A Pilot Study of the Effectiveness of Cognitive Resilience Training on Anxiety, Depression, and Suicidal Ideation Among Students of a Selected University in Mexico

R. Oguntayo & M. Gutiérrez-Vega

Submit your article to this journal ⬀

View related articles ⬀

Routledge
Taylor & Francis Group

Check for updates

A Pilot Study of the Effectiveness of Cognitive Resilience Training on Anxiety, Depression, and Suicidal Ideation Among Students of a Selected University in Mexico

R. Oguntayo and M. Gutiérrez-Vega

Department of Psychology, Institute of Social Sciences and Administration, Universidad Autónoma de Ciudad Juárez, Juárez, Mexico

ABSTRACT

Mental distress burdens student populations; meanwhile, intervention-based studies are insufficient. This pilot study examined the effectiveness of cognitive resilience training (CRT) in enhancing students' mental health. This experimental design study recruited 29 participants (mean age = 21.70; SD = 2.55) from the Autonomous University of Ciudad Juarez (UACJ) in northern Mexico. A questionnaire pack containing the General Anxiety Disorder-2, Patient Health Questionnaire-2, Plutchik Suicide Risk Scale, and Brief Resilience Scale was utilized. At the pretest, there was no significant difference between the experimental group (EG) and the control group (CG). At the posttest, the CG scored higher on anxiety, depression, and suicidal ideation compared to its EG counterparts. However, the EG's participants exhibited higher resilience, leading to a reduction in mental distress compared to their control group counterparts. The study concluded that CRT is an effective intervention for enhancing students' mental health. Therefore, it is recommended for use in university clinical settings.

Introduction

The deteriorating mental health of higher education students worldwide is alarming, but preventative and intervention-based studies have not been sufficient to address this problem (World Health Organization [WHO], 2023). This population has a remarkably high prevalence of anxiety, depressive, and suicidal ideation symptoms (Abrams, 2022; Olaseni et al., 2021). Similarly, mental health issues are on the rise on university campuses in Mexico, necessitating the development of creative solutions to ensure student well-being (Abrams, 2022; Benjet et al., 2019). According to studies, university students are especially susceptible to mental health issues due to academic pressures, social isolation, financial stress, and future uncertainty (Oguntayo et al., 2022; Torres & O'Connor, 2019; World Health Organization, 2023).

CONTACT R. Oguntayo ✉ al228170@alumnos.uacj.mx;rotimijoguntayo@gmail.com 📧 Department of Psychology, Institute of Social Sciences and Administration, Universidad Autónoma de Ciudad Juárez, Juárez, Mexico

Societal disparities, limited access to mental health services, and the cultural stigma of mental illness all contribute to the deteriorating mental health situation in Mexico (Benjet et al., 2019). According to a recent Insight Network survey of students from ten institutions in Mexico, 1 in 5 students has a current mental health diagnosis and almost half have experienced a serious psychological issue for which they felt they needed professional help (Campbell et al., 2022). Many Mexicans do not seek treatment for mental health issues despite having severe and debilitating issues (Campbell et al. 2022; Dosil-Santamaria et al., 2022). In addition, Torres and O'Connor (2019) found that 32.3 percent of Mexican university students reported depressive symptoms and 37.5 percent reported anxiety. To effectively address the mental health issues encountered by university students in Mexico and around the world, comprehensive, contextual and culturally sensitive intervention strategies are required.

Only 23% of Mexicans between the ages of 25 and 34 have a university education, so university students are a privileged group (Benjet et al., 2019). In spite of this, evidence suggests that university undergraduates in Mexico have a distress index comparable to those with a reduced level of education (De Luca et al., 2016). A study conducted by Lipson et al. (2022) analyzed data from 373 college campuses across the United States and found that over 60% of college students met the diagnostic criteria for at least one mental health issue during the 2020–2021 academic year. Nevertheless, it is critical to acknowledge that the research does not make a comparison between the rates of psychopathology among college students and those of non-students (Lipson et al., 2022). Approximately 75% of students surveyed at the national level indicated experiencing psychological distress that was classified as moderate to severe. (American College Health Association, 2021)

Before the commencement of the pandemic, educational institutions grappled with an unprecedented surge in requests for psychological care, surpassing their capacity. The global pandemic, along with its subsequent effects, has exacerbated mental distress among college students worldwide, including in Mexico. For instance, a study undertaken by Ibarra-Mejia et al. (2022) revealed a high prevalence of moderate to severe stress, along with elevated levels of anxiety and depression, among Latinx students, with variations observed based on age and gender. Another investigation conducted at the University of Michigan documented a noteworthy escalation in psychological distress among college students during the pandemic, which has shown a worsening trend over time. (Gupta, 2021)

Moreover, a study in Mexico evaluated the extent of psychological distress and psychosocial factors among students at the onset of the pandemic (Martínez Arriaga et al., 2021). The findings indicated that COVID-19-related social isolation measures and school closures likely contributed to an increase in students' stress levels. Moreover, the inadequacy of the

conventional counseling center model to address this dilemma has become ever more apparent (Abrams, 2022). Despite the prevalence of mental disorders among college students, psychopathology typically manifests prior to college enrollment and is frequently inadequately treated (Oguntayo et al., 2022). According to the Secretaria de Salud de la Ciudad de México (2019), some of these symptoms are the primary causes of disability and death in Mexico.

Also, scholarly findings suggest that the college experience is characterized by heightened demands and exposure to a myriad of experiences that necessitate cognitive resilience skills to overcome psychological sequalae. For instance, an investigation involving international students in the USA identified a correlation between academic performance and depression (Yeung et al. 2021). Additionally, studies from various countries established connections between academic performance and adverse outcomes such as suicide (DeLuca et al., 2016; Benjet et al., 2019), depression (Wagner et al., 2022), and anxiety. (World Health Organization WHO, 2023)

Observably, the transition to university can at times bring about psychological challenges, potentially affecting the wellbeing of students. Hence, studies have recommended that it is imperative for college students to receive assessment-informed treatment consistently throughout their academic journey, with clinicians actively participating in this routine care (Benjet et al. 2019; Pedrelli et al., 2015). As a targeted strategy to improve the psychosocial wellbeing of people dealing with a range of mild to severe psychological disorders, such as depression, anxiety, and suicidal thoughts (Kacic et al., 2021; Palma-Gómez et al., 2020; Wang et al., 2021), cognitive resilience intervention has been found efficacious. The primary aim of this intervention is to fortify mental well-being, mitigate negative thoughts through hope and self-compassion, and foster adaptability for more effective adjustment in the face of challenging circumstances. (Helmreich et al., 2017)

