Well-being and education: current indications and emerging perspectives

Edited by
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Well-being and education: current indications and emerging perspectives

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Editorial: Well-being and education: current indications and emerging perspectives

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Editorial on the Research Topic
Well-being and education: current indications and emerging perspectives

Introduction

In today's rapidly changing world, schools are more than just places of education; they are critical environments where students develop intellectually, emotionally, and socially. The COVID-19 pandemic has underscored the importance of psychological support in schools, highlighting the urgent need for practices that bolster wellbeing and mental resilience among both students and educators. As educational institutions cope with the difficulties of the pandemic and rising inflation, which exacerbate stress and uncertainty, the need for novel approaches to mental health and wellbeing in schools has never been greater (Viner et al., 2020).

Positive psychology, dedicated to understanding what makes life most worthwhile, provides many techniques and strategies that are especially well-suited for use in education. This research, which promotes strengths, resilience, and wellbeing, has the potential to transform schools into caring settings in which both children and teachers may thrive (Seligman et al., 2009).

Positive psychology: cultivating resilience and wellbeing in education

Positive Psychology offers a variety of tools and methods that can be effectively integrated into the school environment to enhance wellbeing and resilience. The principles of Positive Education, a branch of Positive Psychology focused on applying its concepts in educational settings, hold great promise for transforming schools (Waters, 2011).

One of the key strengths of Positive Psychology is its focus on character strengths, positive communication, and self-compassion, all of which can be nurtured in students and teachers alike (Park and Peterson, 2006; Neff and Germer, 2013). By fostering these qualities, schools can create a more supportive and resilient environment, enabling all members of the school community to cope better with the challenges they face (White and Waters, 2015).

New tools and methods for enhancing wellbeing

To meet the current challenges, there is a growing need to develop and implement new tools, practices, and methods to enhance the wellbeing and psychological resilience of students, teachers, and parents. Research and proposals from the international scientific community are crucial in this endeavor (Jennings and Greenberg, 2009; Kim and Asbury, 2020; Lee, 2020). Key areas of focus in enhancing wellbeing and resilience in educational settings include the prevention of teacher burnout by developing interventions that help educators manage stress, avoid burnout, and maintain their passion for teaching (Skaalvik and Skaalvik, 2017). Additionally, integrating Positive Psychology and stress management techniques into the school curriculum can assist both students and teachers in coping with daily pressures (Shankland and Rosset, 2017). Team interventions for psychological resilience are also essential, fostering a sense of community and support among students. Encouraging the identification and use of character strengths in schools can build self-esteem and create a positive school culture for both students and teachers. Positive communication strategies are crucial for enhancing relationships and creating a more supportive environment while teaching compassion and self-compassion can improve mental health and cultivate a nurturing school culture. Lastly, applying Positive Psychology tools to build parental resilience and wellbeing ensures that parents can support their children effectively, contributing to the overall health of the educational ecosystem (Parent et al., 2016).

Building a positive organizational culture in schools

Beyond individual interventions, there is a need to cultivate a positive organizational culture within educational institutions (Waters, 2015). This involves creating an environment where wellbeing is prioritized, and students, teachers, and parents all feel valued and supported. By fostering a culture of positivity, schools can become bastions of mental health and resilience, helping their communities navigate the challenges of today's world (Seligman et al., 2009).

Overview of studies

This editorial will explore 16 studies focusing on various aspects of wellbeing, stress, resilience, and mental health in students and teachers. Topics include burnout prevention and art therapy, as well as the cultural values shaping student self-efficacy. These studies offer fresh perspectives on the interventions and frameworks that can be used to improve education. Several studies focus on students' mental health and stress experiences, with a particular emphasis on how these can be managed or mitigated through specific interventions.

Gong and Geertshuis explored the unique stressors students studying abroad face. Offshore international students often experience both distress and eustress (positive stress), and this study emphasized the importance of understanding and differentiating these experiences. Similarly, Jones et al. delved into the psychological challenges faced by third-culture kids. It identified resilience and family functioning as key mediators in coping with stress and adjustment issues, providing valuable insights into how family dynamics can support mental wellbeing.

Beltrán-Ruiz et al. underlined the importance of attachment and compassionate approaches, suggesting that attachment-based therapies may significantly reduce psychological distress in university students. They offer a promising approach to enhancing student wellbeing through a focus on compassion and emotional connection.

Academic burnout is a recurring theme in the studies included in this Research Topic. Kushida and Troster shed light on the alarming rates of burnout among medical students who face unique stressors due to the intensity of their academic programs—highlighting the prevalence of burnout in this population. Additionally, Kourea et al. proposed the BENDiT-EU program as a preventive tool to reduce burnout and promote wellbeing among students and staff in their study. This program provides a framework for addressing burnout at both individual and institutional levels.

The wellbeing of teachers is equally crucial in maintaining a healthy educational environment. Li presented a comprehensive analysis of how self-efficacy and resilience prevent burnout among teachers. By emphasizing emotion regulation strategies, this study underscores the importance of supporting teachers' mental health to improve their wellbeing and professional performance. Furthermore, Zhang and Luo explores resilience in teaching, offering valuable insights into how educators can cultivate resilience to buffer the effects of occupational stress.

Several studies explore innovative interventions designed to improve wellbeing in educational settings. Mo and Ko explores the use of art therapy as a tool for emotional expression and stress relief. The paper highlights how creative outlets like mandala art therapy can foster emotional regulation and offer students a calming, reflective practice.

In a similarly novel approach, Chute et al. demonstrate how animal-assisted interventions can reduce momentary stress and enhance emotional wellbeing among students. This study suggests that animals may provide a comforting presence that helps students manage immediate stress, promoting relaxation and reducing anxiety.

Cultural values also play a critical role in shaping educational experiences. Jin et al. take a global perspective, examining how cultural values influence student self-efficacy. This study's findings suggest that culturally informed interventions may be necessary to optimize self-efficacy and academic success across diverse student populations.

The COVID-19 pandemic has profoundly affected education worldwide, creating new challenges for students and teachers. Pöysä et al. compares how educators in two countries experienced stress and support during the pandemic. The study underscores the importance of institutional support in mitigating teacher stress during times of crisis.

Students have also faced significant challenges due to the pandemic. Wang et al. explores how resilience and loneliness moderated students' emotional experiences during the lockdown. The findings emphasize the importance of fostering resilience and

addressing loneliness to support students' mental health during such unprecedented times.

The studies in this Research Topic highlight several critical themes for promoting wellbeing, managing stress, and building resilience in educational settings. First, innovative interventions, such as art therapy, animal-assisted programs, and compassion-based therapies, hold significant promise for enhancing mental health. Second, fostering resilience in students and teachers is essential for coping with stress and preventing burnout, particularly in the face of ongoing challenges like the COVID-19 pandemic.

Cultural considerations also play an essential role in shaping how students and educators experience and manage stress. As the study on cultural values and self-efficacy demonstrates, interventions must be tailored to the cultural contexts of the individuals they aim to support. Finally, institutional support for teachers and students alike is crucial. The pandemic has shown that during times of crisis, the level of support provided by educational institutions can significantly impact the mental health and wellbeing of their communities.

The diverse range of topics covered in these 16 studies reflects the growing interest in exploring the mental health challenges students, and educators face in today's educational environments. By understanding the causes of stress and burnout and identifying effective interventions, academic institutions can create healthier, more supportive environments where students and teachers can thrive. These papers provide a robust foundation for further research and action to enhance wellbeing, manage stress, and foster educational resilience.

Conclusion

Positive Psychology offers a promising path forward for schools seeking to enhance the wellbeing and resilience of their communities. Integrating new tools, methods, and practices into the school environment can create a more supportive, resilient, and positive educational experience. This research initiative aims to bring together the latest work in Positive Education, sharing and synthesizing knowledge to benefit educational institutions worldwide. Through this collaborative effort, schools may not only be places of learning but also environments where students, teachers, and parents can thrive amidst the challenges they face.

The education sector has long been a fertile ground for research on wellbeing, stress, and resilience. In recent years, the challenges faced by students and educators have intensified due to numerous factors, including rising academic demands, mental health pressures, and unprecedented disruptions such as the COVID-19 pandemic. The studies presented in this Research Topic provide valuable insights, highlighting the importance of interventions that foster resilience, manage stress, and promote wellbeing in educational settings.

Author contributions

EK: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. MG: Writing – review & editing. GT: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Distress and eustress: an analysis of the stress experiences of offshore international students

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Introduction: The popularity of online learning provides higher education institutions with opportunities to deliver remote educational programs for international students who remain in their home countries but enroll in overseas universities. Yet the voices of offshore international students (OISs) have been rarely heard. This study focuses on the stress experiences of OISs, aiming to investigate the perception of stressors, specific responses, and stress management strategies pertaining to distress (negative stress) and eustress (positive stress).

Methods: Semi-structured interviews were conducted in two phases with 18 Chinese postgraduate OISs enrolled in a range of institutions and disciplines. Interviews took place online and were analyzed thematically to explore participants' experiences.

Results: Stress was found to originate from both socially- and task-based factors, closely related to participants' need to integrate into their on-campus community and gain useful knowledge and skills. Particular sources of stress were associated with distinct perceptions and subsequent responses and management strategies.

Discussion: A summarizing theoretical model is offered to highlight the separate construct of distress and eustress, indicating tentative causal relationships to extend existing stress models to an educational context and provide new insights into OISs. Practical implications are identified and recommendations are provided for policy-makers, teachers, and students.

KEYWORDS

stress, stressors, perception, distress, eustress, stress management, offshore international students, post-graduate students

Introduction

This paper investigates the stress-related perceptions, responses, and management strategies of postgraduate international students who study offshore usually in their home countries. In the paragraphs below we review previous research into the stresses experienced by postgraduate international students in general and identify a lack of research into the more particular case of postgraduate offshore international students (OISs). We then describe recent theoretical models of stress before providing an account of our research method.

Stress among postgraduate international students in tertiary education has been found to be related to cultural differences, inconsistent educational expectations (Yan and Berliner, 2013; Liao and Wei, 2014), lack of social support (Zhang and Brunton, 2007; Lai et al., 2020), discrimination (Smith and Khawaja, 2011; Wilczewski et al., 2021), and financial insecurity (Charles and Stewart, 1991; O'Byrne et al., 2021). It has been associated with issues such as anxiety, insomnia, poor academic performance, and dropout (Laufer and Gorup, 2019; Lai et al., 2020; Garbóczy et al., 2021). Common distress-coping strategies reported by postgraduate

international students include self-help strategies such as goal setting and wishful thinking (Zhang and Brunton, 2007; Garbóczy et al., 2021) and support-seeking strategies such as obtaining information from the government agencies or the university (O'Byrne et al., 2021).

Wide adoption of online learning strengthens the confidence of educational institutions to continue providing online programs for OISs in exceptional circumstances (Arbaugh et al., 2009; Prasetyanto et al., 2022). However, among studies on the stress of international students, few articles differentiate OISs from onshore international students, although their experiences are likely to be differentiated by learning and living environments. Lai et al. (2020) and Wilczewski et al. (2021) found that offshore students experienced a lower level of living stress when compared to onshore students. This might be because offshore students were located in a context closer to families or friends. However, Choo (2021) points out that OISs may experience challenges that have not been identified and researched, such as courses being taught in English while living in a non-English-speaking environment. The effects of these factors on stress have not been explored, and the voices of OISs have been rarely heard.

Not only have the stress-related experiences of OISs been neglected in recent research, but much of the work on international students in general adopts an orientation to stress that is not in full alignment with recent theory. Stress in much of the educational literature is assumed to be a wholly negative response to negative stimuli which results in negative outcomes such as depression or anxiety (e.g., Lai et al., 2020; Garbóczy et al., 2021). This is not the perspective taken in the wider literature on stress which identifies both positive (eustress) and negative (distress) forms of stress that are associated with differentiated patterns of response (Selye, 1956; Lazarus and Folkman, 1984; Le Fevre et al., 2003; Gibbons et al., 2008). That is, recent research suggests that eustress and distress are perceived, experienced, and managed differently (Lepine et al., 2004; Simmons and Nelson, 2007).

This research sought to explore the eustress and distress-related experiences of OISs in order to provide a rich account of their stress-related experiences. In the following section we describe the conceptual framework that guided our study design.

Conceptual framework

To facilitate the design of our study and interpretation of our data we brought together two models: the Holistic Stress Model (HSM) (Simmons and Nelson, 2007) and the Challenge-Hindrance Framework (CHF) (Lepine et al., 2004). The HSM seeks to explain stress through the relationship between individual traits, responses, and stress management while the CHF focuses on the associations between external stressors and stress responses.

According to the HSM, stressors are inherently neutral, and it is individual differences that affect the relationship between stressors and responses (Hargrove et al., 2013). The model suggests that when individuals encounter stressors, they may experience eustress or distress, indicated by emotional, attitudinal, or behavioral responses (Simmons and Nelson, 2007). The CHF, however, purports that not all external stressors are neutral. They argue that there can be challenge (positive) or hindrance (negative) stressors which influence individual responses (Lepine et al., 2004; Podsakoff et al., 2007). Challenge stressors contribute to motivation and high performance (LePine

et al., 2004). Hindrance stressors limit satisfaction and individual development (Podsakoff et al., 2007).

Despite different focuses on the influential factors of eustress and distress, the two streams of research both recognize perception as the underlying mechanism that leads to stress responses. Based on the emphasis on individual perception, the conceptualization of eustress can be extended to include psychological and physical responses to stressors, which are determined by positive individual perceptions; distress is the psychological and physical responses to stressors, which are determined by negative individual perceptions (Le Fevre et al., 2003). Both models propose causal relationships in that eustress or distress follows a positive or negative perception in response to a stressor. Feelings of eustress may be actively savored or managed in the hope of making them last (Hargrove et al., 2013). Similarly, distress responses may lead to coping and efforts to mitigate the distress response (Lai et al., 2020).

Consistent with these models, this research set out four research questions to explore the stress process experienced by postgraduate OISs:

RQ1. What stressors are identified as triggering different perceptions leading to distress and eustress?
RQ2. What stress responses are reported?
RQ3. How is the management of distress and eustress reported?
RQ4. Are there associations between perceptions of stressors (RQ1), stress responses (RQ2), and stress management strategies (RQ3)?

Method

Research design

This research was based on the theoretical perspective of interpretivism (Crotty, 1998). We adopted a phenomenological approach to better understand the lived experiences of study participants through an analysis of their recollections and reflections (Lazarus and Folkman, 1984). The study was conducted in two phases: phase 1 provided for the initial development of a model in answer to the research questions; phase 2 was a replication of phase 1 but with a broader sample of participants. Phase 2 sought to examine the transferability of the answers to the research questions developed during phase 1 (Tuval-Mashiach, 2021).

Study participants and contexts

In phase 1 of the study, 10 postgraduate OISs from the authors' university in New Zealand (NZ) were interviewed. In phase 2, a further eight students from other institutions were interviewed. Demographic information is shown in Table 1. All the participants are Chinese, mostly studying from their home country ($n = 16$). Participants had courses conducted either in a hybrid format (i.e., offshore students watched streamed classes delivered on campus to onshore students) (Choo, 2021) or a purely online approach (i.e., both teachers and students work online) (Prasetyanto et al., 2022). For participants having research programs, communication with supervisors was online using tools such as email and Zoom.

TABLE 1 Participant demographic information.

Participant	Major	Host country	Age	Gender
Phase one				
Participant 1	Master of Commerce	NZ	30	Female
Participant 2	Master of Commerce	NZ	26	Female
Participant 3	PhD in Marketing	NZ	32	Female
Participant 4	Exchange Program in Business School	NZ	26	Male
Participant 5	PhD in Marketing	NZ	34	Female
Participant 6	Exchange Program in Business School	NZ	26	Female
Participant 7	Master of Management	NZ	33	Male
Participant 8	Master of Management	NZ	25	Male
Participant 9	Master of Marketing	NZ	24	Female
Participant 10	Master of Accounting	NZ	24	Female
Phase two				
Participant 11	Master of Commerce	Australia	26	Female
Participant 12	Master of Sociology	America	27	Female
Participant 13	Master of Business Analytics	Singapore	22	Male
Participant 14	PhD in Linguistics	Malaysia	48	Female
Participant 15	PhD in Electrical Engineering	Thailand	34	Male
Participant 16	Master of International Relations	Australia	26	Female
Participant 17	Master of Science	British	24	Female
Participant 18	Master of Accounting	Australia	23	Male

Instrument

To guide semi-structured interviews, an interview schedule was designed, written in both English and Chinese. Each question invited participants to describe scenarios where they felt stressed, and they were encouraged by formal or informal prompts to share details regarding their responses and stress management strategies in their specified contexts (Leech, 2002). Eight interview questions were designed. For example, one question was "Could you think of a time when you felt stressed and positive during study?", and one prompt was "Your story is interesting. Could you please tell me more about your reactions in this context?". The form of semi-structured, in-depth interview enabled higher flexibility and richer insights yielded through lengthy interviews (Belk et al., 2012; Quinlan et al., 2015).

Data collection procedure

Upon the approval of the university ethics committee, an audio-recorded semi-structured, in-depth interview was conducted by the first author with each participant via Zoom, WeChat, or telephone. Each interview lasted about 60 min. Chinese, being the native language for both the interviewer and interviewees, was used in interviews to minimize language barriers (Welch and Piekkari, 2006).

Strategies were used to minimize distractions and build rapport with participants during virtual and telephone interviews. To reduce distractions due to noise, the interviewer would close windows and wear earphones during the interview, and interviewees would be politely requested to do the same if they were in a noisy environment (Oliffe et al., 2021). When technical issues arose to influence the quality of communication, the interviewer would slow down her speed of talking and take pause before asking questions to adjust to potential lags (Oliffe et al., 2021). To build rapport with interviewees, the interviewer attempted to display a friendly and active style (Burke and Miller, 2001). With participants' consent, the interviewer added their social media accounts and had brief interactions prior to the formal interview, introducing the interviewer's identity and research topic, expressing gratitude, and scheduling the interview (Lo Iacono et al., 2016). Meanwhile, the interviewer examined participants' posted pictures or videos to gain an impression of their current living and study status. These understandings were used to form effective, personalized icebreaking, rapport-building questions.

Interviews via Zoom were recorded to collect the audio recording for further analysis. All Zoom video recordings were deleted after the interview and only the audio recordings were saved. For interviews via WeChat or phone, the researcher called the participants and recorded their voices on the researcher's mobile phone. Recordings were saved on a laptop hard drive, a mobile phone, and a cloud service such as WeChat Collection to ensure data storage security.

Data analysis

Three stages of data preparation and analysis: transcription, translation, and thematic analysis were conducted taking approximately 480 hours over in 3 months. Each of the stages is detailed below.

In the first and second stages, audio data was transcribed into Chinese text and later translated into English by the first author. Firstly, audio recordings were transcribed into Chinese text with an online robot service.[1] The texts were corrected and then amended based on the principle of de-naturalism. This principle emphasizes the meaning and conception of the interviewee by removing interview noise such as stutters to reduce the bias in interpreting participants' speech mechanisms (Oliver et al., 2005). Next the Chinese transcript was translated into English. To achieve an accurate and understandable translation, idioms along with the tense of verbs and pronouns (e.g., he, she, it) which were not differentiated in Chinese oral speaking were edited according to the context or explained in subsequent brackets (Choi et al., 2012). At the end of the second stage, the transcripts were cross-checked (Halcomb and Davidson, 2006), by providing the English and Chinese transcripts to participants to check for accuracy. Later, with the consent of participants, follow-up interviews were conducted with all participants on WeChat to clarify ambiguities or expand noteworthy experiences noticed during transcription and translation.

In the third stage, qualitative thematic analysis was applied by both researchers to find patterns of repeated meaning and identify themes in relation to research questions (Braun and Clarke, 2006). After coding all English transcripts in NVivo, codes were classified into three codebooks to facilitate theme identification. That is, initial data codes were parsed to identify perceptions of stressors (RQ1), responses (RQ2), and management strategies (RQ3). When all data were coded and assigned to relevant codebooks, the researchers began sorting codes into relevant clusters and considering emerging themes and sub-themes (Braun and Clarke, 2006). The authors examined transcripts, notes, extracts of data, codes, and themes to specify the essence of each theme (Hycner, 1985).

One hundred and thirty-seven codes were discovered from the first data collection phase with 10 interviews. Among these codes, only six new codes were identified from the last three interviews and none of these new codes suggested a new sub-theme (Guest et al., 2006). This indicates that the last three interviews produced little new information to address the research questions, and it was justifiable to argue that a sample size of 10 with in-depth interviews was adequate for theme identification (Guest et al., 2006). Following the second phase of data collection, data was analyzed based on the previously identified coding system. Data was also re-examined for previously unidentified themes but none were found. In the subsequent findings and discussion sections both data sets are considered together.

Researcher positionality

In accordance with the robust practice in qualitative research we acknowledge the influence of our own positionality in conducting this research (Twining et al., 2017). The authors are both closely involved in the research topic and therefore their values and beliefs will have affected this research (Holmes, 2020). The first author approached the research problem and interviews having experienced being an OIS. The second author approached the research problem

having taught in the hybrid mode to on-campus students and OISs. This configuration enabled the researchers to integrate emic and etic perspectives and engage in a degree of reflexivity which might not have been possible had they worked alone (Morris et al., 1999).

Findings

RQ1. What stressors are identified as triggering different perceptions leading to distress and eustress?

Four themes of perceptions were identified and named as follows: Rejecting, Caring, Constraining, and Stretching. Each is described below. We note that two of the four themes are positive, eustress-related (Caring and Stretching) and two are negative, distress-related (Rejecting and Constraining); two relate to social experiences (Rejecting and Caring) and two relate to studying tasks (Constraining and Stretching).

Rejecting

Stressors in this context were perceived by participants as indicating they did not belong or were disconnected from the dominant on-campus student group. The stressors originated from two main sources, teaching staff and technologies.

Firstly, while attending hybrid courses, participants perceived themselves to be rejected when they were treated differently and more poorly than their on-campus peers:

> The interaction (with students online) was definitely less than with on-campus students… Also, the teacher cared (more) about on-campus students during (in-class) discussions. We (online students) completely did discussions by ourselves. (Participant 17)

Sometimes participants could not interact with the teacher during classes but were only provided with recordings which added to their feelings of rejection:

> I had one course bad in particular… Really bad. Every time they (teacher and on-campus students) just had classes by themselves… Then they (the teacher) would (only) send recordings for us to watch…We didn't have a sense of participation, not at all. And she often didn't reply to emails; sometimes (her) attitudes were bad (impatient) in particular (when replying). (Participant 2)

Further perceptions of rejection originated with technological problems which left participants feeling alienated and unimportant. Participants' perception was that if OISs mattered, these technical difficulties would have been resolved:

> I could not hear the voice of on-campus people because they were too far away from the computer (used to collect voices). (Participant 11)

> Maybe (what the teacher) writes on the blackboard cannot be seen as well. (Participant 3)

Similarly, due to Chinese political restrictions, some teaching programs could only be accessed with a VPN. Compulsory usage of the permitted but unstable university-provided VPN evoked participants' impression that they were not important and were not given equal opportunities to succeed:

> (The exam system) could only be connected by the university VPN. But the university VPN would be disconnected when so many students were taking exams online at the same time… (When logging back) you (students) would find the exam was expired, and you could not get in again. (Participant 10)

Caring

A second theme related to perceptions of stressors (RQ1) was that of caring. Caring stressors originated from two aspects, interacting with teaching staff and connecting with other students.

Participants reported positive impressions of teachers who remembered offshore students and accommodated their needs. This was particularly apparent in accounts from participants who contrasted these teachers with others who they perceived as rejecting:

> Recently when my supervisor heard my father passed away, (the supervisor) wrote an email as a comfort… According to what I know, my supervisor is relatively positive, giving us (OISs) several online group meetings. Other supervisors may do less in this aspect (holding online meetings). (Participant 14)

Perceptions of caring extended to positive perceptions of networking with fellow students and from extra-curricular university support services:

> You (I) could talk with him (the study buddy) every week or month. If you (I) had any problems, he could reply. He actually solved some (problems) in terms of my hardware… From this perspective, I feel someone in the university still cares about you (me), you know? (Participant 3)

Constraining

A third theme related to perceptions of stressors (RQ1) was termed constraining. The term captures student perceptions that they may not benefit from their learning to the extent desired. Such negative perceptions were frequently mentioned by participants who had research projects. The perception of constraining was related to the issue of accessibility, which was attributed to difficulties with expectations, prior knowledge, and cultural differences. Although participants may have described their supervisors as being responsible and having a caring attitude, they could also perceive their learning as being obstructed by different cultural backgrounds between themselves and their supervisors:

> There are lots of gaps during communication… Just like we Chinese may often say a sentence (with a meaning) from the surface, but my subtext tells you (listeners) another thing (which implies the true intention of the speaker). That is, for a sentence told by they (my supervisor), I have no idea what the subtext the sentence has or if it is just about the surface meaning. (Participant 3)

Participants who were used to the Chinese educational system felt constrained by a lack of guidance particularly when supervisors gave them autonomy in managing their own research:

> When a student comes to the university (in China), we will clearly tell them (the student) what our training goals are for you (the student), what classes you (the student) need to take and what goals you (the student) need to achieve. (I) did not have any of these overseas. Then I was asked to select topics and find research questions by myself… I think this is not quite normal. (Participant 4)

Stretching

The final theme related to perceptions of stressors (RQ1) was summarized by the theme named stretching. This positive perception was triggered by experiences that were perceived as challenging but achievable. When learning progressed rapidly and developed relevant skills or knowledge, participants reported positive perceptions of stressors even though or even because learning was difficult:

> The course which is stressful and rewarding is the most tiring one. For a whole semester, (I) did dozens of – almost 20 quizzes… I think the speed of the course was faster than that of the undergraduate stage (in China). With a single semester, you (students) can learn what you (students) learned as undergraduate students for one or two years. (Participant 10)

> I would give that course a high evaluation… Assignments of that course were difficult. We needed to discuss with team members intensively every week —really long discussions. We also needed to design the price, keep an eye on the competitors, minimize the stock, and update the business strategy (in running a simulated company). (Participant 11)

RQ2. What stress responses are reported?

Four themes were identified as relating to stress responses. These were summarized by the following terms: Withdrawal, Involvement, Surface learning, and Exploration. Two of these themes are eustress (Involvement and Exploration) while the other two are distress (Withdrawal and Surface learning).

Withdrawal

A withdrawal was signified by participants reducing their attentional and emotional involvement in their courses and relationships. On occasions this extended to participants thinking about leaving their university:

> (When I found I could not hear the sound or see the slides), I would open a game app and find others (many classmates) were (also) logged in. (Participant 13)

> It was in a very lonely state at the beginning… It's so scary… I thought about it (not studying at this university). I wanted to change to another university. (Participant 4)

Involvement

Enhanced involvement generally reflected positive perceptions and was characterized by enhanced engagement and increased effort. Participants displayed higher interest in taking classes and expressing themselves and/or being more devoted to their studies:

> I felt the teacher was paying attention to us so I was willing to have more communication with him… I would try my best to finish the assignments so that he could be happy. (Participant 12)

> I felt my supervisor was kind-hearted. This (the supervisor's support) would encourage me to finish my research with more effort. (Participant 14)

Surface learning

A third theme identified in response to stress was surface learning (Marton and Säljö, 1976). Associated with negative stress perceptions, participants who lacked shared understanding with their supervisors reported the response of surface learning. Despite spending a long time in reading to comply with supervisors' requirements, they felt confused about their learning and could only have few thoughts and findings:

> To discuss with they (the supervisor) every week, you (I) must hand in something (writings). But I did not have a clear goal. I did read books, but I did not know what I was supposed to write… I might start (reading) since Monday, but I still couldn't write out (my findings on Thursday). (Participant 3)

Exploration

The theme of exploration captures a positive response to stress indicated by learning that goes beyond the materials set by teaching staff. Participants' explorations generally focused on intellectual self-improvement or on cultural differences. This response theme contrasts with that of surface learning which was characterized by a narrow, superficial focus:

> (When doing those assignments), I began to think about how I should acquire a (real) business mindset. Maybe (when I work), I could view my tasks in a more macro way. Thinking of products, marketing, and the big commercial environment… instead of focusing on a narrow field. (Participant 11)

When participants engaged with other students to finish demanding tasks, in addition to exploring ways of self-improvement, participants explored cultural diversity and tried to gain a deeper understanding of foreign cultures:

> For example, one (NZ) classmate discussed sustainability from (the perspective) of coffee and coffee beans. I thought it was awesome… (Before, I) neglected the efforts of individuals (in contributing to sustainability)… I think it is actually a process of both sides (different classmates) exchanging information and experiencing different cultures. I think it is good. (Participant 1)

> (After such group work), you (I) would find it (the problems of team conflicts) might not (be caused by) interpersonal (conflicts); (it is about) culture. That is, it's not that they (the foreign members) don't want to understand. In their brains, this knowledge system – this value has been shaped… They are not deliberate. There are indeed cultural differences (or) cognitive differences between us. (Participant 7)

RQ3. How is the management of distress and eustress reported?

Three overarching strategies were identified for minimizing or managing negative stress and one strategy was identified for managing positive feelings of stress. We named the themes Voice, Emotional support, Seeking alternative learning opportunities, and Goal updating. They are described in turn below.

Voice

Students reported voicing their stressful experiences usually by writing to their teachers in the hope that teachers would address the cause of their concerns. This was a strategy associated with some success for distress alleviation:

> (Though the teachers' attitudes could be arrogant), I still sent him emails (to make suggestions)… He accepted (some of my suggestions) and had some changes. I think it is necessary to express my real thoughts and dissatisfaction. (Participant 12)

Connecting with class representatives and seeking official assistance was also reported as an effective approach to making OISs' voices heard:

> They (my classmates) would tell me (that they felt sad because of the teacher's behaviors), and they would write (their thoughts) in a word document… (I) had these meetings together with the Dean, and (I) would tell them (the Dean) directly. These meetings were effective. (Participant 9)

Emotional support

Participants reported that they sought and received emotional support from family members and friends with similar negative experiences. They suggested that such a strategy brought about relief, but the relief was temporary:

> They (my parents) will probably reassure you (me) and say "you don't (need to) worry; you just do it first"… Just after finding a person to tell, (I feel), there is someone who can listen to you (me). (Participant 1)

> Every time when (the teacher) did not send the reading materials in time, I would "tucao" (idiom: complain about) that teacher with my (offshore) classmates. We gritted our teeth and managed to carry on. (Participant 12)

Seeking alternative learning opportunities

In response to negative stressful experiences, participants reported reducing reliance on the sources of stress and seeking alternative sources or methods of learning. They turned to peers, tutors, or third-party institutions for opportunities to learn:

> I actually have fewer contacts with the teacher. Basically, I (study) together with my classmates if I have any questions. Mainly look at what others do and optimize my own methods… A large proportion of the tuition fees' (value) comes from mutual enrichment between classmates… (My classmates) help to offset (some disappointments because of) the teaching quality. (Participant 7)

> I learnt statistics by myself for the doctoral study… I purchased (third-party Chinese) online courses and studied by myself at home. Spent quite a lot of money. (Participant 14)

Goal updating

A final stress management strategy identified was goal updating. Participants reported reflecting on their performance and resetting their achievement goals. This strategy was associated almost exclusively with positive stress and related to elevating goals to maintain pressure. There were no substantial instances of participants reducing their goals in response to negative stress. It appeared that participants set a higher goal, such as more effective information searching based on their own achievements, to continually motivate themselves:

> Use (higher) efficiency to maintain the positive state… For example, I spent an hour in the task of searching for information today… Then for the second day, I may want to finish it (information searching) within 45 or 30 min. To update my plans and goals every day. (Participant 17)

RQ4. Are there associations between perceptions of stressors (RQ1), stress responses (RQ2), and stress management strategies (RQ3)?

Participants' narratives included multiple accounts of causal links between perceptions of stressors, responses, and with management strategies as might be expected from our theoretical framework. In many instances, it was difficult for the authors to identify quotes that related to one research question that did not also include an account relating to the other research questions. When sharing their experiences, participants tended to recall their perception of stressors first and naturally explain their consequential responses and management strategies. It seemed that different stressors evoked perceptions, which correspondingly resulted in dependent stress responses and stress management strategies. The four themes identified in answer to RQ1 were each associated with a unique pattern of responses (RQ2) and management strategies (RQ3). The associations observed are shown in Figure 1 and depict positive and negative experiences originating from socially-based and task-based stressors. Each of the four pathways is described briefly below.

FIGURE 1
An evidence-based conceptual model.

With regards to socially-based stressors, negative perceptions of being rejected were closely associated in participants' narratives with withdrawal responses. When participants perceived themselves to be rejected during study, they reported their intentions or actions of withdrawing engagement from learning activities. To mitigate the feelings of rejection and the need to withdraw, participants utilized their voice and sought emotional support:

> If I found I could not hear the voices (of teachers) or see the slides… there would be less engagement… but we (me and our classmates) would let teachers know there were some issues with the equipment and they (teachers) would adjust in time. (Participant 13)

> We were easily distracted (when on-campus people were talking and their voices were too quiet). The effects (of hybrid courses) were not good, personally… Feeling better when there was a friend to have classes together. We could talk with each other when there was dissatisfaction. (Participant 11)

With stressors perceived as positive and as conveying an attitude of caring, participants reported that they responded by actively connecting with teachers and other students. Participants expressed their gratitude and increasing determination to study harder in order not to fail the efforts paid by their teachers. We did not identify any management strategies that sought to prolong eustress resulting from caring perceptions. There seemed to be a virtuous cycle between the caring stressors and the eustress of involvement. When individuals responded to caring stressors with behaviors characterized by involvement, they tended to look forward to having more communication with the caring stressors so that such a positive state could be naturally maintained:

> You (I) would be embarrassed (if I) did not take classes seriously. You know, the teacher had already taken care of you (me) so much… (When) she really bought it (a camera) for you (me) to have a clearer view during classes, I was about to cry. I was so touched. (Participant 6)

With regard to negative task-based stressors, when participants talked about their learning process being constrained by vague instructions from teachers, they tended to describe a response of surface learning and sought alternative learning opportunities such as learning from classmates or tutors:

> When I felt the teacher did not play a big role… not giving us (students) clear feedback and I had to self-learn, I could be lazy (and think less)… Then I became really confused when doing assignments… Later I would think of solutions because I wanted to pass the course. When I had any questions, I would ask classmates or the tutor. (Participant 1)

Concerning the positive perceptions of being intellectually stretched, participants reported enhanced efforts characterized by exploration and sought to maintain these feelings by engaging in goal updating:

> (That assignment) asked you (students) to directly analyze listed companies from the perspective of an analyst… looking for problems and having individual understanding and analysis… I felt the assignment was practical and thought I could use them in my work… (Then) I would put pressure on myself and… give myself new demands. (Participant 18)

A closer examination of these relationships revealed that rather than a uni-directional flow of cause and effect, the flow of influence could be bi-directional. Regarding eustress, for example, there could be a virtuous cycle between caring stressors and the eustress of involvement. Concerning distress, for instance, the usage of the support-seeking strategy (e.g., seeking emotional support from parents) could only partially mitigate students' distress. Leaving the source (e.g., rejecting stressors) unresolved, students were still likely to experience distress when encountering similar stressors next time.

Discussion and conclusion

This research set out to address research questions relating to the perception of stressors, specific responses, and management strategies pertaining to OISs' distress and eustress. We further sought to examine the associations between perception, responses, and management strategies.

This research makes five contributions to the stress literature. It provides empirical evidence for the separate constructs of distress and eustress. It also extends existing stress models (i.e., the Challenge-Hindrance Framework and the Holistic Stress Model) to an educational context and offers new explanations for stress management strategies. Moreover, it demonstrates an innovative usage of the qualitative research method in developing causal models. Finally, it provides insights into the experience of OISs. Each is discussed below.

This research provides empirical evidence for the constructs of distress and eustress, giving weight to the notion that distress and eustress are separate constructs with distinct sources and consequences. By identifying multiple external stressors related to teaching staff, technology, and course design, our research sheds light on the sources of distress or eustress. Therefore, we contribute to the argument that eustress is not simply the absence of distress, and eustress does not always occur whenever individuals do not experience distress (Simmons, 2000; Simmons and Nelson, 2007).

The research both supports and extends the CHF and the HSM in an educational context. Identified tasked-based perceptions of stressors (Constraining and Stretching) echo the proposed hindrance and challenge stressors in the CHF (Lepine et al., 2004). Socially-based perceptions of stressors (Rejecting and Caring) complement the CHF by suggesting that in addition to stress stemming from academic tasks, students may also experience stress relating to interpersonal communication when they recognize themselves as different (e.g., offshore students) from the majority (e.g., on-campus students). Additionally, identified distress (Withdrawal) and eustress (Involvement) in this research corroborate the components of alienation and engagement incorporated by the HSM (Simmons and Nelson, 2007). Responses

similar to the distress of Surface learning and the eustress of Exploration, though being studied in the tertiary education context (Johnson and Johnson, 2008; Walker, 2012), have not been thoroughly examined in relation to student stress (Van Slyke et al., 2022). The responses of Surface learning and Exploration thus enhance the HSM and provide future research measuring student stress with more options.

For distress management, we suggest that strategies utilized by participants varied with stress perception and could focus on solving the problem that caused the stress (e.g., Voice) or on alleviating the symptoms or responses to stress (e.g., Emotional support). Based on participants' narration, strategies addressing the cause were more impactful in terms of minimizing distress than strategies focusing on the symptoms of stress. Though problem-solving strategies have been extensively studied (Lazarus and Folkman, 1984), the scope of the "problem" remains vague; few studies clarify whether the "problem" researched refers to the cause of distress or the troubling symptoms (e.g., Baker and Berenbaum, 2007; Schoenmakers et al., 2015). Thus, differentiated effectiveness between strategies solving causes and symptoms is under-researched and warrants further investigation.

For eustress management, we identified one strategy (Goal updating) for sustaining task-based eustress (Exploration) but did not identify strategies for prolonging socially-based eustress (Involvement). Findings related to eustress management suggest that task-based eustress such as Exploration may need careful management, in that it may subside when individuals overcome difficulties and do not set new goals to continually motivate themselves. Yet for socially-based eustress such as Involvement, no further management strategy may be needed and the eustress itself may be the predictor of future positive perceptions. This is because there seems to be a virtuous cycle between the eustress and associated stressors. Individuals may wish to have more interactions with relevant stressors, and thus such a positive state can be naturally maintained.

This research utilized a qualitative methodology to explore plausible causal relationships related to distress and eustress. Perception-response-management associations identified by this research resonate with the calling for the innovative usage of interpretive qualitative methodology (Lukka, 2014).

Finally, the research provides insight into the stress-related experiences of OISs, a neglected category of students. By making their voices heard, this research identifies a range of educational stressors that have been inadequately examined (e.g., the hybrid teaching format), contributing to researchers' understanding of student stress in a virtual context (Choo, 2021; Van Slyke et al., 2022).

Future research directions

Our findings indicate three valuable directions for future research. Firstly, our evidence-based conceptual model (Figure 1) suggests that future research on stress should capture the multi-directional flow of influence between perceptions, responses, and strategies. The dominance of quantitative approaches in this field may have led to the neglect of synergistic and multi-directional influences revealed here through our qualitative approach. Secondly, in addition to external conditions, individual differences could also be considered when investigating stressor perceptions. It is likely that students vary in their

views on certain topics, being affected not only by context but also by the interaction between context and personal characteristics (Cabras and Mondo, 2018) and their study habits (Bernardi, 2003). Finally, the topic of eustress remains under-researched, despite, as is suggested here, eustress having constructive behavioral and attitudinal consequences that extend well beyond the pleasure associated with positive responses.

Practical implications

The research has implications for the preparation of students studying as OISs and implications for institutions that provide such educational opportunities.

Participants' perceptions of caring or rejecting stressors alert us to the vulnerability and sensitivities of OISs, the crucial role that staff-student relationships have, and the need for teachers to be attuned to students' emotional well-being. It is highly unlikely that teachers' behaviors or technological issues occurred through intentional neglect. Teaching students in class and online simultaneously places demands on teachers and systems that institutions may be unprepared for (Choo, 2021). Many participants had experiences of learning in hybrid classes and many of the stressors they identified originated in these classes. Our findings attest to the need to prepare students, teachers, and technologies prior to commencing courses with OISs (Lai et al., 2020).

Students' perceptions of task-based stressors underline the importance, relevance, and accessibility of teaching and supervision. We suggest that academic staff could profitably attune their attention to students' feelings about learning and culturally formed expectations as well as attend to students' comprehension (or lack of it). When students are found to lack academic skills or have expectations inconsistent with educators' expectations, staff may need to recognized and accommodate the emotional toll as well as provide time for articulating assumptions and helping students reflect on ideas and develop essential skills (Ezebilo, 2012).

Finally, this research has implications for stress management. It may be that students can be helped to develop differentiated adaptive strategies in response to particular stress perceptions. Students can try strategies identified by this research to manage distress or eustress originating from different socially- or task-based stressors.

Limitations

Study limitations derive from the selection of participants and the data we analyzed. This research was conducted during the period of the COVID-19 pandemic when participants could not go overseas due to visa restrictions. In the main, this was not a situation that either students or their host institutions had anticipated (Wilczewski et al., 2021). This may have influenced their perceptions. Additionally, participants were all Chinese and were postgraduate students; their expectations of study may vary from other students. With regard to data collection and analysis, interviews were used as the only method to collect data, and the researcher did not have opportunities to observe participants or examine objective behavioral data. Additionally, the collected data was only translated by one researcher although as a check, participants had the opportunity to examine

Chinese and English transcripts. However, the translation was carried out meticulously and with regard to recent research on transcription and translation techniques. Additionally, the two phases of data collection and analysis served to indicate that the findings are robust.

Conclusion

This research set out to answer four research questions regarding the perception of stressors, specific responses, stress management strategies, and their associations relevant to the distress and eustress of OISs. Data obtained from semi-structured, in-depth interviews with 18 Chinese participants led to the identification of 12 themes and four causally related pathways connecting perceptions, responses, and management strategies. The research provides empirical support that eustress and distress are separate constructs with distinctive sources, extending existing stress models to an educational context. Additionally, it discloses new insights into students' stress management and proposes a tentative causal model to advance the understanding of OISs. Findings of this research highlight the impact of context on stress perception, suggesting the importance of analyzing the origins, nature, and management of both eustress and distress in future research.

Data availability statement

The de-identified data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Author contributions

WG conducted the interviews, data translation, data transcription, data interpretation, and draft writing and editing. SG conducted the data interpretation and draft writing and editing. All authors contributed to the article and approved the submitted version.

Conflict of interest

Publisher's note

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Burnout prevalence in medical students attending a team-based learning school

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Introduction: Worldwide burnout prevalence among medical students is high. It has a negative impact on students' personal and professional lives as well as on their psychosocial wellbeing and academic performance. It can result in physicians with emotional distancing and indifference to work, and it compromises the quality of healthcare offered to society. This study evaluates burnout in medical students selected by mini-multiple interviews (MMIs) who were being taught by the team-based learning (TBL) method. MMIs are often used to select students with soft skills for medicine, and TBL is related to greater academic achievement, which would allow students to have greater resilience to stress. Information on burnout occurrence is lacking for this type of student.

Methods: Students (N = 143) attending the first three semesters at a private medical school were evaluated. The Copenhagen Burnout Inventory—Student Version (CBI-SV) questionnaire was applied on three occasions (applications = Apps one, two, and three) in each semester. Scores $\geq$ 50 were considered to indicate burnout. Data were analyzed by statistics programs.

Results: Personal-related and study-related burnout frequencies for 1st semester students were, respectively, 24.4 and 22% in App one and rose to 51 and 48.5% at the semester's end. Second- and third-semester students' frequencies reached 80.4 and 78.8%, respectively. Around 40% of 1st semester students having burnout at App one maintained the burnout score. Peer- and teacher-related burnout frequencies are low (4.9 and 2.4%) at the 1st semester App one and rose to the highest (24–30%) by the end of the 2nd semester. Woman students had significantly higher burnout frequencies in the personal- ($p < 0.001$) and study-related burnout subscales ($p = 0.003$). Students living with friends had lower study-related burnout scores than those living with family or alone ($p = 0.024$). There were no significant correlations between the burnout scores and tuition funding (partial or total) or having or not having religious faith.

Discussion: The prevalence of personal- and study-related burnout among medical students of the Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE), perceived via mini-multiple interviews (MMI)—selected and team-based learning (TBL)—taught, was similar to those internationally reported. The college

semester and the gender of woman were associated with worse burnout levels. Additional studies are needed to support more effective actions to reduce the impact of stress on students.

Introduction

Burnout is a psychological syndrome induced by chronic stressors in a work environment characterized by a triad: emotional exhaustion, cynical attitudes and feelings, and low sense of personal accomplishment (Maslach and Jackson, 1981; Lee and Ashforth, 1990).

There is great concern about the mental health of medical students. Medical students have to cope with long study and working hours. Many first- and second-year students had not realized the demanding nature of medical training.

