for high test anxious adolescents.

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Teachers' Educative Social Skills: A Discussion About Their Importance for the Teaching-Learning Process

Joene Vieira-Santos and Francine Náthalie Ferraresi Rodrigues Queluz

For people to live well in society it is important they have good interpersonal relationships with the people around them. An important tool for this to happen is through the use of social skills. According to Del Prette and Del Prette (2019), social skills can be defined as a descriptive construct of social behaviors valued within each culture that increase the likelihood of occurrence of interpersonal relationships with quality and have a good outcome for the individual, the group in which people are inserted, and the community as a whole. Moreover, as highlighted by the authors, social skills can be divided into classes of behavior, such as civility, assertiveness, empathy, self-monitoring, work skills, expression of positive feelings, and educative social skills, being also important to consider the specific characteristics of each context. That is, what is expected in a given situation may not be expected in another. In other words, there are classes of skills that are required more in certain situations than in others. For example, in a teaching-learning context, the teacher's social educative skills are highly required to increase the likelihood of student engagement in the process (Vieira-Santos et al., 2017). Considering this, the purpose of this chapter is to conduct a discussion about the social educative skills of teachers and how this can affect the teaching-learning process of their students.

Educative social skills (ESS) are conceptualized as social behaviors that can promote the learning or development of others (Del Prette & Del Prette, 2008; Vieira-Santos et al., 2017), being important for teachers to be able to accomplish the task of teaching students what they proposed at the begging. Del Prette and Del Prette (2008) identified, based on a literature review and empirical studies with elementary school teachers, four main classes of ESS: (1) Establishing potentially educational interactive contexts; (2) Transmitting or presenting content on social skills; (3) Establishing limits and discipline; and (4) Monitoring positively.

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According to Del Prette and Del Prette (2008), establishing interactive and potentially educative contexts is related to the implementation of activities such as an adequate arrangement of the physical teaching space, organizing materials, regulating an appropriate distance/proximity among students, and mediating interactions in a way that is productive for everyone. Transmitting or presenting content on social skills happens when the teacher manages, through activities, ways of teaching various classes of social skills to students in such a way they use them in their daily lives. This can occur in several ways, for example: (a) establishing relationships between behavior, antecedent and consequence, (b) presenting models and information of what is expected, (c) asking questions to develop a content, and (d) making clear what the objectives at the end of the process are, among others.

The class of ESS named setting limits and discipline occurs when the teacher makes it clear which behaviors that are desired and undesired in the teaching-learning process, as well as when establishing negotiations, requesting compliance with pre-established rules, and asking for behavioral changes (Del Prette & Del Prette, 2008). Finally, positive monitoring involves paying attention to the students'reports, requesting information to improve understanding, providing positive feedback, expressing positive feelings as a sign of approval, promoting self-evaluation, and establishing consequences for the execution of activities (Del Prette & Del Prette, 2008). Based on the broader concept of ESS, Vieira-Santos (2019) proposed a conceptual model on the teacher's performance in the interaction with students.

Proposition of a Conceptual Model About the HSE of Teachers

Vieira-Santos (2019) proposed a conceptual model considering ESS in the higher education context and proposed that, depending on the teacher's use of ESS and the presence of acquisition, performance, and/or fluency deficits on ESS, the outcomes may be positive or not. Although the model was proposed considering the performance of higher education teachers, we believe that it can be generalized to other levels of education, considering the particularities of each one. For example, in kindergarten, positive interaction with students is expected when involving playful activities, such as songs and drawings to develop individual and group skills during the learning process. In higher education, positive interaction can be developed through the establishment of questions and positive feedback, as well as more elaborate group activities than in kindergarten. The model considers the antecedents (context), the response (performance in interaction with students), and the consequences for the teaching-learning process. The context variables would be related to the teacher's personal history, the interaction with the student (considering the current moment, as well as previous experiences that the teacher has had in situations of interaction with students), the relationship with the educational institution, and the task itself of providing an environment that promotes student learning.