Within this framework, resilience is perceived as a dynamic and adaptable psychological process that either sustains or elevates mental strength, life satisfaction, and prompt recovery from personal adversities (Lindsay et al., 2023). Resilient individuals often deploy psychological skills such as learned hopefulness, gratitude, mindfulness, and effective communication, thereby converting distressing situations into opportunities for personal growth (Precious & Lindsay, 2019). Characteristics that distinguish resilient individuals encompass adept emotional regulation, effective problem-solving skills, and the nurturing of positive relationships. According to Larijani and Garmaroudi (2018), people who are high-resilience can recognize stressors and use problem-solving and information-seeking coping mechanisms to reduce the likelihood of negative outcomes. Additionally, resilient individuals commonly manifest a robust sense of purpose and meaning, empowering them to discover hope and motivation even in the midst of adversity. (Wang et al., 2021)

According to Luthar and Cicchetti's (2000) conceptualization of resilience, it is a dynamic and adaptable process whereby people draw on resources to cope with adversity. Cognitive resilience-centered interventions can be viewed as a process encompassing maintenance, withstanding, overcoming, adjustment, adaptation, posttraumatic growth, stress-related growth, rebound from a stressor, or rapid readjustment (Lindsay et al., 2023; Wang et al., 2021). Aligning with the expanding body of scholarly reviews in this study, resilience is operationally defined as a process wherein, following acute (short-term) or chronic (long-term) distressing situations, individuals actively adapt, withstand, overcome, adjust, cope, and grow, with the support of multifaceted resources at both individual and social levels, in order to maintain and enhance their quality of life across social, psychological, spiritual, and physical wellbeing.

The increasing global interest in developing and evaluating resilience interventions for diverse groups has encountered challenges in establishing consensus regarding the criteria for labeling a program as resilience training and determining the essential components for effective programs (Leppin et al., 2014). The current state of knowledge reflects diversity across resilience training programs in terms of theoretical assumptions, construct operationalization, and inclusion of core components (Helmreich et al., 2017; Leppin et al., 2014). Guidelines for defining, conceptualizing, designing, and assessing resilience interventions are still under discussion. (Kacic et al., 2021; Lindsay et al., 2023; Luthar & Cicchetti, 2000; Marie et al., 2016)

Resilience interventions draw upon various psychotherapeutic approaches, including cognitive-behavioral therapy, acceptance and commitment therapy, mindfulness-based therapy, attention and interpretation therapy, problem-solving therapy, and stress inoculation (Farchi, 2010; Geschwind et al., 2011; Leppin et al., 2014; Ryan, 2014; Sahler et al., 2013; Sood, 2019). Some programs focus on enhancing single or multiple psychosocial resilience factors without strictly adhering to a specific approach, while others are based on a defined resilience model. (Zimmerman, 2013;)

Based on the underlying causes of psychopathology that are taken into account for treatment ideas, the ways that resilience interventions are structured and operable seem to be contextual and eclectic. Though many of its theoretical frameworks exist, a unifying way or mode of action or operating the intervention is mostly based on context and is easily modifiable (Helmreich et al., 2017; Leppin, 2014). The CRT module factors shown in Table 1 are based on treatment goals focusing on anxiety, depression, and suicidal ideation. This training methods have been shown to improve students' wellbeing in past studies (Kacic et al., 2021; Lindsay et al., 2023; Palma-Gómez et al., 2020).

Taking a cognitive-behavioral perspective, stress-related mental dysfunctions are considered outcomes of dysfunctional thinking (Beck,

2020; Benjamin, 2011). Resilience interventions grounded in cognitive-behavioral therapy aim to modify maladaptive thoughts, regulate dysfunctional emotional feelings and teach new problem-solving coping strategies, potentially promoting cognitive flexibility and active coping as resilience factors (Clark et al., 2023; Marsh et al., 2020). Also, with mindfulness-based therapy, practitioners cultivate non-judging awareness of the present moment, fostering adaptability to stress by accepting whatever occurs in the present moment (Stahler, 2013; Sood, 2019). This approach emphasizes efficient adaptation to stress through mindfulness practices.

The current study adopts these concepts, specifically to enhance problem-solving, participants' positive disposition to life orientation and planful problem-solving, thereby fostering psychological adaptation to stress. This includes components like emotional regulation, cognitive training, physical health promotion, social connections etc. (Tabibnia et al., 2018) as shown in Figure 1. In this investigation, these principles are applied to the selected participants using an experimental method with a blend of pretest-posttest with between groups design individual participants were randomly assigned to the experimental and control groups as shown in the figure 1.

Despite the recognized significance of mental health prevalence among college students in Mexico (Benjet et al., 2019), there remains a notable dearth of literature on effective interventions, particularly in tertiary education institutions within third-world countries. These gaps in knowledge underscores the urgency and necessity for an evidence-based pilot study intervention in mitigating psychological distress in academic settings. The study aims to evaluate the effectiveness of CRT in enhancing mental health among selected UACJ students. The findings of this pilot study are anticipated to contribute valuable insights into the effectiveness of CRT as a potential intervention to manage and improve mental health in similar educational contexts. The central research question driving this pilot study is: 'could the application of CRT lead to an enhancement in the mental health of the selected participants?' The study also aims to test the hypotheses, thus:

- Participants will score significantly high on anxiety, depression, and suicidal ideation scales at the pre-intervention stage; however, at the posttest, the participants in the experimental group will score low on the dimensions of mental health compared to their counterparts in the control group.
- Low scores on the resilience scale observed among participants at the pre-intervention stage will increase significantly among the participants in the experimental group compared to their counterparts in the control group during the posttest assessment.

Materials and methods

Design

This pilot study utilized the experimental method. Using the between-group design, the effect of training on improving the level of mental well-being of selected university students was investigated. The independent variable is CRT, which was divided into twelve (12) sessions spanning to twelve (12) weeks. The dependent variable is the level of mental distress. For the investigation, two groups of participants were used; the treatment and control group (see Figure 2 for the chart flow the study design).

Procedures, ethical considerations and sampling techniques

Permission was sought from the authors' university entity responsible for Psychological Care Services (*Servicios de Atención Psicológica Universitaria;* SUAPSI), and it was granted. This investigation was approved by the Ethical Committee (Approval Ref: CEI-2023-1-63). In addition to other ethical considerations, informed consent was obtained from the participants, and privacy, free participation or withdrawal with no consequences, confidentiality and anonymity were maintained.

Participants were both randomly and purposively selected using a pool of students who borrowed a psychology course involving all the 5 institutes of the selected university. The investigators randomly selected the participants who voluntarily agreed to participate in this study by signing the informed consent. The researchers then distributed a pretest of a compact questionnaire to the students for reference data. Among all the 48 students previously tested, 29 scored high on depression, anxiety, suicidal thoughts, or both (see Figure 2). Therefore, these 29 participants were eligible for the study. Consequently, only 29 students participated in the study, of which 14 were in the treatment group and the other 15 were in the control group. Participants were divided into two groups using a method of simple random sampling (see Figure 2).

Using a hat-and-draw method, each prospective participant was randomly assigned to the treatment and control conditions. The objective was to eliminate gender and religion as irrelevant variables. Those who chose "A" were allocated to the treatment group, whereas those who chose "B" were assigned to the control group. The treatment group receives CRT training based on cognitive and intelligence skills to confront adversity, whereas the control group receives a "placebo" teaching of a traditional psychology course. This investigation included third-year university students from UACJ, Juarez, Mexico.