Systematic analysis studies have reported a burnout prevalence of 44.2% (Frajerman et al., 2019) or between 45 and 71% (Ishak et al., 2013) in medical students. More than 50% of first-year students at a British school reported high levels of emotional exhaustion (Guthrie et al., 1998; Cecil et al., 2014). In Brazil, a review and meta-analysis on medical students' mental health found values of 13.1% for burnout prevalence, 49.9% for stress, and 30.6% for depression (Pacheco et al., 2017).

An important matter to consider is what constitutes burnout. A systematic review of the literature found at least 142 burnout definitions (Rotenstein et al., 2018). Many authors have questioned whether the symptoms described for burnout diagnosis are compatible with those of depression. Hintsa et al. (2016) analyzed chronic stress effects, showing that burnout results lost statistical significance when controlled for depression. It is believed that work-related stress is the triggering factor for burnout, but according to Bianchi et al. (2015) stress sources present in social life including work would also be factors underlying burnout and depressive disorders.

Admission to medical schools in Brazil occurs after the completion of 3 years of high school, when the students generally are 17–20 years old. Medical schools in Brazil, public or private, select their students by written examinations based on the high school curriculum. Students with the highest marks are selected for admittance. There are no interviews or any other form of appraisal of the candidate's personality. The teaching methods are traditional with few adaptations.

The medical school of the Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE) is located in São Paulo and, from its beginning, innovated the admission process and the teaching methodology of its medical course. Candidates first undergo a multiple-choice test on high school subjects. In a second phase, they attend mini-multiple interviews (MMI) to evaluate personal competences for the practice of medicine such as empathy, ethics, teamwork, and communication (Costa et al., 2013). The final selection takes into consideration their performance in both phases.

The methodology of the FICSAE medical course is team-based learning (TBL), which is an inter-active learning method. It is grounded in the acquisition of knowledge by discussions among students organized in small groups (Burgess et al., 2017). The students are required to study a subject on their own and are evaluated before and after discussions with colleagues and, in sequence, with a teacher. Active learning requires discipline from the student in order to cope with the required study load throughout the semester (Carrasco et al., 2021). Weekly tests, conceived to stimulate constant learning, can be a source of stress. However, because of the method's focus on group learning, TBL offers students the opportunity to develop social skills such as mutual help, respect for diversity of opinions, and self-esteem and self-control (Carrasco et al., 2021).

Methods such as MMI and TBL aim to select and train students in medical science and in the socio-emotional abilities considered as important skills for a good doctor (Englander et al., 2013). Selection by MMI is related to greater academic achievement and is possibly a predictor of performance after graduation (Scott and Markert, 1994; Reiter et al., 2007; Eva et al., 2012; Lee et al., 2016; Yusoff, 2019).

It is important that MMI-selected medical students adapt better to the demands of training. Similarly, it would be expected that TBL-taught students, because of the mutual collaboration inherent to the method, would be more resilient to the stress of medical training programs. Nevertheless, a search of the literature found no published studies on psychological aspects such as satisfaction with academic life, general wellbeing, or the occurrence of burnout in medical students selected by MMI and/or taught by TBL.

The hypothesis tested in the present study is whether the prevalence of burnout syndrome would be lower in FICSAE medical students because they were selected by MMI and taught by TBL, in comparison to medical students taught by traditional teaching methods, who are selected solely by their knowledge of high school subjects. Theoretically, MMI selection plus the TBL teaching method would impart more resilience to stress. This study investigated the prevalence of burnout syndrome in first-year and second-year FICSAE students in order to identify correlated socio-demographic variables. The findings of the present study are compared to the existing research on the prevalence of burnout syndrome among medical students.

Materials and methods

Participants and ethical aspects

First, second and third-semester students attending FICSAE in 2017 were eligible to participate in the study ($N = 150$). The study was approved by the Research and Ethics Committee of

Hospital Albert Einstein, to which FICSAE belongs, under number 2.233.372. Voluntary participants signed an informed consent form before receiving the study questionnaires. All measures were taken to guarantee the confidentiality of the data and to prevent any social exposure. The main researcher was the only person to access the questionnaires, and there was no nominal disclosure of participants.

Study measures/Data collection

This study was a prospective observational research. The questionnaires were implemented on three occasions in the semester at intervals of approximately 7 weeks. Application took place in FICSAE classrooms. Each of the three occasions avoided the period of final exams or the resumption of classes after vacation. The two questionnaires were:

(1) A socio-demographic questionnaire to characterize the included population according to their age, gender, marital status, medical school semester, existence of housemates, tuition funding, and religion.
(2) Copenhagen Burnout Inventory—Student Version (CBI-SV): a questionnaire created to assess several aspects of the burnout syndrome in students. The CBI-SV questionnaire comprises questions related to four aspects (called subscales) of burnout: personal burnout (six items), study-related burnout (seven items), peer-related burnout (six items), and teacher-related burnout (six items).

All items are rated on a scale of 1–5 points: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always. The subscale scores were validated for publishing in Brazilian Portuguese language (Reiter et al., 2007). The answers to each item were assigned values: never = 0, rarely = 25, sometimes = 50, often = 75, and always = 100. Item ten is scored in reverse order (Campos et al., 2013).

The final score of each subscale was the average mean of its items' scores, varying from 0 to 100. Values equal to or greater than 50 points were considered as the burnout level, and these four subscales were analyzed separately (Borritz and Kristensen, 2004; Campos et al., 2013).

The application, computing, and analysis of the data were performed according to published guidelines (Borritz and Kristensen, 2004). In order to calculate a score, a minimum number of items had to have been answered: at least three items in the subscales for personal, peer-related, and teacher-related burnout and at least four items in the study-related burnout subscale (Borritz and Kristensen, 2004).

Statistical analysis

The analysis was performed with the IBM SPSS Statistics for Windows program, version 24.0, and p-values were adjusted by the computer software R, version 3.4.1, and a 5% significance level was considered. To identify further associations between semester progression and the socio-economic data, estimation equations with binomial distribution considered the inter-dependence of evaluation for each student. The adjusted mean values and 95% CI were compared with p-values corrected by the sequential Bonferroni method.

Results

A total of 97% of all the invited students participated in the study, comprising 143 medical students from the first, second, and third semesters. For the full sample, 60.8% participated in all three questionnaire applications, 25.9% participated twice, and 13.3% participated only once. The sample parameters are available as a **Supplementary Table 1**.

As shown in **Figure 1**, mean scores of ≥ 50 were most evident in the questionnaires that explored personal- and study-related subscales. In contrast, peer-related and teacher-related mean scores were well below the 50 points score, although a significant number of students had burnout scores of ≥ 50 in these subscales.

Table 1 shows the percentage of students with burnout scores tested for the various subscales at different time points during the first three semesters of medical school. In the first semester of the medical course, the personal- and study-related burnout frequencies showed a marked increase from the first application to the second, and they roughly doubled in value by the third application ($p < 0.05$), in which nearly 50% of the students had burnout-compatible scores. It is of note that the questionnaires were applied with intervals of only 7 weeks. These values remained high at the first implementation for the second-semester students, and they increased as the semester progressed ($p < 0.05$ once compared first and second applications and first and third). The highest frequencies of personal- or study-related burnout were seen at the beginning (first application) of the third semester, tending to a small reduction and stabilization as the semester progressed.

The percentage of medical students with peer-related burnout scores was small at the beginning of the first semester (approximately 5%), but it doubled over the semester. The highest values were observed at the middle of the second semester and at the end of the third semester. Teacher-related burnout frequency was 2.4% at the start of the first and second semesters, increasing by the second and third questionnaire applications; the values were highest (30.3%) in the middle (second application) of the second semester. In the third semester, the frequencies markedly decreased to values between 6.5 and 12.5%.

This study allowed other analyses. Approximately 22% of the students, who had low scores at the first application of the personal- and study-related subscales, maintained their low scores throughout the two subsequent applications. Conversely, 38–41% who had scores that were ≥ 50 maintained their scores (data not shown).

In relation to gender, woman students presented higher frequencies of burnout than colleagues who were men in the personal-related burnout ($p < 0.001$) and study-related burnout ($p = 0.003$) subscales. Students living with friends had lower study-related burnout scores than those living with family or alone ($p = 0.024$). There were no significant correlations between the burnout scores and tuition funding (partial or total) or having or not having religious faith.
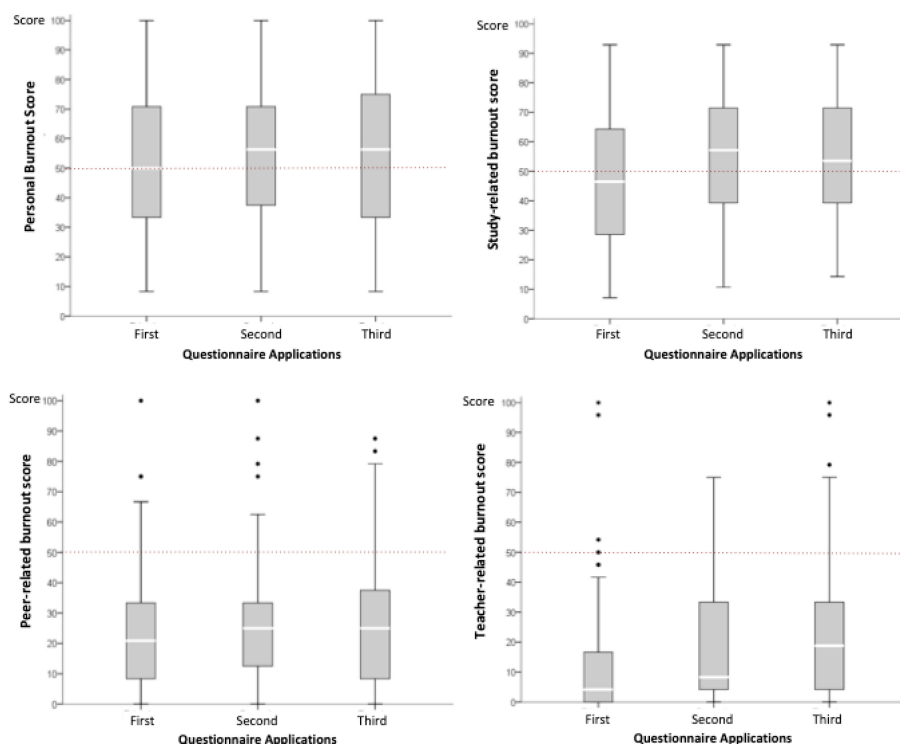
FIGURE 1

Distribution of scores obtained in Copenhagen Burnout Inventory—Student Version (CBI-SV) subscale questionnaires applied to Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE) students at the beginning, middle, and end of the first three semesters of medical school. The subscale types of CBI-SV questionnaires applied were personal-related, study-related, peer-related, and teacher–related. The white line in the boxplots is the median, and the below and above limits represent the first (25%) and third (75%) quartiles, respectively. Maximum and minimum values are indicated by whiskers, and outliers are shown as asterisks. The transversal line marks the score of 50, which is the threshold considered as burnout in CBI-SV questionnaires. The number of students answering the questionnaires varied from 106 to 143.

TABLE 1 Percentage of Faculdade Israelita de Ciências da Saúde Albert Einstein (FICSAE) students with burnout-compatible scores in the Copenhagen Burnout Inventory—Student Version questionnaires applied at the beginning, middle, and end of the first three semesters of medical school.

Medical school semesters	First semester			Second semester			Third semester		
CBI-S burnout subscales	1st appl	2nd appl	3rd appl	1st appl	2nd appl	3rd appl	1st appl	2nd appl	3rd appl
Personal	24.4*[†]	40.5*[$]	51.5*	61.0[†]	73.7*[$]	69.7	80.4[†]	72.5*[$]	67.5
Study-related	22.0*[†]	39.0*[$]	48.5*	43.9*[†]	73.7*[$]	78.8*[†]	78.3*[†]	67.5*	65
Peer-related	4.9	12.2	9.1	17.1	23.7	15.2	13	10	22.5
Teacher-related	2.4	9.8	12.1	2.4	28.9	30.3	6.5	12.5	10
Number of students	41	41	33	40	38	33	47	41	40

Burnout-compatible scores in CBI-SV: ≥ 50. Percentages in relation to the number of valid questionnaires.

[†]Differences between semesters in the same subscale significant at $p \leq 0.01$.

[$]Differences between semesters in the same subscale significant at $p < 0.05$.

*Differences in the same subscale significant at $p < 0.05$.

Discussion

We found that the median prevalence of personal- and study-related burnout scores (≥ 50) in FICSAE students selected by MMI and taught by the TBL methodology was high and varied from 24.4%, at the start of medical school training to 80.4% by the third semester of medical school. These frequencies were closer to the 45–71% burnout levels reported in published systematic review studies of medical schools outside Brazil (Ishak et al., 2013).

However, it is difficult to compare data obtained by different methods or inventories. The Maslach Burnout Inventory (MBI)

was used to evaluate emotional exhaustion among British and American medical students, showing a prevalence of 54.8 and 35–45%, respectively (Cecil et al., 2014; Dyrbye and Shanafelt, 2016). It should be mentioned that these results are not directly comparable to this study described herein, which utilized the CBI-SV, although some items are similar to the MBI emotional exhaustion scale (Maroco and Campos, 2012).

Studies conducted in Brazilian schools, mostly using MBI, reported frequencies of 13.1% (Pacheco et al., 2017) and 12% (Barbosa et al., 2018) for medical students who underwent traditional admission exams to medical schools and who had been

taught by conventional teaching methods, respectively. Moreover, regionalism could possibly explain the variation of Brazilian results and the international prevalence of burnout. All Brazilian studies were carried out in the Northeast Region, while the main and most competitive medical schools are located in the Southeast Region, where the school environment becomes more competitive and stressful. At the University of São Paulo, the most competitive Brazilian medical school, a longitudinal study by Millan and Arruda (2008) showed that only 27% of students passed their first attempt to enter college, whereas 41% made two attempts, and 32% made three or more attempts.

Taken together, the results from the present study indicate that personal- and study-related burnout are critical factors in the academic life of FICSAE students. On the other hand, the relationship with colleagues or teachers was not a stressful factor for most students, as the frequencies observed for these subscales were much lower than those for personal- and study-related burnout. However, as expected, in each semester as time passed, gradual increases were observed in the number of students manifesting peer- and teacher-related burnout. The higher frequencies of teacher-related burnout in the second semester possibly reflect difficulties with a particular teacher or subject, considering the sharp reduction during third semester. In general, the low frequencies of students with peer- or teacher-related burnouts probably reflect the TBL method, which encourages cooperation among students and promotes a closer relationship with teachers. These results are novel, as there are no published reports of the effects of interpersonal relations for TBL-taught students.

The high personal- and study-burnout frequencies at the beginning of the semester affecting 22–24% of the students were not expected. Medical students present a demanding trait for high personal performance (Millan and Arruda, 2008), which, allied to highly competitive admission tests, (Pacheco et al., 2017) might have contributed to those high frequencies. Significantly, around 40% of students maintained the burnout scores throughout the first semester, signaling that this group of students requires special attention.

A multi-center study by Dyrbye et al. (2009) indicates that dissatisfaction with the academic environment and the level of perceived support is more closely associated with first-year and second-year burnout. As students advance, other factors, many related to clinical practice, become important in burnout development. Therefore, effective strategies to optimize the learning environment should be developed for different phases of the medical training curriculum (Dyrbye et al., 2009).

In the present study, women presented higher scores for personal- and study-related burnout than men. Other authors found no difference in general burnout levels between genders, although men present higher depersonalization scores and women higher emotional exhaustion scores (Mazurkiewicz et al., 2012; Cecil et al., 2014; Dyrbye et al., 2014). While religion and receiving or not receiving a scholarship did not affect burnout, rather the factor of living with friends is correlated with lower study-related burnout in comparison to students living with family or alone. Perhaps, individuals who are going through the same moment of crisis feel less fragile and more secure (Saito et al., 2014).

Another question to be raised is to what extent burnout questionnaires yield evidence of real burnout. The most widely used is the Maslach Burnout Inventory (MBI), which was conceived to evaluate three dimensions: emotional exhaustion, depersonalization, and low personal accomplishment at work (Maslach and Jackson, 1981). We deemed that MBI-HSS (Human Services Survey) would not be an adequate method to evaluate first- and second-year medical students because they have only minimal interaction with patients, and for them the most prevalent factor is emotional exhaustion (Mazurkiewicz et al., 2012). Therefore, the present study utilized the CBI-Student Version, a scale that has been validated for the Brazilian Portuguese language (Campos et al., 2013).

As for the limitations of the present study, the study design was cross-sectional and, thus, limited to the first three semesters, and anxiety and depression were not investigated, which can underlie burnout.

In conclusion, the prevalence of personal- and study-related burnout in FICSAE medical students reached significant values, similar to those reported internationally, despite having been selected by MMI and taught by TBL methods. Team-based learning stimulates participation in classes and interest in learning among the so-called Generation Z (Toledo et al., 2012). However, persistent stress can seriously affect the students' psychological wellbeing. Medical schools have the responsibility to support the students to reduce the impact of stress and to make institutional efforts to facilitate academic achievement (Dyrbye et al., 2006; West et al., 2016).

Data availability statement

The original contributions presented in this study are included in the article/**Supplementary material**, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by Research and Ethics Committee of Hospital Albert Einstein. The patients/participants provided their written informed consent to participate in this study.

Author contributions

SK and ET contributed to the conception and design of the study. SK organized the database, performed the statistical analysis, and wrote the first version of the manuscript. Both authors contributed to the review of the manuscript, read, and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2023. 1091426/full#supplementary-material

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Exploring the influence of national music lessons on subjective well-being, self-esteem, and national identity among university students: a case study from China

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This study aims to explore the influence of national music lessons on university students' subjective well-being, self-esteem, and national identity. A Chinese university provided four national music courses spanning 8 weeks. The students' subjective well-being, self-esteem, and national identity were measured before the commencement of the courses (T1), the fourth week of the courses (T2), and post the completion of the courses (T3). A total of 362 participants completed the Positive and Negative Affect Scales, the Satisfaction with Life Scale, the Rosenberg Self-Esteem Scale, and the National Identity Scale at T1, T2, and T3. Results indicated that national music lessons could improve university students' subjective well-being, yet there was no effect on their national identity or self-esteem. Although high national identity and high self-esteem predicted a greater level of subjective well-being, self-esteem and national identity did not affect the influence of national music lessons on subjective well-being. National music lessons were particularly beneficial to students with low and middle levels of subjective well-being, in comparison to those with higher levels of subjective well-being. This paper verifies an efficient method to bolster students' subjective well-being that can be conducted in educational practices.

KEYWORDS

national music lessons, subjective well-being, national identity, self-esteem, university students

1. Introduction

1.1. Subjective well-being and music lessons

Happiness is a spiritual feeling that has been sought out by people all their lives, and it has a far-reaching impact on all areas of an individual's life. The indicator of happiness in positive psychology is subjective well-being, which refers to people's general evaluation of life quality according to their own standards and feelings (Diener, 1984). Diener (2000) has identified three aspects of subjective well-being: positive affect (PA), negative affect (NA), and satisfaction with life (SWL). A person's subjective well-being is associated with better mental health and low levels of depression and anxiety (Burns et al., 2011). After conducting a study collecting students' written reflections, Backman (2016) suggested that subjective well-being is connected to learning, school engagement, appreciation of subjects or lesson content, others' happiness, and

prosocial behavior in a bidirectional crossovers fashion. Therefore, enhancing students' subjective well-being can bring about beneficial changes in many areas of their life.

Tejada-Gallardo et al. (2020) proposed the incorporation of effective interventions into the curriculum as a viable way to improve students' mental health. Implementing music courses for college students may be a productive method to enhance their subjective well-being. On the one hand, music can be employed as a means to regulate emotions (Randall et al., 2014). Research from the past has indicated that music could have a beneficial impact on one's mental health by improving their emotional experiences (Leung and Cheung, 2020). Music classes provide opportunities for students to unwind and alleviate stress by listening to music. As a prior investigation has demonstrated, attending school concerts could foster students' subjective well-being (Kwon et al., 2020). On the other hand, music education has a positive effect on mental health, as reflected in the results of many previous studies (Osmanoglu and Yilmaz, 2019; Mehraban, 2020; Sun, 2022). Mehraban (2020) believed that incorporating music education programs as a distinct curriculum could be an approach to bolster the mental health of students. By offering music courses in colleges and universities, students can gain an appreciation of the aesthetic, humanistic, and inheritance values of music (Behr et al., 2016). National music courses may benefit university students' subjective well-being as a form of the music curriculum.

1.2. National music lessons and national identity

National music is a genre of music exclusive to a national group, characterized by its national features (Wang, 2001). National music comes from the social life and productive labor of various ethnic groups with its unique musical style (Regev, 2007; Dong, 2015). For example, Chinese national music consists of folk songs, folk instrumental music, folk dance, opera music, and rap music (Du, 2006). Chinese national music lessons offer the chance to acquire knowledge of Chinese national music, admire its beauty, and participate in singing it. Instruction in Chinese national music can be accessed at various educational levels, such as primary, junior high, senior high, and college. Chinese national music is a long-standing symbol of Chinese culture (China Culture, 2021). Appreciating national music is not as boring as learning national culture and knowledge. As the carrier of national culture, national music is a more acceptable form of cultural communication.

Social identity theory suggests that group membership is a fundamental part of an individual's identity and self-concept (Tajfel, 1982). National identity refers to one's sense of mutual belonging and obligation to a national group, including the part of one's cognition, emotion, and behavior that is due to membership in that national group (Newman, 2005; Ha and Jang, 2014). The development of ethnic identity is dependent upon two processes: National socialization, in which people gain the behaviors, perceptions, values, and attitudes of their national group, and enculturation, the process of familiarizing oneself with and accepting their traditional national culture (Phinney, 1989, 1990). In certain countries and regions, music education is actively contributing to the promotion of national identity and

cultural development through national musical art (Ho and Law, 2020). Boer et al. (2013) considered that national music is a source of national identity construction. They have provided empirical evidence based on six cultures that national music preference is linked with one's national identity. National music lessons offer students the chance to gain knowledge of national cultures, aiding them in developing a stronger sense of national identity. Thus, national music lessons may contribute to the national identity of university students in a positive manner.

1.3. Self-esteem and national music lessons

Self-esteem is an individual's global judgment or overall evaluation of self-competence and self-value (Rosenberg, 1965). It has been demonstrated by a previous study that individuals with high self-esteem have better work performance, better interpersonal relationships, more happiness, and a healthier lifestyle (Baumeister et al., 2003). A meta-analysis has established that there is a correlation between self-esteem and one's job satisfaction and performance (Judge and Bono, 2001). Self-esteem is not only closely related to one's personal life but also to one's national identity. Previous research has revealed that national socialization and national identity could bolster an individual's self-esteem (Lee et al., 2018). The predictive effects of national socialization and identity on self-esteem have also been observed in samples from China (Kuang and Nishikawa, 2021). National music education has the potential to cultivate a sense of national identity, which may also boost students' self-esteem. Several studies have indicated that music could be beneficial in improving a person's self-esteem. Chen et al. (2016) conducted a study to assess the impact of group music therapy on the mental health of Chinese prisoners, focusing on anxiety, depression, and self-esteem. They determined that group music therapy is an effective approach to improving anxiety, depression, and self-esteem. Yücesan and Şendurur (2018) discovered that music therapy, poetry therapy, and creative drama had a beneficial effect on the self-esteem of university students. The investigation of Sun (2022) has uncovered that music education could strengthen college students' self-efficacy and self-esteem, thus improving their mental health. Through the music education offered by a national music course, university students may experience an improvement in their self-esteem.

1.4. Current study

This study intends to examine the impact of national music lessons on national identity, self-esteem, and subjective well-being among university students. To accomplish the goal of this study, a longitudinal survey was conducted at a university in China to serve as a case study. This study evaluates the role of Chinese music lessons by analyzing the differences in national identity, self-esteem, and subjective well-being of college students at three-time points. Based on previously available evidence, the hypotheses can be drawn:

H1: National music lessons can enhance university students' subjective well-being.

H2: National music lessons can cultivate university students' national identity.

H3: National music lessons can improve university students' self-esteem.

2. Materials and methods

2.1. Study design and participants

This study was conducted in September–November 2022 at a Chinese university. The university offered four Chinese national music optional courses for sophomores, juniors, and seniors. The course contents mainly included: (1) Learning the knowledge of folk songs, appreciating and singing folk songs; (2) appreciating and singing minority songs; (3) appreciating national dance music; (4) learning the knowledge of national special instrumental music, and admiring the compositions performed by national instrumental music. The courses spanned 8 weeks. Data collection occurred at three points: before the commencement of the courses (T1), the fourth week of the courses (T2), and post the completion of the courses (T3). Each data collection included the measurements of national identity, self-esteem, and subjective well-being.

G*Power 3.1.9.7 was employed to determine the minimum sample size necessary (Faul et al., 2007). In line with the study design, *a priori* power analysis of ANOVA (Repeated measures, within factors) was conducted, with an effect size of $f = 0.15$, $α = 0.01$ (i.e., significant level), and 1- $β = 0.99$ (i.e., statistical power). The outcome of the calculation revealed a sample size of 206. A total of 393 students who were enrolled in the Chinese national music lessons completed questionnaires at T1. Among them, 369 participants followed our survey at T2. After T3, we confirmed that only 362 participants had finished all three questionnaires. The age of the participants ranged from 18 to 24 (Mage = 20.06 ± 0.90). Regarding gender, there were 153 males (42.3%) and 209 females (57.7%). In terms of grades, 78 students (21.5%) were sophomores, 279 students (77.1%) were juniors, and 5 students (1.4%) were seniors. As for the major, 203 students (56.1%) were majoring in natural science and engineering, 143 students (39.5%) in humanities and social sciences, and 16 students (4.4%) in art and aesthetics. Furthermore, 91 students (25.1%) were only children, and 271 students (74.9%) had siblings.

2.2. Measures

2.2.1. Positive and negative affect scale

The Positive and Negative Affect Scale (PANAS) was used to measure both positive and negative affect, which contains 10 items for positive affect and 10 items for negative affect (Watson et al., 1988). Huang et al. (2003) provided a Chinese version of PANAS. Participants were asked to rate each item on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely), to measure the extent to which they had experienced the affect in the past month. In this study, Cronbach's alphas for the Positive Affect (PA) subscale were 0.88, 0.91, and 0.89

at T1, T2, and T3, respectively. For the Negative Affect (NA) subscale, Cronbach's alphas were 0.89, 0.91, and 0.90 at T1, T2, and T3, respectively.

2.2.2. Satisfaction with life scale

Satisfaction with life was assessed using the Satisfaction with Life Scale (SWLS; Diener et al., 1985). The Chinese version of SWLS was translated by Xiong and Xu (2009). The SWLS presented five statements to which participants responded with their level of agreement on a 7-point Likert scale, from 1 (strongly disagree) to 7 (strongly agree). In the present study, Cronbach's alphas for the SWLS were 0.86, 0.88, and 0.87 at T1, T2, and T3, respectively.

2.2.3. Rosenberg self-esteem scale

The Rosenberg Self-Esteem Scale (RSES) was implemented to measure self-esteem (Rosenberg, 1965). The Chinese translation of RSES has completed verification (Wang et al., 1999). RSES was composed of 10 items, each with a rating from 1 (strongly disagree) to 4 (strongly agree). Wu et al. (2017) ascertained that item 8 should be regarded as a positively worded item when evaluating Chinese samples. In this study, Cronbach's alphas for the RSES were 0.90, 0.88, and 0.89 at T1, T2, and T3, respectively.

2.2.4. National Identity Scale

National Identity was measured using the National Identity Scale (NIS; Dong et al., 2015). It consisted of three dimensions: exploration, affirmation, and confirmation. Exploration involves actively participating in activities to gain knowledge about the nation. Affirmation represents the degree of the individual's acceptance of the group identity. Confirmation refers to the individual's recognition and sense of mission for the nation. NIS consisted of fifteen items. Participants were asked to rate their agreement on a 4-point scale, ranging from 1 (strongly disagree) to 4 (strongly agree). In the current study, Cronbach's alphas for the NIS were 0.89 at T1, and 0.91 at T2 and T3.

3. Results

Statistical analysis for this study was conducted using IBM SPSS, version 28.0. Referring to the method of the previous study (Haslam et al., 2009), SWB was calculated by standardizing the SWLS and the PANAS and then combining them (SWB = SWLS + PA − NA).

3.1. Subjective well-being of university students

We conducted a one-way ANOVA using time as the within-subject factor (T1, T2, T3) to examine the effect of national music lessons on university students' subjective well-being. As the outcome of Mauchly's test of sphericity was significant ($p < 0.001$), statistics should be reported with Greenhouse–Geisser correction. There was a significant effect of time, $F (1.91, 688.71) = 11.03$, $p < 0.001$, partial eta$^2 = 0.03$. Multiple comparisons (Bonferroni corrected) revealed that students' subjective well-being at T1 ($M = -0.22$, $SE = 0.11$) was significantly lower than at T2 ($M = 0.15$, $SE = 0.12$, $p < 0.001$) and T3 ($M = 0.08$, $SE = 0.11$, $p < 0.001$). From T2 to T3, there was no change in

the students' subjective well-being ($p = 1.000$). The results are depicted in Figure 1.

3.2. National identity and self-esteem of university students

A one-way ANOVA was conducted to evaluate the impact of national music lessons on university students' national identity, with time (T1, T2, T3) as the within-subject factor. The result of Mauchly's test of sphericity was not significant ($p = 0.063$). There was no significant effect of time, $F(2, 722) = 2.19$, $p = 0.112$, partial eta$^2 < 0.01$. It was unnecessary to carry out multiple comparisons.

Similarly, a one-way ANOVA using time as the with-subject factor (T1, T2, T3) was conducted to test the influence of national music lessons on university students' self-esteem. The result of Mauchly's test of sphericity revealed significance ($p = 0.003$), and consequently we report statistics with Greenhouse–Geisser correction. There was no significant effect of time, $F(1.94, 700.15) = 2.20$, $p = 0.111$, partial eta$^2 < 0.01$. It was no need to conduct multiple comparisons.

3.3. Exploratory analyses on university students' subjective well-being

The above results have demonstrated that national music lessons have an impact on subjective well-being, but no influence on self-esteem or national identity. To further explore whether there are individual differences in the influence of national music lessons on subjective well-being, we carried out a series of exploratory analyses. The participants were distinguished depending on their ethnic identity, self-esteem, and subjective well-being at T1, which were identified as three levels: high, medium, and low. As per accepted psychometric standards, those in the upper 27% are classified as high level, those in the lower 27% are classified as low level, and those in between are regarded as middle level.

We conducted a 3 (group: low national identity, middle national identity, high national identity) × 3 (time: T1, T2, T3) mixed-measures

FIGURE 1
Subjective well-being of students at the T1, T2, and T3. The error bars represent standard errors. ***$p < 0.001$.

ANOVA to determine whether the various levels of national identity had an impact on national music lessons influencing subjective well-being. Mauchly's test of sphericity was significant ($p < 0.001$), and we present statistics with Greenhouse–Geisser correction. The main effect of time was significant, $F(1.91, 686.21) = 9.74$, $p < 0.001$, partial eta$^2 = 0.03$. Similarly, the main effect of group was also significant, $F(2, 359) = 29.93$, $p < 0.001$, partial eta$^2 = 0.14$. Nevertheless, the interaction of time and group was not significant, $F(3.82, 1372.42) = 1.08$, $p = 0.365$, partial eta$^2 < 0.01$. There was not necessary to conduct a simple effect analysis. Multiple comparisons (Bonferroni corrected) showed that students with high national identity had higher subjective well-being ($M = 0.91$, $SE = 0.18$) than those with middle national identity ($M = 0.01$, $SE = 0.14$, $p < 0.001$) and low national identity ($M = -1.18$, $SE = 0.20$, $p < 0.001$). Students with middle national identity had higher subjective well-being than those with low national identity ($p < 0.001$).

To explore whether self-esteem had an impact on national lessons affecting subjective well-being, a 3 (group: low self-esteem, middle self-esteem, high self-esteem) × 3 (time: T1, T2, T3) mixed-measures ANOVA was conducted. Mauchly's test of sphericity was significant ($p < 0.001$), and statistics should be reported with Greenhouse–Geisser correction. Results indicated a significant main effect of time, $F(1.91, 684.46) = 9.74$, $p < 0.001$, partial eta$^2 = 0.03$, as well as a significant main effect of group, $F(2, 359) = 111.09$, $p < 0.001$, partial eta$^2 = 0.38$. However, the interaction of time and group was not significant, $F(3.81, 1368.92) = 0.582$, $p = 0.668$, partial eta$^2 < 0.01$. It was not necessary to carry out a simple effect analysis. Multiple comparisons (Bonferroni corrected) showed that students with high self-esteem had higher subjective well-being ($M = 1.71$, $SE = 0.16$) compared to those with middle self-esteem ($M = -0.14$, $SE = 0.12$, $p < 0.001$) and those with low self-esteem ($M = -1.63$, $SE = 0.16$, $p < 0.001$). Students with middle self-esteem had higher subjective well-being than those with low self-esteem ($p < 0.001$).

To examine if the effects of national music lessons on subjective well-being were suitable for students with different levels of subjective well-being, a 3 (group: low subjective well-being, middle subjective well-being, high subjective well-being) × 3 (time: T1, T2, T3) mixed-measures ANOVA was conducted. Mauchly's test of sphericity demonstrated significance ($p < 0.001$), and we report statistics with Greenhouse–Geisser correction. Results revealed a significant main effect of time, $F(1.91, 685.97) = 12.29$, $p < 0.001$, partial eta$^2 = 0.03$, a significant main effect of group, $F(2, 359) = 346.23$, $p < 0.001$, partial eta$^2 = 0.66$, and a significant interaction between the two, $F(3.82, 1371.94) = 10.72$, $p < 0.001$, partial eta$^2 = 0.06$. A simple effects analysis (Bonferroni corrected) showed that students with high subjective well-being had no significant difference across T1 ($M = 2.39$, $SE = 0.10$), T2 ($M = 2.28$, $SE = 0.18$), and T3 ($M = 2.09$, $SE = 0.16$, all ps > 0.09). For students with low subjective well-being, national music lessons can enhance their subjective well-being from T1 ($M = -2.69$, $SE = 0.10$) to T2 ($M = -1.59$, $SE = 0.18$, $p < 0.001$) and T3 ($M = -1.82$, $SE = 0.16$, $p < 0.001$). There was no significant difference from T2 to T3 for students with low subjective well-being ($p = 0.440$). For students with middle subjective well-being, national music lessons can enhance their subjective well-being from T1 ($M = -0.31$, $SE = 0.08$) to T3 ($M = 0.01$, $SE = 0.12$, $p = 0.010$). There was no significant difference from T1 to T2 ($M = -0.08$, $SE = 0.13$, $p = 0.249$), and T2 to T3 ($p = 1.000$) for students with low subjective well-being (Figure 2).
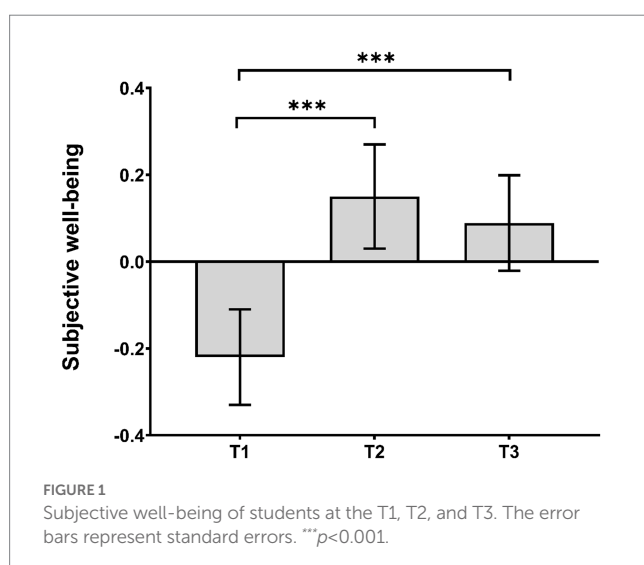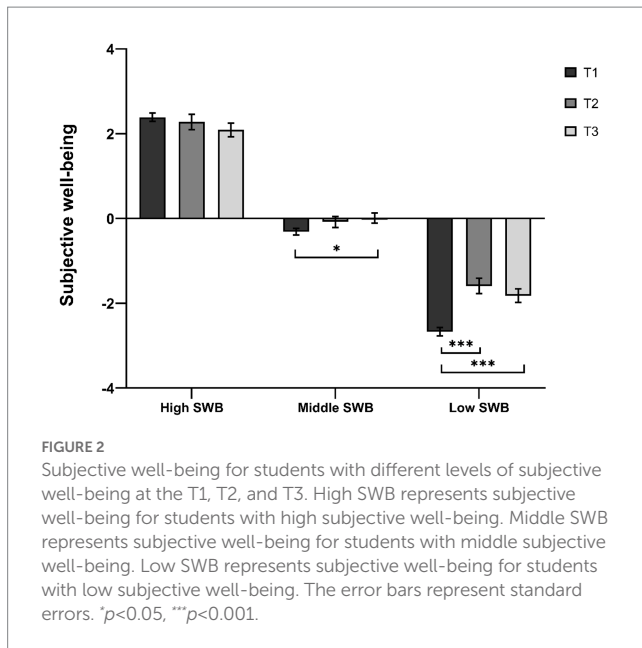
4. Discussion

Based on a case from China, the current longitudinal study aims to explore the influence of national music lessons on university students' national identity, self-esteem, and subjective well-being. The results reveal that national music lessons can enhance students' subjective well-being, but there was no impact on their self-esteem or national identity. In addition, our exploratory analyses demonstrate that national music lessons can only improve subjective well-being for students with low or middle levels of subjective well-being, not for those with high levels. Self-esteem and national identity do not impact the influence of national music lessons on subjective well-being.

4.1. National music lessons enhance the subjective well-being of university students

This study verifies H1 that national music lessons can enhance the subjective well-being of university students. Previous research has established the efficacy of music listening as a strategy to regulate emotions (Randall et al., 2014). During music lessons, teachers provide their students with opportunities to listen to and enjoy music, which helps students to cope with their stress and anxiety. Furthermore, music can facilitate the implementation of other emotion regulation strategies such as distraction and reappraisal (Carvalho et al., 2022). Through national music lessons, students can divert their attention away from negative experiences or unpleasant feelings they have experienced in their daily lives. Music listening in class has a relaxing effect on the students, making them feel at ease (Saarikallio et al., 2017). Through national music lessons, students can experience improvements in their emotional well-being and life satisfaction.

The results of this study indicate that national identity and self-esteem have correlations with personal subjective well-being. Those with a strong sense of national identity or a high level of self-esteem tend to experience greater subjective well-being. The findings are

consistent with previous research. Higher national identity is related to stronger emotional connection, thus contributing to greater subjective well-being (Canto and Vallejo-Martín, 2021). Self-esteem has a spillover effect on subjective well-being, with an increase in self-esteem causing an enhancement of one's subjective well-being (Pierce et al., 2015). However, national identity and self-esteem do not appear to affect the influence of national music lessons on university students' subjective well-being. It has been observed that regardless of the level of self-esteem and national identity, national music lessons have a similar effect on the students' subjective well-being. Music lessons have a varied impact on students depending on their subjective well-being. Specifically, students with low or middle subjective well-being can benefit from taking music lessons. Students with high subjective well-being remain unaffected by music lessons. It appears that there is an upper threshold for happiness experience, making it hard to enhance the pleasure of those who already possess a high degree of subjective well-being.

4.2. National music lessons have no effect on self-esteem and national identity

This study demonstrates that national music lessons cannot affect the self-esteem and self-identity of university students. H2 and H3 should be refused. The formation of national identity in adolescence is a lasting trait (Newman, 2005). Thus, this sense of belonging and responsibility towards the national group remains stable in adults. Despite the national music course providing students with an understanding of national music and culture, it is unlikely to cause a significant change in a stable trait for adults within 8 weeks. Self-esteem is relatively stable for adults, but not immutable for long periods (Orth and Robins, 2014). The self-esteem of university students through the short-term national music course is hard to improve because of other stable determinants factors like socioeconomic status, physical attractiveness, and the degree of intimacy (von Soest et al., 2016).

4.3. Implications, limitations, and suggestions for future research

This study has outstanding practical value, in addition to its theoretical implications. In theory, this study further expands the relationship between music and subjective well-being, proving that national music lessons can promote university students' subjective well-being. Additionally, it has been observed that those with a strong sense of national identity and high self-esteem tend to experience greater subjective well-being. Practically, this paper encourages universities to set up national music courses and other music courses, which are beneficial to the mental health of college students. Music teachers should take the initiative to instruct students on how to listen to and appreciate music, as it may lead to physical and mental relaxation.

This research has certain limitations. First, the sample of this study only involves university students. It is uncertain whether national music lessons have any impact on the self-esteem, national identity, and subjective well-being of adolescents. Second, this case study is conducted at a university in China. It can be concluded that Chinese

national music has a beneficial impact on the mental health of Chinese university students. However, whether this conclusion is applicable to other countries should be further verified in practice. Third, this research is solely dedicated to exploring the effect of national music lessons on national identity, self-esteem, and subjective well-being, without taking into account other psychological characteristics and indicators. It is the opinion of music educators in many countries that taking music lessons is highly beneficial for students' mental health (Law and Ho, 2011; Behr et al., 2016; Lu, 2022), yet this assertion must be confirmed through practical outcomes.

In the future, a cross-cultural study could be conducted to examine the influence of national music lessons on students, exploring the similarities and differences between various cultures or countries. Incorporating the methods of developmental and educational psychology, a long-term tracking design can be implemented to assess the impact of music lessons on various student stages. Furthermore, future studies can examine the influence of music lessons on mental health, like reducing depression/anxiety and strengthening psychological resilience. Music can effectively promote cognitive function (Schneider et al., 2019), which can also be further explored in future studies within the sphere of music education.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by Guangzhou University Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

Author contributions

HF and JT: led writing, conceptualization, methodology, and provided reviews. HF: oversaw data analyses and led data analyses. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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What cultural values determine student self-efficacy? An empirical study for 42 countries and economies

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Self-efficacy is a vital personal characteristic for student success. However, the challenge of cross-cultural comparisons remains as scalar invariance is hard to be satisfied. Also, it is unclear how to contextually understand student self-efficacy in light of cultural values in different countries. This study implements a novel alignment optimization method to rank the latent means of student self-efficacy of 308,849 students in 11,574 schools across 42 countries and economies that participated in the 2018 Program in International Student Assessment. We then used classification and regression trees to classified countries with differential latent means of student self-efficacy into groups according to Hofstede's six cultural dimensions theory. The results of the alignment method recovered that Albania, Colombia, and Peru had students with the highest mean self-efficacy, while Slovak Republic, Moscow Region (RUS), and Lebanon had the lowest. Moreover, the CART analysis indicated a low student self-efficacy for countries presenting three features: (1) extremely high power distance; (2) restraint; and (3) collectivism. These findings theoretically highlighted the significance of cultural values in shaping student self-efficacy across countries and practically provided concrete suggestions to educators on which countries to emulate such that student self-efficacy could be promoted and informed educators in secondary education institutes on the international expansion of academic exchanges.

1. Introduction

Student self-efficacy has been defined as the belief that students believe they have the ability to engage in learning activities and deal with tasks, especially in an adverse situation (Bandura, 1977; Waddington, 2023). Previous studies have documented that self-efficacy impacts multiple student academic performance, such as math score or math problem-solving ability (Klassen and Klassen, 2018; Uchida et al., 2018; Wang et al., 2022; Yang et al., 2022), reading score (Graham et al., 2019; Liu et al., 2020; Zhou et al., 2020), and English learning for foreigners (Wu et al., 2013; Wang and Sun, 2020; Xu et al., 2022). Moreover, a high level of self-efficacy benefits emotional and cognitive outcomes. Extensive literature has documented that self-efficacy positively stirs students' intrinsic motivations in almost all aspects of learning and related tasks

and activities (Chung et al., 2021; Ma, 2021; Tannert and Gröschner, 2021; Wang et al., 2022).

Recognizing the importance of self-efficacy, large-scale international assessments, such as the Program for International Student Assessment (PISA), have measured it in their investigations (OECD, 2019a,b). PISA 2018 developed a measurement tool containing five specific items to assess student perceptions of self-efficacy (Schleicher, 2019). Using the collected data from the students across 79 participating countries, the PISA team made a comparison to see which countries had high/low ratings for each self-efficacy item by calculating the percentage of students who strongly agreed or agreed with each item. However, before making valid comparisons across countries, it is imperative to ensure that the scale works in the same manner across all the participating countries (Whisman and Judd, 2016; Xu and Tracey, 2017).

As a meaningful cross-country comparison requires scalar invariance that is difficult to establish (Long and Brekke, 1999; Davidov, 2009), researchers have recently been gradually applying the alignment approach first introduced by Asparouhov and Muthén (2014) to evaluate measurement invariance across multiple groups. A prominent advantage of the alignment approach is that it merely requires configural invariance, which could significantly lower the barrier of cross-country comparison. Thus, the first goal of the current research is to assess whether the configural invariance of the self-efficacy scale across the countries holds, using data from PISA 2018. Further, we compare the self-efficacy factor mean scores by employing the novel alignment optimization method.