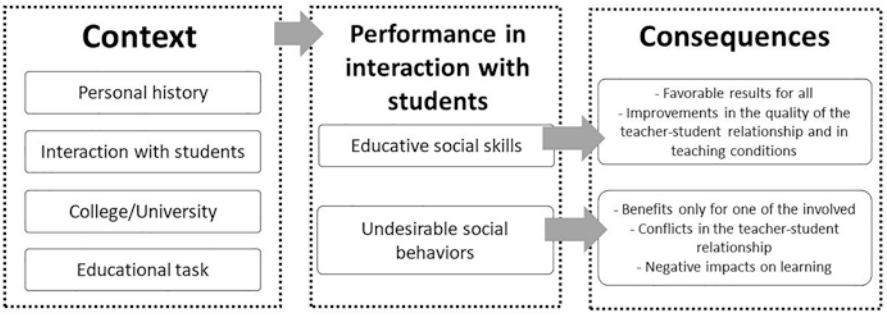

Fig. 1 Conceptual framework about the teacher's performance in the interaction with their students in the teaching-learning context. (Source: The authors)

Regarding the teacher's performance in the interaction with students, this might involve the presentation of ESS or undesirable social behaviors. Depending on the type of performance presented by the teacher in this interaction, there will be a greater likelihood of positive consequences for the teacher and students. The use of ESS increases the probability of positive outcomes for both actors involved in the teacher-student relationship, while the presentation of undesirable social behaviors increases the probability of difficulties in the relationship and problems in the teaching-learning process. The idea of the proposed model is that with the development of ESS by teachers, there is an increase in the probability of positive outcomes in this relationship and, above all, better learning conditions are promoted for both. This model is presented in Fig. 1.

Publications Related to ESS of Teachers in the Last 5 Years

Vieira-Santos et al. (2017) conducted a systematic literature review with the objective of mapping articles published about ESS. The searches were conducted in late 2015, in seven databases, and without field restrictions. Forty-five articles were found, of which only 12.5% referred to studies with teachers. Given this scenario, we decided to conduct a new literature review to identify what has been published in the last 5 years on the ESS of teachers. To this end, two distinct searches were conducted. The first one occurred in Google Scholar, on 08/29/2021, using the descriptors "educative social skills"(between quotation marks) and teachers or professors, and restricted to the last 5 years, which resulted in 526 references. Similar to Vieira-Santos et al. (2017), given the large number of results, the analysis of the references presented was interrupted when new texts could no longer be found for two consecutive pages, thus the first 12 pages presented in the search were analyzed. The second was performed on the same day, in the CAPES Periodicals using the same combination of descriptors and the same time restriction.

Eligible materials for this research included studies that assessed the ESS of teachers (with or without the simultaneous assessment of the social skills of the students of these teachers) and whose abstract and/or full text was available online. Research involving the analysis of ESS and other educative agents (e.g., parents) was not included in the review corpus. Using these inclusion and exclusion criteria led to the selection of 32 scientific texts, which were analyzed using the following categories: (a) type of study, (b) availability of the full text in digital media, (c) year of publication, (d) objective of the studies classified according to Gil (2002), (e) data collection procedures, (f) instruments used, (g) level of education in which the target population of teachers in the study operates, and (h) main results.

Table 1 presents the studies that were selected in this systematic literature review. Regarding the main characteristics of these studies, it was possible to observe that: (a) 43.8% were published in 2018; (b) 83.3% have the full text available; (c) 46.9% were articles and 28.1% were master's dissertations; (d) regarding the purpose of the study, 40.6% presented themselves as correlational research, i.e., that sought to assess the relationship of HSE with other variables; (e) 68.8% used at least one psychometric instrument to assess the participants' ESS; (f) 50.0% analyzed the ESS of elementary school teachers and 18.8% the ESS of university teachers.

The assessment of psychological phenomena is directly related to the construction of measures that accurately capture the construct of interest (American Educational Research Association et al., 2014). Such measures can take different formats, such as self-report instruments, observation protocols, and performance instruments, among others. Table 2 presents the psychometric instruments, located in this chapter, which were used to assess the ESS. It is possible to observe that half of them (IHSE-Prof and IHSE-PU-Professor) refer to self-report instruments in which the teacher assesses their own ESS. In the RE-HSE-Pr, the assessment of the teacher‘s ESS is made by one interviewer based on the teacher‘s answers to the guide questions (Bolsoni-Silva et al., 2019). Finally, in the IHSE-PU-Student, the ESS of undergraduate professors are evaluated by their students. It is worth noting that four separate questionnaires were also located that sought to assess teachers‘knowledge of ESS (Table 3).