Participants

Twenty-nine (29) participants from Autonomous University of Ciudad Juárez, Mexico were involved in this study. The Participants ages ranged from 18 to 33 years old, with a mean age of 21.70 years (SD = 2.55). In total, there were 12 (41.4%) males and 17 (58.6%) females; for participants relationship status, 9 (31.0%) were in romantic relationships with only one partner, 2 (6.9%) were in romantic relationships with more than one partners, and 18 (62.0%) were not in romantic relationship. The study involved 6 participants (20.7%) classified as freshmen, 17 students (58.6%) progressing through the middle of their university degree program, and 6 individuals (20.6%) in their final year; those with excellent academic performance were 4 (13.8%). The participants in good academic status were 21 (72.4%), while those with low academic performance were 4 (13.8%); participants with excellent performance that accorded them scholarships were 9 (31.0%), while 20 (69.0%) participants did not receive scholarships. The participants were distributed evenly between the two groups, with 15 (51.7%) in the control group and 14 (47.3%) in the experimental group.

Instruments

The study used a structured questionnaire containing demographic information about the respondent (such as age, gender, type of degree program, scholarship status, ethnic affiliation, and marital status); the Plutchik Suicide Risk Scale (PSRS; Plutchik et al., 1989); Patient Health Questionnaire-2 (PHQ-2; Kroenke et al., 2003); General Anxiety Disorder-2 (GAD-2; Skapinakis, 2007); and the Brief Resilience Scale (BRS; Smith et al., 2008). The sections are briefly explained as follows:

The PSRS is a 15-item self-report measure that describes the extent to which a person exhibits characteristics comparable to a suicide prototype (suicidal thought and risk). This scale assesses previous suicide attempts, the intensity of current suicidal ideation, despair, hopelessness, and other variables. All affirmative responses are assigned a value of 1, and all negative responses are assigned a value of 0. A score of six or more is considered to indicate the presence of suicidal risk (Santana-Campas & Telles, 2018). It has been validated and determined to have a good internal consistency of 0.74 in the Mexican population (Santana-Campas & Telles, 2018).

The PHQ-2 is a tool used to investigate the frequency of depressed mood in individuals (Kroenke et al., 2003). In a sample of Spanish-speaking mexican-based study, PHQ-2 was found to have adequate validity and an alpha coefficient of 0.80 (Arrieta et al., 2017). The main question is: "During the past two weeks, how often have you experienced any of the following problems?" The two symptoms are "lack of interest or pleasure in activities" and "feeling sad,

blue, or hopeless." For each item, the response options "not at all," "some days," "more than half the days," and "almost every day" are scored as 0, 1 and 3, respectively. Therefore, the PHQ-2 score can range from 0 to 6.

The GAD-2 is an adaptation of the GAD-7 that measures two core DSM-IV anxiety symptoms related to emotional and cognitive expression (Skapinakis, 2007). It consists of the two items "Feeling unwell, anxious, or having nervousness on edge" and "Inability to stop worrying or regulate one's own fears." It has an adequate alpha coefficient of .74 in a sample of Peruvian university students who speak Spanish (Dominguez-Lara & Merino-Soto, 2016).

The BRS is an index designed to assess an individual's ability to recover or bounce back from or in stressful situations; this scale was developed by Smith et al. (2008). Two samples of university students from Chile and Mexico were reported with satisfactory results in factorial structure, reliability, convergent validity, and discriminant validity, which indicates the validity of the scale to measure resilience (Hidalgo-Rasmussen & Gonzalez-Betanzos, 2019). The BRS scale was used to assess resilience. It includes six items: three (direct) written in the same direction as the scale (1, 3, and 5) and three (indirect) written in the opposite direction (2, 4 and 6). Response categories on a five-point Likert scale range from strongly disagree (1) to strongly agree (5). The scale generates a single score by adding the scores of the six components and dividing by the total number of items. The higher the final score, the higher the level of resilience of the individual.

Description of the intervention procedure

In this study, the CRT program was meticulously and contextually developed to provide targeted support for individual participants within the experimental group, aiming to adeptly manage psychopathology caused by stress and
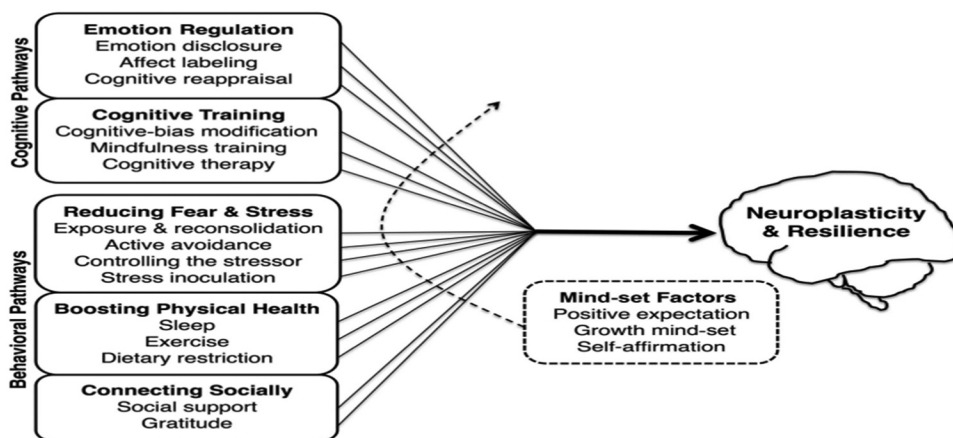
Figure 1. CRT intervention model. **Source**: Tabibnia and Radecki (2018).
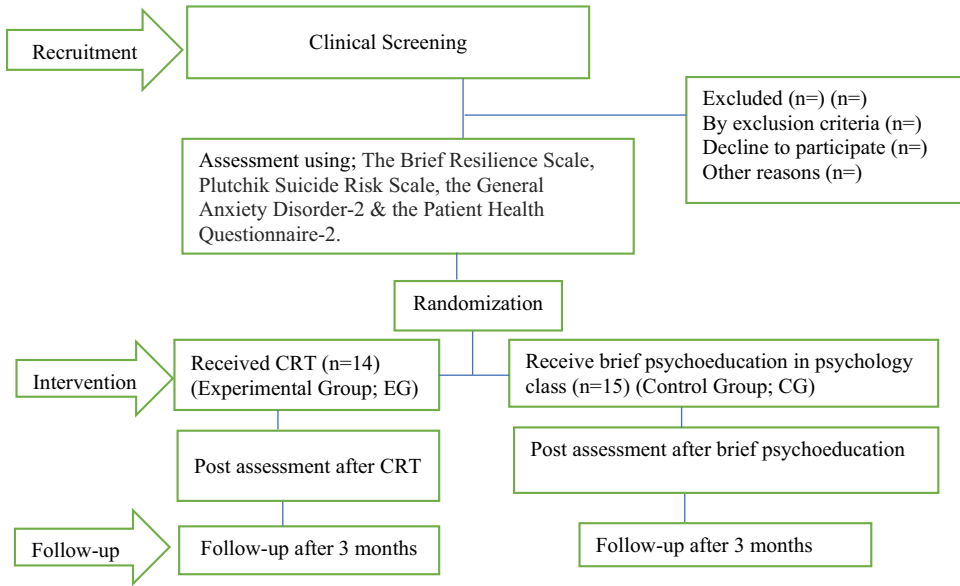
Figure 2. Study design.

adversity. The primary objective was to alleviate symptoms associated with anxiety, depression, and suicidal ideation, emphasizing the nurturing of participants' cognitive and emotional resources. This systematic process aimed at cultivating adaptive beliefs, empowering individuals to perceive distressing events as opportunities for personal growth. The overarching goal was to contribute to participants' strength and holistic development across social, spiritual, physical, and psychological dimensions, ultimately enhancing overall well-being.