Understanding the factors that determine student self-efficacy is an important topic in the education field. These constitute a set of student, family, teacher, and school-level factors, such as student cognitive activation (Li et al., 2021), family socioeconomic status (Ma, 2021), teaching approaches (Gao et al., 2020), and school discipline and safety (Chen et al., 2021). With the increasingly globalized world in which students have more opportunities to engage in culturally diverse programs, how student self-efficacy might be influenced by their cultural background has been receiving more attention (Khine and Nielsen, 2022, p. 112; Oettingen and Zosuls, 2006). Based on Hofstede's six cultural dimensions theory (2005), previous studies have documented the mediating effects of cultural values (e.g., individualism) on the associations between student self-efficacy and several independent variables (e.g., teacher self-efficacy) (Bonneville-Roussy et al., 2019), but few studies have comprehensively assessed six types of cultural values and which is the most influential. Elucidating the complicated mechanism of cultural differences in shaping student self-efficacy might produce country-specific information on how student self-efficacy operates (Bonneville-Roussy et al., 2019; Wan et al., 2022). Therefore, using countries' ranking by student self-efficacy, we use classification and regression tree analysis to classify 42 countries into small groups that share similar Hofstede's six cultural dimensions, and deconstruct the intricate relationships among these cultural values.

2. Literature review

2.1. Measurement bias and invariance in large-scale comparisons

Whenever one construct is compared in a large-scale assessment, there is always a risk of measurement bias being introduced, reducing

the validity of scientific conclusions (Van de Vijver and Leung, 2011). Three types of biases have been widely discussed (Van der Vijver and Rothmann, 2004): construct bias, method bias, and item bias. Construct bias occurs when a concept measures groups differently (McDermott et al., 2020; Gerstein, 2021). For example, a question asks patients to illustrate the characteristics of a good nurse. These characteristics are quite variable across cultures, and an evaluator from a particular culture might have a different perspective on nurses from cultural groups different than their own. Method bias arises from using inappropriate investigation techniques across groups (Kock et al., 2021). For instance, an example of administration bias (one type of method bias) is that miscommunication is almost certain to occur between testers and testees from different cultural backgrounds (van de Vijver, 2002). Item bias refers to differential item functioning, and occurs when different groups respond differently to particular items (Ellis, 1989; Ross et al., 2023).

The elimination of measurement bias is a precondition for achieving cross-cultural measurement invariance; hence, these two constructs (i.e., measurement bias versus measurement invariance) may be seen as opposite sides of the same coin (He and van de Vijver, 2012). Scholars have proposed three types of measurement invariance (Meredith, 1993; Steenkamp and Baumgartner, 1998): configural, metric, and scalar. Configural invariance means the same overall factor of self-efficacy holds for all countries (Yue et al., 2022). It suggests that respondents from different groups adopt the same theoretical framework to respond to a set of items in a scale (Cheung and Rensvold, 2002). Metric invariance requires that the factor loadings are identical across all countries, which indicates that items share equivalent meaning in terms of their relationship to the factor, across groups (Milfont and Fischer, 2010; Jovanović et al., 2022). Scalar invariance is the most constrained, with both loadings and intercepts being identical across all countries (Meredith, 1993; Arrindell et al., 2022). Following the configural invariance level, each level of measurement invariance requires evidence supporting invariance at the prior level (Millsap, 2012). Generally speaking, a valid cross-cultural comparison requires scalar invariance that is often rejected (Asparouhov and Muthén, 2014). Therefore, it is critical to develop an approach to lower the barrier.

2.2. Alignment approach

As scalar invariance is rarely achieved in large cross-national comparisons (Davidov et al., 2014; Hoth et al., 2022), researchers have introduced a method called partial measurement invariance (Byrne, 1989; Byrne and van de Vijver, 2017). That is, through a systematic examination, scholars identify the items with the most invariance and fix their parameters across groups, while allowing other items to be freely estimated. However, when the number of items increases, this method may be error-prone as it conducts an exploratory process (Vandenberg and Lance, 2000). Multi-pairwise mean comparisons method has further been proposed (Zieger et al., 2019). This method fits a factor analysis model on the data from one group and then compares the determined latent mean with each latent mean of other comparable groups one by one, during which three types of measurement invariance were considered. However, as the number of groups increases, both partial measurement invariance and multi-pairwise mean comparisons could become very labor-intensive and

might not identify the group with the highest/lowest latent mean (Zakariya et al., 2020; Wu et al., 2022).

In 2014, Asparouhov and Muthén (2014) developed a new approach for multi-group confirmatory factor analysis (CFA), called the alignment method. Its most significant strength is that it only requires configural invariance rather than exact measurement invariance (i.e., scalar invariance), which significantly lowers the barrier of the group comparisons (Asparouhov and Muthén, 2014). By automatically testing measurement invariance through multi-groups with expected non-invariance, the alignment method is not only able to estimate factor means, factor loadings, and item parameters across groups (Wu et al., 2022). but also tests their invariance to identify the most invariant and non-invariant items (Asparouhov and Muthén, 2014).

Alignment method has been applied effectively in testing measurement invariance across groups (e.g., Munck et al., 2018; Ding et al., 2022), creating measurement models (e.g., Tay et al., 2017; Glassow et al., 2021), and making cross-countries comparisons (e.g., Zakariya et al., 2020; Zakariya, 2021; Wu et al., 2022). However, after an exhaustive search of previous studies, we did not find its application in cross-country comparisons of student self-efficacy, which is a research gap this study attempts to fill.

2.3. Addressing self-efficacy from a cultural perspective

The global population of students who attend study-abroad programs has increased enormously (Isabelli-García et al., 2018). The extant literature suggests that even a short-term summer stay abroad (3–4 weeks) during secondary education could be beneficial for students' development in language learning and intercultural competence (Llanes and Muñoz, 2009; Isabelli-García et al., 2018). However, compared to domestic students of host countries, international students encounter more challenges from the language barrier and different cultural values.

Cultural values refer to "trans-situational goals… that serve as guiding principles in the life of a person or other social entity" (Schwartz, 1994, p. 21). Hofstede et al. (2005) proposed a seminal theoretical framework to elaborate cultural values across six dimensions: (1) power distance, measuring the degree of inequality in a society. In societies with a large power distance, inequalities are expected and desired; (2) individualism versus collectivism, reflecting the degree of loose ties between individuals. Students in collectivistic countries generally emerge with a lower level of self-efficacy than those in individualistic countries; (3) masculinity versus femineity. Feminine culture values relationships and quality of life, but masculine culture values challenge, competition, and advancement; (4) uncertainty avoidance, measuring the anxiety level of a country. A country with strong uncertainty avoidance often reports high stress and people feel less happy; (5) long-term versus short-term orientation, the former meaning the cultivation of values that are directed toward future benefits, particularly persistence and thriftiness, while the latter emphasizes the cultivation of qualities connected to the past and the present, particularly a reverence for tradition and fulfillment of social duties; and (6) indulgence versus restraint, measuring personal impulse and desire control. High levels of indulgence suggest that a culture permits relatively unrestricted

pleasure and a high standard of living. In contrast, restraint implies the tendency to restrict the satisfaction of natural drives with strict social standards.

Previous studies have documented that a society's cultural values could impact an individual's psychological processes, such as self-efficacy, judgment, emotion, etc. (Kitayama and Uskul, 2011; Perry, 2012). However, most of them have been limited to comparing a couple of countries (e.g., Di Giunta et al., 2010; Cernas Ortiz, 2022), lacking investigation of more than three. To our best knowledge, Bonneville-Roussy et al. (2019) is the only exception, using data from the PISA 2015 to explore the moderating impacts of two cultural values (individualism and uncertainty avoidance) on the associations between teachers' teaching practices and student self-efficacy in 16 countries. They found inquiry-based tasks are less effective in predicting the self-efficacy of students from countries that scored highly in uncertainty avoidance, and teacher-led teaching practices are more effective in predicting student self-efficacy if the student are from individualistic countries. Although the relationship between cultural values and student self-efficacy was not directly examined, their findings indicated mixed and complicated associations between multiple cultural values in predicting student self-efficacy.

In addition, there are scant cross-country comparisons in the previous studies that have the benefit of comprehensively considering the influence of cultural values. Six cultural values do not exist in isolation, but rather interact with each other to shape students' beliefs, attitudes, and behaviors. For example, a student from a culture that values restraint may also value long-term planning, which could potentially increase their self-efficacy. However, if that same student also comes from a culture that values high power distance, they may struggle with expressing their opinions and taking control of their own learning, which could potentially limit their self-efficacy. Therefore, the second purpose of this study was to analyze all of six cultural dimensions using classification and regression tree analysis in order to identify the most influential cultural values, the interactive patterns of cultural values, and the distinct groups of countries at varying levels of student self-efficacy.

2.4. Present study

In sum, student self-efficacy is an important factor that significantly contributes to academic achievement and serves as a defining characteristic of successful students. Scholars have made great efforts to make cross-country comparisons of student self-efficacy in order to better understand how to promote it and to decide which nations should be studied in more depth (Wang et al., 2013; Bonneville-Roussy et al., 2019). However, a valid comparison was hard to achieve because it was not easy to satisfy the assumptions of scalar invariance for student self-efficacy measurement tool, particularly in a large-scale assessment. In light of this, the present research makes use of the alignment method in CFA to compare the factor means of student self-efficacy across participating countries and economies in PISA 2018.

Also, as it is still difficult to disentangle the respective contribution of multiple cultural values to student self-efficacy when these values are dynamic and interactive in nature, we use classification and regression tree analysis to segment countries into small groups that share similar Hofstede's six cultural dimensions, and decompose

TABLE 1 Deleted 34 countries unsatisfied with the GOF indices.

Criterion	# Countries	Country
ω_h	6	Brunei Darussalam; Iceland; Malta; Mexico; Sweden; Vietnam
TLI	21	Belarus; Brunei Darussalam; Bulgaria; Chile; Costa Rica; Croatia; Czech Republic; Estonia; France; Indonesia; Ireland; Italy; Japan; Malta; New Zealand; Russian Federation; Singapore; Spain; Switzerland; Uruguay; Vietnam
CFI	15	Belarus; Brunei Darussalam; Bulgaria; Czech Republic; France; Indonesia; Ireland; Italy; Japan; New Zealand; Spain; Switzerland; Uruguay; United Arab Emirates; Vietnam
RMSEA	22	Brazil; Bulgaria; Canada; Chile; Costa Rica; Czech Republic; Estonia; Finland; France; Iceland; Indonesia; Ireland; Italy; Japan; Jordan; Luxembourg; Macao; New Zealand; Spain; Tatarstan (RUS); Thailand; Uruguay
SRMR	0	None

Table presents the unique 34 countries that cannot meet the criteria of ωh and GOF indices.

complicated interactions among these cultural values (Ma, 2005). These are envisaged to answer the following questions:

(1) Which countries have the highest (and lowest) student perceptions of self-efficacy?
(2) Which cultural values proposed by Hofstede et al. (2005) interactively influence student self-efficacy at the country level?
(3) How many distinct groups of countries existed in terms of student self-efficacy?

The significance of our study is multifaceted. First, we employs a novel alignment optimization method to rank the countries and economies considering student self-efficacy which is a research gap has not been addressed. By conducting the analysis, we attempted to offer scientific information based on what the PISA 2018 data says, which could help guide policymakers and education stakeholders toward the right countries or economies to promote student self-efficacy. Second, by using observable cultural dimensions as explanatory variables to identify the distinct groups of countries in terms of student self-efficacy, this study helps educators facilitate student self-efficacy by focusing on those groups of exchange students that may experience cultural shock. Lastly, our study contributes to the broader understanding of the complex relationship between cultural values and student achievement, and may inspire further research in this area to better inform educational policies and practices across diverse cultural contexts.

3. Methods

3.1. Sample

The current study used information of a sample of 15-year-old students in the PISA 2018 database.[1] To select a representative sample of students, the PISA team conducted the PISA 2018 survey of schools and students from each country and students in each school in 79 countries using a probabilistic sampling procedure (OECD, 2019a,b).

As participation in the PISA 2018 was optional for countries and schools (OECD), the initial data presented a non-ignorable number of missing values. Thus, we deleted the observations where >20% of

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1 https://www.oecd.org/pisa/data/2018database/

the values were missing (Enders, 2003); one country (Norway) was removed, as <20% of every participant's information was useful; the website did not provide the country of (Kosovo). The filtered dataset contains 521,032 students in 20,827 schools across 77 countries.

3.2. Measures of student self-efficacy and cultural values

Student self-efficacy was measured by five items in the PISA 2018 questionnaire. All items share the same question stem: "How strongly do you agree or disagree with the following statements." Each item has four categories: 1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree, with a higher value indicating a better rate of self-efficacy. Table 1 presents the exact item wording. Cross-cultural values were extracted from the website (https://www.hofstede-insights.com/country-comparison/). The cultural values for our final analytical sample can be found at Table 2. Hofstede's cultural dimensions data have been widely used in cross-cultural research, and their reliability has been confirmed through multiple studies. Hofstede's original work in the 1980s was based on a survey of IBM employees in over 50 countries, and subsequent studies have expanded and refined these dimensions using data from different sources (Hofstede et al., 2005). A meta-analysis conducted by Taras et al. (2012) demonstrated that Hofstede's dimensions have acceptable levels of internal consistency reliability, with Cronbach's alpha coefficients ranging from 0.65 to 0.75. The validity of Hofstede's cultural dimensions has also been widely supported in the literature. Numerous studies have demonstrated the predictive and construct validity of the dimensions, showing that they are related to various important outcomes across cultures (Taras et al., 2012). The dimensions have been found to be useful in explaining cross-cultural differences in various domains, including learning (Habók et al., 2021), communication (Puyod and Charoensukmongkol, 2019), and education (Al Hashlamoun, 2021). Given the established reliability and validity of Hofstede's cultural dimensions, we believe they are appropriate for use in our study to classify countries with differential latent means of student self-efficacy. By employing these dimensions, we are able to account for the complex cultural differences among the countries and economies included in our sample. Furthermore, the dimensions have been used in previous educational research, making them a suitable choice for the present study (see a review Maddux et al., 2021).

TABLE 2 Non-invariance of student efficacy item intercepts and loadings across 42 countries.

Loadings	Country code
ST188Q01HA	1 2 (3) 4 5 6 7 8 (9) 10 11 (12) 13 14 15 16 17 18 19 20 21 22 23 24 (25) 26 (27) 28 (29) 30 31 (32) 33 34 35 36 37 38 39 40 41 42
ST188Q02HA	1 (2) 3 4 5 6 (7) 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 (23) 24 25 26 27 28 (29) 30 (31) 32 33 34 35 (36) 37 38 39 40 41 42
ST188Q03HA	1 2 3 4 5 6 7 8 (9) 10 11 12 13 14 15 16 17 (18) (19) 20 21 (22) 23 24 (25) (26) 27 (28) (29) 30 (31) 32 33 34 35 36 37 38 39 40 41 (42)
ST188Q06HA	(1) (2) 3 4 5 6 7 8 9 (10) (11) (12) 13 (14) 15 16 17 (18) 19 20 21 22 23 24 (25) (26) 27 (28) (29) 30 31 32 33 34 35 36 37 (38) 39 40 41 42
ST188Q07HA	1 2 (3) 4 5 (6) 7 8 9 (10) 11 12 13 14 15 16 17 18 19 (20) 21 22 23 24 25 26 (27) 28 29 30 (31) 32 33 34 35 36 37 38 39 40 41 42
Intercepts	
ST188Q01HA	1 (2) 3 4 (5) 6 7 (8) 9 (10) 11 (12) 13 14 (15) 16 17 18 19 20 21 (22) 23 (24) 25 26 27 28 (29) 30 31 32 33 (34) 35 36 37 (38) 39 40 41 42
ST188Q02HA	1 2 3 (4) 5 (6) 7 8 (9) 10 11 (12) 13 14 15 (16) 17 18 19 (20) 21 22 23 24 25 26 (27) 28 29 30 (31) 32 (33) 34 (35) 36 37 (38) 39 40 (41) 42
ST188Q03HA	(1) 2 3 4 5 (6) 7 (8) 9 (10) 11 12 (13) 14 15 (16) (17) 18 (19) 20 21 22 23 24 (25) 26 27 (28) (29) (30) 31 32 33 34 35 36 37 38 39 (40) 41 42
ST188Q06HA	1 2 3 (4) 5 6 7 (8) (9) 10 11 12 (13) 14 15 16 17 18 (19) 20 21 22 23 24 (25) (26) 27 28 (29) 30 31 32 (33) 34 35 36 37 (38) (39) 40 41 42
ST188Q07HA	1 (2) 3 4 5 6 7 (8) (9) 10 11 12 13 14 15 16 (17) 18 19 20 21 22 23 (24) 25 (26) 27 28 29 30 31 32 33 34 35 (36) 37 38 (39) 40 41 42

Countries and economies showing non-invariances are in parentheses. The country code would be found at Table 3.

3.3. Analytical procedure

3.3.1. Scale reliability and validity evaluation

Before using the alignment method, it is imperative to evaluate scale reliability and validity. Instead of the popular Cronbach alpha to measure internal consistency, we employed coefficient omega (ω_h) calculated based on factor loadings and unique variance (Dunn et al., 2014; Flora, 2020). Empirical evidence shows that compared to Cronbach's alpha coefficient, ω_h requires less restrictive assumptions, but provides a more accurate measure of reliability (Zinbarg, 2005; Dunn et al., 2014). A value of ω_h greater than 0.7 indicates acceptable reliability (Trizano-Hermosilla and Alvarado, 2016). Moreover, we use confirmatory factor analysis (CFA) to assess the validity. Specially, we tested the unidimensionality of the five-item student self-efficacy scale by conducting CFA for each country/economy robust weighted least squares mean and variance (Bowen and Masa, 2015). Considering the unequal chance of schools being selected within each country, we included the school-level weighting variable (W_FSTUWT_SCH_SUM in PISA 2018 dataset) in the analysis. A series of goodness-of-fit (GOF) indices are employed to assess mode fit, including the comparative fit index (CFI) and Tucker-Lewis index (TLI) with acceptable value ≥0.90 (Hu and Bentler, 1999), and SRMR and RMSEA with acceptable value ≤0.08 (MacCallum et al., 1996; Hu and Bentler, 1999). The Chi-square statistic was presented, but not utilized to examine model fit because it tends to reject a suitable model with a large sample size (Chen, 2007). The dataset of any country that did not meet the reliability and validity criteria was removed. Whereafter, we evaluated whether the unidimensional model of the student self-efficacy scale met the configural invariance.

3.3.2. Alignment approach for research question one

If the configural invariance was met, we were able to employ the alignment approach to rank countries in terms of student self-efficacy. If the former cannot converge, researchers could switch to the latter. Generally, there are two types of alignment models: FREE and FIXED. FREE alignment method that treats all parameters as free is recommended for more than two-group comparison (Muthén and Asparouhov, 2018). If it cannot converge, scholars could employ FIXED alignment which sets the factor mean of a particular group to

zero. Based on the results of the Alignment approach, one could easily tell the items with non-invariance in CFA parameters (i.e., factor loadings and intercepts). Researchers could be statistically confident in making group comparisons if at least 75% of the CFA parameters are estimated to be invariant (Asparouhov and Muthén, 2014).

3.3.3. CART analysis for research questions two and three

CART analysis categorizes associations between the dependent and independent variables based on how those associations emerge across distinct groups (Ma, 2018). To achieve this goal, CART analysis gradually split the pooled sample into homogeneous groups through increasing variations in the values of the dependent variable among groups, which ultimately generates a tree-like map. The first node in the map is called the root node, and the nodes below it are named child nodes. A terminal node is a child node that cannot be further split. The first level of the map represents the strongest relationship between the dependent variable and a specific independent variable. Due to the exploratory benefits of visualizing the impacts of the independent variables on the dependent variables, CART analysis helps to reveal the potential relationships that lack empirical and theoretical support (Ma, 2018).

Our study used CART to partition countries into small homogenous groups that share similar cultural values in terms of factor means of student self-efficacy, and break down complicated interactions among multiple cultural values to pinpoint interaction effects (Ma, 2005, 2018). Data cleaning, CFA, configural measurement invariance examination, and CART analysis were conducted using R version 4.0.3 (R Core Team, 2020), and alignment methods were conducted in *Mplus* 8.8 (Muthén and Muthén, 2017).

4. Results

4.1. Factor structure and configural invariance

Table 1 shows the deleted 34 countries as they fail in at least one of the criteria:ω_h ≥ 0.7 (e.g., Vietnam), CFI/TLI ≥ 0.95 (e.g., Italy, Brunei), and RMSEA/SRMR ≤0.08 (e.g., Czech Republic).

TABLE 3 Descriptive statistics of the sample and measurement quality.

Code	Country	# Schools	# Students	ω_h			CFA		
					CFI	TLI	RMSEA	SRMR	Chi-Square
1	Albania	326	6,099	0.819	0.989	0.996	0.058	0.017	104.341
2	Argentina	753	17,608	0.750	0.963	0.962	0.078	0.031	390.288
3	Australia	451	10,207	0.778	0.964	0.965	0.063	0.031	516.383
4	Austria	727	11,897	0.776	0.966	0.969	0.071	0.032	259.353
5	Baku (Azerbaijan)	282	6,283	0.898	0.989	0.995	0.079	0.017	149.372
6	Belgium	212	5,819	0.829	0.976	0.989	0.011	0.027	235.402
7	Bosnia and Herzegovina	233	5,636	0.744	0.973	0.984	0.072	0.025	215.448
8	B-S-J-Z (China)	55	6,238	0.807	0.985	0.978	0.066	0.021	262.756
9	Colombia	205	6,436	0.803	0.968	0.974	0.076	0.029	297.170
10	Denmark	215	3,041	0.764	0.958	0.952	0.079	0.036	311.763
11	Dominican Republic	1,088	33,034	0.860	0.977	0.992	0.080	0.026	145.931
12	Georgia	467	12,676	0.822	0.982	0.971	0.076	0.024	131.038
13	Germany	318	4,575	0.734	0.956	0.950	0.079	0.034	165.288
14	Greece	240	6,029	0.756	0.971	0.980	0.078	0.027	182.439
15	Hong Kong	183	5,700	0.815	0.982	0.981	0.076	0.022	166.545
16	Hungary	152	6,288	0.750	0.965	0.967	0.078	0.029	174.325
17	Israel	139	2,991	0.792	0.964	0.965	0.080	0.032	283.546
18	Kazakhstan	183	6,000	0.795	0.969	0.975	0.079	0.036	791.376
19	Korea	611	18,185	0.824	0.977	0.990	0.059	0.029	267.740
20	Latvia	188	6,606	0.812	0.978	0.994	0.078	0.025	147.129
21	Lebanon	210	4,611	0.741	0.967	0.971	0.080	0.029	160.603
22	Malaysia	308	4,553	0.778	0.982	0.971	0.067	0.022	101.482
23	Moldova	308	4,962	0.731	0.963	0.963	0.078	0.030	135.741
24	Montenegro	45	3,763	0.703	0.982	0.980	0.052	0.021	85.667
25	Morocco	269	5,574	0.731	0.968	0.973	0.076	0.028	151.996
26	Moscow Region (RUS)	114	5,157	0.825	0.986	0.990	0.067	0.020	134.759
27	Netherlands	50	3,080	0.774	0.962	0.960	0.070	0.032	196.029
28	Peru	61	6,055	0.778	0.973	0.983	0.068	0.028	63.463
29	Philippines	191	6,010	0.735	0.963	0.963	0.078	0.031	130.006
30	Poland	325	4,326	0.770	0.971	0.979	0.068	0.030	149.456
31	Portugal	187	6,975	0.785	0.994	0.988	0.038	0.013	54.229
32	Qatar	240	5,446	0.785	0.968	0.973	0.069	0.030	220.264
33	Romania	275	5,463	0.755	0.958	0.953	0.069	0.033	241.390
34	Saudi Arabia	187	11,969	0.764	0.980	0.997	0.067	0.025	260.569
35	Serbia	197	4,883	0.752	0.965	0.968	0.069	0.029	179.413
36	Slovak Republic	361	11,981	0.789	0.977	0.990	0.077	0.025	207.383
37	Taiwan	61	1877	0.810	0.980	0.997	0.077	0.024	168.046
38	Thailand	238	5,371	0.826	0.982	0.971	0.077	0.023	164.753
39	Turkey	192	7,134	0.849	0.987	0.980	0.072	0.020	177.199
40	Ukraine	290	8,487	0.729	0.959	0.956	0.069	0.030	218.251
41	United Kingdom	250	5,804	0.775	0.958	0.954	0.071	0.034	625.716
42	United States	187	4,020	0.788	0.961	0.958	0.071	0.033	235.703

Table reports the number of schools (11574) and students (308849) across the 42 countries in which the measurement model had acceptable ωh and GOF indices. United Kingdom contains the regions of United Kingdom (Scotland) and United Kingdom (excluding Scotland).

The information of the rest of the 42 countries was kept for further analysis as they meet all of the criteria. Table 3 reported the number of schools (11574) and students (308849) and reliability (ω_h) and validity (CFA) assessments across these countries.

The descriptive statistics of each item in the student self-efficacy scale were provided in Table 4. On average, students had a positive rating of their self-efficacy.

Consequently, we evaluated the configural invariance of multi-group analyses based on the data from 42 countries. The results of the GOF indices showed that the configural invariance model fits the data well ($\chi^2 = 13181.33$, $df = 215$, CFI = 0.966, TLI = 0.972, RMSEA = 0.078, SRMR = 0.031).

4.2. Alignment method analysis of student self-efficacy scale

We initially used the FREE alignment method to rank the 42 countries and economies being compared. As M*plus* 8.8 did not report any warning about untrustworthy standard errors, there was no need to switch to the FIXED method. Table 2 reports the results of the identified factor loadings and thresholds, together with the respective countries or economies. Countries and economies showing non-invariances are in parentheses.

For example, the loading of item ST188Q01HA is non-invariant in seven countries: Australia (3), B-S-J-Z (China) (9), Dominican Republic (12), Montenegro (25), Moscow Region (RUS) (27), Peru (29), and Portugal (32). That is, the equality of the factor loading condition holds for item ST188Q01HA across 35 other countries. The results of other items' interceptions and loadings presented at Table 2 can be interpreted similarly. We found that 169 (80.48%) invariant factor loadings of a total of 210 (42*5) parameters. Turning to the intercepts, 156 (74.29%) invariant intercepts were found, which was slightly smaller than the recommended 75% threshold point. Therefore, we were confident in the trustworthiness of the latent mean estimates and comparison for the student self-student scale across countries (Wu et al., 2022).

4.3. Student self-efficacy comparison across countries

After testing the reliability and validity of the student self-efficacy scale and the assumptions of the alignment method, we were able to rank 42 countries and economies by comparing the factor mean values of student self-efficacy (Table 5).

As shown at the table, the rank order of factor means demonstrated that Albania showed the highest factor mean in student self-efficacy, followed by Colombia and Peru. The lowest three countries/economies in student self-efficacy were Slovak Republic, Moscow Region (RUS), and Lebanon.

4.4. Description of CART

Figure 1 shows that CART analysis partitioned countries into nodes with three levels of factor mean scores of student self-efficacy according to the largest reduction in impurity from the root node. No country was eliminated from the data analysis, and the average factor mean score was 0.68. CART analysis was run with six cultural dimensions, but three of them (i.e., uncertainty avoidance, long-term orientation, and indulgence versus restraint) were discarded.

The root node was first split according to the power-distance dimension (this dimension had the largest reduction in impurity from the root to its child nodes). The left child node became a terminal node (G1); it contained seven countries (17%) that scored at least 91 and whose average factor mean score was 0.31. The right child node contained 35 countries (83%) whose power-distance scores were less than 91 and whose average factor mean score was 0.61. Among those countries, 14 (33%) with indulgence scores less than 29 became a terminal node with an average factor mean score of 0.53 (G2). The other 21 countries (50%), which had an average factor mean score of 0.66, were split further according to the individualism dimension. Fourteen countries (33%) with individualism scores less than 64 had an average factor mean score of 0.63 (G3), and seven (17%) with individualism scores equal or greater than 64 showed an average factor mean score at 0.71 (G4).

4.5. Description of cultural dimensions in terminal group

Table 6 reports factor mean scores in three significant cultural dimensions (power distance, individualism versus collectivism, and indulgence versus restraint) in each of the terminal nodes from low (G1) to high (G4). The root node (G0) is also present for the purpose of comparing a particular terminal node with the average value of factor mean scores.

TABLE 4 Descriptive statistics of student self-efficacy item.

Item	Item wording	*N* (%)	Mean	SD
ST188Q01HA	I usually manage one way or another	283,307 (88.11%)	3.017	0.664
ST188Q02HA	I feel proud that I have accomplished things	282,609 (87.90%)	3.158	0.703
ST188Q03HA	I feel that I can handle many things at a time	282,456 (87.85%)	2.844	0.744
ST188Q06HA	My belief in myself gets me through hard times	282,939 (88.00%)	2.961	0.787
ST188Q07HA	When I'm in a difficult situation, I can usually find my way out	282,967 (88.01%)	3.047	0.693

Table presents the descriptive statistics of the student-efficacy items, including the number of non-missing values, mean, and standard deviation (SD). Item responses were rated on a four-point Likert scale (1 = strongly disagree; 4 = strongly agree).

TABLE 5 Ranking of the student self-efficacy across 42 countries along with cultural values.

Code	Country	Rank	Factor mean	Power distance	Individualism	Masculinity	Uncertainty avoidance	Long-term orientation	Indulgence vs. restraint
1	Albania	1	1.382	90	20	80	70	61	15
10	Colombia	2	1.077	67	13	64	80	13	83
29	Peru	3	1.021	64	16	42	87	25	46
5	Baku (Azerbaijan)	4	0.999	85	22	50	88	61	22
39	Turkey	5	0.959	66	37	45	85	46	49
25	Montenegro	6	0.958	88	24	48	90	75	20
7	Bosnia and Herzegovina	7	0.907	90	22	48	87	70	44
12	Dominican Republic	8	0.899	65	30	65	45	13	54
36	Serbia	9	0.881	86	25	43	92	52	28
34	Romania	10	0.832	90	30	42	90	52	20
19	Kazakhstan	11	0.826	88	20	50	88	85	22
42	United States	12	0.813	40	91	62	46	26	68
20	Korea	13	0.799	60	18	39	85	100	29
11	Denmark	14	0.791	18	74	16	23	35	70
17	Hungary	15	0.789	46	80	88	82	58	31
35	Saudi Arabia	16	0.752	72	48	43	64	27	14
9	B-S-J-Z (China)	17	0.719	80	20	66	30	87	24
24	Moldova	18	0.704	90	27	39	95	71	19
3	Australia	19	0.702	38	90	61	51	21	71
32	Portugal	20	0.68	63	27	31	99	28	33
41	United Kingdom	37	0.673	35	89	66	35	51	69
37	Taiwan	21	0.667	58	17	45	69	93	49
30	Philippines	22	0.649	94	32	64	44	27	42
15	Greece	23	0.639	60	35	57	100	45	50
31	Poland	24	0.629	68	60	64	93	38	29
18	Israel	25	0.626	13	54	47	81	38	
40	Ukraine	26	0.626	92	25	27	95	86	14
4	Austria	27	0.623	11	55	79	70	60	63
16	Hong Kong	38	0.623	68	25	57	29	61	17
13	Georgia	28	0.598	65	41	55	85	38	32
38	Thailand	29	0.579	64	20	34	64	32	45
6	Belgium	30	0.578	65	75	54	94	82	57
28	Netherlands	31	0.574	38	80	14	53	67	68
33	Qatar	32	0.563	93	25	55	80		
14	Germany	33	0.544	35	67	66	65	83	40
26	Morocco	34	0.515	70	46	53	68	14	25
2	Argentina	35	0.49	49	46	56	86	20	62
21	Latvia	36	0.473	44	70	9	63	69	13
23	Malaysia	39	0.392	100	26	50	36	41	57
8	Slovak Republic	40	0.389	100	52	100	51	77	28
27	Moscow Region (RUS)	41	0.361	93	39	36	95	81	20
22	Lebanon	42	0.235	62	43	48	57	22	10

Table shows the rank of 42 countries and economies in terms of student self-efficacy.

FIGURE 1
Classification and Regression Trees (CART) of Country-level Student Self-efficacy. Figure presents the CART analysis of student self-efficacy, conditional on cultural values. Value in each node indicates the mean values of country-level student self-efficacy; the value under each node indicates the percent of countries from the original dataset that belong to that node.
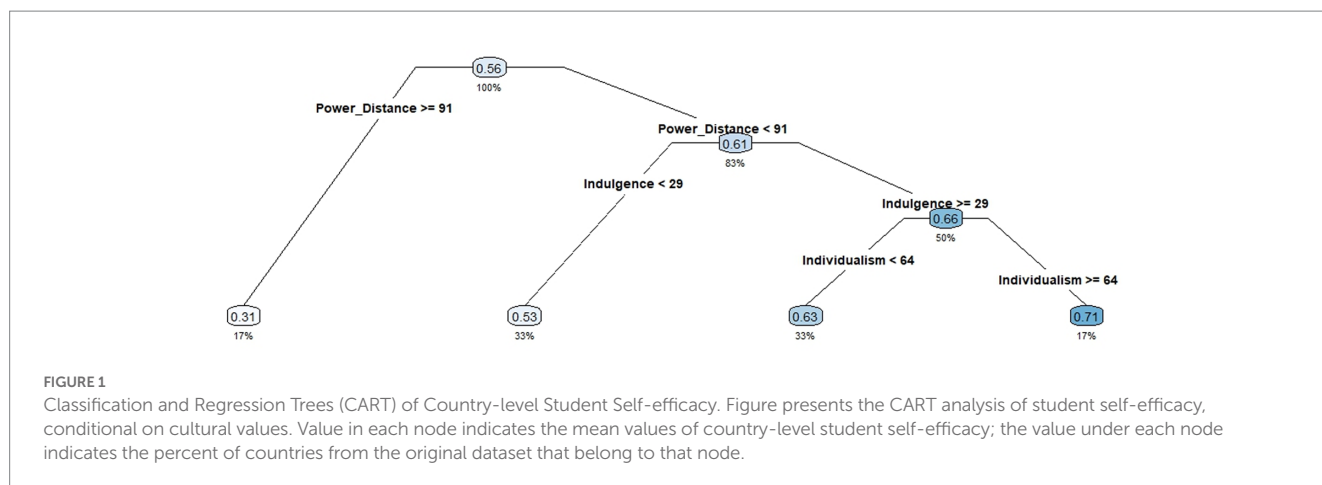
TABLE 6 Means of factor mean student self-efficacy in terminal nodes.

Cultural values	G0	G1	G2	G3	G4
Power-distance	68.05	94.01	78.07	61.31	35.71
Individualism	40.82	32.14	31.43	33.69	81.57
Indulgence	37.53	28.83	19.50	48.69	59.57

G0 is the root node, G1-4 are the terminal nodes in Figure 1.

Descriptive statistics showed that, for the terminal node with the lower factor mean scores (G1), average power-distance scores were extremely high (94.01) and both the individualism (32.14) and indulgence (28.83) scores were the second-to-last across all groups. Conversely, countries in the terminal node with the highest average value of factor mean scores (G4) were dominated by a low power distance (35.71), extremely individualist (81.57), and moderately indulgent culture (59.57). The countries in terminal nodes G2 and G3 shared similar high power distance (78.07 and 61.31, respectively) and collectivistic (31.43 and 33.69, respectively) cultures, but showed very different attitudes regarding an indulgent lifestyle (19.50 vs. 48.69).

5. Discussion

By applying the alignment method in CFA to a large-scale international assessment (i.e., PISA 2018), this study answered our research questions regarding the comparisons of student self-efficacy across 42 countries and economies and the impact of cultural values on shaping student self-efficacy. We found that: (1) based on their factor mean scores, Albania, Colombia, and Peru comprised among the top league of the student self-efficacy assessment and Slovak Republic, Moscow Region (RUS), and Lebanon comprised the bottom; (2) Using Hofstede's six cultural dimensions as predictors, CART analysis identified that three of the six cultural dimensions engaged one another in a complex interactive manner to impact student self-efficacy in a way that is far more complicated than that which many traditional statistical methods such as ANOVA can usually recover (Figure 1). Moreover, power distance was the most critical cultural dimension shaping student self-efficacy. (3) CART analysis also characterized all 42 countries into four groups that were represented as four homogenous terminal nodes (Figure 1 and Table 6).

5.1. Ranking of country-level student self-efficacy

The results of this study supported a one-factor structure of the student self-efficacy measurement tool, as well as satisfactory reliability indices ($\omega_h \geq 0.70$) across most of the countries and economies that participated in PISA 2018, which is consistent with previous research (Pepper et al., 2018; OECD, 2019a,b). A new addition of this study is the ranking of countries and economies by the factor means of student self-efficacy. This contribution recognized Albania as a country whose students had the highest sense of self-efficacy. What did students in Albania do differently? According to the findings of OECD (2019a,b), from 2009 and 2018, student reports disciplinary climate generally improved (López et al., 2022; Zhu and Teng, 2022) and were most likely to co-operation amongst their peers rather than competition (Rudolf and Lee, 2023), and teachers were more passionate in their teaching and continued teaching until students understand (Ortan et al., 2021; Liu and Wang, 2022). The results of the current research also provide a framework for ranking countries according to country-level student self-efficacy. This new addition to the body of knowledge has consequences for educators and policymakers in terms of the countries to look to for promoting better student self-efficacy(Al-Abyadh and Abdel Azeem, 2022; Yang et al., 2022).

5.2. Cultural values shaping student self-efficacy

5.2.1. Understanding the power-distance dimension

Our findings suggest that compared with other cultural dimensions, power distance is the most important predictor of student self-efficacy across varying levels, suggesting that it has a pervasive influence across different levels of student self-efficacy. Findings showed that countries with extremely high power distance (G1) have below-average scores in student self-efficacy, which is documented by previous studies. One international study found that Filipino students usually experience higher anxiety and lower math self-efficacy than American and Korean counterparts (Ahn et al., 2016). This could be explained by the large power distance in Filipino society that

strictly requires students to follow classroom rules and then generates great social stress. To improve self-efficacy, it is important to address power distance and create more egalitarian and inclusive educational environments.

5.2.2. Understanding the indulgence dimension

Distinct patterns were detected after the most substantial partition at the first level of prediction. The indulgence dimension behaves uniquely, appearing only for countries reporting a lower score on the power-distance dimension. In the literature, indulgent culture has mixed effects on student self-efficacy. On one side, an indulgent culture can negatively impact student self-efficacy through low expectations and a lack of challenge (Reyes, 2019). Students need opportunities to push themselves beyond their comfort zones to develop a sense of mastery and confidence in their abilities (Zhang et al., 2018). However, in an indulgent culture, students may not receive the feedback and support necessary to challenge themselves and develop their skills. Without the opportunity to experience success through effort and perseverance, students may struggle to develop a strong sense of self-efficacy (Cernas Ortiz, 2022). However, on the other side, students who come from indulgent societies are more likely to believe that they can achieve their goals and pursue their passions, which can increase their sense of self-efficacy. Additionally, indulgent societies tend to be more tolerant of failure and encourage risk-taking (Alipour and Yaprak, 2022). When students are not afraid to make mistakes and take on challenges, they are more likely to develop a sense of competence and confidence in their abilities.

Our study supported the second case. This discrepancy might be explained by the interaction between power distance and indulgence. Compared to G3-4, G2 scored higher in the power-distance dimension (Table 6), which could increase student anxiety and depression caused by the large power distance. However, these negative perceptions could be mitigated by a relaxed lifestyle, such as creating more opportunities to enjoy life and have fun (Smith et al., 2007; Park et al., 2022). Indeed, the gratification of positive desires is fundamental to Hofstede's interpretation of Indulgence in cultural dimension theory (Hofstede et al., 2005, p. 281).

5.2.3. Understanding the individualism dimension

Lastly, at the third level of the regression tree, the individualism dimension was very relevant for the groups of countries with moderate (G3) and high (G4) levels of student self-efficacy. Specifically, students in countries that scored <64 in the individualism dimension (G3) held weaker beliefs in their ability to fulfill their academic tasks than their counterparts in countries with scores of ≥64 (G4). Two reasons may explain this phenomenon: (1) the high self-efficacy scores may reflect cultural demands for personal responsibility. In individualistic societies, students are often expected to take responsibility for their own lives and academic success (Wang et al., 2020; Tan et al., 2021). This can foster a sense of control and agency, as students feel that they have the power to shape their own future; (2) compared to students from collectivistic societies, those from individualistic societies are less negatively susceptible to failure experiences (Ahn et al., 2016). Taking risks and pursuing new ideas are often seen as positive traits for an individualistic culture, as they can lead to innovation and progress (Tran, 2019; Chang, 2021). This can facilitate a culture of

experimentation and creativity, which can increase self-efficacy by mitigating students' fear of failure.

Moreover, G4 also scored very low on the power-distance dimension (35.71; Table 6), reflecting the critical fact that cultural values do not exist in isolation, but rather interact with each other to shape student self-efficacy (Yang et al., 2020). Students from individualistic cultures and lower power distance were more likely to have higher levels of self-efficacy beliefs, and the interaction of these two cultural values could lead to a stronger sense of self-efficacy. These findings may be due to the greater emphasis on personal achievement and autonomy in individualistic cultures, as well as the reduced reliance on authority figures in cultures with low power distance.

5.2.4. Summary

Although the rest three cultural dimensions of femininity, uncertainty avoidance, and long-term orientation have been potentially related to student self-efficacy (e.g., Bonneville-Roussy et al., 2019), the CART analysis discarded them in our study. However, we cannot state these cultural dimensions are not relevant. Indeed, because our final analysis sample size is small (42 countries), the dropped dimensions may be critical in unincluded countries.

In sum, the current research recovered a discernible pattern in the way three cultural dimensions are able to significantly shape student self-efficacy. The CART analysis underlines that these dimensions are not conceptually well orderly, linear, or closely related; rather, they offered distinct contributions to predict student self-efficacy. These findings have important implications for educators and policymakers, as they suggest that cultural factors can have a significant impact on student motivation and achievement. Educators should be aware of these cultural differences and strive to create learning environments that are inclusive and empowering for all students, regardless of their cultural backgrounds (Day and Beard, 2019; O'Leary et al., 2020).

5.3. Limitations and further research

This study is subject to several limitations, which also provide avenues for further research. First, Albania ranks first among the participating countries and economies in PISA 2018. However, we did not provide empirical evidence that would justify Albania being placed in that position, which requires further field research. Investigating the specific factors that contribute to Albania's high ranking in student self-efficacy would help provide a more nuanced understanding of the underlying causes and potentially inform policy recommendations for other countries.

Second, a large sample size is crucial for CART analysis, but our study had a relatively small sample, which might affect the findings' robustness. Subsequent research should consider incorporating more countries and economies to expand the sample size and improve result generalizability. Furthermore, conducting replication studies using alternative datasets like the Trends in International Mathematics and Science Study (TIMSS) or the Progress in International Reading Literacy Study (PIRLS) would support the validation and verification of our findings.

Countries with low student self-efficacy may also benefit from more studies into the function of educational policies and initiatives that foster self-efficacy. This would aid in providing actionable suggestions on how to create a learning environment that is supportive

of students' self-efficacy in multiple cultural settings. Lastly, extending the study's scope to include additional psychological categories like motivation, resilience, or well-being might help create a more complete picture of the link between cultural values and other elements of student achievement.

5.4. Implications

The findings in the current study highlighted the importance of cultural values in shaping student self-efficacy across countries. Thus, the present study carries several theoretical and practical implications. Theoretically, our findings contribute to the literature by demonstrating that not all cultural values are related to student self-efficacy. The identification of three cultural values (i.e., power distance, indulgence, and individualism) allows for a broader understanding of the complicated process and mechanisms that buffer the impact of cultural values on student self-efficacy. These findings also demonstrated that research on self-efficacy should take cultural differences into account (Gebauer et al., 2021). Cross-country comparisons are not often feasible, but the function of cultural values should also be considered inside individual countries (Bonneville-Roussy et al., 2019). Consequently, for countries that are more ethnically heterogeneous (e.g., in North America), it is necessary to have a deeper theoretical grasp of the nature of self-efficacy in relation to different cultural groups (Khine and Nielsen, 2022).