Finally, an analysis was conducted organizing the main results of the empirical studies, i.e., those that involved data collection from the target audience. To this end, the studies were divided into two major groups: those that involved intervention and those that did not. First, the main results of the articles that did not involve intervention will be described, considering the teaching level in which the research participants worked.

Of the 32 studies, three involved the participation of only kindergarten teachers (Cavalcante, 2018; Guimarães, 2019; dos Oliveira, 2020). Guimarães (2019) found that teachers self-assessed themselves as possessing many ESS, but showed greater difficulties in establishing interactive context and setting limits and discipline. In addition, no significant correlations were found between the teacher‘s ESS repertoire and their students‘social skills or behavior problems. Cavalcante (2018), in turn, assessed the teachers‘beliefs about conflict, kindergarten education, and children's undesirable behaviors, observing that such beliefs, in addition to being

Table 1 Corpus of the systematic review of the literature

Author	Type of work	Full text available	Objectives	Procedure	Use of psychometric instruments	Level of education
Achkar et al. (2018)	Article	Yes	Correlational	Survey	Yes	Elementary
Almeida et al. (2018)	Abstract – Scientific event	No	Correlational	Survey	Yes	Elementary
Bolsoni-Silva et al. (2019)	Article	Yes	Instrument construction	Survey	Yes	Kindergarten and Elementary
Cavalcante (2018)	Dissertation	Yes	Correlational	Case Study	No	Kindergarten
Chagas (2019)	Dissertation	Yes	Explanatory	Quasi-experimental	Yes	Elementary
Chaves et al. (2018)	Article	Yes	Exploratory	Theoretical	Not applicable	Undergraduate
Cintra (2018)	Dissertation	Yes	Explanatory	Quasi-experimental	No	Elementary
Cintra and Del Prette (2019)	Article	Yes	Explanatory	Quasi-experimental	No	Elementary
Del Ponti (2020)	Dissertation	Yes	Correlational	Survey	Yes	Elementary
Del Ponti et al. (2020)	Article	Yes	Correlational	Survey	Yes	Elementary
Dong (2020)	Dissertation	Yes	Description	Documentary survey and research	Yes	Undergraduate
Fontes et al. (2018)	Abstract – Scientific event	No	Description	Description of intervention	No	Kindergarten and Elementary
Gasparin and Wagner (2021)	Article	Yes	Correlational	Survey	Yes	Elementary
Gasparin et al. (2018)	Abstract – Scientific event	No	Exploratory	Literature review	Not applicable	Elementary
Guimarães (2019)	Dissertation	Yes	Correlational	Survey	Yes	Kindergarten
Henrique (2017)	Dissertation	Yes	Description	Survey	Yes	Elementary
Justo and Andretta (2020)	Article	Yes	Correlational	Survey	Yes	Elementary

(continued)

Table 1 (continued)

Author	Type of work	Full text available	Objectives	Procedure	Use of psychometric instruments	Level of education
Lessa (2020)	Thesis	Yes	Explanatory	Experimental	Yes	Undergraduate
Mariano and Bolsoni-Silva (2018)	Article	Yes	Correlational	Survey	Yes	Kindergarten and Elementary
dos Oliveira (2020)	Dissertation	Yes	Correlational	Case study	Yes	Kindergarten
Rosin-Pinola et al. (2017)	Article	Yes	Explanatory	Quasi-experimental	Yes	Elementary
Sapienza and Lohr (2018)	Article	Yes	Exploratory	Case Study	No	Kindergarten and Elementary
Silva (2020)	Monograph	Yes	Description	Case Study	No	Elementary
Soares et al. (2019)	Article	Yes	Exploratory	Literature review	Not applicable	Not specified
Taborda et al. (2018)	Article – Scientific event	No	Description	Survey	Yes	Elementary
Tallamini et al. (2018)	Abstract – Scientific event	No	Description	Description of intervention	Yes	Elementary
Venâncio (2018)	Dissertation	Yes	Exploratory	Case Study	No	Elementary
Vieira-Santos (2019)	Thesis	Yes	Instrument construction	Survey	Yes	Undergraduate
Vieira-Santos et al. (2018b)	Article	Yes	Instrument construction	Survey	Yes	Undergraduate
Vieira-Santos et al. (2018c)	Article	Yes	Correlational	Survey	Yes	Undergraduate
Vieira-Santos et al. (2018a)	Article	Yes	Correlational	Survey	Yes	Undergraduate
Vieira-Santos et al. (2019)	Article	Yes	Correlational	Survey	Yes	Undergraduate