Literature has emphasized the significance of the modules in this study program, which cover various aspects such as maintaining a balance between study and personal life, regulating thoughts and emotions, developing autonomy, practicing self-compassion, employing coping strategies, finding purpose in life, enhancing relationship effectiveness, improving communication skills, fostering positivity, engaging in role play, utilizing mindfulness-based techniques, and cultivating social connections and gratitude as crucial for developing resilience traits or skills (Craig, 2023; Helmreich et al., 2017; Kacic et al., 2021; Kay, 2016; Marsh et al., 2020; Sahler et al., 2013; Tabibnia & Radecki, 2018; Wang et al., 2021).

The initial week included an introductory session outlining the intervention's structure, benefits, and substance. Subsequent sessions explored the concepts and relationships between mental health and CRT, with a focus on enhancing psychological well-being and understanding the significance of resilience cultivation. Each week progressively builds on the previous one, providing participants with a comprehensive understanding of factors

Table 1. Showing CRT in modules and its key objectives of the intervention program.

Number of Sessions	Module focuses	Objectives
1	**Preliminary Routine** • Introduction and explanation of the intervention's advantages, • The administration of baseline instruments, how the intervention operates, and its duration.	**The objectives are for participants to**: • Comprehend the CRT goals, and prospective benefits. Also, to establish baseline among participants and outline the session durations and other rules.
2	**The significance of knowing yourself** • Review of positive and negative experiences that cause distress in one's life • How facing difficulties can be part of a positive role model in the future • Identifying challenging actions now and in the future • Evaluate the benefits and actions you can take now to benefit your future self	• Learn to review life events to increase self-awareness. • Learn to overcome challenges, develop positive role plays to help identify and exploit challenging situations for present and future strengths through proactive personal growth.
3	**Interpreting events and stressors** • Understand the concept of psychological well-being, its most essential aspects, and its meaning in life. • Understand the concept of resilience and the importance of cultivating and training it. • Relationships between emotional, social, and physical stress, intelligence in the face of adversity, and mental health	• Learn how the brain processes events; emotional, social, and physical stress all have an impact on mental health. Stress can be practiced as either distress or eustress. • Learn about cognitive resilience tactics.
4 .	**Taking Autonomy over events** • Interpreting events and determining individual self-efficacy in the way stress is interpreted as either distress or eustress • Adopt a healthy lifestyle (seeking balance in several areas: physical activity, diet, sleep, and relaxation within the daily routine). This lifestyle will allow the individual to focus on their life goals • Improve psychological well-being by developing skills potentially related to life values and goals.	• Learn skills to take autonomy over events, which involves developing self-efficacy in situations and manipulating events to better manage stressors. • Be able to adopt a healthy lifestyle and developing skills and strategies that align with life values and goals
5	**Practicing Mindfulness and Self – compassion** • Understand the meaning of "mindfulness," how to cultivate this skill, and the benefits of its practice. • Acquire the ability to separate ourselves from our thoughts and manage them • Understand the meaning, recognize, capture, and appreciate positive moments • Develop the skill of benevolence and self-care, that is, self-compassion.	• Learn to use mindfulness in managing thoughts, practicing a positive mind-set, and practicing self-compassion for improved well-being and emotional resilience.
6	**Learning adaptation skills** • Recognize the importance of addressing problems effectively. • Learn to use the problem-solving technique. • Learn the influence of our beliefs on our emotions and how to be adaptable in our interpretation of situations. • Being mindfully aware of your being, altering the way we think and kind to ourselves. • Being able to adapt to different life changes, noticing what we feel and naming it.	• Learn to analyze root cause of problem, practice emotion management, self-compassion, and adaptive abilities in dealing with situations,

(*Continued*)

Table 1. (Continued).

| Number of Sessions	Module focuses	Objectives
7	**Building Connection Skills** ● Recognize the importance of our social relationships. ● Learn to maintain and enhance our social relationships. ● Consider methods to deepen and enrich interactions with others by focusing on what works in relationships, what makes you feel comfortable discussing and receiving support, and what makes you feel comfortable discussing and receiving support. ● Through discussions, meditations, and group exercises, we will discover how to enhance our relationships.	● Learn the value of social interactions and how to maintain them. Also, discover how to improve connections through communication skills and relationship development tactics.
8	**Purpose in life and personal growth** ● Approach the future with a positive attitude, considering what is most essential for each individual ● Identify the things you care about and reflect on what matters most. ● Surround yourself with positive people. ● Put yourself out there and experiment with different things.	● Learn to approach the future positively, identify priorities, build positive relationships, and explore new experiences for personal growth.
9	**Regulation and disclosure of emotions.** ● Start small by practicing cognitive flexibility and incorporating it into your life in modest, low-stakes ways. ● Learning to develop your capacity for empathy ● Understanding the experiences, processes, routines, and methods of others aids in the development of cognitive agility. ● Interrupt and redirect your thoughts. ● Consider what else could be true.	● Learn to practice cognitive flexibility by embracing change, challenging negative thoughts, seeking diverse perspectives, adapting to uncertainty, learning from failure, developing empathy, and considering alternative perspectives by interrupting and redirecting thoughts for personal growth.
10	**Practicing Gratitude** ● Learning to communicate gratitude and the meaning of events spontaneously and frequently. ● Learning to take time to reflect and share good experiences to encourage self and help others ● Keep a gratitude journal or send a thank you note. ● Reflect on the positive events in life and what one is grateful for.	● Learn to express gratitude to oneself and others through sharing experiences, journaling, and reflection to foster positivity in daily life.
11	**My communication skills both intra- and interpersonal** ● Use examples from everyday life to facilitate understanding of communication skills. ● Recognize how positive communication helps to avoid uncertainty and doubt that lead to distress. ● Learn to be assertive, positive and communicate polite messages to improve healthy mind and attracts others.	● Learn to build positive communication's role in reducing uncertainty and fostering safety.

(*Continued*)

Table 1. (Continued).