Practically, this study employed the alignment method to rank 42 countries and economies using the PISA 2018 dataset, offering valuable insights for policymakers and education stakeholders. By identifying countries or economies with lower student self-efficacy levels, our findings can inform targeted interventions and policies aimed at enhancing self-efficacy within these regions. This approach allows for a more focused allocation of resources and the development of tailored strategies that address the unique cultural factors influencing self-efficacy in each country. In addition, the ranking can facilitate international collaboration and knowledge sharing between countries with varying self-efficacy levels, leading to the development of best practices and innovative solutions to improve student self-efficacy across diverse cultural contexts. This study also informs educators in secondary education institutes on the internationalization of academic exchanges such that host institutions can better support exchange students' academic success (Khine and Nielsen, 2022). We used Hofstede's six cultural dimensions as explanatory variables to predict country-level student self-efficacy. These cultural dimensions are observable and identifiable, so teachers and principals could easily focus on the exchange student groups that may experience cultural shock. For example, for exchange students from a culture with high power distance, they may struggle to adapt to a culture with low power distance where students are expected to take a more active role in their learning. To build their self-efficacy, the student may need to seek out opportunities to speak up and participate in class discussions or group projects. Similarly, for students from a culture that places a high value on collectivism, they may struggle to adjust to a culture that

emphasizes individualism. In this case, the student may need to build their self-efficacy by learning how to advocate for themselves and assert their individual needs and preferences. Overall, understanding the cultural dimensions may help exchange students navigate their new cultural context and develop the skills and confidence they need to succeed in their studies.

Finally, as teacher-student interaction is the basic social relationship in schools, our study underlined the need to increase teachers' awareness of the roles that cultural values play in student cognitive behaviors (Bonneville-Roussy et al., 2019). Schools and governments would be the best agents to launch initiatives aiming to boost a basic understanding of how teachers' words and actions could impact exchange students' self-efficacy in terms of their diverse cultural backgrounds (Margolis and Mccabe, 2006). This would be particularly useful for students with low self-efficacy from stronger power distance and less indulgent countries (G1-2).

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: https://www.oecd.org/pisa/data/2018database/.

Author contributions

RJ developed the ideas. RJ, RW, YX, and MZ jointly wrote the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Review on the conceptual framework of teacher resilience

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Resilience is the ability to bounce back from setbacks and adapt to new circumstances. Resilient teachers can handle these issues. In this case, it's proposed to interpret the recent decade's resilience research on teachers. Provide a conceptual framework for teacher resilience factors. The Scopus database was used to collect articles. The titles and abstracts of articles were read one by one. As a result, 22 articles were included in the data analysis. The country where the data were collected, the aims of the study, the education level which the participants working, the sample size, the scale used, and the variables included in the study are marked in the full text. Most studies were effect determination, correlation, or exploratory. Initially, age and gender inequalities among instructors were examined. Postgraduate instructors are more resilient than undergraduates. Psychological factors, workplace variables, and teacher competency and attributes are used to study teacher resilience. Teachers' resilience negatively impacts depression, stress, anxiety, well-being, and mood. Quality of life and well-being are positively connected. Job crafting, work engagement, and working environment are favorably connected, whereas job burnout and turnover intention are adversely correlated. Resilience was positively connected with emotion regulation, empathy, others' emotion evaluation, teacher competence, teacher self-efficacy, and self-esteem in teachers. Anger, anxiety, mindfulness, pleasure, social support, fear, and training affect teachers' resilience. Teachers' resilience affects stress, depersonalization, personal accomplishment, emotional exhaustion, children's resilience, job engagement, happiness, well-being, self-care, and success.

KEYWORDS

conceptual analysis, correlated variables, effecting factors, affected variables, teacher resilience

Introduction

Teacher resilience is a crucial topic in the world of education, especially considering the multiple obstacles and pressures that teachers confront every day (Brouskeli et al., 2018; López-Angulo et al., 2022). Resilience refers to an individual's capacity to overcome adversity, recover from failures, and adapt to changing conditions (Bobek, 2002; Kangas-Dick and O'Shaughnessy, 2020). Resilience in the context of teaching is the capacity of teachers to sustain their effectiveness and well-being despite the numerous demands and constraints of the job (Mansfield et al., 2016).

Day and Gu (2014) take exception to the notion that resilience can be summed up as nothing more than the ability to recover quickly after experiencing difficult or traumatic events. The idea of resilience is dynamic and multidimensional, and it is possible to cultivate it through the interaction of one's own resources and the resources provided by their environment (Peixoto et al., 2020). To be more precise, it has been discovered that teachers' levels of resilience are neither natural nor consistent, but rather vary as a direct result of the

impacts exerted by the personal, social, and organizational contexts in which they operate (Gu and Day, 2013). In a study conducted by Mansfield et al. (2012), the researchers questioned 200 preservice and early career teachers, "what makes a resilient teacher?" The study's focus was on the protective characteristics that enhance teacher resilience. The findings highlighted four broad dimensions of protective factors: those specifically related to the profession (such as self-efficacy beliefs and pedagogical competencies), emotional aspects (such as positive emotions and emotional management), social aspects (such as supportive relationships with students and colleagues), and motivational aspects (such as having a sense of purpose in one's work) (e.g., intrinsic motivation, persistence, expectations, and goals). These findings served as the foundation for the development of a scale that takes into account the multifaceted character of resilience within the context of the teaching profession.

Concerns about high rates of teacher burnout, attrition, and discontent have contributed to an increase in research on teacher resilience in recent years (Gratacós et al., 2021). Studies (Brouskeli et al., 2018; Suryaratri et al., 2020; Diasti, 2021) investigated a variety of elements that contribute to resilience, including personal qualities, social support, coping techniques, and occupational resources. By gaining a deeper knowledge of these elements, educators and policymakers may design interventions and methods to increase teacher well-being, job satisfaction, and student results (Van Wingerden and Poell, 2019; Daniilidou et al., 2020; Cho et al., 2021).

Teacher resilience is an important area of study because teachers who do a good job and stay in the field have a positive effect on their students' learning. Teacher resilience, along with their knowledge, skills, and other qualities, make up a patchwork of learning support that helps students do better in school. It's even more important when you think about how teachers are the most important resource for making sure students learn well, especially in an emerging economy with few resources (Ebersöhn, 2014). Teacher resilience sees itself as a concept that bridges the gap between the complicated contexts of practice and the people who work in them. So, this paper looks at the transition from the individual to the school context. It suggests that teacher training should go the other way, from the school context to the person (Gratacós et al., 2021).

Even though it has been defined in different ways, teacher resilience seems to be a mix of personality traits, developmental processes, and skills that teachers have learned (Bobek, 2002; Benders and Jackson, 2012; Ebersöhn, 2014; Tenorio-Vilchez and Sucari, 2021). Resilience is an important part of what keeps new teachers in the job. From a career psychology point of view, teacher resilience is related to work engagement (Van Wingerden and Poell, 2019; Xie, 2021), burnout (Daniilidou et al., 2020; Liu et al., 2021), and job satisfaction (Li and Lv, 2022). It has been linked to a teacher's ability to help kids be resilient and a desire to leave the teaching profession (Bouillet et al., 2014; Bowles and Arnup, 2016). It has been called a key factor for teachers who work in poor urban areas (Day and Hong, 2016; Suryaratri et al., 2020) and for teachers who work with kids who have special educational needs (Mackenzie, 2012; Abdullah et al., 2019).

The job of a teacher is getting more difficult, demanding, and tiring (Flores, 2020; Park et al., 2020). The motivations behind this study are to further explore the complex nature of teacher resilience and identify the factors that contribute to it. By

examining the recent literature, this study aims to create a comprehensive and up-to-date conceptual framework of teacher resilience.

The specific objectives of this study are to:

1. Investigate the variables related to teacher resilience in studies conducted over the last 10 years.
2. Develop a conceptual framework that integrates the findings of these studies and captures the multidimensional nature of teacher resilience.

To address these objectives, the study focuses on research conducted in the last 10 years. This time frame was chosen to capture the most recent trends and developments in the field of teacher resilience, ensuring the conceptual framework is relevant and applicable to current educational contexts. By achieving these objectives, this study aims to provide a better understanding of the factors that contribute to teacher resilience, ultimately informing interventions and strategies to enhance teacher well-being, job satisfaction, and student outcomes.

Method

It is aimed to construct a mini review on the study teacher's resilience. The study is based on published articles. The study is based on published articles, and a systematic review procedure following the PRISMA method was employed.

Data collection process

The Scopus database was used to collect published studies. Scanned using the keyword "teacher resilience." Articles published in English in the last 10 years were selected. As a result of the restriction, 172 articles were seen. The data from the obtained studies has been downloaded in CSV format. The titles and abstracts of 172 articles were read one by one. It was examined according to the criteria of measuring the resilience level of teachers, using a quantitative measurement tool, and not having a review or meta-analysis study. Since the meta-analysis studies were based on published studies, they were excluded from the scope due to the absence of duplication in the studies. As a result of the preliminary examination, 31 articles were selected. In the next step, their full texts were reviewed to determine whether their work fits the focus of the study. In this review, nine articles that did not meet the criteria, such as studies on pre-service teachers, were excluded from the study. As a result, 22 articles were included in the data analysis.

Data analysis

The researchers read each of the 22 articles they obtained as a result of the review one by one. The country where the data were collected, the aims of the study, the education level at which the participants worked, the sample size, the scale used, the number of citations, and the variables included in the study are marked in the full text (Table 1).

TABLE 1 Description of studies in teacher resilience.

Id	Authors	Country	Aims	N	School level	Spe.	Data collection tool	Cited by
1	Abdullah et al. (2019)	Malaysia	C	<100	S	SE	SECRS[12]	0
2	Ayoobiyan and Rashidi (2021)	Iran	C, E	<100	U	EFL	CDRS[2]	12
3	Baguri et al. (2022)	Malaysia	C	>100	P, S	U	BRS[3]	4
4	Bouillet et al. (2014)	Croatia	C, E	>100	Pre	pre	RS[9]	10
5	Brouskeli et al. (2018)	Greece	Ex, C	>100	S	MG	RS[1]	32
6	Cho et al. (2021)	South Korea	C	>250	P, S, H	MG	BRS[3]	5
7	Daniilidou et al. (2020)	Greece	C, E	>500	P	U	MTRS[4]	10
8	Fernandes et al. (2019)	Portugal	E	<100	P, S	U	RS[7]	26
9	Gan et al. (2022)	China	C, E	>250	U	EFL	CDRS[2]	1
10	Gratacós et al. (2021)	Spain	Ex, C	>100	Pre, P	MG	MTRS[4]	7
11	Khammat (2022)	Iraq	C, E	>250	H	EFL	RS[5]	0
12	Kowitarttawatee and Limphaibool (2022)	Thailand	E	>250	Uni	U	ER[10]	2
13	Li and Lv (2022)	China	C, E	>250	U	EFL	RS[5]	1
14	Liu et al. (2021)	China	C	>500	h	U	CDRS[2]	19
15	Liu et al. (2022)	China	C, M	>500	P, S	MG	MTRS[4]	9
16	López-Angulo et al. (2022)	Chile	Ex, C	>500	U	MG	RS[13]	0
17	Park et al. (2020)	South Korea	C, E	>250	P	Pre	RS[11]	1
18	Pečjak and Pirc (2022)	Slovenia	E	>500	P, S	U	CDRS[2]	0
19	Suryaratri et al. (2020)	Indonesia	E	>100	H	U	CDRS[2]	0
20	Van Wingerden and Poell (2019)	Netherlands	C	>100	P	U	RS[8]	0
21	Xie (2021)	China	C, E	>300	U	EFL	CDRS[2]	12
22	Yirci et al. (2022)	Turkey	E	>250	Pre, P, S, H	U	BRS[3]	2

Aims: C, correlation; E, determining the effect; Ex, exploratory; School level: Pre, preschool; P, primary school; S, secondary school; H, high school; Uni, University; U, unspecified; Specialization: SE, special education; EFL, English as a foreign Language; MG, multiple groups; Pre, preschool teachers; U, unspecified. Superscript numbers provided were used to determine the same data collection tool.

Findings

When the number of publications is analyzed by years, the increasing number of publications over the years indicates that there is an increasing interest and focus in the field of teacher resilience research. In 2014 and 2018, only one publication was recorded per year. The number of publications increased to four in 2019 and then to three in 2020; this indicates steady growth in interest and research into teacher resilience. With six articles published in 2021, there was a significant increase in the number of publications. In 2022, the uptrend continued with seven posts recorded so far. This highlights the continued interest and commitment of researchers to explore various aspects of teacher resilience, refine methodologies, and examine new contexts and dimensions. In summary, the increasing number of publications from 2014 to 2022 indicates that the importance of teacher resilience research is increasingly recognized. As more studies are conducted, it is important to integrate and synthesize the findings to contribute to a comprehensive understanding of teacher resilience and its implications for education.

Examining the research on teacher resiliency reveals two studies having a single author, while the remaining studies have multiple authors. When the countries researched were categorized, the majority of studies, eleven, were done in East Asia. Thereafter, seven studies were conducted predominantly in Europe. The Middle East (3) and South America (1) are positioned next on the list. When the aims of the conducted studies were categorized, the majority consisted of effect determination (13), correlation (11), and exploratory (3) studies. There was a categorization of sample size. Five of the studies have samples of 500 or more, while eight contain samples between 250 and 500. Although six studies include between 100 and 250 participants, the other three studies have less than 100 people. Examining the categorization of sample groups according to education level reveals that some studies were conducted at a single education level while others were conducted at many levels. Most research was conducted in elementary (8) and secondary (7) schools. In the subsequent ranking, the high school (5) and preschool (4) levels were included. One research was done at the university level, while the level was unspecified in five other investigations. When the specialties of the teachers were analyzed, it was shown that EFL teachers predominantly

operated as a unit. In 5 studies, several branch instructors were identified, but in 2 studies, preschool teachers and in 1 study, special education teachers were examined. In nine investigations, there was no explanation about the branches of the professors.

When the scales used to measure the resilience of teachers in the studies were examined, the CDRS scale based on the Connor and Davidson (2003) study was used the most. Later, the Brief Resilience (Smith et al., 2008) and the Multidimensional Teacher Resilience Scale (MTRS) (Mansfield and Wosnitza, 2015) scales were used. Teacher Resilience Questionnaire (Campbell-Sills and Stein, 2007) study was used twice. Other scales were used once.

The article by Brouskeli et al. (2018) has the highest number of citations with 32, indicating that it is a highly influential study in the field of teacher resilience. The high citation count may suggest that the findings or methodology of this study are particularly relevant to other researchers in the field. The articles by Fernandes et al. (2019) and Liu et al. (2021) have also received a significant number of citations, with 26 and 19, respectively, suggesting that these studies have also had a notable impact on the research community. The majority of articles have a citation count of 12 or below, which may indicate that these studies are relatively new or have had a more modest influence in the field. It is important to note that articles published more recently, such as Khammat (2022) and López-Angulo et al. (2022), have not had as much time to accumulate citations, and thus their impact on the field might not be fully reflected in their current citation count. There are several articles with zero citations, such as Abdullah et al. (2019), Suryaratri et al. (2020), and Khammat (2022). These articles may be less influential or might have been published very recently, giving them less time to be cited by other researchers. Overall, the variation in citation counts among these articles highlights the diverse range of influence and impact that these studies have had in the field of teacher resilience. The varying citation numbers also emphasize the importance of considering multiple factors, such as publication date and overall trends in the field, when evaluating the impact of these articles.

Variables in teacher resilience studies

The researchers seek to see if the levels of teacher resilience as evaluated by the teachers altered depending on some variables (Figure 1). To begin, it was investigated whether or not there was any variation among the teachers with regard to demographic factors such as age and gender. In spite of the fact that some studies (Brouskeli et al., 2018; Van Wingerden and Poell, 2019) suggests that the levels of teachers' resilience do not vary depending on the gender variable, another study (Liu et al., 2022) found that women had higher levels of resilience than men, while the result of the study (López-Angulo et al., 2022) indicated that men had higher levels of resilience than women. According to the age variable, the findings of the study (Liu et al., 2022) indicate that experienced instructors with an age range of 36–45 years have a greater level of resilience than others. There was no difference found between the ages of those who participated in the studies (Brouskeli et al., 2018; Van Wingerden and Poell, 2019).

Also, variables pertaining to teachers' careers were studied. According to Brouskeli et al. (2018), teachers of the humanities and social sciences are more resilient than those of the exact and natural sciences. Pedagogy in language, communication, and Spanish

instructors have more resilience than pedagogy in mathematics and computer Science, according to the finding (López-Angulo et al., 2022). Nevertheless, according to Brouskeli et al. (2018), postgraduate instructors are more resilient than their undergraduate counterparts. Although Brouskeli et al. (2018) indicate that there is no differentiation based on teacher seniority, Liu et al. (2022) indicate that the resilience levels of new instructors (those with 1–3 years of experience) are lower than those of other teachers. In the study (Brouskeli et al., 2018), it was determined that the resilience of teachers did not change according to the variables of school type, school size, and students' socio-economic status.

In studies that examine if there is a correlation between teacher resilience and specific variables, the variables are categorized under three headings: psychological variables, variables connected to the workplace, and variables related to teachers' own competence and qualities. According to the findings (Cho et al., 2021), there is a negative correlation between teachers' resilience and depression, stress, and anxiety. According to the results (Gan et al., 2022), emotion and resilience are negatively correlated. On the other hand, according to Baguri et al. (2022) findings, dispositional hope and mattering are positively correlated with resilience. In addition, there is a favorable association between resilience and quality of life (Abdullah et al., 2019), and well-being (Brouskeli et al., 2018; Cho et al., 2021). Although job burnout and turnover intention (Liu et al., 2021) were correlated negatively with resilience, job crafting, meaningful work, work engagement (Van Wingerden and Poell, 2019), and working conditions (Brouskeli et al., 2018) were correlated positively with resilience. Resilience was shown to be positively associated with emotion regulation (Xie, 2021; Khammat, 2022; Li and Lv, 2022; López-Angulo et al., 2022), use of emotion (López-Angulo et al., 2022), total emotional intelligence (López-Angulo et al., 2022), and self-emotional appraisal (López-Angulo et al., 2022), which may be viewed as instructors' capacity to regulate emotional states. In this study, a positive correlation was identified between resilience and empathy (Pečjak and Pirc, 2022) and others' emotion evaluation (López-Angulo et al., 2022), which are connected to the ability to comprehend the emotional states of their colleagues and pupils. There is a positive correlation between resilience and teacher competence (Brouskeli et al., 2018; Liu et al., 2022; Pečjak and Pirc, 2022), teacher self-efficacy (Cho et al., 2021; Gratacós et al., 2021), crisis self-efficacy (Baguri et al., 2022), reflection (Ayoobiyan and Rashidi, 2021), and self-esteem (Baguri et al., 2022) in terms of the teachers' personal qualities. It has been discovered that there is a positive correlation between instructors' views about some of their topics (RS-beliefs; Pečjak and Pirc, 2022) and their perceptions of online learning outcomes (Liu et al., 2022) and resilience.

There were two categories that the impact studies fell into. Within the first category are the elements that have an effect on resilience. Anger (Gan et al., 2022), anxiety (Gan et al., 2022), and fear (Yirci et al., 2022) all have a detrimental impact on one's resilience. On the other hand, beneficial effects are produced by positive emotional states such as Eastern mindfulness (Kowitarttawatee and Limphaibool, 2022), Western mindfulness (Kowitarttawatee and Limphaibool, 2022), and enjoyment (Gan et al., 2022). In addition, the findings of the study (Ayoobiyan and Rashidi, 2021) indicate that mental abilities such as cognitive reflection and metacognitive reflection have a favorable influence on one's resilience. The resilience of teachers can be increased by training on resilience (Bouillet et al., 2014; Fernandes

FIGURE 1
Conceptual map of teacher resilience.
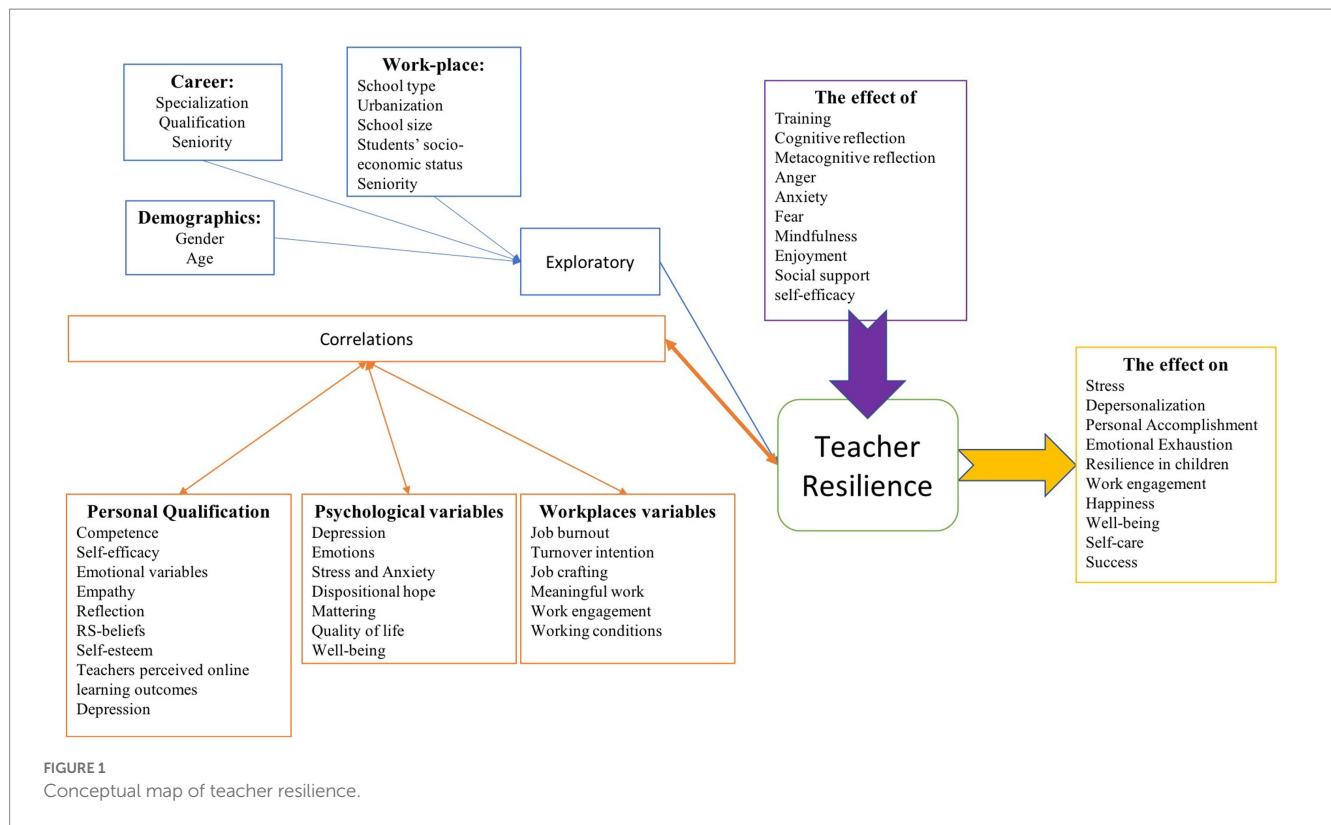
et al., 2019) and through social support (Park et al., 2020; Suryaratri et al., 2020). According to the findings of the experiment (Daniilidou et al., 2020), the self-efficacy and resilience of instructors are favorably affected. The second group consists of the many factors that are subjected to research about the influence of resilience. For instance, according to the findings (Daniilidou et al., 2020), it has a detrimental impact on both resilience and depersonalization, as well as emotional tiredness and stress. Happiness (Yirci et al., 2022), psychological well-being (Khammat, 2022), personal accomplishment (Daniilidou et al., 2020), self-care (Park et al., 2020), success (Li and Lv, 2022), teachers' job engagement (Xie, 2021), and resilience in children (Bouillet et al., 2014) are all favorably influenced, though.

Conclusion and recommendations

The rise in the number of publications between 2014 and 2022 signifies a growing acknowledgment of the significance of research on teacher resilience. As more research is carried out, it becomes crucial to amalgamate and distill the findings, ultimately contributing to a well-rounded comprehension of teacher resilience and its impact on education. Two teacher resilience studies had single authors, while the others included multiple writers. East Asia has the most studies, eleven. Seven European studies followed. Studies covering more than one country were not found in the studies examined. In this context, there is a need to plan studies in which cultural comparisons will be made to examine the resilience levels of teachers from more than one country with multiple variables. Most investigations were effect determination (13), correlation (11), or exploratory (3). Analyzing sample group classification by education level shows that some studies were done at one level and others at numerous levels. Eight primary

and seven secondary schools did the most research. The ranking comprised high school (5) and preschool (4). Five studies were undefined, while one was university-level. There is enough studies at the primary and secondary levels. However, studies measuring the resilience levels of university-level lecturers should be planned. EFL instructors worked together when their specializations were examined. Five studies found branch instructors, although two studied preschool teachers and one evaluated special education teachers. In nine inquiries, teacher branches were not explained. Comparisons regarding the specializations of teachers are not dense. It is suggested that the other training that the teachers receive together with their branches should be included in the studies as a variable. It was observed that the preferred scales were mostly nanostructured. It is stated that teachers' resilience is dynamic and multi-structured. Therefore, it is preferable to use more comprehensive scales. The varying citation counts among the articles underline the wide-ranging influence and impact these studies have had in the teacher resilience research domain. Brouskeli et al. (2018) has the highest citation count, suggesting its notable relevance in the field, while studies like Fernandes et al. (2019) and Liu et al. (2021) also exhibit significant impact. The disparities in citation numbers emphasize the need to consider multiple factors, such as publication date and overarching trends, when assessing the influence of these articles in the field of teacher resilience.

The researchers want to know if certain variables have an impact on the teachers' assessments of the degree of teacher resilience. First, it was looked at if there were any differences amongst the teachers in terms of demographics like age and gender. Studies show that results vary depending on demographic factors. It is possible to find out whether instructors' demographic factors interact with other factors (such as being married and having children). Moreover, factors related

to instructors' professions were investigated. For instance, postgraduate teachers are resilient than their undergraduate colleagues. According to study, the impact of teachers' seniority on their degrees of resilience varies. It is advised to perform research in this area at various educational and cultural levels.

In studies that examine if there is a correlation between teacher resilience and specific variables, the variables are categorized under three headings: psychological variables, variables connected to the workplace, and variables related to teachers' own competence and qualities. There is a negative correlation between teachers' resilience and depression, stress, anxiety, well-being, and emotion. On the other hand, dispositional hope, quality of life, well-being, and mattering are positively correlated. In the context of workplace variables, job burnout, and turnover intention are negatively correlated, while job crafting, meaningful work, work engagement, and working conditions are positively correlated. In the context of teachers' own competence and qualities, resilience was shown to be positively associated with emotion regulation, use of emotion, total emotional intelligence, self-emotional appraisal, empathy, others' emotion evaluation, teacher competence, teacher self-efficacy, crisis self-efficacy reflection, and self-esteem. In addition to correlation studies, impact studies can also be conducted with these variables, which are thought to be related. Another result is that anger, anxiety, mindfulness, enjoyment, social support, self-efficacy, fear, and training all have an impact on teachers' resilience. The second group consists of the many factors that are subjected to research about the influence of resilience. Teachers' resilience influences stress, depersonalization, personal accomplishment, emotional exhaustion, resilience in children, work engagement, happiness, well-being, self-care, and success.

In closing, the increasing research on teacher resilience between 2014 and 2022 highlights its growing significance in education. This mini-review offers a balanced and comprehensive overview of the studies while critically examining their impact. The research landscape is diverse, with varying authorship, locations, and focus. Several variables are associated with teacher resilience, emphasizing the need for further studies exploring resilience levels across different cultural backgrounds, educational levels, and specializations. Additionally, future research should utilize comprehensive, multi-structured scales for a more holistic understanding of teacher resilience. Longitudinal studies can be conducted to determine whether the effects of these variables vary over time. It can also be investigated whether there is a teacher resilience mediating role in the relationship between these variables. The conclusions of this mini-review emphasize the importance of considering multiple factors and taking a critical approach when evaluating research impact in the field of teacher resilience, contributing to the development of effective strategies to support and enhance teacher resilience in various educational contexts.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Stress, mental health and sociocultural adjustment in third culture kids: exploring the mediating roles of resilience and family functioning

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Introduction: This cross-sectional study explores the contributions of personal and contextual factors in the adjustment process of a sample of internationally mobile children and adolescents having relocated to Switzerland. Based on evolutionary developmental theories and recommendations by Research Domain Criteria and The Hierarchical Taxonomy of Psychopathology theoretical frameworks, we hypothesized and tested a heuristic model of TCK adjustment, aiming to identify prevention and treatment targets tailored for our sampled population.

Methods: We assessed the relationships in the hypothesized models, particularly how perceived and acculturative stress influence TCK adjustment and whether the relationship between the predictors of TCK stress and the outcomes of TCK adjustment are mediated by resilience and family functioning. A total of 143 participants aged 7−17, having relocated internationally with their working parent(s), recruited in local and international schools in Switzerland, were included in this study. Data were collected using an online survey after we collected consent. We assessed factors of adjustment using validated questionnaires: perceived stress and acculturative stress and the potential mediating roles of family functioning and resilience. We measured the outcome of adjustment through mental health difficulties and sociocultural adjustment. We used path analysis to test the model.

Results: Results highlight the contributions of perceived stress and acculturative stress to TCK mental health and sociocultural adjustment. We also we found a mediation effect for resilience in the relationship between perceived stress and mental health. Family functioning was not a significant mediator in any relationship that we assessed.

Discussion: We discuss implications for future research, promoting TCK adjustment and preventative psychotherapeutic interventions.

KEYWORDS

adjustment, stress, family functioning, third culture kid, resilience

Introduction

An international family relocation is both an opportunity and a challenge. Parents may hope that the experience will teach their children open-mindedness, flexibility, and world awareness. However, these benefits are inherently associated with the cost of losing friends and closeness to relatives and adjusting to new cultures, climates, and schools (Miyamoto and Kuhlman, 2001;

McLachlan, 2007; Van Der Zee et al., 2007; Lijadi and Van Schalkwyk, 2017). For these children and adolescents, any benefits are conditional on their ability to buffer the stress associated with an international move (Vercruysse and Chandler, 1992; Pittmann and Bowen, 1994; Straffon, 2003; Van Der Zee et al., 2007; Weeks et al., 2010; Lucier-Greer et al., 2015; Sterle et al., 2018; McKeering et al., 2021). Children who relocate internationally with their working parents are labeled "Third Culture Kids" (TCK). The term, first introduced by Useem and Downie (1976), was later refined as "internationally mobile children and adolescents, who relocate with their families for work or advanced training purposes," sometimes on short- to mid-term contracts, in this case, described as "highly mobile" (Pollock et al., 2010; Van Reken et al., 2017). The ability to adjust is central in the developmental trajectories of TCK and has implications for their mental health and social development. Research suggests that these individuals will develop a fluid and plural identity based on the hybrid integration of their cultural experiences (Bhabha, 2004; Jamshidian, 2019).

This study aims to strengthen our understanding of factors influencing TCK adjustment, by means of a heuristic model including primary factors and mediators. Haslberger et al. (2014) propose a comprehensive expatriate adjustment model, which considers the dimensions, domains, and dynamics of expatriate adjustment. The model acknowledges the interaction of dimensions of cognitive, affective, and behavioral indicators with various environmental and life domains in a dynamic, time-sensitive setting. Another model proposed by Naithani and Jha (2009) compiles adjustment factors identified throughout research in the field in a multidimensional model. This model isolates family, individual demographic and psychographic, work, and other environmental and contextual factors that influence expatriate adjustment. We assume that a network of personal and environmental factors will contribute to TCK adjustment (Nolen-Hoeksema and Watkins, 2011). However, empirically validated models of TCK adjustment, which account for developmental aspects of adjustment, still need to be included to the best of our knowledge.

We chose the theoretical standpoint of transdiagnostic models such as Hierarchical Taxonomy of Psychopathology (HiTOP) and Research Domain Criteria (RDoC), which focus on the scaffolding of psychopathology, for the construction of our hypothesized model (Conway et al., 2012; Drury and Cuthbert, 2015; Kotov et al., 2017). As suggested within the RDoC initiative, this study considers the TCK sample as having encountered a particular stressful exposure and aimed to document the mechanisms involved in TCK adjustment. The HiTOP framework considers outcomes such as internalizing or externalizing symptoms as mental health indicators more accurately than bound clinical diagnoses. Ellis and colleagues consider developmental adjustment to stress a part of life's ordinary course through their evolutionary–developmental perspective (Ellis et al., 2022). This evolutionary view of adjustment to change considers that the effects of adverse childhood experiences have an additive effect on developmental outcomes rather than the opposed cumulative risk view (Cicchetti and Tucker, 1994; Cicchetti and Rogosch, 1996; Felitti et al., 1998; Danese and McEwen, 2012). Stress and adversity in childhood will not always dysregulate or impair development but may regulate adaptive patterns of functioning (Belsky, 2008; Ellis and Giudice, 2014; Frankenhuis and Amir, 2022). The effectiveness of an adaptive pattern is determined by context, such that the analysis of any particular trait or behavior becomes inextricable from the context within which the pattern is expressed. In the case of TCK, the

expression of adjustment will be read within the context of repeated sociocultural change, calling for a set of traits, skills, and resources that could be inefficient in a sedentary setting, in what is termed experience-driven plasticity (McLaughlin et al., 2014; Sheridan and McLaughlin, 2014). The threat and deprivation framework furthers our understanding of the adaptive response. For example, TCK might experience temporary loss of learning opportunities linked with language barriers or perceived threats due to unfamiliar surroundings or strains on parenting, all of which will participate in the shape of their developmental adaptive response. The threat and deprivation framework underlines that an adaptive response to the immediate environment may induce a ripple effect on responses to immediate and distal environments, perhaps influencing their susceptibility to future contexts and environmental strains (Ellis et al., 2022). A TCK who learns to cope with international relocation and reduce the stress linked with the immediate, unpredictable environment will benefit from learning and plasticity in developing neural pathways. This developmental adjustment may regulate future, less immediate responses in a TCK's life, which emphasizes the importance of providing a framework for positive learning, resolution of stress, and understanding of the factors contributing to or hindering their adjustment (Cicchetti and Tucker, 1994). Hinde (1992) developed the idea that complex systems may be described without aiming to achieve a universal, exclusive, or uniform description of the system itself. With that in mind and informed by existing literature, we developed two TCK adjustment models (Figure 1).

Searle and Ward (1990) define adjustment as a dual concept comprising of psychological and sociocultural aspects, each conceptualized within different frameworks. On the one hand, psychological adjustment, framed within the stress and coping theoretical model, defines stress as "a particular relationship between the person and the environment that the person perceives as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus and Folkman, 1984, p. 19). Lazarus and Folkman's model identifies perceived stress as a predictor of psychological adjustment: the perception of stress is retrieved from the actual stressor and is linked with an individual's perception of their ability to cope and their assessment of the stressful situation. Such stressors include international relocation and the related unpredictability of a new environment, novelty, change associated with the new location, a new school, an unfamiliar language, and the necessity of fitting in and making new friends (Searle and Ward, 1990). The individual's perception of stress can either ameliorate or hinder the adjustment process and, therefore, the individual's mental health. On the other hand, sociocultural adjustment is explained through social learning theory and the acquisition of knowledge which facilitates integration within the new context, such as language skills or cultural norms (Bierwiaczonek and Waldzus, 2016). "Acculturation is the process of transferring culture from one group of people to another group in response to contact with one another" (Amason et al., 1999, p. 312). Sociocultural adjustment is a long-term outcome of that very process (Berry, 2006). While some research suggests that TCK may develop their own identity rather than assimilate into another culture, they are nonetheless confronted with changes upon transitioning from one country to another (Chankseliani, 2018). Acculturative stress results from acculturation and is described as a response to strains associated with changes in habits and patterns such as language, behaviors, interactions, and environment (Berry, 1980; Padilla et al., 1985).

FIGURE 1
Hypothetical mediation models of TCK adjustment.
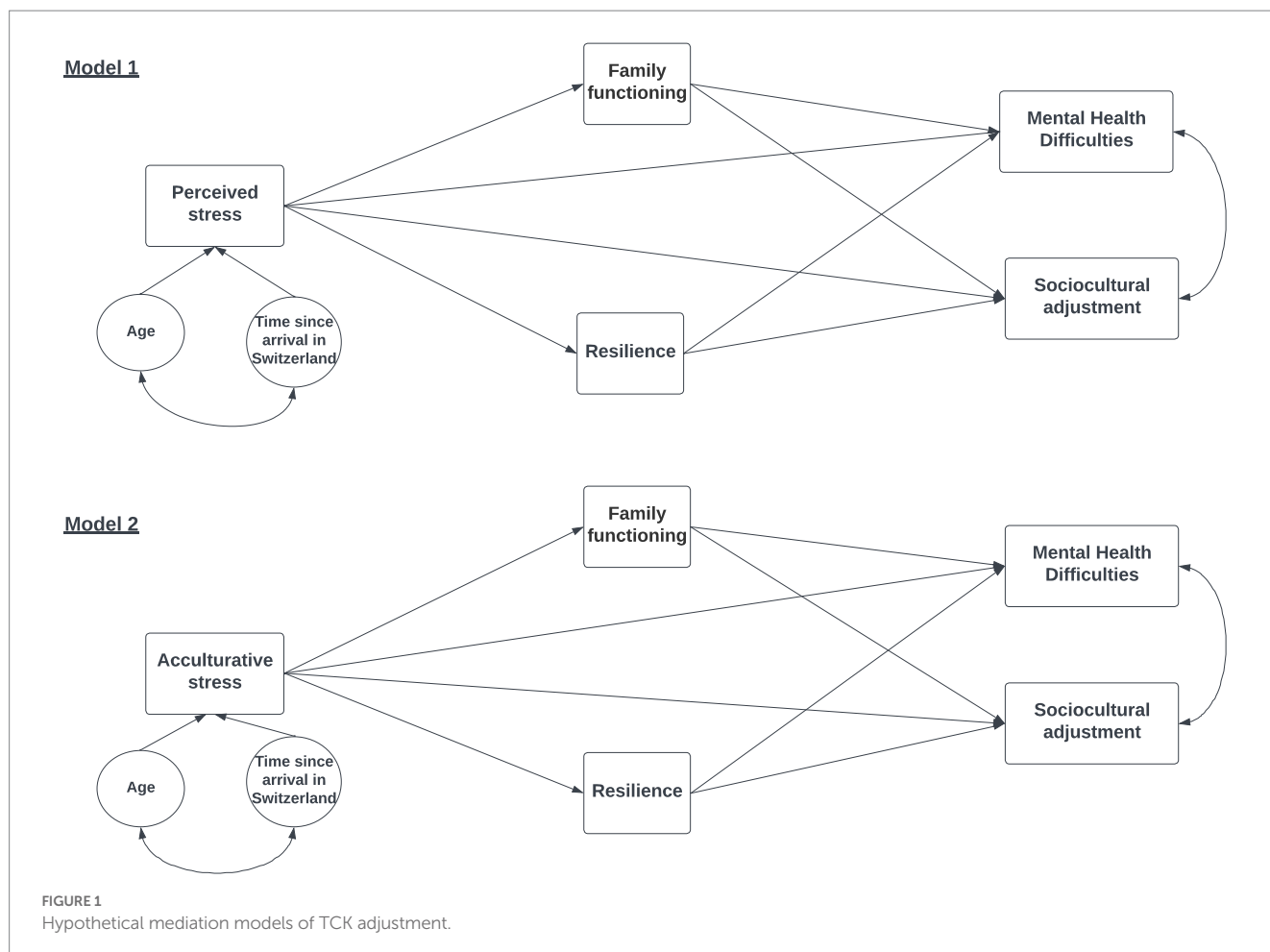
Acculturative stress in children relates to their feelings of being discriminated against or marginalized, negative feelings about being in a new country or speaking a new language, changes in cultures between schools, or changes in family dynamics due to local or cultural realities (Suarez-Morales et al., 2007; Morales, 2015). Symptoms that develop from acculturative stress may include internalizing and externalizing symptoms and family conflict and thus impact both social adjustment and mental health (Berry, 1988, 2006; Akhtar, 2012; Chien, 2013; Sirin et al., 2013).

Resilience is an adaptive process that enables an individual to function when confronted with risk factors that are expected to affect developmental and adjustment outcomes (Masten et al., 2012; Masten, 2014). Resilience has been extensively associated with better developmental outcomes in high-risk environments and is described as the ability to navigate and negotiate those challenges, potentially promoting mental health and well-being (Ong et al., 2006; Ahern et al., 2008; Ungar, 2010; DiCorcia and Tronick, 2011; Windle, 2011; Vieira et al., 2020). Many studies have identified the mediating role of resilience between life challenges and mental health outcomes and well-being in children and young adults (Fritz et al., 2018; Collazzoni et al., 2020; Tam et al., 2020; Ye et al., 2020; McLafferty et al., 2021).

Stress from a life change, such as international relocation, is managed by individual resources and social support (Wang et al., 2020). Family relationships are the first stage of a broader context that affects the child's ability to regulate stress and navigate change. These relationships have a crucial influence on the outcomes of adversity during childhood. Research on how parenting affects a child's ability to adjust is extensive and supports the idea that this is a factor that participates in differential sensitivity to stress and the longitudinal development of mental health (Chen et al., 2015; Cano et al., 2016; del Barrio et al., 2016; Lorenzo-Blanco et al., 2017; Keijser et al., 2020). In TCK, research shows the participating role of parenting on adjustment (Shaffer et al., 2001; Takeuchi et al., 2007; Haslberger and Brewster, 2008), although a recent review points to a gap in research on family adjustment in TCK (Sterle et al., 2018). Walsh proposes a framework that integrates family functioning as a transactional process that mediates adjustment in complex environmental situations through problem-solving, communication, and encouraging growth and learning (Walsh, 2016). Current research suggests that family resilience fosters individual resilience and improves adaptability (Hadfield and Ungar, 2018).

Research goals

The current study aimed to examine the relationship between both perceived stress and acculturative stress and the two outcomes mental health difficulties and sociocultural adjustment, as well as the roles of resilience and family functioning in mediating these associations within a sample of TCK having relocated to Switzerland.

Within each model, we considered the potential mediating role of resilience on the outcomes of adjustment: an intermediate process between the individual psychological processes and the outcomes of adjustment to the international relocation as a stress factor. Considering resilience as a mediator further enforces the viewpoint of developmental plasticity and adjustment through skill-building. The potential mediation of family functioning acknowledges the importance of context in development.

Our main aim was to assess the relationships in the hypothesized models using path analysis. The following research questions guided our study:

1. How do perceived and acculturative stress influence TCK adjustment (measured in terms of mental health difficulties and sociocultural adjustment)?
2. Is the relationship between the predictors of TCK stress and the outcomes of TCK adjustment mediated by (a) resilience and (b) family functioning?

Research question 1, hypothesized that increased perceived and acculturative stress will both be negatively associated with TCK mental health and with sociocultural adjustment. Regarding research question 2, we hypothesized that the expected associations between TCK stress predictors and TCK adjustment outcomes would all be mediated by resilience and family functioning.

Methods

Participants and procedures

This cross-sectional study is part of a more extensive longitudinal study, including broader measures of psycho-socio-cultural adjustment of TCK and their families over two-time points between 2017 and 2021 (Ooi et al., 2022). We recruited participants from international and local schools in Switzerland, multinational companies in Basel, and the city of Basel's welcome comity. We distributed flyers and gave talks to approach target populations and invite them to participate. Inclusion criteria were (a) families with children between 7 and 17 years old, (b) parents relocating to Switzerland for employment, (c) both parent and child understanding and speaking English, and (d) neither parent nor child were Swiss citizens. The Ethics Committee of the Faculty of Psychology at the University of Basel issued an ethics approval for the study (Study No. 047–18-4). We obtained written informed consent and assent following the Declaration of Helsinki from participants and their parents prior to study-related procedures. All data were pseudo-coded without personal identifiers. We included and analyzed data from 143 child and adolescent participants in the present study.

Measures

Outcomes of adjustment

We assessed mental health problems using the 25-item SDQ (Goodman, 1997). Parents rated their child/adolescent on a Likert-type scale ranging from 0 (*not true*) to 2 (*certainly true*). The sum of subscales of emotional problems, conduct problems, hyperactivity,

and peer problems redeems a "total difficulties score." The parent-rated version of the questionnaire has shown strong validity and predictive value for clinical disorders and is considered a good predictor of mental health in children and adolescents. The scale is used in many studies across numerous countries and cultures (Goodman et al., 2000; Bourdon et al., 2005). Higher scores indicate more internalizing and externalizing problems, suggesting more mental health problems. Items 7, 21, and 25 are reverse coded for the total difficulties score. Reliability for the total difficulties score was high ($\alpha = 0.80$).

We assessed sociocultural adjustment using 21 items from the child version of the Sociocultural Adaptation Scale (SCAS-Child; Ward and Kennedy, 1999). Items explore behavioral and cognitive factors in sociocultural adjustments, such as making friends or feeling settled. We did not include the item "accepting/understanding the local political system," assuming this item would not apply. Various scale versions exist, and it is easily adaptable to specific cultural settings. Parents of children below 12 completed the SCAS-Child on their behalf. Items are rated on a Likert-type scale ranging from 1 (*no difficulty*) to 5 (*extremely difficult*) and are summed to provide a total score, with higher scores indicating more difficulties, suggesting poorer sociocultural adjustment. The SCAS-Child has been widely used in previous studies and has shown good reliability and cross-sample consistency (Lowi et al., 2011; Yuan et al., 2013; Titzmann and Gniewosz, 2018). Internal consistency, as measured by Cronbach's alpha, was 0.91.