Table 2 Instruments described in the literature to assess HSE

Name	Authors	Quantity of items	Dimensions	Respondent
Teacher Educative Social Skills Interview Script (RE-HSE-Pr)	Bolsoni-Silva et al. (2019)	9 guiding questions and 80 items	Educative Social Skills (HSE-Pr), Negative Practices (PR NEG), Context Variables (CONT), Children's Social Skills (HS) and Behavior Problems (externalizing and internalizing PROBL). Such categories are grouped into Total Positive and Total Negative.	Professor
Inventory of Educative Social Skills of University Professors – Student Version (IHSE-PU-Student)	Vieira-Santos (2019)	49	Approve and value students' behaviors (AVC, 13 items); Expose, explain, and evaluate interactively (EEA, 11 items); Cultivate affection, support, and good humor (AAH, 10 items); Reprove students' undesirable behaviors (RCI, 9 items); and Guide activities (OAt, 6 items). These dimensions combined form a higher-order dimension called ESS.	Undergraduated student
Inventory of Educative Social Skills – Teachers (IHSE-Prof)	Del Prette and Del Prette (cited by Rosin-Pinola et al., 2017)	64	Formed by two scales. Scale 1, called Organizing Interactive Activity, has 14 items subdivided into three factors: (a) Giving instructions about the activity, (b) Selecting, making available materials and content, and (c) Organizing the physical environment ($\alpha = 0.730$). Scale 2, named Conducting interactive activity, has 50 items divided into four factors: (a) Cultivate affectivity, support, good mood, (b) Expose, explain and assess interactively, (c) Approve, value behaviors and (d) Reprove, restrict, correct behaviors.	Basic Education Teacher
Inventory of Educative Social Skills of University Professors – Professor Version (IHSE-PU-Professor)	Del Prette and Del Prette (cited by Vieira-Santos, 2019)	65	Factorial structure not described.	University Professor

Table 3 Questionnaires to assess teachers' knowledge about ESS

Questionnaire	Goal	Structure
Questionnaire on Educative Social Skills and Special Education (QHSEeEE; Dong, 2020)	To evaluate undergraduate students'knowledge about the target audience of Special Education and improve understanding of the results obtained with IHSE-Prof.	Part I: Characterization of the sample. Part II: Five questions on Special Education and ESS. The questionnaire was designed for this study, but underwent the assessment of seven judges to assess the clarity, coherence, and objectivity of the items.
Questionnaire of Educative Social Skills of preschool teachers in everyday school situations (Guimarães, 2019)	To assess the frequency of behaviors related to the four dimensions proposed by Del Prette and Del Prette (2008).	Prepared by the researchers, consisting of 26 sentences presenting situations of daily school life at preschool, answered on a Likert-type frequency scale.
Questionnaire Knowledge and Use of Social and Social Educational Skills at school (Lessa, 2020)	To verify whether the content on SS or ESS was included in any subject of the course they take, the perception of the relevance of this content to their area of professional practice and to their practice in the school context.	Composed of 12 open questions. Prepared by the researcher.
Questionnaire "Knowing what you think" (Cintra, 2018; Cintra & Del Prette, 2019)	To identify participants' conceptions of (a) the role of the classroom teacher, (b) classroom management, (c) students'social-emotional development, and (d) self-assessment of ability to recognize emotions and manage conflict.	Prepared for the Project "Distance education: linking the promotion of teacher's educational social skills to the social and emotional development of students at school" (Del Prette, 2016).

grounded in common sense knowledge, were related to deficits in the teachers'social performance during the work with their students. In addition, Mariano and Bolsoni-Silva (2018) found positive correlations between teachers'ESS and children's social skills and between the presence of negative educational practices in the teachers'repertoire and children's behavior problems.