Number of Sessions	Module focuses	Objectives
12	**Overcoming Setbacks and Moving Forward** • Members life narrative, and simple ways of creating a meaningful life narrative. • Learning from sCRTpts of life (obstacles and setbacks). • Perception; learn to use perceive setbacks as instruments of success; future anticipation versus setbacks and moving forward • Review of key concepts from all sessions; visualization and exercise to learn how to develop contingency plans	• Learn crafting meaningful life narratives, harnessing setbacks as opportunities to learn and gain present or future success, and developing contingency plans.
	Conclusion and Retrospection • It is essential to always remember that we do not control the outside world, but that controlling our own actions is far more crucial to our lives in the long run. • Our brain (mind) controls our world view • Analyze and draw conclusions from the therapy	• Learn the significance of self-control, the role of the mind in shaping perspectives, and how to analyze situations. general reflection and insights from therapy (CRT).

Note:.
to. Each bullet represents a reading, writing, or group discussion activity related to the topic.
b. Each module corresponds to one weekly session (12 total sessions)..
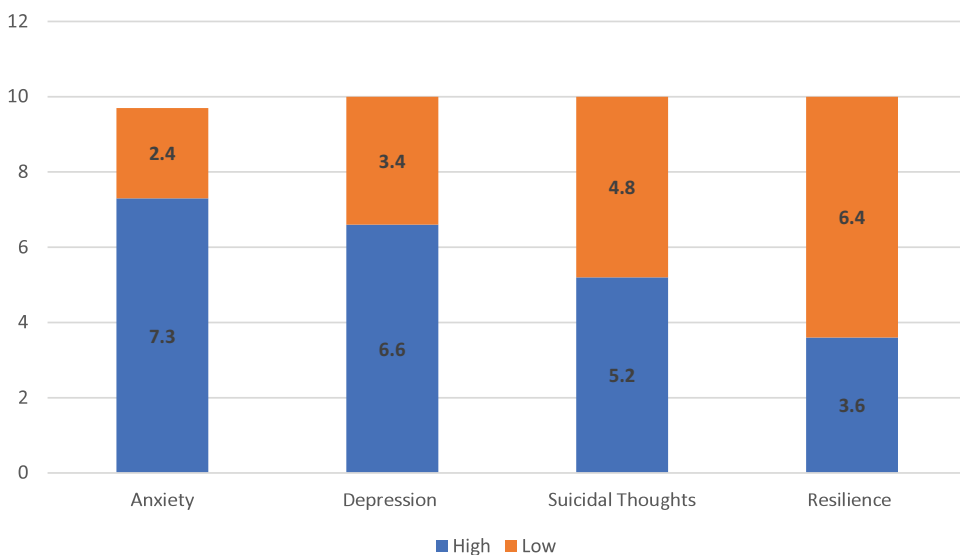
Figure 3. Showing the pre-test mental health baseline.

contributing to resilience and psychological health. Participants engagements were fostered through practical exercises, discussions, and the integration of diverse materials (video, markers, interactive boards, laptops, and sound devices) in each systematically introduced module. The program included exercises aimed at practicing training skills, and participants were assigned

Table 2. Mann-whitney U test results for experimental and control groups' pretest scores of resilience, anxiety, depression, and suicidal ideation scales.

Scales	Group	N	Mean Rank	Sum of	U	P
Suicide-ideation	Control	15	13,61	215,50	85.500	.564
	Experimental	14	15,39	190,50		
Depression	Control	15	14,93	209,00	92.000	.774
	Experimental	14	14,07	179,00		
Anxiety	Control	15	13,79	213,00	88.000	.626
	Experimental	14	15,21	193,00		
Resilience	Control	15	13,14	184,00	79.000	.379
	Experimental	14	15,86	222,00		

homework throughout the sessions of intervention. The therapist monitored completion through session-based interactions and inquiries.

Figures 1 and 2 with Tale 1 provide a detailed overview of the procedure and the intervention's configuration respectively. The study spanned 12 weeks, during which participants engaged with the training program in the university psychological counseling center. This setting is serene and conducive for psychotherapy, and the training was tailored to the participants in experimental group-specific psychological needs.

Before the post-assessment, participants had two months to provide feedback. All participants, including the control group, underwent the post-assessment and a two-month follow-up in a university classroom environment. Dropouts before program completion were excluded from the post-intervention evaluation. Actively seeking participants' feedback and follow-up was essential to refining the intervention and providing ongoing support in their journey toward resilience and well-being (see Table 1).

Data analysis

Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS) 27.0 version for descriptive and inferential statistics. To analyze the data in this investigation, after the extraction of the results and the descriptive analysis of the data, the Kolmogorov-Smirnov test, the Wilcoxon test, and the Mann-Whitney test were used to examine the

Table 3. Mann-whitney U test results for experimental and control groups' posttest scores of resilience, anxiety, depression, and suicidal ideation scales.

Scales	Group	N	Mean Rank	Sum of Ranks	U	P
Suicide-ideation	Control	15	18.87	330.00	.000	<.001
	Experimental	14	6.07	105.00		
Depression	Control	15	3.47	316.00	.000	< .001
	Experimental	14	1.50	119.00		
Anxiety	Control	15	3.80	330.00	14.000	<.001
	Experimental	14	1.57	105.00		
Resilience	Control	15	10.93	120.00	.000	<.001
	Experimental	14	21.36	315.00		

p<.001=statistically significant.

Table 4. The result of the Wilcoxon signed rank test in terms of resilience, suicidal ideation, and depressive anxiety symptoms scales.

Scales	Group	N	Mean Rank	Sum of Ranks	Z	P
Suicide-ideation	Negative value	15	8.23	123.50	−2.035	<.001
	Positive value	14	22 .25	311.50		
	Equal	29				
Depression	Negative Value	0	15.00	316.00	−4.708	< .001
	Positive Value	29	.00	119.00		
	Equal	29				
Anxiety	Negative Value	0	15.00	435.00	−4.709	<.001
	Positive Value	29	.00	.00		
	Equal	29				

p<.001=statistically significant.

formulated hypotheses, looking at a statistical test of the difference between the variables of interest and a set of two sampled groups, that is, the pretest and posttest scores.

Results

Before the intervention program, the scale scores of the participants (experimental and control groups) were examined using a descriptive statistic and the graphical presentation as shown in Figure 3. The bar chart showed the distribution of students' mental health and resilience scores at the pretest stage, which revealed that more than 48% of participants scored low on resilience and high on all dimensions of mental health. These were the only eligible individuals for the study, and they all consented to participate in it.

As shown in Table 2, before the commencement of cognitive training intervention, there is no difference in the suicidal ideation, depression, anxiety, and resilience pretest scores between the experimental and control groups. These results indicate that there were no statistically significant differences between the experimental and control groups in terms of suicidal ideations (U = 85.500, p = .564), depression (U = 92.000, p = .774), generalized anxiety (U = 88.000, p = .626), and resilience (U = 79.000, p = .379); these results confirmed the formulated hypothesis.