Predictors

We assessed perceived stress using the 13-item Perceived Stress Scale for Children (PSS-C; White, 2014). Each child participant rated the items on a Likert-type scale ranging from 0 (*never*) to 3 (*a lot*). Items 2, 5, 6, 9, 10, 12, and 13 were reverse-coded, and the sum of all items provides a total score. The PSS-C has been widely used with culturally diverse samples and has shown good reliability and cross-sample consistency (Manns et al., 2021; Beranbaum et al., 2022; Takeuchi et al., 2022). Higher scores indicate higher levels of stress. Internal consistency, as measured by Cronbach's alpha, was 0.82.

We assessed acculturative stress using the 4-item Acculturative Stress Inventory for Children (ASIC; Suarez-Morales et al., 2007). The scale measures participants rated items on a Likert-type scale ranging from 0 (*does not apply*) to 5 (*bothers me a lot*). Items explore perceived discrimination and immigration-related stress. Items are summed to provide a total score, with higher scores indicating higher levels of acculturative stress. The ASIC has been widely used with culturally diverse samples and has shown good reliability and cross-sample consistency (Thibeault et al., 2017; Schlaudt et al., 2021). Internal consistency, as measured by Cronbach's alpha, was 0.66.

Mediators

We assessed resilience using the 12-item Child and Youth Resilience Measure (CYRM-12; Liebenberg et al., 2013). The scale has been used worldwide, and pilot studies have confirmed its validity and consistency across 11 countries and 14 communities (Renbarger et al., 2020). Each child participant rated the items based on a 3-point Likert scale ranging from 1 (*no*) to 3 (*yes*), and items are summed to provide a total score. Higher scores indicate higher levels of characteristics associated with resilience. As measured by Cronbach's alpha, internal

consistency was 0.64 and deemed acceptable (Nunnally and Bernstein, 1994; Pallant, 2001; Vaske, 2008).

We assessed family functioning using the 12 items that assess general functioning from the original 60-item McMaster Family Assessment Device (Epstein et al., 1983). Previous research suggests that the 12-item general functioning scale gives a good picture of family functioning (Ridenour et al., 1999; Georgiades et al., 2008; Al-Krenawi et al., 2009; Hosseini et al., 2018). Parents completed the 12 items using a Likert-type scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Odd items are reverse-scored, and all items are summed to provide a total score. Higher scores indicate poorer family functioning. The scale has satisfactory reliability, good test–retest reliability, and high validity and has been empirically tested across cultures in clinical and non-clinical settings (Epstein et al., 1983; Miller et al., 1985; Keitner et al., 1990; Morris, 1990; Wenniger et al., 1993). Internal consistency, as measured by Cronbach's alpha, was 0.84.

Covariates

Based on the existing literature, we controlled for age (empirically divided into two groups, 7–12 years and 13–17 years) and the length of stay in Switzerland (in months) as these variables were shown to influence the adjustment outcome (Vercruysse and Chandler, 1992; Straffon, 2003; Ittel and Sisler, 2012).

Data analysis

Research data were analyzed using R (Version:4.02). (The R Foundation for Statistical Computing for Windows; Version 3.5.1 for Windows[1]). We used univariate statistics (mean, standard deviation, and graphical displays) to describe the participants' demographics and study variables. Then, we performed correlation analyses to examine the bivariate associations among the variables of interest. We checked for multivariate normality, multivariate outliers, and multicollinearity, as recommended by Kline (2015). No cases had to be removed from the dataset and multicollinearity was no issue. Models were kept separate because of a suppression effect between acculturative stress and perceived stress. A manipulation check showed that participants all completed the survey within an acceptable time frame (Curran, 2016).

We conducted the path analyses using the R package Lavaan (Rossee, 2012; Li, 2016). Since the model was just identified (c.f. Figure 1), both models fitted the data perfectly. Hence, no assessment of goodness of fit was necessary (i.e., Comparative Fit Index, CFI, Tucker-Lewis Index, and TLI were equal to 1). Regarding path coefficients, we provide unstandardized estimates and confidence intervals from bootstrapping from 500 samples, including the corresponding *z*-statistics and *p*-values, plus the standardized estimates. We assessed direct, indirect, and total effects. When the total effect was significant, then the direct and indirect effects were used to determine if partial mediation had occurred, and, in case the direct effect was not significant, full mediation was assumed (Preacher and Hayes, 2004; Zhao et al., 2010; Gunzler et al., 2013). When

indirect effects were significant, we accepted that mediation had occurred (Preacher and Hayes, 2004; Zhao et al., 2010; Gunzler et al., 2013). Estimates of standard errors were based on the Delta method.

Results

Sample description

The total number of children who participated in this study was 143. We dealt with missing values using the full information maximum likelihood method, thereby assuming a missing at random (MAR) pattern *sensu* Rubin (Rubin, 1976). Parents of 17 participants did not complete the demographic section, although their children answered the questionnaires. Demographics are hence based upon 126 observations and 17 missing values. Among the child participants, 76 (60%) were females, and 50 were male (40%). Participants ages were evenly distributed between both groups: 51 (40%) were below 13 years, and 75 (60%) were aged from 13 to 17. The average time spent in Switzerland was 53.3 months (ranging from 51 to 66 months). The child's ethnicity was European/Caucasian in 89 cases (71%), Asian in 12 cases (10%), multiple in eight cases (6%), Hispanic in four cases (3%), and other in 13 cases (10%) (including North American, South American, and other than specified). Participant children were of 55 different nationalities, including 23 combined nationalities. Parents reported English as the first language spoken at home in 82 (65%) cases, whereas German was the first language in two cases, Italian in three cases, and French in one case. German, French, and Italian are the three official languages of Switzerland.

Descriptive statistics

Table 1 presents the means and standard deviations for each variable involved in the two models, except for covariates, and the correlation matrix among these variables.

Largest associations were observed between perceived stress and resilience and between perceived stress and sociocultural adaptation. Somewhat weaker but still considerable associations were further found between acculturative stress and sociocultural adaptation, between resilience and mental health difficulties, and between resilience and sociocultural adaptation. Note also the relatively high correlation between perceived and acculturative stress.

Table 2 presents the regression statistics for each model. As shown in this table, perceived stress, resilience and sociocultural adjustment each account for >30% of the variance explained in model 1. Family functioning has low incidence score for both models. In both models, sociocultural adjustment accounts for >10% of variance than mental health difficulties.

Path coefficients are shown in Figure 2. Table 2 summarizes the results of direct, indirect, and total effects in each model.

Model 1

As shown in Table 3, one of the two total effects was significant (research question 1). Thus, perceived stress was positively associated with sociocultural adjustment difficulties, with a large effect size. Concerning the mediating role of resilience and family functioning in the relationship between perceived stress and the outcomes of TCK

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TABLE 1 Descriptives and correlations of study variables.

Variable	N	Mean (SD)	1	2	3	4	5	6
1. Perceived stress: PSS-C	138	149.9 (6.69)	1					
2. Acculturative stress: ASIC	138	7.75 (4.08)	0.42*	1				
3. Family functioning: MMFF	126	19.33 (4.57)	0.04	0.02	1			
4. Resilience: CYRM-C	122	30.98 (3.18)	−0.56**	−0.13	−0.09	1		
5. Mental health difficulties: SDQ	125	7.05 (5.17)	0.12	−0.1	0.28	−0.33*	1	
6. Sociocultural adaptation: SCAS	95	44.61 (12.14)	0.52**	0.47*	0.02	−0.36*	>0.02	1

N, number of observations; SD, standard deviation; PSS, perceived stress scale for children; ASIC, acculturative stress inventory for children; MMFF, McMaster family assessment device; SDQ, strengths and difficulties questionnaire, total difficulties score; SCAS, sociocultural adaptation scale – child version. $*p < 0.05$, $**p < 0.01$.

TABLE 2 Regression statistics.

R^2	Model 1	Model 2
PSS	0.35	
ASIC		0.14
MMFF	0.002	0.001
CYRM	0.31	0.01
SDQ	0.18	0.19
SCAS	0.33	0.36

$N = 143$, PSS, perceived stress scale (child version); ASIC, acculturative stress inventory for children; CYRM, child and youth resilience measure; MMFAD, Mc Master family assessment device; SCAS, sociocultural assessment scale (child version); SDQ, strengths and difficulties questionnaire total difficulties score.

adjustment (research question 2), we found that the relationship between perceived stress and mental health difficulties was mediated by resilience ($b = 0.15$, $p < 0.05^*$, see Table 3). This mediation effect can be considered an indirect only effect, as the corresponding direct effect between perceived stress and mental health was not significant (Table 3), suggesting full mediation and the unlikelihood of an omitted mediator (Zhao et al., 2010). The effect size of this mediation effect was small to medium.

The remaining three indirect effects did not significantly differ from zero. Thus, both indirect effects, with family functioning as a mediator, were unimportant. In this context, it is of note that all path coefficients pointing to or leading away from the mediator family functioning were not significantly different from 0 except for the coefficient between family functioning and mental health difficulties. This highlights a correlation in between family functioning and mental health difficulties outside of the relationship with the predictor perceived stress (see Figure 2).

We found a significant effect of age on perceived stress (see Figure 2). Time, however, did not influence perceived stress.

Model 2

As shown in Table 3, one of the two total effects was significant (research question 1). Thus, acculturative stress was positively associated with sociocultural adjustment difficulties, with a large effect size. We found that only the direct path from acculturative stress to mental health difficulties was significant. In contrast, the total effect was not significant, suggesting there may be one or more other relevant mediators for this association (Zhao et al., 2010).

Concerning the mediating role of resilience and family functioning in the relationship between the predictors of acculturative stress and the outcomes of TCK adjustment (research question 2), we found that all four indirect effects were unimportant. Consequently, neither family functioning nor resilience mediated the relationship between acculturative stress and mental health difficulties or sociocultural adaptation.

Discussion

The objective of this exploratory study was to determine pathways of adjustment in TCK based on two hypothesized models of TCK adjustment. Our findings contribute to enriching our understanding of the process of adjustment in TCK by providing evidence toward an intricate network of factors involved in psychological and sociocultural adjustment. The conceptual separation between adjustment types as proposed by Searle and Ward (1990) is justified in our findings. However it seems that these distinctive outcomes may be expressions of underlying intrinsic and extrinsic characteristics: the findings in this study emphasize that the personal experience of stress could be a key indicator in adjustment outcomes for TCK: intrinsic personal variables of cognitive interpretations of a stressful situation (perceived stress) and sensitivity to cultural change and discrimination (acculturative stress) are founding processes for mental health and adjustment to relocation in our sampled TCK. More specifically, our study provides evidence of the influence of perceived stress on sociocultural adjustment and, mediated by resilience, on mental health difficulties. Our second model shows acculturative stress's influence on adjustment outcomes: sociocultural adjustment and mental health difficulties. In this second model, no mediation is found, despite significant pathways between family functioning and mental health difficulties for one and resilience on both outcomes of adjustment for the other. This finding is in line with work by Krueger (1999, 2002) and Helzer and Hudziak (2002) on comorbidity and the structure of mental disorders; theories of psychopathology, which stem from Kruger's work, suggest feedback associations between latent psychological variables and transdiagnostic outcomes (Liu and Alloy, 2010; Conway et al., 2012). Likewise, we find that different subtypes of stress influence various outcomes, with the potential to generate feedback on stress due to adjustment difficulties. Moreover, our models' results suggest another mediator's existence, which underlines the system's complexity.

FIGURE 2
Path models of the hypothetical models of TCK adjustment. The models show the coefficients of the direct paths from the path analysis. The coefficients above lines are Beta coefficients (Standard error). Straight lines show the effects tested in the regression analysis. Curved lines show correlations. The standardized solution coefficient (effect size) is below the line. *$p<0.05$, **$p<0.01$, ***$p<0.001$.

Another finding from our study is the mediated relationship between perceived stress and mental health through resilience. Specifically, we found that increased levels of perceived stress led to decreased resilience, which in turn, led to more mental health difficulties. Our finding is in line with previous findings on the mediating role of resilience between life challenges and mental health outcomes (Fritz et al., 2018; Tam et al., 2020; Ye et al., 2020; McLafferty et al., 2021). On the other hand, family functioning affects mental health, although this variable does not mediate stress. Our sample's family functioning difficulty scores are slightly lower than the normal range reported for a non-clinical sample (Byles et al., 1988; Hogye et al., 2022). According to this measure, families communicate well about the move and provide a safe space for TCK, which aligns with previous findings (Selmer and Lam, 2004). Previous research suggests that after an international relocation, other family members are also disrupted in their habits; the international assignment may inverse parental roles, and all family members may experience increased stress and disrupted quality of life (Selmer and Lam, 2004; van der Zee et al., 2007). We assume that such family disruptions may affect family functioning and therefore TCK mental health, if closer-knit family relations do not compensate for increased family stress or personal struggles. Future studies could refine our understanding of the role of parenting strategies and parental satisfaction on TCK adjustment (Bornstein et al., 2018).

In summary, our findings from a healthy sample of TCK support the evolutionary theory which suggests that personal characteristics forge an individual's ability to cope with life stress (Ungar, 2008; Carver and Connor-Smith, 2010; Maranges and Reynolds, 2020; Maranges and Strickhouser, 2021). Prevention programs focusing on stress (perceived and/or acculturative stress) for children and teens relocating internationally seem fit to decrease cognitive vulnerability and improve adjustment and overall outcomes (Gillham et al., 2012). Skill sets to oppose stress could include mindfulness-based stress reduction techniques, psychological flexibility, optimism, coping skills, social support networks, physical activity, and a personal moral compass (Kashdan and Rottenberg, 2010; Fritz et al., 2018; Iacoviello and Charney, 2020; Tam et al., 2020; Arslan and Allen, 2021).

In addition, our results underline the role of resilience as an "intervening variable" on the outcome of mental health. Individuals who are resilient in their ability to cognize stress, change, and contrasts will adjust better (Hampel and Petermann, 2006). This intervention supports the assertion that resilience-building programs could benefit mental health and, more generally, adjustment in TCK (Waugh and Koster, 2015; Collazzoni et al., 2020). Resilience enhancement programs associated with stress reduction techniques have been effective in various populations (Black, 1993; Kim et al., 2018). Moreover, in the case of TCK having developed a mental health disorder and understanding that these were not better explained by any other tangible trigger, treatment programs could include stress reduction and resilience-building skills (Van Daele et al., 2011; Sharma and Rush, 2014; Joyce et al., 2018).

TABLE 3 Defined parameters showing measured effects from each model are presented in Figure 2.

Model	Effect type	Path	Path coefficient (CI lower/upper)	Standard error	Z-value	P (>Z)	Standardized path coefficient
Model 1							
	Total effects	PSS-SDQ	0.097 (−0.064/0.249)	0.070	1.385	0.166	0.125
		PSS-SCAS	1.048 (0.724/1.333)	0.175	5.997	<0.001***	0.561
	Direct effects	PSS-SDQ	−0.069 (−0.246/0.082)	0.080	−0.865	0.387	−0.089
		PSS-SCAS	0.953 (0.540/1.365)	0.216	4.406	<0.001***	0.511
	Indirect effects	PSS-MMFF-SDQ	0.01 (−0.024/0.051)	0.018	0.532	0.595	0.012
		PSS-MMFF-SCAS	−0.009 (−0.138/0.024)	0.020	−0.472	0.637	−0.005
		PSS-CYRM-SDQ	0.157 (0.057/0.276)	0.050	3.154	0.002*	0.202
		PSS-CYRM-SCAS	0.103 (−0.132/0.310)	0.109	0.947	0.344	0.055
Model 2							
	Total effects	ASIC-SDQ	−0.151 (−0.387/0.090)	0.115	−1.32	0.187	−0.119
		ASIC-SCAS	1.504 (0.951/1.986)	0.263	5.718	<0.001***	0.5
	Direct effects	ASIC-SDQ	−0.214 (−0.433/0.000)	0.107	−2.008	0.045*	−0.169
		ASIC-SCAS	1.388 (0.845/1.907)	0.254	5.459	<0.001***	0.461
	Indirect effects	ASIC-MMFF-SDQ	0.008 (−0.060/0.082)	0.029	0.286	0.775	0.007
		ASIC-MMFF-SCAS	−0.013 (−0.188/0.098)	0.045	−0.278	0.781	−0.004
		ASIC-CYRM-SDQ	0.055 (−0.001/0.137)	0.040	1.366	0.172	0.043
		ASIC-CYRM-SCAS	0.128 (−0.026/0.342)	0.093	1.379	0.168	0.043

$N = 143$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$, CI, confidence interval from bootstrapping; PSS, perceived stress scale (child version); ASIC, acculturative stress inventory for children; CYRM, child and youth resilience measure; MMFAD, Mc Master family assessment device; SCAS, sociocultural assessment scale (child version); SDQ, strengths and difficulties questionnaire total difficulties score. Effect sizes for standardized path coefficients: >0.1 = small, >0.3 = medium, >0.5 = large.

Limitations and directions for future studies

This study has several limitations. Firstly, we conducted the study during the first and second waves of the COVID-19 pandemic. International border closures and uncertainties, as well as social isolation, will have triggered a significant increase in stress for TCK and their families, mainly because of the physical impossibility of reaching their homeland and relatives and friends in their home countries. Research shows that stress from the COVID-19 pandemic hinders adolescent adjustment (Ellis et al., 2020; Ye et al., 2020). It is only possible to report the distinction between COVID-19-related perceived stress and that more closely related to the relocation, although there may be a connection between the two. However, our measure of acculturative stress is specific to the relocation situation. Replication studies would allow a further investigation of our findings post-pandemic and account for the low reliability of ASIC and CYRM found in this study. Mixed methods studies, including qualitative interviews, could help determine which stress factors are essential in perceived and acculturative stress.

Second, this study did not integrate longitudinal adjustment measures due to high dropout rates and recruitment difficulties related to the COVID-19 pandemic. Longitudinal measures of adjustment constitute an interesting insight into the dynamics of the adjustment process. They should be considered for further studies, as suggested

by our study's correlation between acculturative stress and length of stay in Switzerland.

Also, our sample experienced slight contextual variation (same country, same period) and shared many demographic similarities (socio-economic status, location, attended school). We assume that the measured variation in mental health and sociocultural adjustment was due to the measured processes, although we cannot rule out other contributions to TCK adjustment.

This exploratory study focused on particular traits in a defined ecological sample. Our findings are specific to this population and withhold an emphasis on sociocultural change, which could be replaced in other studies to reproduce our results and account for variance in alternative clusters of developing children who share alternative similarities (i.e., migrant children or children undergoing a divorce). Future studies could also include comparison groups between clinical and non-clinical samples or TCK versus non-TCK specific samples.

Future research on TCK could include exploring the role of developmental stages and locus of control in perceived stress (Boyraz et al., 2019; Srivastava and Kapoor, 2021). As found in the correlation between age and perceived stress in our study, the ability to process the disruptions from a move depends on a child's cognitive, emotional and social developmental stage (Vercruysse and Chandler, 1992; Ittel and Sisler, 2012). Moreover, a subtle difference in status by which their relocation is an independent life event (fateful). In contrast, it may be considered a dependent life event for their parents, who chose to relocate. This element of choice makes TCK's cognitions about and around the move particularly sensitive.

Conclusion

The findings from this study contribute to a better understanding of the processes involved in TCK adjustment, particularly the roles of perceived stress and acculturative stress on mental health and sociocultural adjustment, respectively as well as the mediating role of resilience and family functioning. As such, this study expands on our knowledge of the process of TCK adjustment and offers a pragmatic measure of the dual process described by Ward and Kennedy (1999).

Our findings contribute to building evidence of the existence of specific personal sensitivities to stress exposure (Hammen, 2006; Conway et al., 2012). Our study is an example of the pathways toward the ability to adjust to life stress and offers an insight into the etiology of potential chronic difficulties in adjustment and sensitivities to the development of psychopathology.

We propose that building specific skills such as resilience and stress reduction strategies would promote developmental plasticity

and conditional adjustment to family relocation stress such that TCK may develop an adaptive function that they could exert to thrive in an ever-changing world (Ellis et al., 2017; Ellis and Del Giudice, 2019).

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: Jones et al. (2022). Data set – Stress, Mental Health and Sociocultural Adjustment in Third Culture Kids: The Mediating Roles of Resilience and Family Functioning [Data set], Zenodo, https://doi.org/10.5281/zenodo.7304328.

Ethics statement

The studies involving human participants were reviewed and approved by The Ethics Committee of the Faculty of Psychology at the University of Basel issued an ethics approval for the study (Study No. 047-18-4). Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

Author contributions

EJ, YO, MR, and JG contributed to the study concept and design. EJ and AM analyzed the data. EJ drafted the manuscript. JG, MR, YO, and AM contributed to critical advice and revisions of the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The effect of teacher self-efficacy, teacher resilience, and emotion regulation on teacher burnout: a mediation model

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Introduction: This research aimed to explore the relationships among teacher self-efficacy, teacher resilience, emotion regulation, and teacher burnout within the context of Chinese English as a foreign language (EFL) teachers.

Methods: A sample of 638 Chinese EFL teachers participated in this study. They completed self-report assessments for teacher self-efficacy, teacher resilience, emotion regulation, and teacher burnout. Confirmatory factor analysis was conducted to establish the construct validity of the measurement tools. Subsequently, structural equation modeling was utilized to assess the proposed structural model.

Results: The results of the study revealed significant insights. Teacher self-efficacy and resilience exhibited direct and negative associations with teacher burnout. Additionally, an interesting finding emerged where teacher emotion regulation indirectly affected teacher burnout, mediated by teacher resilience. The analysis supported the suitability of the partial mediation model as the best-fit representation of the relationships.

Discussion: The findings of this study provide valuable implications for EFL teaching programs. The negative connections between teacher self-efficacy, resilience, and burnout highlight the importance of nurturing these factors to mitigate burnout risk. The discovered mediation effect of teacher resilience emphasizes the role of emotion regulation in promoting teachers' overall well-being. These outcomes collectively contribute to the understanding of teacher dynamics and suggest potential avenues for targeted interventions.

KEYWORDS

self-efficacy, teacher resilience, emotion regulation, EFL, burnout

Introduction

Instructors are regarded as key players among the variety of educational system stakeholders because they have the power to influence both individual students' achievement and the system's overall performance (Darling-Hammond et al., 2020). As one of the important teacher variables, burnout is viewed as the inability to manage work-related anxiety, deteriorating social relationships, sustained exhaustion, and decreased interest in the profession (Li et al., 2021). Teacher burnout is a pervasive problem that has been widely studied in educational research (Chang, 2009). Burnout among teachers is a significant concern due to its negative impact on teacher well-being, job satisfaction, and student outcomes (Hakanen et al., 2006; Chang, 2013). In recent years, the significance of teacher resilience and self-efficacy has been recognized as essential components of teacher well-being and the prevention of teacher burnout (Daniilidou et al., 2020). In teacher training programs, teachers' burnout and stress are crucial because it is

believed that they may be important contributing factors to teachers' attrition (Gallant and Riley, 2017; Amitai and Van Houtte, 2022).

Self-efficacy, as another variable, is based on the social cognitive theory, which highlights the development and use of human agency and the idea that individuals can have some control over their behavior (Bandura, 2006). According to the social cognitive theory, self-efficacy of teachers can be characterized as a person's confidence in their own ability to organize, plan, and perform activities necessary to achieve specific educational objectives. Teacher self-efficacy pertains to a teacher's belief in their own ability to successfully carry out specific teaching tasks and responsibilities (Tschannen-Moran et al., 1998). It is an important factor in determining a teacher's performance, job satisfaction, and overall well-being (Tschannen-Moran and Hoy, 2001). Studies have shown that teachers with high levels of self-efficacy are more effective in their instructional practices and are more likely to persist in the face of challenges (Skaalvik and Skaalvik, 2014; Han and Wang, 2021; Liu et al., 2021). They also tend to be more engaged with their students, have better relationships with their colleagues, and experience less stress and burnout (Zee and Koomen, 2016).

Teacher resilience is an important factor that can contribute to reducing teacher burnout (Polat and İskender, 2018). Resilience is the ability to adapt and cope with challenging situations, such as heavy workloads, difficult students, and negative school environments (Mansfield et al., 2016). Resilient teachers are better able to bounce back from setbacks and maintain their motivation and energy levels. Research has shown that resilient teachers are more likely to have a positive attitude toward their work, experience less stress, and have better job satisfaction than less resilient teachers (Daniilidou et al., 2020). Resilient teachers also tend to have better student outcomes, such as improved academic performance and fewer behavior problems. There are several factors that can contribute to teacher resilience, such as social support from colleagues and administrators, positive teacher-student relationships, and effective coping strategies (Beltman et al., 2011; Liu and Chu, 2022). However, it is important to note that resilience is not a fixed trait and can be developed through training and interventions. Given the importance of resilience in preventing teacher burnout, it is crucial to understand the factors that can promote resilience among teachers, especially those working in challenging environments such as Chinese EFL teachers (Chu et al., 2021).

The other variable under investigation in this study is emotion regulation, which is concerned with one's capacity to manage, alter, and regulate the awareness and conveyance of emotions brought on by both internal and external variables (Wijaya, 2021; Zhao, 2021). It is a method by which individuals try to influence the emotional events they have in order to further their own goals (Colombo et al., 2021). In the teaching profession, emotions, intra-psychological factors, and elements all play a significant role. As a result, teachers' performance and academic achievement are heavily reliant on their capacity to recognize and manage these feelings (Zhao, 2021). Therefore, it can be concluded that instructors' ability to control and maintain emotional experiences in the classroom is referred to as teacher emotion regulation (Wang and Ye, 2021). This management may consist of how the teachers perceive, express, alter, maintain, and create emotional interactions.

Although there is a great deal of literature on the psychological aspects of teachers, more empirical research is required to fully understand the elements that affect teachers' professional careers. Despite the importance of these constructs, research examining the associations among teacher self-efficacy, resilience, emotion regulation, and burnout in the context of Chinese EFL teachers is limited. Therefore, the purpose of this study is to investigate the relationships among teacher self-efficacy, resilience, emotion regulation, and burnout among Chinese EFL teachers. Specifically, we aim to determine whether self-efficacy and resilience predict burnout directly and whether emotion regulation has an indirect effect on burnout through the mediation of teacher resilience. Understanding these relationships has important implications for developing interventions to avoid teacher burnout and foster teacher well-being in the context of EFL teaching programs.

Literature review

Teacher burnout

Freudenberger (1974) first introduced the idea of "burnout" as a concept relating to the workplace as a kind of reaction to constant workplace stressors, manifesting as a psychological condition defined by one's decreased emotional state. According to Maslach and Jackson (1981), burnout can be broken down into three subsections: emotional exhaustion, personal accomplishment, and depersonalization. Emotional exhaustion, personal accomplishment, and depersonalization are all essential aspects of burnout. Personal accomplishment relates to a person's sense of ineffectiveness and inability to accomplish an assignment. Depersonalization is the process by which an individual begins to feel pessimistic about his/her career. Long-term job stress is thought to be the cause of burnout, especially in human service employees like instructors (Jennett et al., 2003). All instructors may experience stress at work, despite the varied causes, and the majority of them manage such tension well. Burnout, however, might be the result of unsuccessful efforts to deal with continuous tension (Jennett et al., 2003). A syndrome of emotional exhaustion, depersonalization, and decreased personal achievement is known as burnout (Maslach et al., 1996). According to Maslach et al. (1996), burnout is primarily defined by emotional exhaustion, while Pines and Aronson (1988) also included physical exhaustion, which is marked by low energy and persistent fatigue. In this sense, emotional exhaustion was defined as a person's experience of emotional desolation brought on by stresses, tensions, pressures, and work overload related to their employment. In such circumstances, people might constantly feel exhausted and lack the vigor and enthusiasm to meet the challenges of their everyday jobs (Maslach and Leiter, 2016). Depersonalization in the context of teacher burnout refers to negative, pessimistic mindsets and emotions about one's students or coworkers. Overall, depersonalized people frequently have negative opinions of their jobs and the coworkers they interact with. Reduced personal accomplishment describes a propensity for teachers to hold a negative opinion of themselves, as well as a broader perception that they are no longer performing a useful and significant job. According to research (Lee and Ashforth, 1996), the three components of burnout cannot be combined into a singular measurement, also Schaufeli and Salanova (2007) identify emotional exhaustion and depersonalization as the two main components of burnout. Research across cultural boundaries demonstrates that indicators of teacher burnout predict not only

teachers' motivation and work satisfaction, but also their subjective and objective health. For example, Hakanen et al. (2006) demonstrated that among Finnish instructors, both emotional exhaustion and depersonalization were inversely correlated with self-rated health as well as job performance. According to available studies (Schaufeli and Salanova, 2007), burnout and motivation have a negative relationship. In addition, in a study of educators in Hong Kong, Leung and Lee (2006) discovered that the exhaustion component of burnout indicated teachers' intentions to leave the profession. Several investigations have shown a moderate interplay between burnout and instructor self-efficacy (Friedman and Farber, 1992; Evers et al., 2002). However, Skaalvik and Skaalvik (2007) discovered a significant correlation between instructor self-efficacy and exhaustion using structural equation modelling.

According to research, people working in human service fields like medical, health care, social services, and education frequently experience burnout (Lizano, 2015). Teachers frequently experience exhaustion as a result of the demands of their jobs and other obligations (Hiver and Dörnyei, 2017). Although the relevant literature suggests that problems with the educational environment, such as student misbehavior, work-related stress, a lack of support, interpersonal issues, and role ambiguity, are primarily to blame for the emergence of burnout among teachers (Aloe et al., 2014; Scott, 2019), it is also acknowledged that instructors' psychological inclinations influence how they approach these unfavorable aspects (Herman et al., 2018). Self-efficacy beliefs are the one psychological element that affects teachers' abilities to cope with common stressors (Schwarzer and Hallum, 2008). Also, recent investigations have explored the interplay between teachers' emotions, technostress, and burnout in the context of distance learning during the pandemic (Sulla et al., 2022).

Teacher self-efficacy

Bandura (1997) defined self-efficacy as the belief that one can successfully accomplish a specific task. The first study on teacher self-efficacy was conducted in the late 1970s by the Rand Corporation, building on the work of Rotter (1966) and, more notably, Bandura's (1997) social cognitive theory. According to Bandura's (1997) social cognitive theory, teacher self-efficacy refers to the belief of educators in their own abilities to manage particular teaching tasks at a desired level of quality within a specific context. According to Bandura (2006), individuals are self-organizing, active, self-regulating, and reflective in this definition. According to this viewpoint, self-efficacy influences one's behaviors and objectives and is impacted by both individual behavior and environmental factors (Schunk and Meece, 2006; Skaalvik and Skaalvik, 2010). Self-efficacy has garnered significant attention in L2 research (Piniel, 2013; Fathi et al., 2023), as efficacy beliefs have been found to exert a profound influence on individuals' activity choices, level of effort invested, and persistence in the face of challenges. Furthermore, efficacy beliefs shape individuals' perceptions of opportunities and obstacles they encounter during the language learning process (Bandura, 2006). Efficacy beliefs influence people's choices of activities, the amount of effort they put into those activities, and how long they will persevere in the face of challenges. Moreover, efficacy beliefs decide how chances and barriers are observed (Bandura, 2006).

According to research on the characteristics of teachers, self-efficacy is favorably associated with work satisfaction (Skaalvik and Skaalvik, 2014), work engagement (Han and Wang, 2021), organizational commitment and negatively correlated with burnout (Waweru et al., 2021). Fathi et al. (2021) reported a negative association between teacher self-efficacy and job burnout. Furthermore, instructors with high self-efficacy observed less inappropriate student behavior and were better able to collaborate with their peers to achieve shared educational goals (Goddard and Kim, 2018). Similar results were found by Skaalvik and Skaalvik (2014) among 2,569 teachers in schools, showing that instructors who feel confident in their ability to do their jobs report higher work satisfaction and less emotional exhaustion. Research demonstrates that instructors with high self-efficacy perceptions foster a high-quality learning environment by designing lessons that challenge students' abilities, handling students' misbehaviors skillfully, and making an effort to engage students meaningfully (Tsouloupas et al., 2010).

The importance of teacher self-efficacy in relation to job satisfaction has been supported by recent investigations in the field. For example, Sulla and Rollo (2023) examined the effect of a short course on the rates of praise and on-task behavior among Italian primary school teachers. Their findings implied that a positive relationship between teachers' self-efficacy and job satisfaction, indicating that higher levels of self-efficacy were associated with increased satisfaction in the teaching profession (Sulla and Rollo, 2023). It is generally accepted that instructors who have higher levels of self-efficacy establish an atmosphere for developing stronger bonds with their students and interacting in ways that support behavioral functioning in students (Hamre et al., 2008). Burić and Macuka (2018) used a sample of Croatian teachers to demonstrate that instructors who were self-efficacious reported greater involvement in their job, more satisfaction, love, and enjoyment, and less exhaustion, despair, and anger toward their students. Choi and Lee (2018) used a mixed-methods approach to investigate the relationship between 190 EFL practitioners' teaching practices and teacher self-efficacy. The application of teaching practice and general self-efficacy were found to be strongly correlated. Additionally, the findings from the interviews suggested that cultural aspects and some opinions about the best methods to teach English had an impact on the relationship between actual teaching and efficacy beliefs. In a later study, Hoang and Wyatt (2021) emphasized the critical influence of culture and context in forming the self-efficacy beliefs, pedagogical approaches, classroom management, and student behavior management of Vietnamese pre-service teachers.

Teacher resilience

At first, the term "resilience" was used to describe children's capacity to overcome hardship and develop as a result of it (Li et al., 2019). Early psychological research on resilience focused primarily on identifying distinct personality types and other protective variables that could lessen the negative effects of demanding life circumstances and promote positive adaptation (Luthar and Cicchetti, 2000; Li and Lv, 2022). According to Richardson (2002), there are three stages to the resilience process: the first involves identifying resilience traits and qualities, such as self-efficacy, that can help instructors overcome

challenges; the second involves the adaptation process, in which the person tries to cultivate the resilience traits. According to Richardson (2002), this stage is defined as "disruptive reintegrative process for accessing resilient qualities" (p. 307). The individual successfully completes the third phase, which takes a multidisciplinary approach and is compelled by obstacles to develop strength over issues.

As reported by Bernshausen and Cunningham (2001), the notion of resilience alludes to one's capacity to recover and move forward after facing challenges. To put it another way, it is the capacity to adjust to challenging circumstances and enhance one's expertise or skill when dealing with pressures and negative events (Bobek, 2002). As noted by Hong (2012), one of the best methods to reduce the number of EFL teachers leaving their jobs is to increase their resilience using the right techniques. As stated by Mansfield et al. (2016), teacher resilience is an ever-evolving process that involves the interaction of both internal and external resources and allows educators to recover from burdens, harmful stressors, and unpleasant incidents in the classroom. The three aspects of "capacity," "process," and "outcome" are included in Beltman's (2015) multidimensional analysis of teacher resilience. The capacity component focuses on teachers' ability to use the resources they have available to deal with stressful experiences. Process describes a scenario where teachers' personal characteristics interact with situational variables to adopt effective tactics in the face of difficulties. The final component, outcome, describes how a resilient teacher performs at the end of their career with a higher level of happiness, satisfaction, dedication, and loyalty.

As an evolving field of positive psychology, people have described teacher resilience differently. According to Bobek (2002), teacher resilience is a dynamic process that reflects a teacher's ability to adjust to various circumstances and strengthens that ability in the face of unfavorable circumstances. Brunetti (2006) defines resilience as the capacity of educators to persevere with their dedication to teaching and pedagogical techniques even in difficult circumstances and despite repeated obstacles. Based on Oswald et al. (2003), teacher resilience is a result of teacher effectiveness and is defined as the capacity to manage one's limitations and environmental obstacles, regain strength when facing risks, and maintain well-being. Moreover, Day and Gu (2014) discovered moral courage and ethical principles as resilience-enhancing factors for teachers, and they proposed that the ability to sustain balance and possess a strong sense of dedication, control, and ethical direction within the regular environment where teachers carry out their duties is essential. Finally, Tait (2008) asserted that teacher resilience develops through interaction with the environment in difficult situations, and that it is applicable to both personal capacity and setting.

Howard and Johnson (2004) identified several essential traits that resilient teachers consistently demonstrate, such as a sense of agency, moral purpose, a strong support group, and a sense of accomplishment (p. 12). According to other studies, important characteristics of resilient teachers include having a positive attitude towards their work and high ethical standards (Stanford, 2001), the ability to manage their classroom effectively and develop strong connections with their students (Day, 2008), as well as possessing a good sense of humor (Bobek, 2002). Researchers have studied various facets of teacher resilience in relation to the important contributions of teacher resilience to successful educational achievement (Xie, 2021; Li and Lv, 2022). Also, Li and Lv (2022)

aimed to find whether there is a link between EFL teachers' resilience, emotion regulation, and success in the Chinese setting. The results revealed a direct and favorable relationship between emotion regulation, resilience, and success in EFL teachers. Besides, it was discovered that EFL instructors' resilience was stronger than their emotion regulation in predicting success. Likewise, Xie (2021) investigated the predictive strength of Chinese EFL instructors' emotion regulation and resilience in their work engagement. According to the results, both resilience and emotion regulation can significantly predict work engagement. Also, Richards et al. (2016) asserted that teacher resilience is essential in reducing the likelihood of teacher burnout.

Emotion regulation

Emotion regulation was more emphasized in L2 education with the growing interest in positive psychology and, as a result, greater efforts to uncover factors impacting L2 teachers and learners (Wang et al., 2021). According to Gross (1998), emotions arise as a result of the intensity of a repeated pattern of attention and reaction. When an individual faces a problem, they initially react to it, investigate it, and then elicit a particular emotional response. The impact of emotions can be constructive and advantageous, such as in enhancing decision-making skills. However, emotions can also be detrimental when they lead to "maladaptive cognitive or behavioral biases," depending on the circumstances. Also, Emotion regulation is mainly motivated by harmful and destructive emotions (Gross, 2015).

This concept has been described in various ways since its emergence. Gross (1998) defines emotion regulation as the way individuals control which emotions they feel, when they feel them, and how they express and experience them. Thompson et al. (2008) suggest that emotion regulation encompasses both internal and external processes that involve evaluating and managing emotions to achieve personal objectives. Cole et al. (1994) describe emotion regulation as the capacity to react to life's circumstances with a range of emotions in a socially acceptable and adaptable manner, allowing for both spontaneous and delayed reactions as appropriate.

Bielak and Mystkowska-Wiertelak (2022) has categorized emotion regulation into two processes: downregulate and upregulate. The former is used to minimize and regulate the impacts of negative emotions, whereas the latter is used to enhance and amplify good emotions. Given the prevalence of teacher-student interactions in the teaching profession, instructors commonly employ emotion regulation strategies. Li and Lv (2022) suggest that instructors could utilize downregulation methods to mitigate negative emotions, like stress, which could impede students' motivation, engagement, and achievement. Conversely, Gong et al. (2013) propose the use of emotional upregulation techniques to enhance teaching effectiveness and promote academic accomplishment. Similarly, Sutton (2004) recommends that teachers could employ emotional regulation strategies to foster a supportive teacher-student relationship while modeling an idealized image of an emotionally balanced educator.

Gross (2015) makes distinction between two kinds of emotion regulation: "intrinsic emotion regulation" and "extrinsic emotion regulation." Intrinsic emotion regulation occurs when an individual, especially an adult, seeks to regulate his/her own emotions. A person attempts to control the feelings of another individual through extrinsic

regulation, which has been studied in parent–child interactions. Barthel et al. (2018) have stated that regulation of emotions through external support is more effective than self-regulation, as the human brain expends less energy. In language classrooms, where emotional and vulnerable situations arise during learning, instructors can play a crucial role in helping learners manage their emotions through external support (Gkonou and Miller, 2019; Li and Lv, 2022).

Despite a growing interest in investigating emotion regulation across sciences, few studies have focused on language education, especially language teachers' emotion regulation (Greenier et al., 2021). In this regard, Benesch (2017) argued that in EFL classes, both instructors' and pupils' positive and negative emotions influence learning outcomes, with the former boosting and the latter decreasing learning. According to Golombek and Doran (2014), language instruction is an emotionally demanding occupation because of the significance and weight of different interpersonal relationships in EFL contexts. Various studies in various cultural settings have been performed in light of the interest in EFL teachers' emotion regulation. According to Gong et al. (2013), Chinese teachers employ various emotion regulation strategies and goals to manage their emotions before and after teaching. Their main objective is to minimize the adverse effects of emotions on students' learning. In a separate study, Yin (2016) investigated the emotion regulation processes used by Chinese teachers and how they influence their professional goals. The findings indicated that the use of emotion regulation techniques is beneficial for teachers in achieving their career objectives, and this, in turn, can impact their overall well-being.

The present research

Research has shown that higher levels of self-efficacy are associated with lower levels of burnout in teachers (Bandura, 1977; Caprara et al., 2006). Therefore, teacher self-efficacy was considered as a predictor of teacher burnout in the hypothesized model. Also, teacher resilience refers to a teacher's ability to adapt to and cope with the demands and challenges of their job, including stressful situations. Research has also shown that higher levels of resilience are associated with lower levels of burnout in teachers (Gu and Day, 2013; Mansfield et al., 2016). Therefore, teacher resilience was also added as a predictor of teacher burnout in our study. Emotion regulation refers to a teacher's ability to manage their emotions effectively in response to job-related stressors. Teachers who are better able to regulate their emotions are less likely to experience burnout (Gross and John, 2003; Castillo-Gualda et al., 2019). As such, emotion regulation was also added as a predictor of teacher burnout in this study. Additionally, teacher resilience was chosen as a mediator variable based on previous research suggesting that it plays an important role in the relationship between teacher self-efficacy and teacher burnout (Gratacós et al., 2021). Specifically, higher levels of teacher self-efficacy may lead to greater resilience, which in turn can reduce the negative impact of stress and prevent burnout. Additionally, emotion regulation has been found to be positively associated with resilience (e.g., Tugade and Fredrickson, 2004), implying that emotion regulation might also indirectly affect teacher burnout through resilience.

In light of the aforementioned background, the primary objective of this study was to explore the interconnectedness between teacher self-efficacy, teacher resilience, emotion regulation, and teacher burnout among Chinese EFL teachers. Specifically, the study sought to examine the direct impact of teacher self-efficacy and resilience on burnout while also investigating the indirect influence of emotion regulation on burnout through the mediating role of teacher resilience. The selection of EFL teachers as the sample for this study was driven by several reasons. Firstly, by focusing on the impact of teacher self-efficacy, resilience, and emotion regulation on burnout within the EFL context, the study aimed to gain valuable insights into the unique challenges and dynamics faced by EFL teachers. EFL teaching entails distinct characteristics, such as instructing English in non-English-speaking countries, working with diverse cultural and linguistic backgrounds, and operating within educational systems that prioritize English language proficiency (Gan, 2013). Secondly, EFL teachers encounter specific job-related stressors that may differ from those experienced by teachers in other subjects or educational contexts (Prapaisit de Segovia and Hardison, 2009; Liu et al., 2023). They often grapple with high demands in terms of lesson planning, language instruction, and managing language barriers (Shamim, 2008). Moreover, they navigate complex classroom dynamics due to students' varying language proficiency levels and cultural differences, which can contribute to heightened stress levels and burnout risks. This study aims to contribute to the existing literature on teacher burnout by exploring factors that are unique to the EFL context and have the potential to influence burnout outcomes. In so doing, interventions and support mechanisms can be tailored to address their distinct needs and promote their overall well-being (Talbot and Mercer, 2018; Xiyun et al., 2022). The findings of this study hold practical implications for EFL teacher training programs, professional development initiatives, and policies aimed at mitigating burnout and fostering teacher resilience within EFL settings.

Method

Participants

The participants of this study were 638 Chinese EFL teachers who were chosen based on convenience sampling. The demographics of the participants are presented in Table 1. The participants ranged in age

TABLE 1 Demographics of participants.

Demographics	N	%
Age		
Mean (SD)	638	34.5 (7.63)
Gender		
Female	450	70.5
Male	188	29.5
Educational background		
Bachelor's degree	413	64.7
Master's degree	209	32.8
Doctoral degree	16	2.5
Teaching experience		
Mean (SD)	638	9.8 (6.23)

from 21 to 62, with a mean age of 34.5 years (SD = 7.63). The majority of the participants were female (70.5%), and most had a bachelor's degree (64.7%). The participants had an average of 9.8 years of teaching experience (SD = 6.23). The study was conducted in China, where English is instructed as a foreign language in many schools and universities.

In China, individuals aspiring to become EFL teachers typically pursue a bachelor's degree in English education or a related field. This undergraduate program typically spans 4 years and equips students with a solid foundation in language teaching methodologies, linguistics, and English literature. Upon completing their bachelor's degree, some individuals may choose to further their education at the master's or doctoral level to deepen their expertise in the field.