Half of the studies analyzed in chapter aimed at assessing the ESS of elementary school teachers, and 31.2% of the studies did not involve the application of interventions. In this segment, the studies related to mental health and the differences between groups of teachers stood out. In relation to mental health, for example, Achkar et al. (2018) evaluated the ESS, Burnout level and quality of the teacher-student relationship of 400 Elementary II teachers (seventh to ninth grade) from public and private schools from Brazil. The results indicated that the more elaborate the teacher's repertoire of ESS, the greater the perception of the quality of the teacher-student relationship from the teacher's perspective, and the lower the level of Burnout. In addition, ESS and Burnout syndrome explained 17% of the variability in the quality of the teacher-student relationship, with ESS having the greatest weight in predicting the quality of the teacher-student relationship. Therefore, the

more ESS the teacher presents, the better the quality of the relationship he/she establishes with his/her student. On the other hand, Gasparin and Wagner (2021) found positive associations between ESS and symptoms of stress, anxiety, and depression. It is possible that there are intervening variables that trigger such symptoms despite the teachers'level of ESS. Further studies need to be conducted to clarify such relationships.

Differences between groups of teachers were identified considering whether they teach more initial or more advanced grades. However, the results seem to be contradictory. For example, Taborda et al. (2018) observed that teachers of earlier grades more often perform interactive and creative activities, while Henrique (2017) found that the higher the grade in which the teacher works, the greater their ability to conduct interactive activities. However, studies comparing the differences between teachers from kindergarten and elementary school found that the first one were more skilled than the latter (Bolsoni-Silva et al., 2019). It is possible that teachers in the early years have more opportunities to perform interactive and creative activities due to the levels of academic demands at this level, while teachers in more advanced grades may find it easier to perform such activities, even if they do so less frequently. Further studies can be conducted to deepen the understanding of these differences.

Also related to elementary school teachers, the perception that students who are victims, aggressors, or witnesses to bullying have of the ESS of their teachers was investigated (Del Ponti, 2020; Del Ponti et al., 2020). In this context, it was found that the ESS related to managing discipline were highlighted more frequently (by both teachers and students) than the ESS of mediating learning/development and emotional support. In addition, teachers'self-assessment of their ESS was more similar to the assessments made by the aggressor group in terms of both frequency and effectiveness.

In the context of Higher Education, two groups of studies were located: (a) those that assessed the ESS of university lecturers (Vieira-Santos, 2019; Vieira-Santos et al., 2018a, b, c, 2019) and (b) those that examined the ESS of undergraduate students (Dong, 2020; Lessa, 2020). Among the studies related to higher education teachers, two of them were focused on describing the development process and assessing the psychometric qualities of the IHSE-PU-Student instrument (Vieira-Santos, 2019; Vieira-Santos et al., 2018b) and the others indicated that an elaborated repertoire of ESS contributes to students feeling more satisfied with the learning conditions offered by the teacher (Vieira-Santos et al., 2018a, b, c) and more supported by teachers (Vieira-Santos et al., 2019). Studies on undergraduate students showed that students in the Pedagogy course had higher levels of ESS than students in other undergraduate courses, indicating that they are probably exposed to a greater number of ESS-promoting elements than other students (Dong, 2020).

The analysis of the main results of the articles without intervention also showed that discrepancies between teachers'and students'perceptions of teachers'ESS were observed both, in studies with elementary school students (Del Ponti, 2020) and undergraduates students (Vieira-Santos, 2019). Such studies strengthen the need for teachers'ESS to be assessed in a multi-informant model, as proposed by Del Prette

and Del Prette (Del Prette & Del Prette, 2009). Moreover, by comparing their perception with their students'perception of their ESS, the teacher has the opportunity to identify the strengths of their social performance that should be maintained and also those that need to be improved (Vieira-Santos, 2019). Such improvement can occur, among other ways, through participation in intervention programs designed to develop teachers'ESS.