In Table 2, Mann-Whitney U tests were conducted to compare the resilience score between the two groups. Concerning anxiety, the Control group (CG) had a higher median (Mdn = 4.00) than the Experimental group (EG) (Mdn = 2.00). Symptoms of depression were significantly higher in the CG (Mdn = 3.00) than in the EG (Mdn = 1.50). Similarly, the CG had significantly more suicidal thoughts (Mdn = 18.00) than the EG (Mdn = 6.00). The results indicated statistically significant differences between the groups for all variables: Resilience (U = .000, Z = −4.608, p < .001); generalized anxiety (U = .000, Z = −4.713, p < .001); depressive Symptoms (U = 14.000, Z =-4.082, p < .001); and suicidal ideations (U = .000, Z =-4.620, p < .001). The result implies that there is a significant difference between the experimental and control groups;

the control group scored high on suicidal ideation, depression, and anxiety symptoms but scored low on CRT, while those in the experimental group scored high on resilience and low on the mental health components after the intervention program (posttest phase). These results confirmed the formulated alternate hypothesis and it is accepted for this study.

In Tables 3 and 4, the resilience scores of participants in EG and CG were compared with anxiety, depression, and anxiety symptoms. The results showed a statistically significant difference between the two variables ($Z = -4.708$, $p < .001$) based on negative ranks. Also, the results indicated a statistically significant difference between suicidal and CRT ($Z = -2.035$, $p = .042$) based on negative ranks. In the same way, the results showed a statistically significant difference between the resilience and generalized anxiety variables ($Z = -4.709$, $p < .001$) based on negative ranks. In the test of paired samples (i.e., within the same group), there were significant differences between resilience and each of the depressive symptoms, suicidal ideations, and generalized anxiety. These findings confirmed the formulated alternate hypothesis and it is accepted for this study.

Discussion

In this pilot study, we investigated the efficacy of Cognitive Resilience Training in mitigating psychological distress (anxiety, depressive symptoms, and suicidal ideation), within a cohort of undergraduate students at UACJ, Mexico. Initial examination of pretest results revealed that, at the study's onset, both the experimental and control groups exhibited comparable levels of suicidal ideation, depression, anxiety, and resilience. The distribution of mental health dimensions and resilience scores, as illustrated in Figure 3 (bar chart), disclosed a noteworthy proportion of participants characterized by low resilience and elevated psychological distress, rendering them suitable candidates for the intervention.

As discussed earlier, individuals endowed with high resilience are theorized to adeptly recognize stressors and employ coping strategies that alleviate or resolve challenges. These strategies may involve problem-solving or information-seeking approaches aimed at mitigating distressing situations (Larijani & Garmaroudi, 2018; Marsh et al., 2020; Palma-Gómez et al., 2020). In contrast, those with low resilience are more inclined to perceive events as uncontrollable, often resorting to rapid strategies like avoidance, albeit to a lesser extent. This nuanced distinction underscores the pivotal role of resilience in shaping individuals' responses to stressors, laying the groundwork for the exploration of cognitive resilience training's impact on such dynamics in the subsequent analysis.

At the posttest, there were statistically significant differences between the experimental and control groups on the posttest. Compared to the CG, the EG displayed lower levels of suicidal ideation, depression, and anxiety, as well as higher levels of resilience. This indicates that CRT had a positive effect on the participants' psychological distress and resilience. The results are comparable to those of previous research; for example, CRT as an intervention has been defined as "protective factors" used to contend with adversity that predisposes individuals to psychopathology (Cowden et al., 2016; Clark et al., 2023; Marsh et al., 2020; Palma-Gómez et al., 2020).

Studies once referred to CRT as "mental toughness" because it fosters positive thinking to suppress and combat cognitive distortions that predispose individuals to psychopathology (Lindsay et al. 2023; Lindsay et al., 2023; Marsh et al., 2020; Precious & Lindsay, 2019). Humans with resilient skills develop adversity intelligence by navigating the brain (mind) to develop intelligence in the face of adversity, according to a recent study (Sood, 2019). Exposing students to CRT can increase their adversity intelligence, improve their quality of life, and decrease academic tension, mood challenges, anxiety symptoms, and suicidal thoughts. CRT skills can transform stress into eustress; this can teach the brain to view adversity as a way to increase cognitive flexibility in problem-solving while remaining optimistic; it can train the mind technically; and it can make a person uniquely successful after passing through situations that are perceived as stressful.

In accordance with previous research (Craig, 2023; Helmreich et al., 2017; Kacic et al., 2021; Kay, 2016; Marsh et al., 2020; Sahler et al., 2013; Tabibnia & Radecki, 2018; Wang et al., 2021) and corroborated by the present study, it is established that cognitive resilience possesses the capacity to augment a broad spectrum of foundational abilities crucial for self-emotional regulation. These enhanced skills, when applied in the face of stressful daily life events, function as a robust defense against adverse situations that have the potential to induce psychological distress.

Conclusion, implication, recommendations and limitations

On the basis of the results of this pilot study, it was found that CRT is an effective treatment for reducing psychological distress and cultivating resilience among a subset of the selected participants. As a consequence of the intervention, the experimental group reported lower levels of suicidal ideation, depression, and anxiety, as well as increased levels of resilience following participation in the program. In view of these findings, the research recommends integrating Cognitive Resilience Training (CRT) into clinical university psychological support services to holistically equip students and staff with vital coping skills and emotional regulation techniques. This adaptable process, involving resource utilization to cope with adversity, facilitates effective

management of life burdens, stress, tension, and psychological distress stemming from academic or distressful life events. While the pilot study centered on specific undergraduates at a chosen university, it emphasizes the need to assess CRT's efficacy across diverse contexts by implementing it with a more varied student and staff population. Also, long-term follow-up studies with participants who received this type of treatment could yield insightful information regarding the intervention's long-term effects on mental health and resilience.

Even though this study's findings are useful and credible, it has the following limitations: the study's small sample size may diminish its generalizability therefore further study should extend CRT to a larger population. Additionally, the method of participant selection might have introduced certain biases into this study, compromising the validity of the results, therefore, the future main study may use restricted randomization technique in lieu of simple randomization to overcome this shortcoming. Also, self-report measures used in this pilot study are susceptible to response bias and may not provide an objective assessment of psychological distress. The limited duration of the CRT program in this short-term study might not fully capture its comprehensive impact. Consequently, a longitudinal study could offer a more impactful exploration of mental health outcomes in future research.

In summary, the study establishes CRT as effective in reducing psychological distress (anxiety, depression, and suicidal ideation) while cultivating resilience among the chosen university students. It suggested recommendations, including implementing CRT on campus and conducting follow-up studies for improved efficacy of future training. Also acknowledging the study's limitations, future research should imbibe larger participants, more diverse samples, and robust designs, which will enhance comprehension of CRT efficacy across educational settings.

Authors contributions

RO conceived the research ideas, organized the research, performed the studies, analyzed the data, drafted and revised the manuscript, and also analyzed the data and interpreted the results. MGV redrafted and revised the manuscript. All authors contributed to writing sections of the manuscript and read and approved the submitted version.