In primary and secondary schools, Chinese EFL teachers typically have a set number of weekly teaching hours, which can range from 15 to 25 h depending on the specific curriculum and school schedule. In higher education institutions, the teaching workload may vary, with some teachers having fewer teaching hours and more time allocated to research and other academic responsibilities. Additionally, the average number of students per class can differ based on the educational level. In primary and secondary schools, class sizes tend to range from around 30 to 50 students, while in higher education institutions, classes are generally smaller, with an average of 20–30 students per class.

Instruments

As the participants were English teachers who were proficient in the English language, there was no need for translation of the items. Therefore, the original English versions of the scales were used in our research.

Teacher self-efficacy scale

The teacher self-efficacy scale TSES is a 12-item self-report scale developed by Tschannen-Moran and Hoy (2001) to assess teachers' beliefs in their ability to achieve desired instructional outcomes. Participants rated their level of agreement on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Sample items include "I can get through to the most difficult students in my class." The questionnaire's validity and reliability have been confirmed through studies in the literature (e.g., Tsigilis et al., 2010; Duffin et al., 2012; Zhang et al., 2023). These studies provide supporting evidence for the factor structure and psychometric properties of the scale, validating its effectiveness in assessing teacher self-efficacy.

Teacher resilience scale

The teacher resilience scale (TRS) is a 25-item self-report measure designed by Connor and Davidson (2003) to assess the personal qualities that help individuals cope with adversity and stress. Participants rated their level of agreement on a 5-point Likert scale from 0 ("not true at all") to 4 ("true nearly all the time"). A sample item is "When things look hopeless, I do not give up." The Connor-Davidson Resilience Scale has been validated and refined in studies such as Campbell-Sills and Stein (2007) who verified the psychometric properties and validity of the 10-item version of the Resilience Scale in assessing resilience.

Emotion regulation questionnaire

The emotion regulation questionnaire (ERQ) is a 10-item self-report scale developed by Gross and John (2003) to assess individuals' ability to regulate their emotions in a socially acceptable manner. The questionnaire has two subscales: cognitive reappraisal and expressive suppression. Participants rated their level of agreement on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The validity and reliability of the scale have been established in previous studies (e.g., Sala et al., 2012; Ioannidis and Siegling, 2015). These studies provide strong empirical support for the criterion and incremental validity of the Emotion Regulation Questionnaire, affirming its effectiveness in accurately gauging emotion regulation.

Maslach burnout inventory-educators survey

To evaluate participant burnout, the Maslach burnout scale for educators (MBI-ES), validated by Maslach et al. (1996), was utilized. The scale comprises 22 items and measures three factors: emotional exhaustion (9 items), depersonalization (5 items), and reduced personal accomplishment (8 items). The scale uses a seven-point Likert scale ranging from 0 (never) to 6 (every day) to assess teacher burnout levels. The dimensionality and psychometric properties of the Maslach Burnout Inventory have been extensively examined and confirmed through various studies (Aluja et al., 2005; Kokkinos, 2006). These rigorous investigations provide compelling evidence supporting the validity and reliability of the inventory as a robust tool for assessing burnout among school teachers.

Procedure

The ethical approval was obtained from the Institutional Review Board prior to commencing the study, ensuring the protection of participants' rights and welfare. The research protocol, including the data collection procedure and informed consent process, underwent thorough review and received approval. To adhere to the approved ethical guidelines, data collection was carried out using Chinese online platforms.

Before participating in the survey, participants were provided with a comprehensive explanation of the study's purpose and procedures. They were explicitly informed about the voluntary nature of their participation, the anonymity of their responses, and the confidential handling of their data. Furthermore, participants were assured that their decision to participate or withdraw would have no bearing on their professional standing or relationship with the involved institutions.

The survey questionnaire consisted of two parts. The first part gathered demographic information, including age, gender, teaching experience, and educational background. The second part included four validated self-report measures assessing the constructs of interest. Each measure utilized a Likert scale format, with participants indicating their agreement or disagreement with provided statements based on their personal experiences.

Participants were instructed to complete the survey independently and allocate sufficient time to ensure thoughtful and accurate responses. They were also encouraged to seek clarification or ask questions regarding any aspect of the survey if needed. Data collection for this study spanned a two-month period, from January to February 2022. During this timeframe, the online survey was administered to

the participants, allowing for data collection within the designated period. Participants were given a specific timeframe to complete the survey, ensuring data collection occurred within the defined data collection period.

Data analysis

To investigate the relationships among the factors, the researcher used SPSS 23.0 to conduct descriptive and correlation analyses. The study's hypothesis was tested using Structural Equation Modeling (SEM) in Amos program (version 22.0). First, the measurement model was fitted to the data, and then the underlying structural model was examined. The study used several fit indices, including $\chi 2/df$, GFI, CFI, RMSEA, and SRMR, to evaluate the overall fitness of the hypothesized model. A $\chi 2/df$ of less than 3 with a value of p greater than 0.05 was considered good, and GFI and CFI values of 0.90 or higher were indicative of good fit (Hu and Bentler, 1999). Additionally, RMSEA <0.08 and SRMR <0.10 were considered good fit indices (Vandenberg and Lance, 2000).

Results

Before conducting the analysis, missing data, normality, and outliers were checked. The missing data analysis revealed that less than 1% of data was missing, which was handled using the expectation–maximization algorithm (EM). The normality assumption was tested using the skewness and kurtosis values, which were within the acceptable range of ±2.0. The univariate and multivariate outliers were identified using Mahalanobis distance, and three cases were found to be multivariate outliers, which were then removed from the analysis.

Table 2 presents the outcomes of the descriptive and correlation analyses among the constructs. As seen in the table, teacher resilience has a significant positive correlation with emotion regulation ($r = 0.49$, $p < 0.01$, df = 633) and teacher self-efficacy ($r = 0.44$, $p < 0.01$, df = 633). This indicates that higher levels of teacher resilience are associated with higher levels of emotion regulation and self-efficacy. Additionally, emotion regulation has a significant positive correlation with teacher self-efficacy ($r = 0.34$, $p < 0.01$, df = 633), indicating that higher levels of emotion regulation are associated with higher levels of self-efficacy. Also, teacher burnout has a significant negative correlation with teacher resilience ($r = -0.56$, $p < 0.01$, df = 633), emotion regulation ($r = -0.36$, $p < 0.01$, df = 633), and teacher self-efficacy ($r = -0.38$,

$p < 0.01$, df = 633), revealing that higher levels of teacher burnout are associated with lower levels of teacher resilience, emotion regulation, and self-efficacy.

Then, the measurement model was assessed using CFA, which showed that the four-factor model (teacher self-efficacy, teacher resilience, emotion regulation, and teacher burnout) provided a good fit to the data ($\chi 2/df = 1.87$, CFI = 0.93, TLI = 0.92, RMSEA = 0.06, SRMR = 0.04). Table 3 presents the results of confirmatory factor analysis, including factor loadings, standard errors, and fit indices for each scale.

Table 4 provides information about the convergent validity and composite reliability of the constructs. An AVE value of 0.6 or higher indicates that at least 60% of the variance in the construct is explained by its indicators, which suggests good convergent validity. Also, a CR value of 0.7 or higher suggests good reliability. According to the table, all the constructs have good convergent validity as their AVE values are above 0.6. Moreover, all the constructs have good internal consistency as their CR values are above 0.85, which suggests that the items within each construct are measuring the same underlying construct in a reliable manner.

Moreover, as seen in Table 5. Diagonal elements represent the square root of AVE for each construct, which are 0.79, 0.74, 0.79, and 0.73 for teacher self-efficacy, teacher resilience, emotion regulation, and teacher burnout, respectively. Off-diagonal elements represent the correlation coefficients between the constructs. All off-diagonal elements are lower than the diagonal elements, confirming discriminant validity.

Once the measurement model was validated, several structural models were evaluated to test the hypotheses. The study compared the hypothesized partial mediation model (Model 3) to a full mediation model (Model 2) and a direct model (Model 1), and their respective fit statistics are presented in Table 6. The results revealed that Model 3 had a significantly better fit than both Model 2 (Δdf = 6, $\Delta\chi^2 = 85.57$, $p < 0.001$) and Model 1 (Δdf = 5, $\Delta\chi^2 = 259.33$, $p < 0.001$), as indicated by the fit indices employed. As a result, Model 3 was deemed to be the most parsimonious fit for the data.

The final fit model (Partial Mediation) is illustrated in Figure 1, which displays the path and parameter estimates. The path coefficients were significant for all except the path linking teacher emotion regulation and burnout. The structural model reveals that teacher self-efficacy significantly impacted teacher resilience ($\beta = 0.32$, $p < 0.01$), as did emotion regulation, with a significant positive effect on resilience ($\beta = 0.22$, $p < 0.01$). Moreover, teacher resilience had a positive association with burnout ($\beta = 0.47$, $p < 0.01$).

Then, the researcher employed Baron and Kenny's (1986) approach to examine whether teacher resilience acted as a mediator in the relationship between variables. The direct model (Table 7) demonstrated significant path coefficients between self-efficacy, teacher emotion regulation, and burnout (self-efficacy → burnout: 0.40, $p < 0.001$; emotion regulation → burnout: 0.13, $p < 0.05$), thereby fulfilling the first step of Baron and Kenny's method. The complete mediation model revealed significant path coefficients between self-efficacy and emotion regulation with resilience (self-efficacy → resilience: 0.32, $p < 0.001$; emotion regulation → resilience: 0.25, $p < 0.01$), satisfying the second step of the approach. The partial mediation model demonstrated that teacher resilience partially mediated the link between teacher emotion regulation and burnout. Additionally, teacher emotion regulation had an insignificant path

TABLE 2 Descriptive statistics and correlations.

	M	SD	1	2	3	4
1. Teacher SE	4.07	0.56	–			
2. Teacher resilience	4.37	0.51	0.44*	–		
3. Emotion regulation	3.58	0.63	0.34*	0.49*	–	
4. Teacher burnout	2.71	0.51	−0.38*	−0.56*	−0.36*	–

N = 638. *$p < 0.01$.

TABLE 3 Results of CFA.

Scale	Items	Factor 1	Factor 2	Factor 3	Factor 4
Teacher self-efficacy	TE1	0.85 (0.05)	0.12 (0.03)	−0.04 (0.02)	−0.02 (0.02)
	TE2	0.86 (0.04)	0.09 (0.03)	−0.06 (0.02)	0.01 (0.02)
	TE3	0.81 (0.04)	0.07 (0.03)	−0.09 (0.02)	−0.03 (0.02)
Teacher resilience	TR1	−0.03 (0.03)	0.89 (0.04)	0.03 (0.02)	0.04 (0.02)
	TR2	−0.01 (0.03)	0.87 (0.04)	−0.01 (0.02)	0.01 (0.02)
	TR3	0.02 (0.03)	0.84 (0.04)	0.02 (0.02)	−0.03 (0.02)
Emotion regulation	ER1	−0.05 (0.03)	−0.06 (0.03)	0.80 (0.04)	0.06 (0.02)
	ER2	−0.01 (0.03)	−0.03 (0.03)	0.86 (0.04)	0.03 (0.02)
	ER3	−0.07 (0.03)	0.02 (0.03)	0.84 (0.04)	−0.01 (0.02)
Teacher burnout	TB1	−0.01 (0.03)	−0.01 (0.03)	−0.01 (0.03)	0.85 (0.04)
	TB2	−0.05 (0.03)	0.01 (0.03)	−0.03 (0.03)	0.86 (0.04)
	TB3	−0.02 (0.03)	−0.02 (0.03)	0.02 (0.03)	0.87 (0.04)

TE, teacher self-efficacy; TR, teacher resilience; ER, emotion regulation; TB, teacher burnout. Standard errors are in parentheses.

TABLE 4 Convergent validity and composite reliability.

Constructs	AVE	CR
Teacher self-efficacy	0.63	0.91
Emotion regulation	0.62	0.89
Teacher resilience	0.55	0.88
Teacher burnout	0.53	0.85

AVE, average variance extracted; CR, composite reliability.

TABLE 5 Discriminant validity.

	1	2	3	4
Self-efficacy	0.79			
Emotion regulation	0.44	0.71		
Resilience	0.34	0.49	0.80	
Burnout	−0.38	−0.56	−0.36	0.73

coefficient on burnout, while teacher resilience functioned as a complete mediator between teacher self-efficacy and teacher burnout. Thus, the impact of emotion regulation on teacher resilience influenced burnout.

Discussion

The current study aimed to probe the effect of instructor resilience, instructor self-efficacy, and emotion regulation on teacher burnout among Chinese EFL teachers. The results of testing the hypothesized model indicated some key findings. Firstly, the outcomes of this study demonstrated that teacher self-efficacy directly predicted teacher burnout. This finding supports previous research that has emphasized the importance of teachers' self-efficacy in increasing teachers' work engagement and enthusiasm (Skaalvik and Skaalvik, 2007; Federici and Skaalvik, 2011; Perera et al., 2018). The finding is also consistent with previous research that has shown that self-efficacy perceptions

are associated with burnout (Friedman, 2003; Schwarzer and Hallum, 2008; Bümen, 2010; Skaalvik and Skaalvik, 2010; Savas et al., 2014; Lauermann and König, 2016; Kim and Burić, 2020; Fathi et al., 2021; Bing et al., 2022). Self-efficacy is concerned with an individual's belief in their competencies to do specific tasks effectively (Bandura, 1977). From this perspective, teachers with higher levels of self-efficacy might feel more self-assured in their ability to manage challenging situations in the classroom and more competent in their teaching practices. This sense of self-assurance may help teachers to better handle the demands of their job, which may protect them from burnout. Conversely, instructors with low levels of self-efficacy may feel overwhelmed by the demands of their job and may be more likely to experience burnout. As such, EFL instructors' perceptions about their abilities to use suitable teaching methods, manage their classrooms, and engage students can influence their potential for burnout. In accordance with this finding, Skaalvik and Skaalvik (2007) also concluded that job satisfaction was found to be favorably connected to teacher self-efficacy and negatively correlated to both aspects of teacher burnout, with emotional exhaustion being the most powerful predictor. Another potential explanation for this finding is that whenever EFL Instructors are confident about their abilities and their pedagogical competence to induce instruction, they dedicate more time as well as effort to their profession and are enthusiastically involved in it, thereby experiencing less burnout level.

Furthermore, it was found that resilience could considerably predict EFL instructors' burnout. This finding is in accordance with previous studies emphasizing the negative association between instructor resilience and burnout (Howard and Johnson, 2004; Beltman et al., 2011; Mansfield et al., 2016; Richards et al., 2016; Polat and İskender, 2018; Daniilidou et al., 2020; Xie, 2021). Resilience is concerned with an individual's ability to bounce back from adversity and to adapt to changing circumstances (Mansfield et al., 2016). As such, teachers who are more resilient may be better equipped to handle the stressors associated with their job, such as high workloads, difficult students, and challenging classroom environments. This ability to cope with stressors may reduce the risk of burnout by helping instructors to maintain a sense of well-being and job satisfaction. It is argued that more resilient instructors are more inclined to

TABLE 6 Comparison of fit indices for three models.

Model	χ^2	df	$\Delta\chi^2$	GFI	CFI	RMSEA	TLI	SRMR
Direct effect (1)	1050.00**	542	–	0.83	0.92	0.05	0.91	0.17
Full mediation (2)	790.67**	537	259.33	0.85	0.96	0.04	0.94	0.06
Partial mediation (3)	705.10**	531	85.57	0.87	0.97	0.03	0.97	0.05

$\Delta\chi^2$ indicates the difference in χ^2 between the current and subsequent model. **$p < 0.001$.

FIGURE 1
The final partial mediation model.
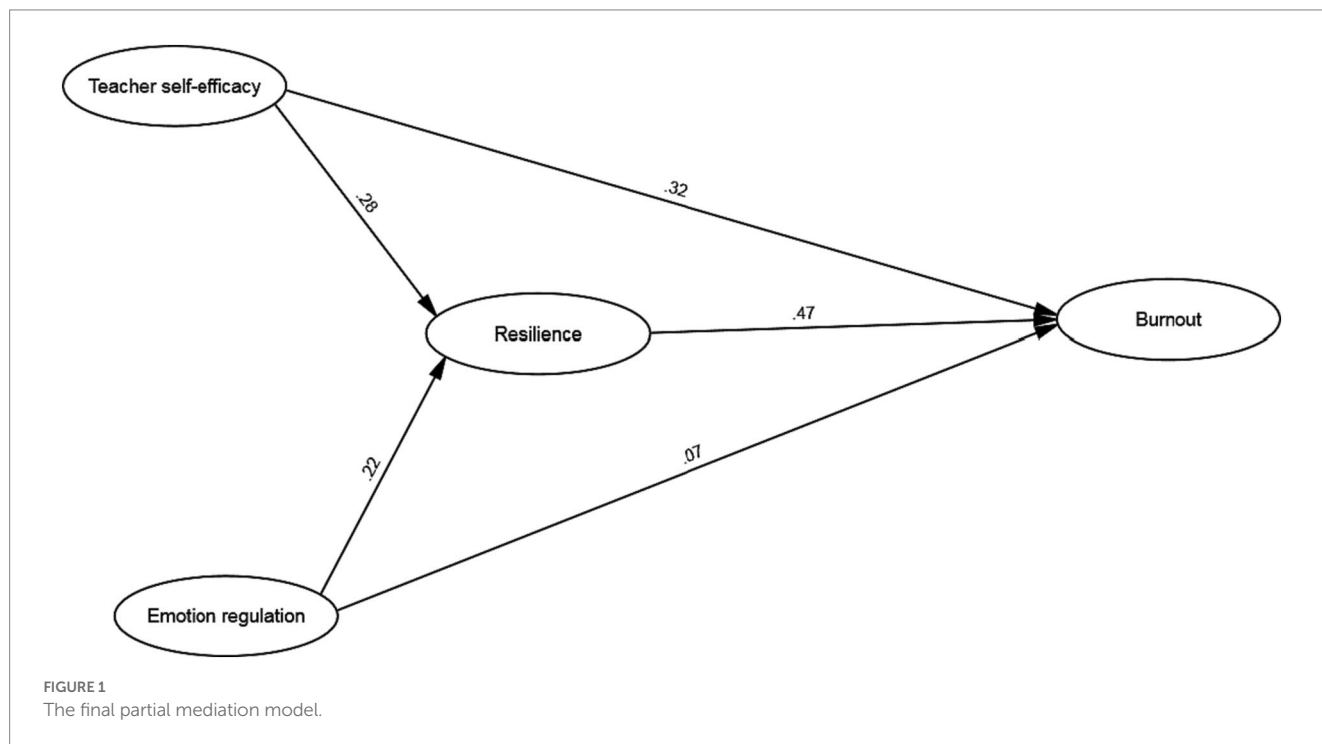
be proficient in managing the environments of the schools and institutions where they work and experience less anxiety as a result. It is also argued that instructors with greater resilience experience less tension and experience higher levels of unity, resulting in a more potent sense of belonging and greater confidence in their abilities to meet standards (Beltman et al., 2011).

Finally, it was revealed that teacher emotion regulation affected teacher burnout directly via the mediation of resilience. This finding is also consistent with previous research that has suggested that emotion regulation is a crucial element in the development of resilience (Bobek, 2002; Tugade and Fredrickson, 2004; Gratacós et al., 2021; Xie, 2021; Li and Lv, 2022). Emotion regulation is concerned with a person's ability to manage their emotional feedback to different situations (Gross, 1998). In the educational context, teachers who are better able to regulate their emotions may be more resilient in the face of stressors, which might protect them from burnout. Specifically, teachers who are able to regulate their emotions may be better equipped to cope with the demands of their job and may be less probable to experience burnout (Maslach and Leiter, 2016). Additionally, the finding that resilience mediated the relationship between emotion regulation and burnout suggests that interventions aimed at improving emotion regulation skills may be effective in reducing burnout by increasing teachers' resilience. This finding supports previous studies that have found that emotion regulation is

associated with resilience (Kay, 2016; Azpiazu Izaguirre et al., 2021) and that resilience mediates the relationship between emotion regulation and burnout (Brackett et al., 2010; Fried and Chapman, 2012; Chang, 2013; Fiorilli et al., 2017; Castillo-Gualda et al., 2019). These findings suggest that fostering emotion regulation skills may be an effective means of promoting teacher resilience and reducing burnout among EFL teachers.

In accordance with this finding, Bobek (2002) asserted that productive relationships with experienced people help EFL teachers acquire additional insight into approaches to dealing with various difficulties of teaching circumstances, which fosters resilience and emotional competence. One possible justification for this finding is that individuals that take advantage from greater degrees of emotion regulation can experience more work satisfaction, which justifies the positive connection between teacher emotion regulation and success. Teachers who are proficient at assessing, adjusting, and managing their feelings, such as both positive and negative ones, result in fulfilment and pleasure from their work, and they regulate their feelings and tension when facing problems via emotion regulation.

Overall, the findings of this research suggest that teacher self-efficacy, resilience, and emotion regulation are important factors in predicting teacher burnout. The study provides further support for the importance of these factors and highlights the potential benefits of interventions aimed at improving teacher self-efficacy, resilience, and

TABLE 7 Path estimates of structural model.

Standardized path coefficients (t-value)			
	Direct effects model	Full mediation model	Partial mediation model
Self-efficacy → burnout	0.40 (5.81***)		0.32 (3.67***)
ER → burnout	0.13 (2.02*)		0.07 (0.78)
Self-efficacy → resilience		0.32 (4.09***)	0.28 (3.98**)
ER → resilience		0.25 (3.08***)	0.22 (2.97**)
Resilience → burnout		0.52 (6.27***)	0.47 (5.22***)

ER, emotion regulation, *p-value < 0.05, **p-value < 0.01, ***p-value < 0.001.

emotion regulation in reducing burnout. This outcome indicates that teacher resilience plays a mediating role in the association between emotion regulation and burnout, but there may be other factors that also contribute to the relationship between these variables. This finding highlights the complexity of the relationship between these variables and suggests that further research is called for to identify other potential mediating factors.

Conclusion and implications

The purpose of the present study was to broaden the research on psychological factors affecting EFL instructors in Chinese context. For this reason, the effect of teacher resilience, teacher self-efficacy, and emotion regulation on teacher burnout among EFL teachers was investigated. The above-mentioned teacher variables should receive more attention from researchers and educators as these constructs can affect teachers' exhaustion, resulting in less teacher engagement in classrooms. Generally, this research article highlights the importance of promoting resilience, self-efficacy and emotion regulation among teachers in order to reduce the likelihood of teacher burnout. The results of the study support the theoretical model that teacher self-efficacy and resilience are negatively related to teacher burnout, and teacher emotion regulation has an indirect effect on teacher burnout through the mediation of teacher resilience. This study makes important contributions to the existing literature on the relationship among teacher self-efficacy, resilience, emotion regulation, and burnout. The study confirms the importance of teacher self-efficacy and resilience in protecting against teacher burnout, which is consistent with previous research. Furthermore, the study adds to the literature by showing that teacher emotion regulation also plays a role in preventing burnout. The findings of this study extend the existing theoretical models of teacher burnout and suggest that interventions designed to enhance teacher resilience and emotion regulation may be effective in reducing burnout.

The findings of this study have significant implications for teacher educators and EFL instructors, particularly in the domains of initial and in-service training. These implications underscore the critical importance of prioritizing teachers' emotional well-being and equipping them with effective strategies for emotion regulation. To this end, teacher training programs should prioritize the inclusion of specific modules that enhance teachers' understanding of the environmental and psychological factors that influence the effectiveness of emotion regulation techniques. Mentoring programs can play a crucial role by providing opportunities for instructors to learn and apply a diverse range of tactics, gaining valuable insights into the contexts where these strategies yield positive outcomes.

Additionally, EFL teacher training should encourage teachers to engage in self-reflection, examining their personal characteristics and preferences that may influence their use of emotion regulation techniques (Farrell, 2016; Xiaojing et al., 2022). By promoting self-reflection, teachers can be empowered to modify and adapt their current practices of emotion regulation, leading to the adoption of more positive and beneficial strategies and enhancing their efficacy in the classroom.

Furthermore, teacher training programs should place a strong emphasis on the development of teachers' self-efficacy and resilience. These programs should provide teachers with the necessary knowledge and skills to build confidence in effectively managing challenging situations and navigating the demands of their profession. By fostering a sense of resilience, teachers can better cope with stressors and setbacks, reducing the likelihood of burnout and promoting their overall well-being. In addition to teacher training, school administrators and policymakers have a crucial role to play in supporting teachers' emotional well-being. Educational institutions should ensure that teachers have access to essential resources, such as counseling services and professional development opportunities, to help them effectively manage and regulate their emotions. Furthermore, creating a positive and supportive school climate that encourages open communication and collaboration among teachers can significantly contribute to reducing teacher burnout.

Finally, the current investigation's findings are constrained by some significant limitations. Firstly, the current investigation was carried out in China, a nation where English is a foreign language. To identify any potential discrepancies in the results, additional EFL/ESL context studies must be conducted in the future. Second, the impacts of contextual factors like age, gender, teaching experience were not studied. To assess the mediating impact that these variables have on the relationship between teacher resilience, teacher self-efficacy, emotion regulation, and teacher burnout, more research on this subject is advised. It is advised that future research use qualitative methods to triangulate results with other quantitative studies in order to obtain a deeper and more accurate assessment of these variables. This will help present a more comprehensive and in-depth view of the relationship between the variables. Additionally, this research made use of information gathered from English instructors at both private institutions and high schools. The impact of these two settings on the self-efficacy, resilience, emotion regulation, and burnout of teachers may be very different. Also, the study was cross-sectional, which limits the ability to draw causal conclusions. Future studies could use longitudinal designs to investigate the causal relationships among teacher self-efficacy, resilience, emotion regulation, and burnout. One limitation of our study is that although the original scales were used in

English, it is important to note that locally validated Chinese versions of the scales might have been a more appropriate option for our sample. However, we mitigated this limitation by conducting confirmatory factor analysis on the English scales within our study, ensuring their revalidation and establishing their convergent and discriminant validity.

Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: the raw data supporting the conclusions of this article will be made available by the authors, without undue reservation. Requests to access these datasets should be directed to SL, lishanshan@sdpei.edu.cn.

Ethics statement

The studies involving human participants were reviewed and approved by Faculty of Education, Qufu Normal University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Effectiveness of attachment-based compassion therapy to reduce psychological distress in university students: a randomised controlled trial protocol

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Introduction: Higher education, particularly university, is a challenge for many students that can lead to their mental health being seriously affected. The stress to which they are subject throughout their time at university can lead to anxiety and depression. "Third wave" psychotherapies, including compassion-based therapy, have been used to improve psychological outcomes, such as stress, anxiety, emotional distress and well-being. There are some signs that third wave psychotherapies reduce psychological distress in university students, but more and higher-quality studies are needed. In this randomised controlled trial (RCT), we hypothesise that the provision of attachment-based compassion therapy (ABCT) will be more effective than an active control group based on relaxation therapy for improving psychological distress in university students.

Methods and analysis: A two-arm RCT will be conducted involving 140 university undergraduate and postgraduate students from the University of Zaragoza and the National University of Distance Education (UNED) who reside in the autonomous community of Aragon, Spain. Interventions with either ABCT or relaxation therapy will be implemented, with an allocation ratio of 1:1 between groups. Both interventions will last six weeks and consist of six weekly group sessions lasting 1.5 h each. Data will be collected before and after the intervention, and there will be a follow-up at six months. The primary outcome will be psychological distress at post-intervention. Secondary outcomes will be depression, anxiety, stress and burnout symptoms, affectivity and emotional regulation. Attachment style, experiential avoidance, compassion (for others/oneself) and mindfulness skills will be measured as potential mechanistic variables. Intention-to-treat analysis will be performed using linear mixed regression models. The clinical significance of improvements will be calculated. Potential side effects will be monitored by an independent clinical psychologist.

Ethics and dissemination: This study was approved by the Clinical Research Ethics Committee of Aragón. Participant data will remain anonymous, and results

will be submitted to peer-reviewed open-access journals and disseminated via conferences.

Clinical Trial Registration: ClinicalTrials.gov, identifier NCT05197595.

Introduction

Background and rationale

Recent studies show that university students commonly suffer from mental health problems (Auerbach et al., 2018; Karyotaki et al., 2020). It has been found that more than half of university students might suffer from depression, panic and/or generalised anxiety (Keyes et al., 2012). Anxiety levels increase during university years (Bewick et al., 2010), and the prevalence rates of psychological distress and mental health problems are significantly higher than those of the general population (Stallman, 2010; Jackman et al., 2022). There are numerous areas that can pose a challenge and increase stress for university students, such as financial status, health, love life, family and work/school relationships, and problems experienced by loved ones (Karyotaki et al., 2020). The main mental health pathologies found are depression and anxiety (Regehr et al., 2013), although some university students also report feelings of loneliness, difficulties with family and intimate relationships, and other interpersonal concerns (Conley et al., 2015). All these mental health problems may have psychological and social impacts, and they can also determine students' ability to function in academic terms, leading to an increase in dropout rates (Dyrbye et al., 2010; Sharp and Theiler, 2018; Marôco et al., 2020), which presents a problem for themselves and for the institutions involved (Conley et al., 2015). Nevertheless, providing psychological tools is believed to be a promising way to enhance students' resilience and minimise risks of mental health problems (Sharp and Theiler, 2018; Sheldon et al., 2021).

In recent years, there has been an increasing number of studies regarding so-called "third wave" cognitive-behavioural psychological techniques. Through the promotion of acceptance, mindfulness, cognitive defusion and compassion, these therapies seek to change the function of experience for the individual in order to enhance well-being (Hayes et al., 2006). Third wave therapies have demonstrated promising results in different areas related to people's health and psychological well-being (Grossman et al., 2004; Khoury et al., 2015; Spijkerman et al., 2016; Kirby et al., 2017). A number of studies show that these techniques can reduce anxiety, stress and burnout, and increase psychological well-being in the university population (Regehr et al., 2013; de Vibe et al., 2018; Patel et al., 2018; Dawson et al., 2020). Nonetheless, although their results are promising, some of the studies have also been found to have low methodological quality and considerable heterogeneity of effects (Dawson et al., 2020).

Among third wave psychological techniques, mindfulness-based programmes (MBPs) have predominantly been studied for the prevention and treatment of depressive or anxiety symptoms, and they have also been used in clinical practice for the longest time (Parsons et al., 2017; Cladder-Micus et al., 2018; Goldberg et al., 2018). As examples of how this has materialised, we can see that the National Institute of Health and Care Excellence (NICE) UK guideline recommends an MBP for the prevention of relapses in depression (Kendrick and Pilling, 2012), and that some MBP adaptations for university students have been piloted with positive results (Medlicott et al., 2021). One of the implicit components of MBPs is compassion. However, the effectiveness of compassion-based programmes (CBPs), which use specific practices to develop compassion, is yet to be proven in non-clinical populations (Brito-Pons et al., 2018). A number of pilot studies that include explicit compassion practices and programmes based on compassion therapy have shown encouraging results; however, they were conducted using small samples and therefore require further replications (Arimitsu, 2016; Ko et al., 2018; Collado-Navarro et al., 2021; Martínez-Rubio et al., 2021). In the university population specifically, the efficacy of self-compassion is inconclusive as there is not a great deal of evidence (Dawson et al., 2020) that is consistent with the state of the art in the general population, meaning that further research is required (Kirby et al., 2017; Shonin et al., 2017).

CBPs propose meditative techniques and practices to develop (a) compassion for others, which arises from witnessing the suffering of others and having the desire to alleviate it (Goetz et al., 2010); and (b) self-compassion, which is this same desire but towards oneself (Neff, 2003). The attachment-based compassion therapy (ABCT) programme (García-Campayo et al., 2016; García-Campayo, 2020) seeks to promote compassion for others and self-compassion in individuals through the development of a secure attachment style. Although work on the attachment style has already formed part of some of the compassion programmes on which ABCT is based (Neff, 2003; Gilbert, 2009), ABCT makes the change towards a healthy attachment style the core of the therapeutic process. This programme has obtained satisfactory results by increasing self-compassion in healthy adults (Navarro-Gil et al., 2020) and reducing affective distress in patients with anxiety, depressive and adjustment disorders (Collado-Navarro et al., 2021), and its clinical usefulness with fibromyalgia patients has also been demonstrated (Montero-Marin et al., 2019; Santos et al., 2022), with results maintained in the medium term.

This present study will continue this line of research by assessing the effectiveness of an adapted six-week ABCT programme in the treatment of psychological distress in university students, compared with relaxation therapy. It will also evaluate the potential mediating role of attachment style, experiential avoidance [i.e., the unwillingness to experience painful thoughts and emotions (Berta-Otero et al., 2022)], compassion (for others/oneself) and mindfulness skills (i.e., an awareness of the present moment that is characterised by a non-judgmental attitude) in the intervention group, compared to the

active control group based on relaxation therapy. There is some preliminary evidence to show that experiential avoidance, self-compassion and mindfulness skills having a potential mediating role in ABCT (Montero-Marin et al., 2019; Collado-Navarro et al., 2021; Lopez-del-Hoyo et al., 2022). However, there are no previous studies evaluating attachment style and compassion for others as putative mechanisms of ABCT, even though they are core constructs of the programme.

Objectives and hypotheses

The main aim of this study will be to assess the effectiveness of a six-week ABCT programme, compared with an active control group based on relaxation therapy (including progressive muscular relaxation and guided imagery), for the reduction of psychological distress symptoms in university students. Secondary objectives are (a) to examine the effects of ABCT on anxiety, depression, stress and burnout symptoms, as well as positive and negative affect, and emotional regulation and (b) to analyse the possible mediating role of attachment style, experiential avoidance, compassion (for others/oneself) and mindfulness skills on improvements in the ABCT group, compared to the control group based on relaxation therapy.

The main hypothesis is that ABCT will be more effective than relaxation therapy to reduce psychological distress in university students at post-treatment. Secondary hypotheses are the following: (a) ABCT will be more effective than relaxation therapy for the improvement of anxiety, depression, stress and burnout symptoms, as well as positive and negative affect, and emotional regulation at post-treatment; (b) improvements in psychological distress, anxiety, depression, stress, burnout, positive and negative affect, and emotional regulation will be maintained at six-month follow-up; and (c) attachment style, experiential avoidance, compassion (for others/oneself) and mindfulness skills will have a mediating role on the improvements obtained in the ABCT group vs. the control group based on relaxation therapy.

Trial design

This study will be a randomised controlled trial (RCT) comprising two parallel arms, with pre-treatment, post-treatment and six-month follow-up measurements, and a 1:1 allocation ratio between groups. University students in Zaragoza, Spain, will be randomly assigned to two different conditions: ABCT (intervention group) and relaxation therapy (active control).

Methods

This protocol was designed in accordance with the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) statement (Moher and Chan, 2014). The trial registration can be found at ClinicalTrials.gov NCT05197595 (January 19, 2022).

Setting and study sample

We will recruit students from the University of Zaragoza and the National Distance Education University (UNED), both in Spain, who meet the following inclusion/exclusion criteria. Inclusion criteria: (a) over 17 years of age; (b) studying for an undergraduate or postgraduate (master's or PhD) degree; (c) proficient in spoken and written Spanish; and (d) provide signed informed consent. Exclusion criteria: (a) over 30 years of age; (b) diagnosed with a disease that affects the Central Nervous System or a serious mental illness; and (c) consumption of recreational drugs or on medication that could affect the nervous system. Concomitant care will be permitted during the trial if treatment has been initiated previously and consists of a maintenance dose (no increments or psychological interventions will be allowed).

Sample size

The sample size estimation was calculated based on the assumption that the ABCT group would be able to obtain intermediate effects when compared to the active control condition based on relaxation therapy. In order to determine this, we considered a standardised difference between trial arms on the main outcome (psychological distress, measured by the Depression, Anxiety and Stress Scale (DASS-21) total scale) of 0.5, which is the more conservative estimation observed in a previous similar study that included university students and delivered a third wave psychological intervention based on six meditation sessions (Modrego-Alarcon et al., 2021), and is usually considered a common rule of thumb of clinically significant change (Norman et al., 2003). Considering a power $(1-\beta)$ of 0.80 for a two-tailed contrast and an α of 0.05 with a group allocation ratio of 1:1, we obtained a group size of approximately 64 subjects. Therefore, the total size of the required sample will be 128 voluntary participants from the university student population. Assuming a loss rate of around 30%, based on a previous similar study (Modrego-Alarcon et al., 2021), we have inflated the numbers so that the total sample size needed will be approximately 190 subjects, 95 in each group.

Recruitment

Recruitment of potential participants will begin as follows: (1) informative posters providing a brief explanation of the study will be displayed around the main campus of the University of Zaragoza at tutoring whose services are used by students of distance courses (for UNED students) and other places of interest for university students to encourage interested students to make contact via e-mail; (2) contact will be made with different student organisations to send informative e-mails to students. Each organization will send the message using e-mail lists, without providing the research group with any personal information; and (3) contact with local government agencies and media (e.g., newspapers) to disseminate information about the research study and provide a contact e-mail for any interested students.

Those students who make e-mail contact will be provided with more detailed information by means of a phone call or virtual meeting. A research assistant will explain the study and verify that the student meets the inclusion criteria. This contact will also specify the route by which the study information document is to be received, and a link will be provided to the baseline evaluation. All assessments which will be made online, both at baseline and in the subsequent follow-up measurements at the end of the intervention (post-treatment), and at

six months, and the surveys will be completed online using SurveyMonkey®. Before beginning the baseline survey, the participants will be able to read the information sheet, accept the privacy terms and conditions of the website, and sign the informed consent form. The recruitment and baseline assessment process will continue until the required sample size is obtained.

Randomisation, allocation, and blinding

Once baseline data is collected, participants will be randomly allocated to each arm. The random assignment of the subjects will be carried out by a different member of the research group who is unrelated to the study and using a computer-generated random sequence. This sequence will be blinded to both the participants and the research assistants who will be assisting with the assessments (i.e., by providing the link to the survey on the appropriate date), as well as to the trial manager who will be in charge of group allocation. Participants will be assigned to one of two groups: ABCT or relaxation therapy. Given the nature of the interventions, neither the group facilitators (i.e., psychotherapists) nor the university student participants will be blinded to their allocation. However, the research assistant in charge of providing the link to the assessment survey will be blinded, as well as the expert who will carry out the statistical analysis.

Data collection and monitoring

After completing the programmes, the same person who provided the links to complete the baseline survey will oversee the process of contacting the participants so that they can carry out the post-test (with a time window of one month after the intervention), and follow-up (six months after the last session of the programme, with a time window of one month) measurements. Participation in meditation programmes, as in the case of any psychotherapeutic approach, can cause negative side effects that, although rare, need to be monitored (Van Dam et al., 2018; Baer et al., 2021). Therefore, study participants will be asked to report any signs of a worsening in their mental or physical health (whether serious or not) that may arise during the sessions. Participants will also be asked to comment on any discomfort they experience both during and between sessions. If adverse effects appear, the psychologist in charge of the groups will discuss with an independent data monitoring committee (which will be made up of the trial manager, a clinical psychologist and a psychiatrist) whether any additional measures need to be taken to ensure the integrity of the participant (e.g., abandon the study). The results of the surveys at each time point will also be overseen by the data monitoring committee, who will decide whether any potential deterioration of psychological health needs further consideration or treatment. This will be facilitated by contacting the corresponding mental health services of national health system. Figure 1 is the flow diagram that shows the expected participation of the subjects throughout the study, from recruitment to follow-up data collection.

Interventions

Both groups will receive interventions with a duration of six weeks. Each session will be 90 min long and will be held in face-to-face

groups. Before beginning the programme, participants will be given a paper copy of the information sheet and the informed consent form, and they will be able to raise any doubts they might have regarding the study.

Attachment-based compassion therapy

The ABCT programme that will be used is a short adaptation of the University of Zaragoza compassion training programme (García-Campayo et al., 2016). Table 1 shows how the sessions are structured in terms of theory as well as formal and informal practices. Tasks to consist of practical exercises using audio recordings will be set for completion between sessions. The ABCT programme will be conducted by a clinical psychologist with experience in ABCT and third generation therapies.

Relaxation therapy

The progressive muscle relaxation programme proposed by Bernstein and Borkovec (1973) will be used. To match this programme to the ABCT programme, it will be adapted to six sessions, each lasting 90 min, with the addition of guided imagery. As in the previous case, tasks to consist of practical exercises using audio recordings will be also set for completion between sessions. The contents and structure of the sessions are described in Table 2. The relaxation program will be facilitated by a clinical psychologist with experience in relaxation techniques.

Outcomes

Data will be collected using a battery of questionnaires administered at baseline, immediately after the intervention (post-treatment) and at six-month follow-up. Outcomes of the ABCT and the control conditions will be evaluated and compared. The primary outcome will be a self-reported global measure of psychological distress to provide data on the intervention. Secondary outcomes will allow a more detailed exploration of ABCT in terms of depression, anxiety, stress, burnout, emotional regulation and affectivity. Furthermore, the role of attachment style, experiential avoidance, compassion (for others/oneself) and mindfulness skills as potential mediators of outcome will be explored. A breakdown of the study outcomes is given in Table 3.

Main outcome

The main effectiveness outcome will be psychological distress at post-intervention as the primary endpoint, which will be assessed using the short version of the Depression, Anxiety and Stress Scales (DASS-21) (Lovibond and Lovibond, 1996). The DASS-21 is a self-report questionnaire composed of the three negative affectivity subscales of depression, anxiety and stress. Each of the subscales comprises seven items with Likert-type response options (from 0 "did not apply to me at all" to 3 "applied to me very much, or most of the time"). The result of each of these scales will be doubled to achieve equivalence with the long version of 42 items (Lovibond and Lovibond, 1996). The DASS-21 has been specifically validated in the Spanish population, showing strong internal consistency values (total scale $\alpha = 0.96$; depression $\alpha = 0.93$; anxiety $\alpha = 0.86$, and stress $\alpha = 0.91$), as well as appropriate patterns of discriminant, convergent and factorial validity (Daza et al., 2002). The DASS-21 total scale

FIGURE 1
Study flowchart.
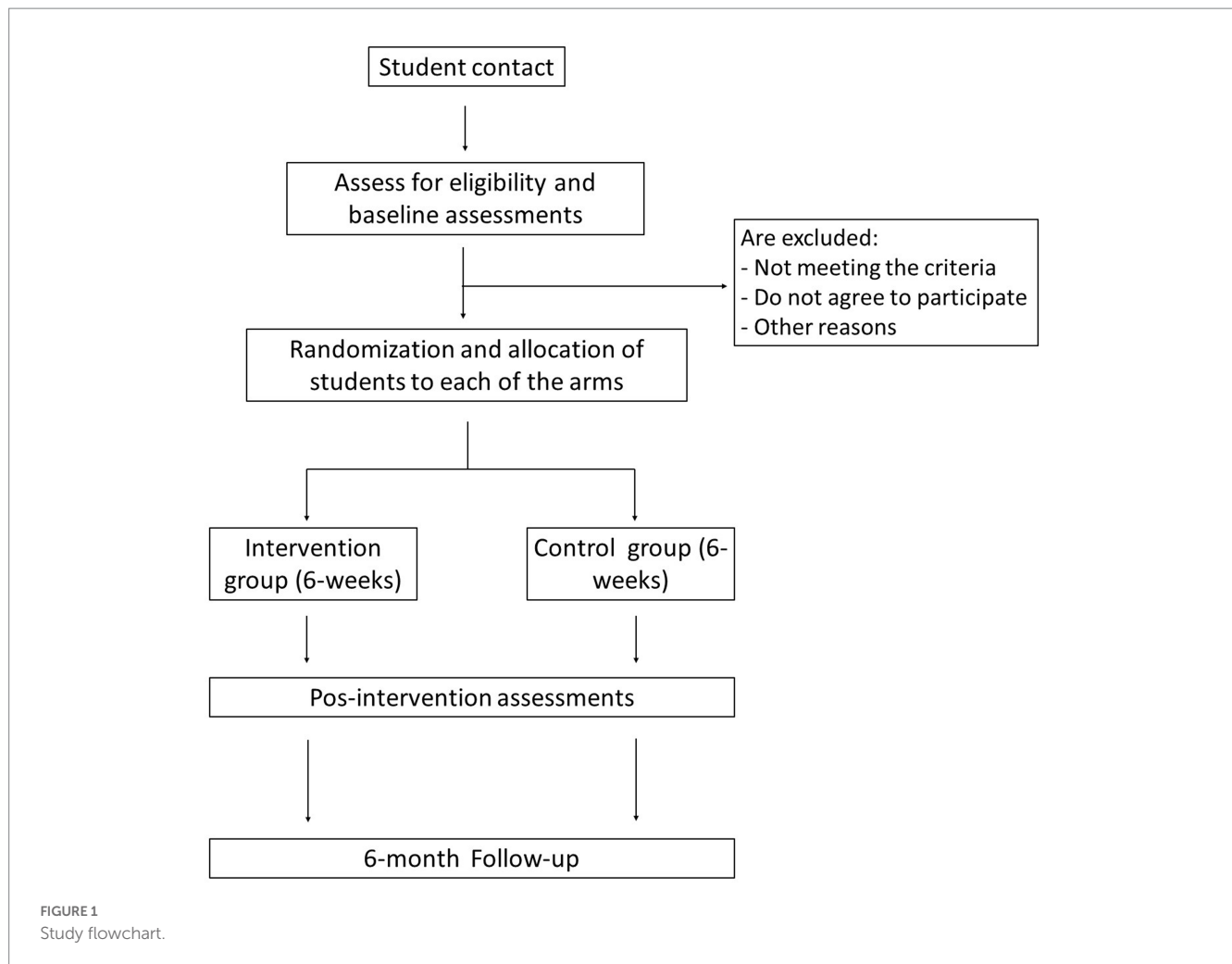
TABLE 1 Adaptation of the ABCT programme (6 weeks).