In this sense, it is important to highlight that 25% of the studies analyzed in this chapter involved the description of intervention programs for the promotion of teachers'ESS. Of these, two involved the description of an intervention proposal, but which had not yet been carried out and, therefore, lacked data on its effectiveness (Fontes et al., 2018; Tallamini et al., 2018). Among the studies that presented results from the application of the proposed program, all of them showed data that indicated the effectiveness of the intervention to develop and/or improve the participants' ESS (Achkar et al. 2018; Chagas, 2019; Cintra, 2018; Cintra & Del Prette, 2019; Lessa, 2020; Rosin-Pinola et al., 2017; Sapienza & Lohr, 2018).

For example, Rosin-Pinola et al. (2017) applied the Program for the Promotion of Educative Social Skills (PHSE) to 40 public school teachers of Elementary I (from first to fifth grade). The program involves eight meetings, which address, in sequence, the following skills: (a) select, make available materials and content, and teach the skills; (b) organize the environment; (c) give instructions on activity; (d) cultivate affectivity, support and good humor; (e) expose, explain and evaluate interactively; (f) approve and value behaviors; (g) reprove, restrict and correct behaviors. The meeting involved homework assignments, psychoeducation, and activities for ESS development during the meeting. The comparison of the participants' scores before and after the intervention showed significant improvements in all worked ESS.

Cintra and Del Prette (2019) presented a program offered in the format of a course in semi-attendance modality. The course lasted 40 h, distributed over 2 months, and involved: (a) a digital literacy session and pre-test, (b) six content units composed of online activities, a face-to-face meeting and interpersonal interaction exercises to be performed before the face-to-face meeting, and (c) a closing session and a post-test. The activities performed in the virtual learning environment (in which the course was hosted) and were evaluated by tutors with experience in teaching and researching social skills. The comparison between the pre- and post-test data showed significant improvements in both knowledge and repertoire on social skills.

The results of studies describing interventions seem to indicate that investing in programs aimed at developing teachers'ESS tends to be an effective way of promoting improvements in teachers'repertoire of ESS. In addition, data indicate that the higher the teachers'ESS repertoire, the greater the students'satisfaction with the learning conditions offered (Vieira-Santos et al., 2018a, b, c) and the greater the social support provided by teachers to students (Vieira-Santos et al., 2019). The literature seems to suggest that improving teachers'ESS repertoire is a way to improve the quality and effectiveness of the teaching-learning process. Based on the results found in the studies in this review, the following topic will include tips on how teachers can use their ESS in the teaching-learning process.

HSE Tips

- Be willing to listen to students'demands so that the rules for classroom interaction are proposed with consideration for everyone's needs.
- Identify if students are understanding what is being taught and, if in doubt, ask them for feedback.
- Give positive feedback to students when they exhibit desired behaviors, such as participating in discussions, completing assignments, and more.
- Explain the behaviors expected and the demands to be met in order for them to do well in the discipline.
- Make it clear to students that they can express opinions in agreement or disagreement with what is being said, as long as they do so in a respectful way.
- Be empathetic with your students, understanding that behavior problems may be related to out-of-class problems.
- Organize the physical environment and the materials previously, so that the teaching-learning process can be favored.
- Mediate interactions between students to make them as positive as possible.
- Ask questions in order to arouse students'curiosity.
- Make clear what the objectives are to be achieved at the end of the teaching-learning process.
- Present to them the model of the expected activities/behaviors.
- Present to them the desired and undesired behaviors.
- Request that they change their conduct when necessary.
- Promote self-evaluation on the teaching-learning process.
- Focus on the positive aspects of your students'performance rather than the negative, always encouraging them to continue learning.

Conclusion

The purpose of this chapter was to conduct a discussion about teachers'ESS and how it may affect their students'teaching-learning process. After verifying recent studies on teachers'ESS, it can be seen that they are related to a better interpersonal relationship with students, as well as more engagement during participation in the activities proposed by the teacher and better learning conditions. On the other hand, the fact that teachers present deficits in ESS is not necessarily related to the presence of students with behavioral problems. Finally, programs of intervention and promotion of ESS have proven to be an important tool to improve the learning conditions offered, also improving the relationship between students and teachers at all educational levels. Further studies on the theme are important for a deeper understanding of the issue.

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