Acknowledgment

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

Abrams, Z. (2022, October 12). Student mental health is in crisis. Campuses are rethinking their approach. Monitor on Psychology,53(*7*) https://www.apa.org/monitor/2022/10/mental-health-campus-care

Arrieta, J., Aguerrebere, M., Raviola, G., Flores, H., Elliott, P., Espinosa, A., Reyes, A., Ortiz-Panozo, E., Rodriguez-Gutierrez, E. G., Mukherjee, J., Palazuelos, D., & Franke, M. F.(2017). Validity and utility of the patient health questionnaire (PHQ)-2 and PHQ-9 for screening and diagnosis of depression in Rural Chiapas, Mexico: A cross-sectional study. *Journal of Clinical Psychology*, *73*(9), 1076–1090. https://doi.org/10.1002/jclp.22390

Beck, J. S. (2020). *Cognitive behavior therapy: Basics and beyond*. Guilford Publications.

Benjamin, C. L., Puleo, C. M., Settipani, C. A., Brodman, D. M., Edmunds, J. M., Cummings, C. M., & Kendall, P. C. (2011). History of cognitive-behavioral therapy in youth. *Child & Adolescent Psychiatric Clinics*, *20*(2), 179–189. https://doi.org/10.1016/j.chc.2011.01.011

Benjet, C., Gutiérrez-García, R. A., Abrego-Ramírez, A., Borges, G., Covarrubias-Díaz, A., Durán, M. D., & Mortier, P. (2019). Psychopathology and self-injury in first-year incoming students at six Mexican universities. *Public Health of Mexico*, *61*, 16–26. https://doi.org/10.21149/9158.

Campbell, F., Blank, L., Cantrell, A., Baxter, S., Blackmore, C., & Goyder, E. (2022). Factors that influence mental health of university and college students in the UK: A systematic review. *BMC Public Health*, 1778. https://doi.org/10.1186/s12889-022-13943-x

Clark, J. D., Mallett, C. J., Moyle, G. M., & Coulter, T. J. (2023). Understanding mental toughness at a women's Australian rules football club. *Psychology of Sport & Exercise*, *67*, 102432. https://doi.org/10.1016/j.psychsport.2023.102432

Cowden, R. G., Meyer-Weitz, A., & Oppong Asante, K.(2016). Mental toughness in competitive tennis: Relationships with resilience and stress. *Frontiers in Psychology*, *7*, 320. https://doi.org/10.3389/fpsyg.2016.00320

Craig, H. (2023). *Resilience in the workplace: How to Be resilient at work*. PositivePsychology.com. https://positivepsychology.com/resilience-in-the-workplace/

De Luca, S. M., Franklin, C., Yueqi, Y., Johnson, S., & Brownson, C. (2016). The relationship between suicidal ideation, behavioral health, and college academic performance. *Community Mental Health Journal*, *52*(5), 534–540. https://doi.org/10.1007/s10597-016-9987-4

Dominguez-Lara, S., & Merino-Soto, C.(2016). Análisis estructural de la escala de afrontamiento ante la Ansiedad e incertidumbre prexamen (COPEAU) en universitarios peruanos [structural analysis of coping with pre-exam anxiety and uncertainty (COPEAU) in Peruvian college students]. *Revista Digital de Investigación En Docencia Universitaria*, *10*(2), 31–45. https://doi.org/10.19083/ridu.10.474

Dosil-Santamaria, M., Ozamiz-Etxebarria, N., Idoiaga Mondragon, N., Reyes-Sosa, H., & Santabárbara, J. (2022). Emotional state of Mexican university students in the face of the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *19*(4), 2155. https://doi.org/10.3390/ijerph19042155

Farchi, M., & Gidron, Y.(2010). The effects of "psychological inoculation" versus ventilation on the mental resilience of Israeli citizens under continuous war stress. *Journal of Nervous & Mental Disease*, *198*(5), 382–384. https://doi.org/10.1097/NMD.0b013e3181da4b67

Geschwind, N., Peeters, F., Drukker, M., van Os, J., & Wichers, M. (2011). Mindfulness training increases momentary positive emotions and reward experience in adults vulnerable to depression: A randomized controlled trial. *Journal of Consulting & Clinical Psychology*, *79*(5), 618–628. https://doi.org/10.1037/a0024595

Gupta, S. (2021). *The COVID-19 pandemic made U.S. college students' mental health even worse*. Science News. https://www.sciencenews.org/article/covid-19-coronavirus-pandemic-us-college-students-mental-health

Helmreich, I., Kunzler, A., Chmitorz, A., König, J., Binder, H., Wessa, M., & Lieb, K. (2017). Psychological interventions for resilience enhancement in adults. *Cochrane Database of Systematic Reviews*, *2017*(2), CD012527. https://doi.org/10.1002/14651858.CD012527

Hidalgo-Rasmussen, C. A. & Gonzalez-Betanzos, F.(2019). The treatment of acquiescence and theFactorial structure of the brief resilience scale (BRS) in Mexican and Chilean university students. *Annals de Psicologia*, *35*(1), 26–32. https://doi.org/10.6018/analesps.35.1.297781

Ibarra-Mejia, G., Lusk, M., & Jeon, S. (2022). Stress, anxiety, and depression among latinx university students during the COVID-19 pandemic. *Social Development Issues*, *43*(1). https://doi.org/10.3998/sdi.1815

Kacic, V., Zimmerman, F., Milbourn, B., Girdler, S., Black, M., Bölte, S., & Hayden Evans, M. (2021). Developing resilience and promoting positive mental health strategies in university students. *British Journal of Psychology Open*, *7*(S1), S142–S143. https://doi.org/10.1192/bjo.2021.403

Kay, S. A. (2016). Emotion regulation and resilience: Overlooked connections. *Industrial and Organizational Psychology*, *9*(2), 411–415. https://doi.org/10.1017/iop.2016.31

Kroenke, K., Spitzer, R. L., & Williams, J. B.(2003). The patient health questionnaire-2: Validity of a two-item depression screener. *Medical Care*, *41*(11), 1284–1292. https://pubmed.ncbi.nlm.nih.gov/14583691/

Larijani, H. A., & Garmaroudi, G. (2018). Effectiveness of mental health resilience training for red crescent health teams. *Romaneasca Magazine Pentru Multidimensional Education*, *10*(1), 64–83. https://doi.org/10.18662/rrem/37

Leppin, A. L., Bora, P. R., Tilburt, J. C., Gionfriddo, M. R., Zeballos-Palacios, C., Dulohery, M. M., Sood, A., Erwin, P. J., Brito, J. P., Boehmer, K. R., & Montori, V. M. (2014). The efficacy of resiliency training programs: A systematic review and meta-analysis of randomized trials. *Public Library of Science ONE*, *9*(10), e111420. https://doi.org/10.1371/journal.pone.0111420

Lindsay, S., Carter, J. E., Houle, J., Ding, K., Hautmann, A., & Yang, J. (2023). Evaluation of a cognitive resilience program for college student-athletes: A pilot study. *Journal of American College Health*, *71*(1), 310–317. https://doi.org/10.1080/07448481.2021.1891083