Session 1	Preparing for compassion: kind attention.	Theory: the functioning of our brain, the reality of suffering: primary and secondary suffering, what is and what is not compassion. Formal practices: compassionate breathing and compassionate body scan, compassionate coping with difficulties. Informal practices: 3-Minute compassion practice, self-compassion journal, savour and thank you
Session 2	Discovering our compassionate world	Theory: compassion and mindfulness, self-esteem and compassion, fear of compassion. Formal practices: connect with affection, develop a situation or a safe place, compassionate gesture and phrases. Informal practices: the object that unites us to the world, compassion practice diary, what are we good at?
Session 3	Developing our compassionate world	Theory: mechanisms of action of compassion, efficacy of compassion, self-criticism. Formal practices: identify and develop the secure attachment figure, replace the critical voice with the compassionate voice. Informal practices: write a letter to the attachment figure.
Session 4	Understanding our relationship with compassion	Theory: attachment models, importance of these models in daily life. Formal practices: becoming aware of our attachment model, receiving affection from friends, indifferent and enemies. Informal practices: Letter to parents
Session 5	Working on ourselves	Theory: importance of affection towards oneself and towards others Formal practices: giving affection to friends and indifferent, giving affection to ourselves, reconciliation with our parents. Informal practices: three positive and three negative aspects of our parents, the largest sample of affection (in general and from our parents)
Session 6	Understanding the importance of forgiveness	Theory: guilt and the importance of forgiveness Formal practices: become aware of the damage we have done to others and ask for forgiveness, forgive others, and give compassion to enemies, forgive oneself. Informal practices: compassion in daily life

TABLE 2 Relaxation programme (6 weeks).

Session 1	Presentation of the group and the goals of relaxation Basic principles of progressive muscle relaxation
	Brief explanation of the initial procedure with 16 muscle groups Progressive muscle relaxation practice with 16 muscle groups Imagination training
	Identification of the sensations and difficulties of relaxation
Session 2	Share homework related experiences and doubts
	Theory of visualisation techniques
	Practice of progressive muscle relaxation with 16 muscle groups
	Visualisation Practice: The Orange
	Identification of sensations and difficulties of relaxation
Session 3	Share homework related experiences and doubts
	Brief explanation of the procedure with 7 muscle groups
	Practice of progressive muscle relaxation with 7 muscle groups
	Visualisation Practice: The Beach
	Identification of sensations and difficulties of relaxation
Session 4	Share homework related experiences and doubts
	Practice of progressive muscle relaxation with 7 muscle groups
	Visualisation practice: the landscape
	Identification of sensations and difficulties of relaxation
Session 5	Share homework related experiences and doubts
	Brief explanation of the procedure with 4 muscle groups
	Practice of progressive muscle relaxation with 4 muscle groups
	Visualisation practices: the globe and white light
	Identification of sensations and difficulties of relaxation
Session 6	Share homework related experiences and doubts
	Brief explanation of relaxation by evocation, relaxation by evocation + counting and relaxation by counting
	Relaxation by evocation + counting Relaxation by counting
	Mental relaxation and visualisation practice: the perfect day
	Identification of sensations and difficulties of relaxation

TABLE 3 Study outcomes.

Instrument	Assessment area	Kind of outcome	Time
Bespoke survey	Sociodemographic	Characteristics of participants	Baseline
DASS-21	Psychological distress	Primary (total score) Secondary (sub-scales) outcome	Baseline, post-treatment and 6-month follow-up
PANAS	Positive and negative affect	Secondary outcome	Baseline, post-treatment and 6-month follow-up
ERQ	Emotional regulation	Secondary outcome	Baseline, post-treatment and 6-month follow-up
MBI-SS	Burnout	Secondary outcome	Baseline, post-treatment and 6-month follow-up
RQ	Attachment style	Mechanistic measures	Baseline, post-treatment and 6-month follow-up
AAQ-II	Experiential avoidance	Mechanistic measures	Baseline, post-treatment and 6-month follow-up
SOCS-O	Compassion for others	Mechanistic measures	Baseline, post-treatment and 6-month follow-up
SOCS-S	Compassion for the self	Mechanistic measures	Baseline, post-treatment and 6-month follow-up
FFMQ-SF	Mindfulness	Mechanistic measures	Baseline, post-treatment and 6-month follow-up

DASS-21, depression, anxiety and stress scales, 21 items; PANAS, positive and negative affect schedule; ERQ, emotional regulation questionnaire; MBI-SS, Maslach burnout inventory student survey; RQ, relationship questionnaire; AAQ-II, acceptance and action questionnaire-II; SOCS-O, Sussex-Oxford compassion for others scale; SOCS-S, Sussex-Oxford compassion for the self scale; FFMQ-SF, Five facet mindfulness questionnaire short-form.

score will be considered the main outcome, and the DASS-21 subscales (i.e., depression, anxiety, and stress) will be considered secondary outcomes. To facilitate interpretation, and following Chin et al. (2019), we will also use a secondary pre-defined binary outcome measure based on the DASS-21 total score that will differentiate those participants who scores 16 points or more to identify individuals with potential anxiety disorders or a major depressive disorder.

Secondary outcomes

Burnout symptoms will be evaluated using the Maslach Burnout Inventory Student Survey (MBI-SS) (Schaufeli et al., 2002). This inventory consists of 15 items, in which references to work are changed to references to study. The MBI-SS includes three subscales: exhaustion (5 items), cynicism (4 items) and efficacy (6 items). Participants respond on a Likert-type scale with seven response options ranging from 0 ("never") to 6 ("always"). The psychometric

properties of the MBI-SS Spanish validation have been observed to be adequate (exhaustion $\alpha = 0.83$, cynicism $\alpha = 0.83$ and efficacy $\alpha = 0.82$) (Pérez Fuentes et al., 2020).

Positive affect and negative affect will be evaluated by means of the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988). This self-report questionnaire consists of two 10-item scales (i.e., positive affect, and negative affect). Each item is scored on a five-point Likert-type scale, from 1 ("not at all") to 5 ("very much"). The internal consistency of the Spanish version of the PANAS positive and negative scales is adequate, with values of $\alpha = 0.87$ and 0.91, respectively (Sandín et al., 1999).

Emotional regulation will be measured by the Emotional Regulation Questionnaire (ERQ) (Gross and John, 2003). This scale consists of 10 items, to which participants respond using a seven-point Likert scale (1 = "strongly disagree", 7 = "strongly agree"). The ERQ is designed to measure the tendency of respondents to regulate their emotions through (1) cognitive reappraisal (6 items), and (2) expressive suppression (4 items). The Spanish version of the ERQ shows an adequate internal consistency (cognitive reappraisal: $\alpha = 0.89$–0.90; expressive suppression: $\alpha = 0.76$–0.80), test–retest reliability and convergent/discriminant validity (Cabello et al., 2013).

Mechanistic measures

Attachment style will be measured using the Relationship Questionnaire (RQ) (Bartholomew and Horowitz, 1991), a self-report questionnaire in which participants are asked to rate their correspondence to four separate paragraphs, each representing a secure, preoccupied, dismissive or fearful attachment style, by means of a seven-point Likert-type scale. An algorithm allows for a categorical classification of attachment style (i.e., secure, or insecure) (Griffin and Bartholomew, 1994a). The RQ also offers the possibility of measuring two key dimensions underlying attachment in adults: anxiety, which is more self-related, and avoidance, which is more other-related (Griffin and Bartholomew, 1994b). Studies have demonstrated reliability of the RQ questionnaire to be high (Leak and Parsons, 2001). The validated Spanish version of the RQ, which shows adequate psychometric properties (Yárnoz-Yaben and Comino, 2011), will be used in our study.

Experiential avoidance will be assessed with the Acceptance and Action Questionnaire-II (AAQ-II) (Bond et al., 2011). The AAQ-II is a measure of experiential avoidance as an aspect of lack of psychological flexibility. It is made up of seven items on a seven-point Likert-type scale, where 1 is "never true" and 7 is "always true". The items reflect a lack of willingness to experience unwanted emotions or thoughts, and a lack of ability to be in the present moment and behave according to what is valued when experiencing unwanted psychological events. The instrument presents a unifactorial solution, with good internal consistency ($\alpha = 0.88$), and good convergent, divergent and discriminant validity (Berta-Otero et al., 2022). An adaptation to Spanish will be used (Ruiz et al., 2013).

Compassion will be assessed using the Sussex-Oxford Compassion for Others Scale (SOCS-O) and the Sussex-Oxford Compassion for the Self Scale (SOCS-S) (Gu et al., 2020). The SOCS-O and SOCS-S represent two dimensions, compassion for others and self-compassion, respectively, with 20 items each. Participants indicate how true each statement is using a five-point Likert-type scale, ranging from 1 ("not entirely true for me") to 5 ("always true for me"). A total score is calculated for the SOCS-O and for the SOCS-S, with higher scores

meaning greater levels of compassion for others or self-compassion. The study will use an adaptation of the scale to the Spanish language, which is currently being validated.[1]

Mindfulness skills will be measured with a short version (24 items) of the Five Facets of Mindfulness Questionnaire (FFMQ-SF) (Bohlmeijer et al., 2011). The FFMQ questionnaire is grouped into five mindfulness facets: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience. Participants must indicate the degree to which each of the items is generally true for them on a five-point Likert-type scale, from 1 ("never or very rarely true") to 5 ("very often or always true"). Scores from the subscales can be combined to produce a total score. The Spanish version of FFMQ-SF presents good internal consistency values for the total score ($\alpha = 0.70$) and subscales (α values ranging from 0.65 to 0.80), and an appropriate factorial structure (Cebolla et al., 2012; Asensio-Martínez et al., 2019).

Data analysis plan

The results will be presented in accordance with CONSORT recommendations (Moher et al., 2001; Moher and Chan, 2014). All the variables will be described and subject to visual inspection at baseline by using frequencies (proportions) for qualitative variables, or means (standard deviations, SD) for quantitative variables.

Main analysis

The effectiveness of the ABCT group vs. the control group based on relaxation therapy will be evaluated at post-treatment on the main DASS-21 total score, considered as a continuous variable. Multilevel mixed effects linear regressions will be carried out by means of a repeated measures design on an intention-to-treat (ITT) basis, using the restricted maximum likelihood (REML) method. Non-standardised slopes and 95% confidence intervals (95% CIs) for the "group × time" interaction will be provided, together with raw means (SDs) by group. Cohen's d effect size (ES) will be calculated using the combined SD at baseline (Morris, 2008). ESs are considered small when $d \leq 0.2$; medium when $d = 0.5$; and large when $d \geq 0.8$ (Cohen, 1988).

Secondary analysis

The effectiveness of the ABCT group vs. the relaxation group regarding the secondary outcomes, as well as secondary time points, will be evaluated following the same analytical strategy used for the main analysis. Per protocol analysis will also be performed, considering only those university student participants who attend at least three sessions (out of six). The clinical significance of improvements between groups will be explored by calculating the

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1 Garcia-Campayo, J., Barcelo-Soler, A., Martinez-Rubio, D., Navarrete, J., Perez-Aranda, A., Feliu-Soler, A., et al. (under review). Exploring the relationship between self-compassion and compassion for others: the role of psychological distress and wellbeing.

absolute risk reduction and number needed to treat (NNT) (and their 95% CI) for the DASS-21 total scores. We will use three criteria for improvement: (i) changing to a less severe cluster in the DASS-21 total score, compared to the one the patient was allocated to at baseline (Chin et al., 2019); (ii) calculating reliable change; and (iii) the clinically significant change of improvements by establishing both reliable change and the cut-off point on the DASS-21 total score, using the Jacobson and Truax method (Jacobson and Truax, 1992).

Mediation analysis

The potential mediating role of the proposed mechanistic variables will be explored in both the primary and secondary outcomes. For this purpose: (i) primary and secondary outcome pre-follow-up differential scores will be calculated and considered dependent variables; (ii) pre-post differential scores of attachment style, experiential avoidance, compassion (others/self) and mindfulness skills will be calculated and included as potential mediators; and (iii) the group condition (ABCT vs. relaxation therapy) will be considered the independent variable. Indirect effects (IEs) will be estimated using path analyses. Regression coefficients of bootstrapped IEs will be calculated, as well as their 95% CIs based on 10,000 bootstrap samples, considering a significant mediating effect when the mentioned bootstrapped 95% CI does not include zero (Lockhart et al., 2011). The percentage of the mediating effects will also be calculated.

Level of significance

An alpha level of 0.05 will be established using a two-tailed test.

Discussion

Different studies conducted over the years have pointed out that the mental health of university students is being increasingly compromised (Storrie et al., 2010; Macaskill, 2013). The university population faces a difficult period with many stressors that can trigger a number of serious mental disorders (Karyotaki et al., 2020). Psychological distress has been identified as one of the most important points to be improved in the mental health of young university students (Williams et al., 2015). As a result of all of this, interventions that aim to improve mental health in university students have been widely used (Regehr et al., 2013). Specifically, it has been proposed that programmes aimed at reducing stress and improving well-being among university students should include experiential avoidance, self-compassion and mindfulness skills as therapeutic targets (Martinez-Rubio et al., 2023). In fact, some interventions based on acceptance, compassion and mindfulness training have shown positive results in reducing psychological distress symptoms (de Vibe et al., 2018; Patel et al., 2018; Dawson et al., 2020). CBPs propose practices through which to develop compassion for others and self-compassion (Goetz et al., 2010), and in the case of ABTC, the use of attachment style is proposed as the common thread to generate compassion (for others/oneself) by building a secure attachment figure (García-Campayo et al., 2016; García-Campayo, 2020). ABCT has been shown to be effective in reducing psychological distress in both clinical and non-clinical populations. Some studies show promising results of the use of CBPs in university students (Arimitsu, 2016; Ko et al., 2018; Collado-Navarro et al., 2021; Martínez-Rubio et al., 2021).

With regard to the strengths of this study, although compassion-based approaches show promise for treating the mental health of university students, this study will be one of the first RCTs to evaluate the efficacy of CBPs on university students' mental health, and the first to verify the specific potential benefits of ABCT for this population. In addition, the study will make use of a randomised controlled design with a relatively large sample of university students and a medium-term (6 months) follow-up, as recommended by previous research on this population (Dawson et al., 2020). This will allow changes to be observed in the medium term and mediation analyses to be carried out. It is also important to point out that an active control group will be used, as recommended in research using contemplative programmes (Ma and Teasdale, 2004), since it allows possible changes in the variables to be attributed to the intervention and not to other factors, such as the attention shown by the instructor or the relationship with the group.

As limitations, we need to recognise that the use of self-report measures can be biased due to social desirability. Another possible barrier is the fact that these programmes require consistent home-based practice between sessions (Grossman et al., 2004). This can lead to the distraction of part of the sample due to fatigue or lack of commitment to the programme.

Ethics statement

The studies involving human participants were reviewed and approved by Clinical Research Ethics Committee of Aragón (registration: PI21-395). The patients/participants provided their written informed consent to participate in this study.

Author contributions

MB-R, JG-C, and JM-M conceptualised and designed the study. MB-R and JM-M wrote the first draft of the protocol. JM-M developed the statistical analysis plan. SF, JG-C, MP-G, YL-d-H, and MN-G reviewed the manuscript content. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Adolescent help-seeking: an exploration of associations with perceived cause of emotional distress

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Background: Help-seeking is intrinsic to efforts to manage the onset, maintenance, or escalation of mental health difficulties during adolescence. However, our understanding of adolescent help-seeking remains somewhat nebulous. A greater comprehension of help-seeking behavior from the perspective of adolescents is needed. It is also prudent to explore help-seeking behavior in the context of perceived cause for emotional distress, particularly as causal beliefs have been found to influence help-seeking behavior in adults.

Objectives: The present study sought to categorize adolescents' experiences of help-seeking, and to examine the extent to which these categories (or "types") of help-seeking behavior are associated with their perceptions of causal factors for emotional distress.

Methods: The data for this study were drawn from interviews conducted as part of the HeadStart Learning Programme. The sample comprised of 32 young people aged 11–12 years. Ideal-type analysis, a qualitative form of person-centered analysis, was used to construct a typology of adolescent help-seeking. Participants' help-seeking "type" was then compared with their perceived cause for emotional distress "type."

Findings: We developed four distinct categories of help-seeking: (1) guided by others who have taken notice; (2) skeptical with unmet needs; (3) motivated and solution focused; and (4) preference for self-regulation. Simultaneously, we identified principal associations between perceived cause of emotional distress—(1) perceived lack of control; (2) unfair treatment; (3) others: their actions and judgements as the catalyst; (4) concern for self and others; and (5) self as cause—and help-seeking approaches. "Perceived lack of control" was most likely to be associated with "others who have taken notice"; "Unfair treatment" with "skeptical with unmet needs"; "others: their actions and judgements as the catalyst" with "motivated and solution focused"; "concern for self and others' with 'guided by others who have taken notice"; finally, "self as cause" was most likely to be associated with "preference for self-regulation."

Conclusions: This study demonstrates meaningful and distinct categories of adolescent help-seeking and offers empirical evidence to support the assertion that perceived cause for emotional distress may influence the help-seeking approaches of adolescents.

Introduction

Help-seeking is intrinsic to efforts to manage the onset, maintenance, or escalation of mental health difficulties during adolescence (1). However, our understanding of adolescent help-seeking remains somewhat nebulous (2). A greater comprehension of help-seeking behavior from the perspective of adolescents themselves is crucial to better support at-risk young people on their terms, and such understanding can support the continued development of prevention research and practice (3). Given the propensity for emotional distress during adolescence (4), it is also prudent to explore help-seeking behavior in the context of perceived cause for emotional distress (5), particularly as causal beliefs have been found to influence help-seeking behaviors in adults (6–9). To address this need, the present study sought to categorize early adolescents' experiences of help-seeking, and to examine the extent to which these categories (or "types") of help-seeking behavior are associated with their perceptions of causal factors for emotional distress. The categories of perceived cause for emotional distress were established with the same sample in an earlier paper (5) and included: (1) perceived lack of control; (2) unfair treatment; (3) others, their actions and judgements as the catalyst; (4) concerns for self and others; and, (5) self as cause.

Adolescence is defined as the stage between age 10 and 19 (10). It can be split into three distinct phases, early adolescence (10–13 years), middle adolescence (14–16 years), and late adolescence (17 + years). This epoch is a key developmental period, with great potential for self-development as well as physical and intellectual growth (11). It can also be a challenging period given changes across numerous developmental domains (12), which are often emotionally demanding (13). Heightened emotional reactivity is a quintessential marker of this period (14), and emotional regulation, our ability to effectively respond to and manage our emotions, is undergoing its own process of development (15). Research indicates that internal regulatory strategies change throughout the period of adolescence, moving from limited efficacy in early and middle adolescence to a greater reliance on adaptive strategies later in the epoch (15–17). Taken together, it is perhaps unsurprising that we typically see an increase in experiences of emotional distress (i.e., difficult affect responses, such as feeling angry, worried, anxious or depressed), thought to indicate burdensome or ineffective adaptions to environmental demands (4). Most of us have experienced challenging affect responses to some extent, especially during our teenage years (18). For many adolescents, elevated emotional distress will not lead to significant difficulties; however, for some, heightened emotionality may contribute to the onset of life-impacting difficulties (14).

Adolescence is a critical period for the onset of mental health difficulties, with emotional difficulties such as anxiety and depression among the most prevalent (19–21). The number of adolescents aged 11 to 16 in England reporting a "probable mental disorder" increased from 2017 to 2020, prevalence has remained relatively stable at a rate of 20.4 percent since, whereas prevalence among 17 to 19 year olds has risen from 17.4 percent in 2021 to 25.7 percent in 2022 (22). This increase may have been exacerbated by the COVID-19 pandemic (23), but concerns regarding the

trajectory of adolescent mental health, across varying levels of difficulty, were present prior to the pandemic (24), on a global scale (20, 25). Correspondingly, there is significant interest in early intervention to curtail the onset of life-impacting difficulties. A concurrent goal is to improve adolescent wellbeing, a construct broadly referring to personal and social functioning, with a focus on feelings and life evaluation (26). Whilst aspects of wellbeing, such as pleasant emotions and meaningful engagement (27), reflect aspects of good mental health, mental health difficulties and wellbeing have distinct correlates (28). Therefore, the absence of disorder does not necessarily indicate wellness and adolescents who are not experiencing clinical levels of difficulties may still need support.

Unlike behavioral problems, emotional difficulties are more easily concealed, making it difficult to identify a young person's internal struggle (29, 30). As a result, articulating the need for help has been identified as an important factor to support adolescent mental health and wellbeing (31). However, at a time of peak vulnerability, adolescents are the least inclined developmental group to seek professional help when it comes to mental health concerns (32). There are numerous factors that influence one's ability to explicitly ask for help for emotional difficulties. Qualitative work has helped us to understand wider factors influencing the help-seeking in greater detail. Recent work by Westberg et al. (33), for example, demonstrates that adolescents may be unfamiliar with or insecure in the processes of help-seeking. Adolescents may also feel that current structures of support are inaccessible and unresponsive (33). Thus, this more nuanced insight helps to dismantle the prevailing deficiency focus on adolescents as "poor" help-seekers (34), and instead highlights that wider contextual factors might be impinging on this process. Indeed, to effectively address mental health challenges among adolescents and young adults, it is crucial to understand how they perceive and experience support and seek help (35, 36).

Help-seeking has the potential to modulate the severity and persistence of problems (37, 38) and can support timely intervention and recovery (39, 40). Despite this importance, there remains disagreement about how we define help-seeking (41). According to Rickwood and Thomas (42), it is "an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern" (p. 180). This is split into formal help (e.g., clinicians) and informal help (e.g., teachers, friends, and family). Evidence indicates that adolescents tend to favor more informal support, particularly friends (38, 43). In a similar vein, we know adolescents are more likely to initially share difficulties with their peers, and peers can be extremely valuable to the help-seeking process (44). However, a meta-analysis examining association between informal help-seeking behavior and adolescent psychosocial outcomes would suggest there is a paucity of research investigating links between informal help-seeking and psychosocial outcomes during adolescence (41). Qualitative research shows us that, whether formal or informal support, adolescents want to be heard by adults they seek help from, but often do not have this experience when it comes to seeking support (36). Barker (45) states that help-seeking refers to *any* steps taken by an adolescent, who feels they need assistance, to meet their needs in a positive way. Barker's (45) definition allows for us to consider that adolescents may be

going to great efforts to seek and engage with varied forms of help; therefore, it is valuable to explore help-seeking from their perspective as experts in how they manage challenges to their wellbeing (36, 46).

Whilst help-seeking is considered to be inextricably linked to intervention and prevention efforts for mental health difficulties, low levels of help-seeking during adolescence are a significant barrier to this effort (1, 40, 42). The process of seeking help is complex, with multiple decision points as well as barriers and facilitators that can impact progression (32). There is a growing body of research exploring what supports or hinders help-seeking during adolescence [e.g., (37)], with the most identified barriers including stigma and negative views toward services and professionals (39). Midgley et al. (47) suggested that causal beliefs may also have consequences for adolescent help-seeking. Indeed, Aguirre et al. (39) explain that the nature of mental health symptoms, such as self-blame and the experience of emotional distress, may contribute to diminished help-seeking behaviors. Yet, our understanding of the ways that perceived cause for emotional distress might influence help-seeking during this developmental period is limited, particularly in relation to young people considered to be at-risk of mental health difficulties.

The current study

This study builds on our previous work where we identified categories of perceived cause for emotional distress among adolescents considered to be at-risk of developing mental health difficulties (5). We identified five distinct "types" of perceived cause using ideal-type analysis, a method for developing categories from qualitative data, including: [1] perceived lack of control; [2] unfair treatment; [3] others, their actions and judgements as the catalyst; [4] concerns for self and others; and, [5] self as cause. Our goal here is to identify potential patterns across types of perceived cause, as identified in O'Neill et al. (5), and types of help-seeking, identified in the present paper. Hence, the aim of the present study was 2-fold: (1) to explore and identify meaningful categories of help-seeking behavior among adolescents with personal experience of emotional distress; and (2) to examine the extent to which causal perceptions for emotional difficulties are associated with help-seeking behaviors.

To our knowledge, no other research has attempted to achieve these dual aims within an early adolescent sample. We aim to enhance understanding of the interplay between perceptions of cause and seeking help for emotional distress in early adolescence. Adolescents face a multitude of challenges (12), thus, our aim was to determine potential overarching patterns in their approach to help-seeking rather than focusing on singular instances. Help-seeking is complex (32). In attempting to develop this typology, it was not our intention to negate this complexity, but rather to explore potential commonalities as well as differences in approaches. Knowledge of overarching patterns has implications for how we work with adolescents to better understand their approach to seeking help so that we might facilitate a process that is aligned to their experiences, needs and expectations.

Method

Setting for the study

Beginning in 2016, the 6-year HeadStart Learning Programme was implemented with the intention of exploring and testing ways to improve the mental health and wellbeing of 10–16-year-olds. In doing so, the programme aimed to prevent the development of significant mental health difficulties by implementing a plethora of preventive interventions at six sites across England. The HeadStart Learning Team were tasked with assessing the impact of the varied interventions in the context of broader issues related to adolescents' mental health and wellbeing, coping behavior, and experiences of professional and social support. The longitudinal evaluation of HeadStart consists of survey and interview data collection, gathered annually. Interview data from the Learning Team's evaluation of the HeadStart Learning Programme were used in the present study. It is important to remember that this study has been conducted in England, a Western setting, and to bear in mind that help-seeking and explanatory models of mental health and wellbeing may vary depending on the cultural context (48, 49).

Participants

The sample was drawn from 82 young person interviews, conducted as part of the first annual wave (2017) of qualitative data collection. The evaluation team asked school or HeadStart staff to invite adolescents who *could* receive or who *had* received support (including targeted or universal) from HeadStart to take part in the interviews. As outlined, the present work sought to build on findings from earlier work by the authors; therefore, the present study is framed as a "companion" paper for O'Neill et al. (5), and the 32 interviews used in both studies are the same. The initial sample of 32 was chosen based on discussions of perceived cause for emotional distress and lived experience of emotional distress. Initial decisions around inclusion were made by AON, who logged reflections which were reviewed and discussed with ES who had extensive knowledge of the interviews. Of the initial 82 interviews, 11 participants were excluded due to age (9–10 YO). The remaining transcripts (11–YO) were checked for prevalent discussions of personal emotional distress as well as perceptions of cause for this distress. Those who discussed both were included in the study ($N = 32$). Adolescents who reported situations that might be perceived externally as distressing but did not report feeling distressed themselves were not included. Likewise, those who indicated distress but not a perceived cause were excluded; excluded participants were checked and verified by ES. It is recognized that this approach to participant selection may mean that experiences of help-seeking in the sample more broadly were not included in this study. However, as well as exploring categories of help-seeking behavior, we were interested in understanding the extent to which overarching causal attributions might correspond with global help-seeking behavior. Utilizing the same sample was intrinsic to this goal. The final sample consisted of 32 adolescents. The age range was 11 years and 8 months to 12 years and 9 months [mean (M) = 12 years, standard deviation (SD) = 0.31].

Ethical considerations

The qualitative strand of the Learning Team's national evaluation of the HeadStart Learning Programme received ethical approval from University College London (ID Number: 7963/002). Adolescents were given the opportunity to participate in the interviews, which they were free to accept or decline. Researchers conducting the interviews had up-to-date Disclosure and Barring Service checks and received safeguarding training from their host institution. Before adolescents who decided to take part were interviewed, they and their parents were asked to read a participant information sheet detailing the study. Thereafter, informed consent was sought by parents/carer(s), and assent to take part was sought from the participants before the interviews began. Interviewees were made aware that the information they provided would remain confidential, unless they disclosed something that indicated harm to themselves or others. During the write-up phase, all identifying information was anonymized; interviewees were aware this would happen.

Data collection

Data were generated through one-to-one semi-structured interviews with the adolescents. Interviews varied in length from 15 to 60 min (M = 38.02, SD = 9.85) and were conducted by the research team in a private room at the participant's school. An interview schedule was used, which was developed as part of the programme evaluation, in collaboration with the research team and Common Room—A consultancy and advocacy organization supporting the views of adolescents in research and policy. The schedule allowed for a focus on experiences of coping with and receiving support for difficulties, including their experiences of and opinions on support from formal (e.g., from the HeadStart programme or other professionals) and informal (e.g., from family and friends) sources. The broad contextual focus of the interview schedule covered important domains in the lives of the adolescents, including school, home, family, friendships, and feelings/emotions.

The main purpose of the interviews was to support the evaluation of HeadStart rather than to directly explore help-seeking behavior or causal attributions for emotional distress. However, during the interviews, adolescents were asked about their experiences of coping and receiving support when facing difficult situations and feelings in life. Therefore, they often spoke about help-seeking and causal perceptions either due to a prompt from the interviewer for further detail or spontaneously in the context of their narrative. The interview schedule lent itself well to such explorations, and perceptions of cause for emotional distress in the context of help-seeking has relevant implications for adolescent wellbeing and the efforts of HeadStart.

Data analysis

Our aim for this study was 2-fold: (1) to explore and identify meaningful categories ("types") of help-seeking behavior among our sample of adolescents with personal experience of emotional distress; (2) to consider the extent to which overarching perceptions of cause for difficulties and type of help-seeking behavior might overlap for the participants in this study. Accordingly, ideal-type analysis was chosen as the most suitable form of analysis. This qualitative approach offers a systematic methodology for developing a typology, the grouping of participants with shared features (50), from qualitative data and allows for comparative analysis between and within clusters of cases (51). Categories or "ideal-types" were derived inductively or bottom-up from the data and participants were placed into the category which best represented their global approach to help-seeking. This approach enabled us to offer distinctions between overarching help-seeking behaviors, which is beneficial given the complex and varied nature of help- seeking. An ideal type essentially describes the bringing together of influential attributes from similar cases to explore how a particular phenomenon is understood (52, 53). Using Stapley et al.'s (54) seven steps for ideal-type data analysis, the following procedures were observed:

Step 1: Becoming Familiarized with the Data Set. The first and second authors (AON and ES) were already acquainted with the data from work conducted earlier (5), conducting the interviews (ES), and reading the transcripts and listening to the audio files from the interviews several times to purposefully familiarize themselves with the data (AON and ES). From the beginning, precautions were taken to minimize bias in interpreting the data, particularly given AON and ES' knowledge of future timepoints and extensive involvement with the analysis for the sister paper. These precautions included involving multiple co-researchers throughout the analysis and ensuring that findings were grounded in the data. As an additional step, we invited new members to the team who were not involved in the companion study, one of whom had no knowledge of the interviews from alternative timepoints.

Step 2: Writing the Case Reconstructions. A case reconstruction, or summary, of each interview was created by AON, focusing on instances related to help-seeking behavior. Each summary was a description of the relevant content from each interview transcript. Summaries were checked and verified by AON against the full interview transcript and reviewed by ES.

Step 3: Constructing the Ideal-Types. Case reconstructions were systematically compared to identify patterns across participants' experiences. This was completed initially by AON and then again with a team comprising of the first author and a co-researcher. This co-researcher had no involvement in the companion paper. It was essential to have someone who had not seen or been involved in the companion paper to minimize unintended bias when exploring links between the findings of the present and companion paper. After initial discussions, AON grouped similar cases together to construct the ideal-types.

Step 4: Identifying the Optimal Case. A case from each cluster was chosen that best illustrated the ideal-type; this case then acted as an orientation point for comparison of other cases within that type. The presence of an optimal case for each cluster allowed us to explore the extent to which participants shared common experiences, whilst also identifying divergence within each group.

Step 5: Forming the Ideal-Type Descriptions. A detailed description of each ideal type was constructed, with the optimal

case for each type in mind. The intention was that all cases categorized within each type could be identified using the type description.

Step 6: Credibility Checks. Echoing other work utilizing ideal-type analysis (5, 51, 55, 56), we carried out extensive credibility checks to ensure that the ideal-types and descriptions clearly reflected the data. This stage involved input from three co-authors, including the first author, and an independent researcher. AON's grouping of similar cases together to construct the ideal types was reviewed by the third author (IR), the placements were discussed and refined based on IRs feedback.

To verify our sorting, the independent researcher proceeded to place each case under the most befitting type without prior knowledge of placement. Initial consistency between the placements was <100%. Where there was inconsistency between the placements, the ideal-type descriptions were refined to ensure clarity and cases were recategorized within alternative clusters as necessary. Discrepancies were reviewed by ES and discussed with AON. Final placements were discussed extensively between AON and ES, resulting in the loss of an ideal type. It was determined that one of the types was not operating effectively as an independent category. Accordingly, the features were collapsed into the appropriate type and the participants recategorized, leaving us with four rather than five groups. The final categorization between AON and ES was done with 100% agreement.

Step 7: Making Comparisons. Once the similarities between cases were clearly delineated, variations within the clusters were explored to illustrate the nuance within the types.

Findings

Based on the interviews given by participants, we identified four overarching types of help-seeking behavior, including: [1] guided by others who have taken notice, [2] skeptical with unmet needs; [3] motivated and solution focused; and [4] preference for self-regulation. The four types are presented below alongside ideal-type descriptions, the optimal case from each group, and a summary of other cases within the cluster. The participant names provided below are pseudonyms.

Ideal-type 1: guided by others who have taken notice (N = 10)

Ideal-type description

The adolescents in this category often highlight the ways in which their approach to help-seeking is evolving due to initial offerings of support, including being referred for intervention support. Typically, adolescents here discuss past experiences of coping less favorably and emphasize that they now deal with things "*better*" owing to support offered. For this group, someone taking notice and offering help gives them a safe space to share, as well as access to a person who they trust to support them; if offered a support structure that provides trust, privacy, and a sense of feeling cared about, they will likely continue to engage with it thereafter. The importance of this is highlighted by an inclination to avoid addressing certain difficulties in their interviews, as well

as a broader focus on trust. There is a sense that these adolescents know that they need support, but they may not feel able to reach out or may feel uncomfortable accessing it without guidance. However, they are likely to share their difficulties with people who they are close to who might be able to facilitate the help-seeking process. There is often a focus on having someone who they are close to "*sort things out*" or seek help from others on their behalf (e.g., telling a sibling, friend, or parent about an issue so they can bring it to a teacher on their behalf). They are willing to share and engage with help—perhaps more reactively than pro-actively—but facilitation helps them take the first step, otherwise support is only sought at a breaking point. Essentially, they are in the early stages of figuring out what works for them and need help to do so.

Optimal case

Maggie is presented as the optimal case for this ideal-type. Maggie tells us about her experiences of violence at home. She indicates that this has been happening for a long time, and when she finally told the teacher about it, this made "*it easier for [her], to not feel... like [she's] going to have to put up with being hit.*" The catalyst for finally sharing was someone recognizing and reporting that she had been self-harming due to stress. She found not having to keep everything a secret anymore a relief and she felt like finally talking to someone was the reason that the self-harming "*stopped.*" Maggie has spoken to her sibling about being bullied in the past, who helped her to talk to school staff about it, which made her "*feel better*"." In general, she finds it easy to talk to her sibling about her problems because of the "*the fact that [her sibling] says [they] will try and get it sorted out and [they know] quite a lot of people in the school.*" She also speaks to her mum about things that she finds difficult; her mum helps her by calming her down and sorting things out: "*If it's something about school that's upset me she will phone the school to get it sorted out and if it's something at home she will tell the person to stop and leave me alone.*"

Summary of the other cases within this type

Before having a peer mentor, there were difficulties that Ian had not spoken about; he has found having a space to do this helpful, especially as his mentor is "*a very nice person*" who is easy to talk to. Avery and Thomas had similar experiences. Jayden has had support made available to her after speaking with a teacher, as a result, she is speaking with someone about her difficulties at home and is going to have further support. Like other adolescents in this group, Joseph and Riley have valued having a safe space made available to them to facilitate sharing their experiences and concerns. They have been participating in the same type of small-group psychoeducational sessions, and Joseph feels "*it's a great place, [...] and it makes you open up and it makes you know the emotions.*" Riley also feels that participation in this activity is where she "*learned to talk to somebody*" about her difficulties. Similarly, Quinn attends a youth club that gives him a space to share, which acts as a steppingstone to support: "*if you've got any problems, you can speak to them*" and they can "*sort it out*"; he will only share with people he trusts. Frankie has had a similar experience, but for him he "*might be able to talk about once a year, just in case something big happens and [he needs] to talk to someone.*" He feels that it is helpful doing this because then he

knows that the problem is going to get "*sorted out at one point.*" He alludes to problems he is facing, but when asked if he would like to speak about them, he responds, "*I'd rather not at the moment.*" Parker also values having someone to sort out problems; sometimes he wants to leave school because he has "*loads*" of "*upset inside,*" instead he finds a teacher to speak to which takes the "*emotions away.*" Parker had intervention support organized for him because he was "*getting quite angry and reactive*" and feels this support has helped him "*know what to do*" when he is facing difficulties.

Ideal-type 2: skeptical with unmet needs (*N* = 5)

Ideal-type description

Adolescents in this category often recall times when they did not feel supported in the ways that they wanted or needed when they actively sought help. This appears to have led to a sense of skepticism and even apathy in relation to seeking help. Often adolescents in this group will talk about issues they are having and how they feel like they just "*have to get on with it.*" This is different to not ruminating on the problem and trying to move forward, but rather a 'what is the point' mentality. Some may even turn down support offered to them because of bad experiences in the past or no longer share their problems due to a previous experience of trust being broken. Young people here may indicate that they can get support but not when they really need it, this might be because they feel that other people will be busy at the time of greatest need. There is also a sense of not feeling heard or fully understood when they have tried to reach out for help, or a fear that they would not be taken seriously if they did. The adolescents in this group tend to appreciate friendships that offer them a distraction from the problems that they might be facing, and there may be a reliance on others to make them feel happy. This gives a sense of wanting to forget about or be distracted from the problem that they are facing, a sort of escapism from things that they may feel cannot or will not be resolved.

Optimal case

Arden represents the ideal-type for this group. Arden explains that she is being bullied and when asked how she copes, she responds: "*Just go along with it, because I'm used to it.*" She recalls a time her teacher tried to intervene with classmates calling her names because she was "*crying every day.*" This backfired because it inadvertently led to further bullying. Arden feels that teachers have not always supported her effectively, this includes taking other people's sides over hers: "*Favoritism, I think it is. I don't know why.*" She spoke about a specific incident of being bullied by a peer, during which she was not believed when she told the teacher, leaving her to manage it herself: "*I just had to deal with it, because no one did anything.*" She talks about a few teachers and friends who she feels have been supportive, but also states that she cannot trust anyone, "*[c]an't trust no one. I don't trust anyone.*" Arden mentions that there are two teachers who she can go to for support, but she feels that this is not enough and is not sure how to access additional support: "*I do need, like, more support [...] Because, like, there's*

like... I don't feel there's nowhere I can go to. Like, I'm lost for who to go to." Despite this perception of having nowhere to turn, when asked if she would like the school to be informed of her difficulties, she responds: "*I don't know*" and explains that things have gotten somewhat better anyway.

Summary of the other cases within this type

Kit has spoken to teachers about peers being rude and inappropriate to him at school, "*but sometimes they won't help.*" He no longer feels okay about talking to teachers, instead he feels he has to let his peers carry on with the behavior and try to ignore it. Similarly, when Alex is not feeling happy, he would try to "*deal with it*" and "*try to get over it,*" he feels that going to a teacher to ask for help might make things worse. He also feels that when something "*really desperately needs handling [...] there's no one there*" and indicates that teachers are too busy elsewhere to help when they are needed. Carey feels that some teachers do not listen to her, she does not know why this is. She talks about feeling depressed quite often and how no one understands her when she is feeling this way, including herself. She thinks talking to someone when she is feeling depressed might help, but she does not do this. She will avoid talking to her mum about feeling depressed because she has "*really different feeling than [her mum] does.*" For Sam, his friends make him feel better when he is feeling angry, sad or anxious by joking around and distracting from what is going on. When asked if he would recommend people speaking to someone if they are experiencing difficult emotions he states: "*no 'cause they wouldn't listen.*" He has "*family problems*" and when asked if he has had any support in relation to this, he states "*don't see it as something that can be helped.*"

Ideal-type 3: motivated and solution focused (*N* = 8)

Ideal-type description

The adolescents in this group appear to be motivated help-seekers who are looking for solutions to their experienced difficulties in a way that feels most useful for them. This group appears to be the most invested in the process of *active* help seeking, often seeing asking for help as a strength. Therefore, even if people let them down, they are not dissuaded, but rather motivated to look elsewhere. Like the guidance group, they perceive previous behaviors in the context of their difficulties as problematic but tend to feel like they have developed better ways of coping; however, they are almost a step further along than the guidance group in that they are more able to *proactively* help seek. Here, the adolescents tend to be clear on their preferences for help-seeking, e.g., a preference to share with people their own age due to perceived shared understanding, or a preference to express themselves creatively to process and deal with difficult emotions. They may face barriers in relation to help-seeking, such as not being believed or taken seriously, but, unlike type two, they are more likely to persist until they find a solution. They value good quality support and will talk about this with fondness and gratitude, and

they tend to focus more on the 'good support' rather than on times when their needs were not met.

Optimal case

Kris represents the optimal case for this ideal-type. Kris describes a close relationship with friends that enables her to share her difficulties; she feels that even if she only told them "*a little bit*" they would "*understand really well.*" She finds her friends "*easiest*" to talk to, therefore she does not like falling out with her friends and losing this kind of support. She mentions having a peer mentor and several teachers at school who she feels like she can also talk to if she needs help. Of her peer mentor she states: "*I feel like we're gonna be able to talk to each other a lot more 'cause we're both young.*" Kris feels that she can utilize the support of her peer mentor so she does not have to worry about "*friends not being there*" because she can "*always go*" to her peer mentor instead. In her opinion, it is harder to talk to older people about problems because you have "*explain it to them a lot more,*" but when talking with friends you can be a "*bit less formal.*" There are also teachers she will talk to in school if needed, she explains that one of the teachers is "*really nice*" which is why she feels she can talk to her.

She also talks to her mum about her difficulties and prefers to speak to her rather than her dad because she feels her mum understands a lot more. However, under certain circumstances she will speak to her dad, but it has to be "*for a really good reason*" that will help her "*get something off [her] chest.*" When she argues a lot with one parent, she runs to her other parent's house who she feels is the only one who understands. Kris also explains that she has experienced abuse from a family member. She spoke to someone in a weekly group support session about this: "*I told the lady (Person B) about it and, it just felt like I could get it off my chest, so that's somebody actually new.*"

She also received support from mental health professionals outside of school, which she "*really enjoyed*"; in explaining why she enjoyed it, she states: "*Cause once I got to know the person who I was talking to […] it felt like I was just in my own home and I could just like, I don't know it just felt like I didn't have to like sit there and talk to her directly so I could like, go and play while she was talking to me and it felt like I could just relax.*" She explains that she might be going back to this support because she felt like she could talk to them a lot easier and because she feels she needs a bit more support. She believes it will help her "*mentally*" and she will not have to "*bottle it up or anything.*"

Summary of the other cases within this type

Like Kris, Annie has supportive friends, and she feels that they have a "*strong bond.*" She likes to draw to express her emotions and feels like music helps her through difficult times, making her feel "*not alone.*" Though she would talk to her dad, she prefers to speak to her mum as she feels that she can "*relate to most things,*" and she believes that talking to people about difficulties is helpful. Shae also feels like her friends are always there for her, in fact she is able to list a number of people who she would talk to if she was feeling upset, including her parents, HeadStart intervention staff and her siblings. Luca talks extensively about worries in relation to various aspects of her life and she is very focused on resolving her worries.