Lipson, S. K., Zhou, S., Abelson, S., Heinze, J., Jirsa, M., Morigney, J., Patterson, A., Singh, M., & Eisenberg, D.(2022). Trends in college student mental health and help-seeking by race/ethnicity: Findings from the national healthy minds study, 2013-2021. *Journal of Affective Disorders*, *306*, 138–147. https://doi.org/10.1016/j.jad.2022.03.038

Luthar, S. S., & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. *Development & Psychopathology*, *12*(4), 857–885. https://doi.org/10.1017/S0954579400004156

Marie, M., Hannigan, B., & Jones, A. (2016, June 13). Resilience of nurses who work in community mental health workplaces in Palestine. *International Journal of Mental Health Nursing*, *26*(4), 344–354. https://doi.org/10.1111/inm.12229

Marsh, S., Taylor, R., Galland, B., Gerritsen, S., Parag, V., & Maddison, R. (2020). Results of the 3 pillars study (3PS), a relationship-based programme targeting parent-child interactions, healthy lifestyle behaviours, and the home environment in parents of preschool-aged

children: A pilot randomised controlled trial. *Public Library of Science ONE*, *15*(9), e0238977. https://doi.org/10.1371/journal.pone.0238977

Martínez Arriaga, R. J., González Ramírez, L. P., de la Roca-Chiapas, J. M., & Hernández-González, M. (2021). Psychological distress of COVID-19 pandemic and associated psychosocial factors among Mexican students: An exploratory study. *Psychology in Schools*, *58*(9), 1844–1857. https://doi.org/10.1002/pits.22570

Oguntayo, R., Buhari, O. I. N., Oyeleke, J. T., Bolarinwa, O. A., Ogunmodede, A. J., Adegunloye, O. A., Ajokpaniovo, M., Adegoke, A. A., & Malomo, S. O. (2022). Understanding the mental health needs of the university community and the determinants of sequala well-being: A qualitative study. *Ife psychology*, *30*(2), 53–65. https://www.ajol.info/index.php/ifep/article/view/235649

Olaseni, A. O., Oguntayo, R., Popoola, O. A., & Akinsola, O. S. (2021). Adverse childhood experiences and personality traits as predictors of suicidal ideation among university students. *Ilorin Journal of Business and Social Sciences*, *23*(2), 143–155. https://ideas.repec.org/a/ris/ilojbs/0086.html

Palma-Gómez, A., Herrero, R., Baños, R., García-Palacios, A., Castañeiras, C., & Fernandez, G. L., (2020). Efficacy of a self-applied online program to promote resilience and coping skills in university students from four Spanish-speaking countries: Study protocol for a randomized controlled trial. *BMC Psychiatry*, *20*, 148. https://doi.org/10.1186/s12888-020-02536-w

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College students: Mental health problems and treatment considerations. *Academic Psychiatry*, *39*, 503–511. https://doi.org/10.1007/s40596-014-0205-9

Plutchik, R., van Praag, H. M., Conte, H. R., & Picard, S.(1989). Correlates of suicide and violence risk: The suicide risk measure. *Comprehensive Psychiatry*, *30*(4), 296–302. https://www.sciencedirect.com/science/article/abs/pii/0010440X89900539

Precious, D., & Lindsay, A. (2019). Mental resilience training. *Journal of the Royal Army Medical Corps*, *165*(2), 106–108. https://doi.org/10.1136/jramc-2018-001047

Ryan, A. (2014). *ACT and be READY: Evaluation of an ACT-based resilience training program delivered to people with diabetes*. Professional Doctorate, School of Psychology, The University of Queensland. https://doi.org/10.14264/342099

Sahler, O. J., Dolgin, M. J., Phipps, S., Fairclough, D. L., Askins, M. A., Katz, E. R., Noll, R. B., & Butler, R. W. (2013). Specificity of problem-solving skills training in mothers of children newly diagnosed with cancer: Results of a multisite randomized clinical trial. *Journal of Clinical Oncology Official Journal of the American Society of Clinical Oncology*, *31*(10), 1329–1335. https://doi.org/10.1200/JCO.2011.39.1870

Santana-Campas, M. A., & Telles, F. S.(2018). Psychometric properties of the plutchik suicide risk scale in a sample of young Mexicans deprived of liberty. *Advances in Psychology*, *26*(1), 57–64. https://www.researchgate.net/publication/331047748_Psychometric_properties_of_the_Plutchik_suicide_risk_scale_in_a_sample_of_young_Mexicans_deprived_of_liberty

Secretaria de Salud de la Ciudad de México. (2019). *Health Sector Program 2019-2024*. SS. https://www.gob.mx/salud/documentos/programa-sectorial-de-salud-2020-2024

Skapinakis, P.(2007). The 2-item generalized anxiety disorder scale had high sensitivity and specificity for detecting GAD in primary care. *Evidence-Based Medicine*, *12*(5), 149. https://doi.org/10.1136/ebm.12.5.149

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J.(2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, *15*(3), 194–200. https://pubmed.ncbi.nlm.nih.gov/18696313/

Sood, A. (2019). *The resilient mind: How to cultivate mental strength and thrive in any situation*. HarperCollins. https://www.mckinsey.com/industries/healthcare/our-insights/

Tabibnia, G., & Radecki, D. (2018, March). Resilience training that can change the brain. *Consulting Psychology Journal: Practice and Research*, *70*(1), 59–88. https://doi.org/10.1037/cpb0000110

Torres, Y., & O'Connor, K. (2019). Social support, depression, and university students in Mexico. *Psychological Reports*, *122*(1), 89–101. https://doi.org/10.1177/0033294118792999

Wagner, F., Wagner, R. G., Kolanisi, U., Makuapane, L. P., Masango, M., & Gómez-Olivé, F. X. (2022). The relationship between depression symptoms and academic performance among first-year undergraduate students at a South African university: A cross-sectional study. *BMC Public Health*, *22*(1), 2067. https://doi.org/10.1186/s12889-022-14517-7

Wang, Y., Chi, I, Zhan, Y., Chen, W., & Li, T. (2021). Effectiveness of resilience interventions on psychosocial outcomes for persons with neurocognitive disorders: A systematic review and meta-analysis. *Frontiers in Psychiatry*, *12*, 709860. https://doi.org/10.3389/fpsyt.2021.709860

World Health Organization. (2023). *Depression.* https://www.who.int/news-room/fact-leaves/detail/depression

World Health Organization (WHO. (2023). *Mental health.* https://www.who.int/newsroom/factsheets/detail/mental-health-strengthening-our-response

Yeung, T. S., Hyun, S., Zhang, E., Wong, F., Stevens, C., Liu, C. H., & Chen, J. A. (2021). Prevalence and correlates of mental health symptoms and disorders among US international college students. *Journal of American College Health*, *70*(8), 2470–2475. https://doi.org/10.1080/07448481.2020.1865980

Zimmerman, M. A. (2013). Resiliency theory: A strengths-based approach to research and practice for adolescent health. *Health Education & Behavior: The Official Publication of the Society for Public Health Education*, *40*(4), 381–383. https://doi.org/10.1177/1090198113493782