She engages with various systems of support to do so, and she makes a great effort to enact the advice that she gets from her family and support worker. Archie also talks to her teachers and family about her problems, she feels like they give her "*good*" advice, which she does her best to enact. Jodie discusses support across different areas of his life, and he actively engages with this support. He works hard to overcome barriers when seeking support, including when school staff are not as supportive as they could be. Like Jodie, Jamie finds ways to overcome challenges when it comes to seeking help, this includes writing in a journal for her mum to read so that it does not distract from support she feels like her sister needs. For Blake, her parents and friends are a trustworthy and strong source of support, and she is also comfortable talking to teachers about her difficulties: "*[b]ecause, um, that's [the teacher's] job basically, in the school, 'cause they wouldn't hire someone, who, erm, isn't good at that.*"

Ideal-type 4: preference for self-regulation (*N* = 9)

Ideal-type description

This group of adolescents appear to favor self-regulation to manage their difficulties. There is not necessarily an aversion to other forms of seeking help, but rather they feel capable of or have a preference toward managing themselves and their reactions. They may take responsibility for their feelings and responses, determining that they are old enough to deal with problems themselves. Adolescents here may talk about having control over their feelings, or desire to control feeling supported by an aversion to ruminating on problems. There is a possibility that they might use tactics to self-regulate in order to mask how they are really feeling to avoid impacting others; for instance, to protect others from the consequences of their anger or to protect their family from their true feelings. They typically have a good sense of where they could go for help but tend not to explore these options. However, they appear to be aware that there might be times when they need to talk to others if it is deemed serious enough. Should they reach that point, there is a focus on finding the most appropriate person for the situation (e.g., issue in school requires a teacher, issue at home requires parent). For adolescents in this group, there is a sense of wanting to be alone, to calm down, and return to "*normal*" when emotions are heightened. This process might involve things like coloring, listening to music, as well as yelling and punching. Adolescents in this group have tried various methods recommended by others, but they tend to rely on themselves most frequently and typically find this to be the most effective or preferred solution.

Optimal case

For this ideal-type, Craig is the optimal case. To manage his anger, Craig lists numerous strategies: "*Like, I start moaning. Like I don't do it that much in school, but if I'm at home I might do it. Um, I'd shout or something like that, like walk outside, and I like playing football, so I like kicking the ball straight at, like, the bricks and the thing, like, of the house just to make as much noise as I can.*" He says that this does not help and annoys his family. Craig feels that teachers would support him to the best of their ability, but he does

not feel like he is upset often, he believes he can control how he feels and thus "*always feel happy.*" When asked how he controls feelings, he responds: "*I just don't think about it […] you could like have something said to you that upsets you but you just don't think about it a lot.*" When he is upset, he does not talk to anyone, and instead will "*sit there*" in his room, and play video games "*like a normal person.*" He typically does not talk to anyone because he feels like it is usually something that he can deal with himself: "*Cause like it could be for stupid reasons and, like, I can deal with it myself, like I'm old enough to deal with it myself instead of like, bringing other people into it.*" In his view, he should always deal with his problems himself, however, if he were dealing with a significant problem, then he might want to speak with someone "*sometimes,*" but this is only under certain circumstances: "*if it's serious, I might but, like, sometimes I'd be able to control it. If it's serious, serious. I'll only tell certain people, like someone I've known all my life, I'd only tell them.*"

Summary of the other cases within this type

Darragh feels that he is "*very implosive*" and so he does not really "*show a lot.*" He indicates that he likes to hide emotions, particularly anger: "*I can keep it in me but like but I'm not sure when it is going to burst.*" He thinks about good times that he has had with a person or manipulates his body so that he cannot punch someone and to keep the anger "*in.*" Dale also deals with his worries by thinking about all the good times that he has had with his friends. When he feels sad, he will "*just wait until it's all gone out and [he] can start feeling happy again.*" He explains that the length of time this takes depends on "*how big the matter is.*" He has a number of activities to help him through difficulties, but this does not help when the problem is "*really big*" because he does not "*really want to be happy in a time of sadness.*" When asked if he would speak to someone when feeling this way, he explains, "*I'd normally just keep to myself unless it's not that big, but normally it is.*"

When she is upset, Emilia wants to be alone, "*because then [she] can like calm down easier if [she's] angry, [and] just go back to normal.*" She has self-regulating strategies in place to help this calming process, including watching YouTube videos, coloring and texting friends. When asked if she would like any support for feeling upset or angry, she responds "*Not really, I'll be fine.*" Bobbie also feels that doing things on your own can help you calm down, he indicates his friends, bike and dog help him do this. Aoife, on the other hand, punches when she is angry, "*I punch my pillow and throw things at my wall*," but she also lists a multitude of activities she engages in when she is having a hard time, including music and drawing which help her to regulate. When asked if there was someone who she would talk to when having difficulties, she responds "*no because I sort it out myself*," but she will speak to someone if it is "*really, really important*," though not strangers, as they are "*off limits.*"

Lewis likes to chat with friends and do "*bloke things*" with them. He uses "*breathing out the mouth and in through the nose*" and a stress ball to calm down. When he needs to calm down, he will walk away from the person causing the issue, he feels like calming down is what works best for him. For Liz, reading extensively helps her

feel better when she is stressed. Of reading she states the following: "*I like forget what's going on in my life and feel a lot better*" and explains that the stress goes away when she reads. To manage his difficulties, Finley tries to "*channel it out […] just like trying to like think of different stuff and forget about it.*" He talks about experiences of anger and how he manages this: "*I guess breathing is a good one; just kind of breathing out,*" and reiterates his preference to focus on being happy. He feels like talking about family problems is difficult, owing to familial loyalty and the "*bond*" that you have with parents.

Categories of help-seeking and corresponding perceived cause of emotional distress

Participants' help-seeking types, identified in the present study, and corresponding category of perceived cause for emotional distress (perceived lack of control; unfair treatment; others: their actions and judgements as the catalyst; concern for self and others; and, self as cause), identified in our earlier study (5), are outlined below. Table 1 illustrates the number of participants in corresponding types. This information, and the accompanying commentary presented below, are only intended to be exploratory as we note that the nature of the study and sample size precludes more formal inferential quantitative analysis.

Discussion

This study sought to capture overarching approaches to help-seeking among adolescents considered to be at-risk of experiencing mental health difficulties. Concomitantly, we were interested in exploring the potential overlap between categories of help-seeking and perceived cause of emotional distress. Using interview data from adolescents with personal experience of emotional distress, we developed four distinct categories of help-seeking: (1) guided by others who have taken notice, (2) skeptical with unmet needs; (3) motivated and solution focused; and (4) preference for self-regulation. We also compared the help-seeking type that our participants exhibited to their perceived cause for emotional distress type—(1) perceived lack of control; (2) unfair treatment; (3) others: their actions and judgements as the catalyst; (4) concern for self and others; and, (5) self as cause, as identified in O'Neill et al. (5), and reported the patterns observed. Whilst there is variability in the corresponding percentages across the ideal types (see Table 1), here we report the principal patterns. We found that participants identifying perceived lack of control as their causal type tended to also identify ideal-type 1: guided by others who have taken notice as their help-seeking type; those in the unfair treatment type tended to align with ideal-type 2: skeptical with unmet needs; others: their actions and judgements as the catalyst with ideal-type 3: motivated and solution focused; concern for self and others with ideal-type 1: guided by others who have taken notice; finally, those identifying self as cause tended to also align with ideal-type 4: preference for self-regulation. These findings suggest that overarching causal perceptions for emotional distress may have an important bearing

TABLE 1 Participant corresponding categories of help-seeking and perceived cause.

	Categories of perceived cause for emotional distress				
	Perceived lack of control	Unfair treatment	Others: their actions and judgements as the catalyst	Concern for self and others	Self as cause
Categories of help-seeking					
Guided by others who have taken noticed	3	0	3	2	2
Sceptical with Unmet needs	1	3	1	0	0
Motivated and solution focused	0	1	5	1	1
Preference for self-regulation	0	2	3	1	3

on help-seeking, or vice versa; thus, highlighting the importance of taking causal perceptions into account to support help-seeking in the context of emotional distress. Simultaneously, our findings highlight the value of exploring help-seeking from the perspective of adolescents to better understand the nuances of their approach.

The help-seeking ideal-types and the important role of others

Our findings could support the existence of a continuum from more active to passive help-seeking tendencies or attitudes. For instance, at one end of the continuum are adolescents who are "motivated and solution-focused" and "guided by others who have taken notice," who tend to actively seek help from others or who share their difficulties with people who they are close to who might be able to facilitate the help-seeking process. Whereas, at the other end of the continuum are adolescents who are "skeptical with unmet needs" and those who have a "preference for self-regulation," who have a sense of skepticism and even apathy in relation to seeking help or who prefer to rely on themselves to manage their difficulties. The categories that we uncovered further highlight the important influence that others play in relation to where adolescents are situated on this continuum, as well as how they might move within it. From what we have observed, it is possible that there is a point at which the actions and reactions of those who are able to support adolescents might impact the direction and development of their overarching approach to help-seeking. The categories identified, therefore, may be subject to change over time based on previous experience of help-seeking and/or waiting to be noticed. Further research is needed to identify the point at which change might happen and what factors could influence potential change. Overall, the nature of the approaches identified suggest that having someone to check in, take concerns seriously, offer resources, and to co-create a plan of action with adolescents may benefit the help-seeking process.

Ideal-type 1: "guided by others who have taken notice" in particular emphasizes the critical role that significant others have in promoting and sustaining engagement with help-seeking. Here, the adolescents demonstrate an awareness that they could benefit from additional support but do not necessarily feel able to reach out without a prompt to do so, hence there is heightened reliance on others. There are numerous reasons why adolescents may find it

difficult to ask for help initially, including stigma, embarrassment (2) and not knowing where to go for help or how to access it (57). These aspects reflect components of mental health literacy, which broadly refers to knowledge and beliefs surrounding mental health difficulties that aid prevention and management (58). While interventions to promote mental health literacy are becoming more available for older adolescents, there remains a comparable lack of interventions for younger adolescents (59, 60). Therefore, initial support may be more prudent during early adolescence where knowledge, skills and an ability to regulate emotions (15) may be less well developed. The participants in this category indicate that they may need additional help in bolstering their mental health literacy, particularly as we observed that having a steppingstone to support can often lead to continued engagement with help-seeking. This kind of support may also be beneficial to the identification of emerging difficulties.

There is prevailing consensus that schools are significantly well placed to support the early identification of mental health difficulties among at-risk students (29). Whilst teachers, parents and caregivers are often instrumental in linking adolescents to clinical care, they are also a valuable support system in their own right (40). Emotional challenges can be difficult to identify (29), and asking for help may facilitate the process of early identification of difficulties and subsequent intervention (31). However, some participants in our study experienced a lack of support when they tried to seek help. For those in ideal-type 2: "skeptical with unmet needs," external invalidations when trying to seek support often resulted in ambivalence toward help-seeking. This was often due to not feeling believed or taken seriously. Emotional invalidation (e.g., through minimization of emotional distress) in the developing years can have consequences for emotional expression and can play a role in lifelong difficulties (61), our findings suggest that it can also impact adolescents' approach to help-seeking. Therefore, we echo Hellström and Beckman (36) in highlighting that present adults are important to the help-seeking process and that adolescents need to feel heard by adults to facilitate this process.

Whilst previous negative experience of help-seeking has been recognized as a barrier to asking for support (44), we identified variation in the extent to which this might be the case. Participants across types 2 and 3 described past unhelpful experiences when seeking support, often leading to disengagement in ideal-type 2: "skeptical with unmet needs." However, those from ideal-type 3 "motivated and solution focused" remained enthusiastic about help-seeking despite being let down in the past. It is unclear why

this is the case, but a possible explanation may relate to early experiences of support; for instance, effective support early on acting as a buffer against future ineffective experiences. Whilst this is speculation and ultimately beyond the scope of the present study, we do see that in ideal type 1: 'guided by others who have taken notice' that when effective support is provided, adolescents tend to stay engaged with the process. Another possible reason for the difference may be related to perceived cause for difficulties, which is explored later. What is clear is that ideal-type 3: "motivated and solution focused" demonstrates how adolescents can be active agents in their own recovery and management if appropriately supported to do so. Shared decision making has been promoted across health-care settings (62), it is less well explored in school settings with adolescents considered to be at-risk of mental health difficulties (63). Indeed, it is argued that there is often a deficit focus in relation to adolescence, rather than an acknowledgment of their skills and the enormous potential of this developmental period (64).

The final category, ideal-type 4: 'preference for self-regulation', includes adolescents who favor using strategies to self-regulate when facing difficulties. Self-regulation, which refers to any regulation by oneself for oneself to facilitate an arrival to a desired state (65), has been linked to adolescents' psychological wellbeing (66). Our findings suggest that some adolescents who prefer self-regulation demonstrate a level of mental health literacy that reflects an awareness of where they can go for help. However, it is likely that they will only access support if they feel that the circumstances are "serious" enough and will often opt for handling problems themselves. Approaches to self-regulation can be sophisticated and less sophisticated; less sophisticated methods might include bottling up emotions (35), this is something some of the young people in this group appeared to utilize. It is important to note that self-regulatory approaches can be taught (35), perhaps suggesting that some young people in this group have had more guidance for self-regulation than others.

Principal patterns of help-seeking and perceived cause for emotional distress

Midgley et al. (47) argued that aetiological beliefs may have consequences for help-seeking amongst adolescents diagnosed with depression. We echoed these arguments and suggested that perceived cause for emotional distress may influence help-seeking among adolescents considered to be at risk of mental health difficulties (5). The present study sought to empirically explore this suggestion and our exploratory analysis revealed some apparent associations between help-seeking and causal attribution ideal types (though we recognize the need for further work to confirm these associations, which go beyond what was possible in the current study). Further, in drawing these studies together, it is clear that people in the lives of adolescents not only influence causal attributions and help-seeking respectively, but that they also influence how these concepts interact and overlap; perhaps the starkest example of this is that adolescents who identified unfair treatment as their overarching cause for emotional distress were most likely to identify skeptical with unmet needs as their approach to help-seeking. Taken together, this highlights that perceived cause

may have the potential to influence approaches to help-seeking, potentially through the role of others and the quality of the infrastructure that they provide for support.

In exploring further the role of perceived cause for emotional distress in relation to help-seeking among adolescents, this work broadly supports our earlier systematic review of the literature (63) where four themes related to causal attribution and help seeking were identified, including: (1) cause and implications for self-preservation; (2) the degree of personal and wider knowledge and understanding of cause; (3) perceived extent of control in managing cause; and (4) cause having potential to affect others. However, findings from O'Neill et al. (63) were drawn from literature that did not explicitly focus on causal attributions for emotional distress and subsequent approach to help-seeking. To narrow this gap, the present study offered this explicit focus by drawing comparisons with our companion study (5). This presented the opportunity to observe patterns and offer a more detailed insight to the link between causal attributions and subsequent help-seeking behavior in the context of emotional distress.

Participants for whom lack of control was the overarching cause of emotional distress were more likely to indicate a help-seeking approach that was guided by others who had taken notice, reflecting a similar lack of control over their own help-seeking behavior. This association indicates an external locus of control, the degree to which one believes circumstances and outcomes are caused by internal or external factors, in relation to both cause and help-seeking. Indeed, perceived extent of control in managing cause was also found as a theme that related to causal perceptions in O'Neill et al. (63). It is, therefore, likely that locus of control impacts causal attributions which may in turn impact their approach to help-seeking. This is further supported by the finding that in terms of the participants who felt that they were to blame for their experience of emotional distress (self as cause), they were also more likely to indicate a preference for self-regulation, suggesting an internal causal locus and a subsequent internal strategy to deal with their problems.

Adolescents identifying others: their actions and judgements as the catalyst as their overarching cause of emotional distress were most likely to be found in ideal-type 3: motivated and solution focused. Although adolescents in this group can face setbacks, for instance not being believed when they share their difficulties, they are focused on finding the best solution for themselves. It is unclear why this might be the case given a potential propensity to find the actions and judgements of others to lead to emotional distress. It is like they are able to see help-seeking as separate from those they are seeking it from and are adept at understanding what works best for them.

Those who identified unfair treatment as the overarching cause of emotional distress in O'Neill et al. (5), were most likely to be categorized as ideal-type 2: "skeptical with unmet needs," or ideal-type 4: "preference for self-regulation." This indicates that adolescents who are affected by perceived unfair treatment may carry this through to their help-seeking, which may manifest as either skepticism about how others can help, or explicitly pursuing internalized strategies that do not rely on others. This suggests parallels in terms of dissatisfaction and mirrors previous findings that indicate that an adolescent's ability or desire to communicate their emotions and ask for help can be compromised by a lack of

trust (29), and previous negative experiences of sharing emotions with significant others (44). The adolescents in this group often spoke about times when they tried to get help but that they were let down in some way. There is a possibility that the reactions that adolescents in this category received when seeking help or hoping to be noticed were influenced by the receiver's causal beliefs (e.g., people assuming that they are being dramatic). It has been argued that causal beliefs regarding difficulties influence recommendations for help-seeking (67, 68); for instance, research suggests that believing a cause is psychosocial is associated with recommending psychological care (68). There is a possibility that this relates to whether or not people take adolescents' concerns seriously, which we have seen can impact their ongoing approach to help-seeking and feed into their perceived cause for emotional distress.

As for the concern for self and others causal group (5), they were most likely to be found in ideal-type 1: "guided by others who have taken notice," suggesting that being prone to worrying about impacting others and oneself may cause delays in help-seeking. Numerous studies have observed that adolescents delay or avoid speaking to others about challenges that they are facing, or things that they are finding difficult, to avoid the potential ramifications (69, 70). There may also be a desire not to burden others with their difficulties (71). In our systematic literature review (63), we too found that the degree to which the perceived cause had implications for self-preservation or impacting others influenced help-seeking, although cause having the potential to impact others was only found as a theme for the at-risk group in our review and not the clinical group (63). The present study empirically demonstrates this association once again within an at-risk group.

Implications

Our findings highlight a number of possible ways to better understand and facilitate the help-seeking process for adolescents at increased risk of experiencing mental health difficulties. First, they highlight the importance of creating space for passive as well as active help-seekers. There is often much responsibility placed on adolescents to seek help rather than a reflection on how this process can be better facilitated. For instance, while it is important to make young people aware of where they can go to seek help and what that help might look like (72), it is also important to have systems in place to help those not actively (or overtly) help-seeking. There is often a deficit focus on not talking, this can be seen as a failure to communicate need rather than a decision that needs to be respected; young people may communicate their difficulties in more subtle ways depending on their perceived cause, and communication is more likely to happen in safe, confidential settings where autonomy is respected (34). Therefore, there is a need to adjust potential deficit perspectives in relation to passive help-seeking. This may help to create a more holistic approach which allows adolescents to access support without them having to ask first. Based on our observations, it is likely that if the right infrastructure is in place, an initial stepping stone into help-seeking will promote continued engagement with the process. It has been noted that offering services within schools reduces the effort required to access other services and may help address structural

barriers, including transport and lack of time, for accessing support (73). However, those not experiencing significant difficulties also need places to go and it is important that support is made available across a spectrum of difficulties.

In all considerations related to accessing support, adolescents' views should be seen as intrinsically valuable (35). Therefore, asking adolescents what they would like support infrastructure to look like and ensuring that they maintain agency within this process may be beneficial. To facilitate sharing difficulties, adolescents need to know that their problems will be taken seriously (69), and a lack of understanding on the part of the receiver can lead to dismissive responses (57). Therefore, it is not only valuable to equip young people with knowledge and skills in relation to help-seeking and how to help themselves (73), but also essential to ensure that those most likely to be engaging with adolescents are equipped to offer effective support. This involves enhancing their understanding of the help-seeking process, particularly in relation to causal perceptions. They also need to be aware that self-regulation can be taught (35) and should not just be expected. Likewise, parents, caregivers, teachers and allied professionals need to be supported to validate distress. This might involve being made aware of the extent to which personal beliefs around cause for difficulties might influence their own response and level of support.

Finally, the use of ideal-type analysis to create a typology of adolescent help-seeking behavior is a novel approach, it was also novel with regards to adolescent perceived cause for emotional distress. In using ideal-type analysis in this way, we were able to observe and report principal associations between perceived cause of emotional distress and overarching help-seeking behavior. Whilst more work is needed to explore these associations in greater depth, our findings offer empirical evidence of the existence of an association between perceived cause and help-seeking among adolescents at increased risk of mental health difficulties. This approach allowed us to build on evidence from a previous paper and to synthesize the findings. Understanding the extent to which perceived cause for emotional distress impacts help-seeking has important implications for those working with young people, including understanding their role in the processes of cause and support.

The creation of typologies is a long-established approach to understanding human behavior, particularly to understand and explore similarities and differences in an organized and structured way (50). They can help to identify patterns which ultimately have a bearing on our knowledge and understanding of the world (50). There are a number of influential typologies that have been successful in categorizing complex and varied phenomena. For instance, in providing an empirical basis for attachment theory (74, 75), four categories of attachment have been established, including secure, insecure avoidant, insecure ambivalent (76), and disorganized attachment (77). These categories offer a structured pattern to understand vast experiences of early-life experience and how they might impact later life outcomes. Thus, the categories that have been systematically established in the present research through ideal-type analysis can be used to further our understanding of causal perceptions and help-seeking. Specifically, it has been established that to effectively support help-seeking, we need to consider causal attributions.

Strengths, limitations, and suggestions for future research

This study contributes original and valuable insight into adolescent approaches to help-seeking as well as the overlap between help-seeking and perceived cause for emotional distress. We offered an exploration in relation to causal beliefs and help-seeking during adolescence, work typically done with adult samples. We also focused on young people at-risk of mental health difficulties rather than those already experiencing serious mental health difficulties, who are typically the focus in help-seeking literature. Young people who are not affected by serious mental health problems still need to have their experiences and views considered; such information is useful when trying to prevent future difficulties and support young people through current challenges (35). This work considered one timepoint in early adolescence, but future research should seek to explore how adolescents' approach to help-seeking changes over time in the context of perceived cause for emotional distress.

We examined help-seeking and perceptions of cause in the broader context of the lives of adolescents, but the interviews used in this study were not explicitly designed for this purpose, meaning that we had less control over probing. Primary data generation explicitly focusing on causal perceptions and help-seeking may be useful (36). The interviews were held with young people who were selected by staff and who agreed to participate in the interviews within a school setting. School and HeadStart staff offered young people the opportunity to take part in the study via expression of interest forms or simple nomination. Therefore, the views of young people who had not been noticed or selected by staff may have been missed in this typology. There may also be other types of help-seeking found in alternative setting with at-risk groups. It is important to note that this study was conducted in a Western context and that there may be cultural variation in relation to help-seeking (49) and explanatory models of mental health and wellbeing (48).

This study was strengthened by the use of ideal-type analysis, which offered a systematic approach to developing the types. This was a novel and useful way to explore the overlap between categories of cause and categories of help-seeking. While we provided a numerical breakdown of patterns observed, we cannot comment on the statistical significance of the associations. However, it was not our intention to validate the types quantitatively. At this stage we were interested in overlap between cause and help-seeking, but it is also important to consider categories that do not overlap and what this might tell us about how and why causal perceptions and help seeking are connected. Exploring associations and lack thereof in more depth is a prudent endeavor for future work in the area.

The types were constructed by the first author, who has been involved in other projects that focus on help-seeking and perceived cause for emotional distress. Their knowledge of the prior studies and broader understanding of the literature has inevitably influenced data interpretation. While there was agreement in the construction of the types among the wider team, and steps were taken to ensure quality and rigor, it is inevitable that wider knowledge will have influenced the construction of the types. This important context within which the types are situated should be noted when interpreting the findings.

Conclusion

This study demonstrates meaningful and distinct categories of adolescent help-seeking, outlining commonalities as well as variations both within and between the approaches observed. In exploring help-seeking from adolescents' perspectives, this research identified active as well as passive approaches to help-seeking; the knowledge of which is useful for informing intervention efforts as it emphasizes a need to put mechanisms in place to support passive as well as active help-seekers. Simultaneously, we identified principal associations between perceived cause of emotional distress and help-seeking approaches, offering empirical evidence to support the assertion that perceived cause for emotional distress influences the help-seeking approaches of the young people in our study. The understanding that causal perceptions play a role in help-seeking in this context foregrounds the importance of exploring causal beliefs to aid efforts to bolster help-seeking. The combined findings of this research make clear that people in the lives of adolescents not only influence causal attributions and help-seeking respectively, but that they also influence how these concepts interact and overlap. Therefore, the findings underscore the importance of adequate training to help adults in the lives of adolescents understand how their reactions and interactions may inadvertently impact adolescents. Finally, by illustrating a breadth of help-seeking approaches, this work demonstrates the inherent value of considering adolescents' experiences and co-producing solutions with them to enhance the effectiveness of current and future support.

Data availability statement

The datasets presented in this article are not readily available because access to data is restricted to the HeadStart Learning Team to comply with the study's research ethics approval. The interviews were generated as part of a national evaluation of an early intervention programme and are held by the Anna Freud Center. Requests to access the datasets should be directed to emily.stapley@annafreud.org.

Ethics statement

The studies involving humans were approved by University College London (ID Number: 7963/002). The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

AO'N, ES, and NH contributed to conception and design of the study. AO'N summarized the interviews and wrote the first and subsequent drafts of the manuscript. AO'N preformed the analysis,

supported by IR and ES to create and refine the ideal-types. All authors contributed to manuscript revision, read, and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Academic burnout in psychology and health-allied sciences: the BENDiT-EU program for students and staff in higher education

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Studying at university involves demanding academic and clinical training requirements for students from Psychology and other health-allied fields, potentially having severe physical and mental health implications. Existing training programs for addressing burnout have focused thus far on specific areas (e.g., stress management, physical exercise, mindfulness meditation, etc.) with promising outcomes. However, no comprehensive programs have been developed to train students and staff in the early identification of burnout signs and characteristics as well as in self-assessing personal needs and habits (i.e., primary prevention), or in identifying community resources and evidence-based strategies to overcome burnout (i.e., secondary prevention). This paper describes the content development, refinement, and piloting process of the BENDiT-EU program as part of a European collaborative to address academic burnout for health-allied students. Piloting results showed that participants viewed the program positively and provided helpful suggestions for content improvement and training delivery. Future research directions should target experimental investigations of the program's effectiveness and the longitudinal interaction of burnout with other variables (e.g., resilience).

1. Introduction

Studying at university entails a demanding workload (e.g., group and/or individual projects, papers, presentations, exams, attending lectures, clinical training, etc.) that may create stress and anxiety, especially if one is unable to cope with multiple academic requirements (Vizoso et al., 2019; Nyante et al., 2020). This is particularly evident for students from health-allied sciences (e.g., Medicine, Psychology, Nursing, etc.), whose clinical training involves, among others, a complex kind of patient care (e.g., Meier et al., 2001; Meim et al., 2021). Typically, the study of Medicine has been considered "difficult," "burdensome," or "demanding," with many undergraduate students describing their studies as "stressful" or "very stressful" (Dahlin et al., 2005). Researchers suggest that this perception may occur early in medical students' academic studies (Heinen et al., 2017), with up to 46.10% of undergraduate students reporting exhaustion (Almutairi et al., 2022). Many medical students describe an ever-increasing exposure to academic stress, potentially resulting in early psychiatric comorbidity (Ludwig et al., 2015).

Similar findings have been found with Psychology and Nursing students (e.g., He et al., 2018). For example, Myers et al. (2012) found that Psychology students may exhibit poor self-care habits, such as inadequate sleep, low social support, and inability to regulate emotions, while Lovell et al.'s (2015) study showed that more than 33.3% of Nursing students reported mild or severe mental illness symptoms (e.g., depression, anxiety, stress) and the most of them reported engaging in multiple unhealthy behaviors (e.g., skipping breakfast, low sleep quality, inadequate physical activity). If these early signs are not addressed adequately or diagnosed, they may eventually result in burnout syndrome (Jiménez-Mijangos et al., 2023).

2. Literature review – academic burnout: a three-dimensional syndrome

2.1. Definition and characteristics of academic burnout

As a distinct "occupational phenomenon" (World Health Organization, 2019), academic burnout consists of (1) exhaustion in an attempt to fulfill academic requirements successfully; (2) increased mental distance from one's studies, feelings of negativism or cynicism, and (3) feelings of ineffectiveness in academic obligations (Abreu Alves et al., 2022). Its prevalence varies significantly from 8 to 71% (Ishak et al., 2013; Loayza-Castro et al., 2016), with an asymmetric self-report of sub-components (40.8–55.4% for emotional exhaustion, 31.6–35% for cynicism and 27.4–30.9% for academic accomplishment), possibly due to instrument differences, university profiles, diagnostic criteria, cultural aspects, and structure of educational systems (Frajerman et al., 2019; Rosales-Ricardo et al., 2021). Academic burnout is a cumulative phenomenon, with a higher prevalence in clinical years (Bullock et al., 2017) and tends to be under-reported. Reasons for under-reporting include insufficient peer support, stigmatization, personal stereotypes about academic endurance, or blind adherence to group norms.

A series of conceptual models were developed regarding burnout syndrome. Initially, the relationship between the three dimensions of burnout was understood as sequential, with exhaustion assumed to develop first (as a direct result of overload), followed by depersonalization (seen as a dysfunctional coping mechanism after perceiving exhaustion), and culminating with feelings of professional inadequacy and inefficacy (Maslach and Leiter, 2016). Recent models consider the perceived discrepancy between inner resources and external demands (see the Job Demands-Resources Model) (Cherniss, 1980) and the role of an ongoing, low-level loss of resources (see the Conservation of Resources model) (Buchwald and Hobfoll, 2004) as essential catalysts for burnout. Conversely, the Areas of Worklife Model offers a different perspective on burnout, as it claims that six key areas (workload, control, reward, community, fairness, and values) may contribute to burnout through the person-job imbalance (Leiter and Maslach, 2004). This model suggests that reducing work demands and increasing perceived control and adequacy of work to the employee's values can lower the risk of burnout.

In sum, the three conceptual models guide researchers to identify ways (e.g., burnout curriculum training) to support students' socio-emotional needs by providing self-care information and facilitating student involvement in applying work-life balance practices.

2.2. Research evidence on the negative impact of academic burnout

If not acknowledged and addressed, student burnout can have significant individual consequences (Pokhrel et al., 2020; March-Amengual et al., 2022; Niedobylski et al., 2022) and high societal costs. For instance, burnout among physicians can have long-term effects on their job motivation and performance. This can directly impact the quality of life of their patients. Physicians who experience burnout may exhibit cognitive, emotional, and behavioral vulnerabilities, such as indifference, cynicism, hostility, or avoidance of targeting patients or families. If left unaddressed, these issues can lead to a significant and lasting disruption of the therapeutic relationship between physician and patient (Meier et al., 2001; Patel et al., 2018).

A series of specific factors may contribute to the emergence of burnout in health-allied academic environments. External factors typically include the significant demands of the academic program and clinical training (Hill et al., 2018), the long study duration (Radcliffe and Lester, 2003), the curriculum vastness (Satpathy et al., 2021), frequent examinations (Sreeramareddy et al., 2007), lack of perceived control (Ishak et al., 2009), massive workload (Ball and Bax, 2002), displacement from familiar support systems (Gradiski et al., 2022), and increased emotional demands of this profession (Weurlander et al., 2019). Regarding empathy, it is considered a valuable skill in all healthcare professions (Hurwitz et al., 2013). However, medical schools (especially in the clinical track) do not always prioritize empathy in their teachings (Outram and Kelly, 2014). The emotional aspect of the therapeutic relationship is often overlooked. In addition to this, personal factors like personality traits, coping ability, stress levels, and beliefs about death and suffering may influence a student's integration into the clinical environment and their reasons for choosing this career (Popa-Velea et al., 2017).

2.3. Intervention approaches to addressing academic burnout

Considering the prevalence of burnout among students and its negative consequences, prevention and intervention strategies and programs should be implemented. While many universities ensure students' well-being and offer psychological services (e.g., counseling, career guidance, stress management, psychotherapy, etc.) (Semu, 2020), these efforts are often utilized after students have already developed burnout symptoms. This means that students may only seek support when their mental health has significantly deteriorated. Therefore, it is crucial to implement strategies and programs to prevent burnout before it becomes a problem.

According to Semu (2020), universities can help prevent burnout among Medicine and health-allied students by providing mandatory courses on the topic. These courses should be incorporated into the students' programs of study, and should aim to raise awareness about burnout and provide intervention tools as early as possible. By doing so, universities can potentially decrease academic burnout (Reynolds, 2019). Burnout prevention courses often include cognitive behavioral training, communication skills training, relaxation exercises, counseling, and social support skills (Awa et al., 2010). Additionally, several universities have implemented optional courses on burnout prevention with encouraging results. These courses have been so successful that they have now been

included in the core curriculum (Santibanez et al., 2022). However, it should be noted that offering optional courses on burnout may not be an effective universal preventative measure, as it will only be accessible to a subset of students.

Current research suggests developing and implementing comprehensive training programs that could provide holistic and targeted support for burnout (Vizoso et al., 2019). Existing training programs have focused on specific areas, such as stress management (Bragard et al., 2010), aerobic exercise (Gerber et al., 2013), and mindfulness meditation (Smith, 2014). Despite their promising outcomes, comprehensive programs have yet to be developed to address burnout (Fares et al., 2016).

3. Purpose

This study aimed to develop an innovative training program that provides students and staff with basic information about preventing, self-assessing, and managing burnout symptoms. The BENDiT-EU program envisions improving student well-being by (a) offering a personalized intervention plan based on student self-reflection regarding habits, needs, and responsibilities; (b) exposing participants to evidence-based intervention strategies to practice and then select suitable strategies to include in their individualized plan; (c) facilitating access to community resources, and (d) promoting inclusivity for all. Particularly, university students and staff with an international status may encounter adjustment hardships in addition to academic demands. The training content and activities have been designed to address ethnic diversity.

Furthermore, the team's objective was to make the program sustainable with a low cost-to-benefit ratio. To achieve this, the researchers collaborated with experts and students in Medicine and health-allied fields from different European countries to ensure social and content validity in the design and evaluation of the curriculum. The training program is the result of the European-funded project "Burnout Education, Normatives and Digital Tools for European Universities" (BENDiT-EU), whose task was to construct a comprehensive set of resources for Medicine and health-allied students and professionals to address academic burnout. For more information about the project's consortium, targets, and outcomes, readers may visit the project's website.[1]

4. The BENDiT-EU training program

4.1. Program objectives and content

The BENDiT-EU is a comprehensive program designed to help students and staff: (a) understand the main characteristics of burnout and its progression phases; (b) self-assess any burnout signs by utilizing online psychometric measures accessed via the BENDiT-EU platform; and (c) develop an individualized intervention plan to prevent burnout signs by identifying potential risk and protective factors as well as implementing strategies from the program's toolbox. Specifically, the BENDiT-EU program includes two training modules

and a resource guide for trainers (See section 4.2) (BENDiT-EU, 2023). Table 1 describes the 30-h program's objectives and content.

The first module is designed to provide a theoretical overview of academic burnout (Days 1–3), while the second module gives practical ideas on managing academic burnout and exploring individual and organizational resources to seek support services (Days 4–5). Specifically, Day 1 focuses on introducing the concept of burnout, exploring perceptions of burnout, and discussing its signs and symptoms. Participants engage in interactive activities such as working on case studies to identify burnout symptoms and consequences, pairing up to interview one another, discussing burnout in small groups, and completing a hands-on activity to visualize daily activities and responsibilities. Day 2 delves into academic burnout assessment. Participants learn about self-evaluation and assessment tools for academic burnout, complete assessments using the BENDiT-EU platform, and engage in reflection and discussion activities. Day 3 aims to identify ways to prevent and intervene. Participants discuss risk and protective factors for burnout, learn to identify early signs of academic burnout, and apply this knowledge through case studies. They also engage in activities designed to increase awareness of their daily routines and schedules and how these may contribute to or alleviate burnout. Day 4 centers on developing an academic burnout intervention strategy toolkit. Participants learn and practice various techniques for preventing and intervening, such as planning based on personal values, breathing exercises, relaxation strategies, cognitive behavioral therapy, and mindfulness. They also explore coping skills, social support and create an individualized "toolbox" for improving well-being and reducing academic stress. Day 5 aims to identify and discuss systems of support available to students dealing with academic burnout. Participants share their experiences with intervention strategies, learn about social support, and create a social network map. They also discuss strengthening their support networks, peer mentoring, and Balint groups.

The BENDiT-EU program is designed to be inclusive for international participants. For each training day, there are specific prompts for trainers to consider for integrating local and international students in group activities. Specifically, case study scenarios during interactive activities incorporate the experiences of international students, and participants are tasked to analyze the cases based on guided questions. Trainers ensure that international participants are fully included in groups with appropriate accommodations (e.g., language interpretation, time extension, peer pairing, assessment participation in their mother language).

4.2. Program supplement: the train-the-trainer resource guide

The train-the-trainer resource guide aims to equip staff from counseling or other health-related services with the necessary competencies and resources to effectively train students on burnout prevention and intervention strategies. As an additional component to the BENDiT-EU program, the guide offers essential information for preparing, delivering, and following the training sessions and practical teaching tips for adult learners.

The first section of the resource guide focuses on preparing for the training, which encompasses two key aspects: (a) an overview of adult learning principles grounded in the theory of andragogy, as proposed by Knowles (1978), and (b) preparation tactics to ensure trainers are

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1   https://www.bendit-eu.eu

TABLE 1 The BENDiT-EU Program Objectives and Content.

Module	Training day	Participant learning outcomes	Training content	Training time
Module 1	Day 1	• Define academic burnout and its main characteristics • Describe the burnout progression phases • Identify personal life instances of academic burnout	Exploring burnout perceptions, identifying personal activities and responsibilities that may contribute to burnout, working on case studies to identify burnout signs, consequences, and progression phases, role playing scenarios to understand the difference between stress and burnout, anxiety and burnout	6 h
	Day 2	• Assess academic burnout by completing the assessment instruments via the online BENDiT-EU platform • Analyze and interpret the assessment results	Connecting burnout to participant's personal life, assessing academic burnout, navigating the online assessment platform, completing online self-assessment instruments on burnout, reflecting on the self-assessment results	5.5 h
	Day 3	• Identify risk and protective factors for burnout in academic environment • Describe early signs of academic burnout identification • Apply early signs, protective and risk factors of academic burnout via a case study	Connecting assessment results to risk and protective factors for burnout, identifying individual, social, and organizational factors in participant's daily life, categorizing and presenting one's daily family, work, and personal activities in a calendar format, prioritizing daily tasks using the Eisenhower matrix, creating a personalized plan for burnout prevention	6.5 h
Module 2	Day 4	• Describe available strategies for primary and secondary prevention of academic burnout • Describe the strategies available for academic burnout intervention.	Practicing strategies (e.g., box breathing exercise, saying 'no', relaxation techniques), identifying and practicing intervention elements (health and fitness, coping skills, cognitive behavioral therapy techniques, mindfulness, self-development groups), creating a personalized toolbox based on self-guided questions	6 h
	Day 5	• Map of social network based on closeness and type of support • Explore campus/organizational resources for support • Identify ways to address cultural diversity in academic burnout assessment and intervention materials	Defining three types of social support, creating a map of individual's social network and listing people on the map based on certain criteria, reflecting on one's social network map based on guided questions, defining peer mentorship and balint groups, exploring university and city resources for support	6 h

well-versed in the content they will deliver, thereby facilitating a positive learning environment. The second section outlines guidelines for effectively conducting the training sessions, addressing elements contributing to a stimulating and conducive learning atmosphere. Topics covered include greetings, ice-breaking activities, time management, group rules, teaching strategies for active engagement, and burnout prevention resources. Lastly, the third section provides recommendations for post-training procedures and supplementary resources about burnout identification, prevention, and intervention.

5. The BENDiT-EU program development process

As Figure 1 shows, the development and refinement of the BENDiT-EU training program followed a three-phase process to ensure the highest quality and effectiveness of the content.

5.1. Phase I: content development and refinement

The research team developed the program content based on an extensive literature review on academic burnout prevention and

intervention (see BENDiT-EU, 2023). The content was divided into two main parts: (a) the theoretical domain with information on the characteristics, early identification, and assessment of academic burnout, and (b) the practical domain with intervention strategies and environmental supports for addressing burnout signs. Five training sessions were developed with accompanying trainer slides and student worksheets. All sessions followed a similar structure to ensure predictable and consistent implementation. Each session would start with an overview of the aim, participant learning outcomes, training materials, and allocated time. Then, an analytical description of the daily activities is presented with specific instructions for the trainee's and trainer's behaviors and the training materials. Every session concludes with a homework activity and a trainer prompt to ensure adaptations for culturally diverse students.

The training content was reviewed for coherence, clarity, and logical sequence by 10 research team members at an in-person meeting in Spain in July 2022. During this meeting, members were asked to present their assigned topic while soliciting colleague feedback to enhance the content and optimize the session delivery. The initial review concluded with each research member anonymously, evaluating the five training day presentations via a questionnaire and providing quantitative and qualitative feedback. Table 2 presents the quantitative feedback of the research team. As noted, more than 60% of participants evaluated the
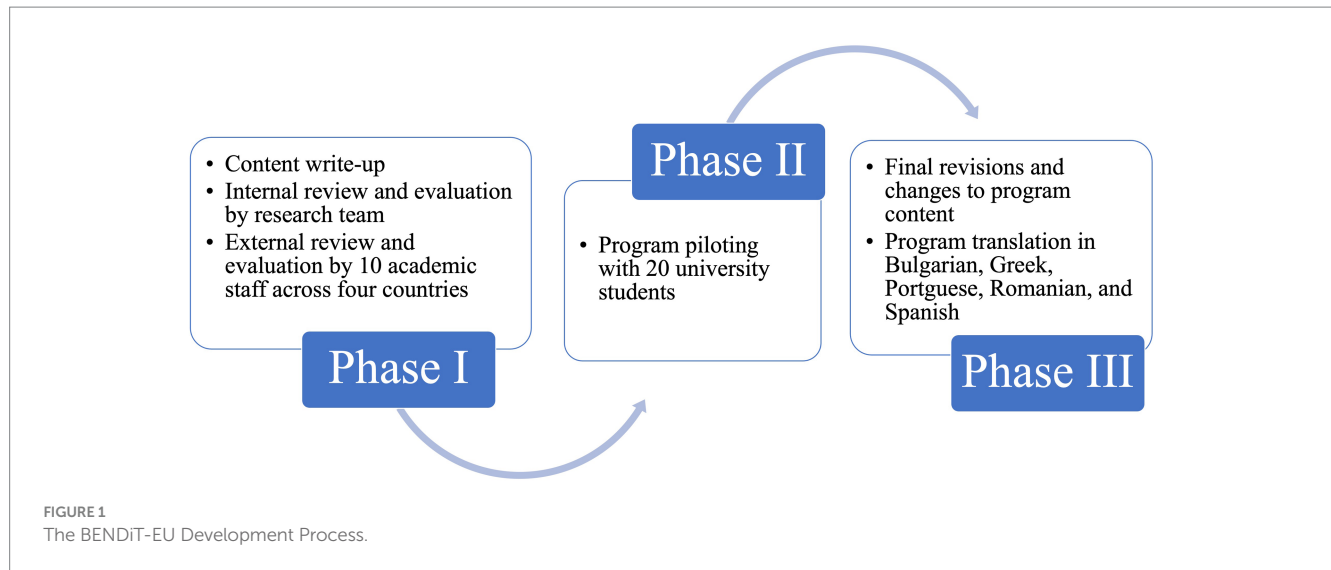
FIGURE 1
The BENDiT-EU Development Process.

TABLE 2 Phase I: Internal review feedback.

	None	Fair	Good	Very good	Excellent
The training content met expectations				40%	60%
The quality of training content was satisfactory			10%	20%	70%
The quality of training activities was satisfactory			10%	20%	70%
The training time was used efficiently			20%	30%	50%

$N = 10$ members.

training expectations, content, and activities as very good to excellent. A third of the group rated the quality of the training content and the activities from good to very good, while half of the participants noted that the efficient use of training time was good to very good.

When analyzing the qualitative comments, there were suggestions for improving the interactiveness and engagement of training activities with the inclusion of case studies representing diverse students, incorporating prompt questions for group discussion, connecting activities with the ideas of gender and culture, including practice activity about planning and organization, and opportunities for reflection on the activities. Suggestions were provided for strengthening the training content concerning gender differences in academic burnout, factors of burnout for international students, a circle of social network support, a list of resources for international students, and summarizing the main ideas after each training day. Managing training time effectively was an additional component that was raised. Content adjustments had to be made to ensure activity transitions were kept to a minimum and time for discussion and reflection during activities was sufficient.

Following the internal review and evaluation, a revised draft was prepared and presented to 10 external academic faculty across five academic institutions in Bulgaria, Cyprus, Portugal, Romania, and Spain. The sample was purposive. The research team identified faculty who had not been involved in the project but had academic teaching experience to assess the content clarity and suitability for university students. Specifically, an assigned research member presented the modules to their colleagues at each institution, and then the latter provided qualitative feedback. All 10 participants were positioned favorably about the usefulness and necessity of the topic and its training content. They identified

a clear balance between burnout theory and hands-on activities. However, four external reviewers suggested including a warm-up activity for Day 2 and making transitions more transparent at the beginning/end of each day by incorporating short revisions. The research team refined the program and then proceeded with the pilot in Phase II.

5.2. Phase II: content piloting

In this phase, the research team piloted the program in a five-day training with 20 undergraduate students majoring in Psychology, Medicine, Nursing, and Social Work from five countries. Students participated voluntarily and did not present any severe burnout symptoms. At the end of each day, students were asked to evaluate their satisfaction and share feedback about the program (content, activities, time allocation) and its usefulness through an anonymous survey questionnaire using paper and pencil. Project staff members blind to the study's purpose collected the questionnaires and gave them to the research team.

Table 3 presents students' overall experience during the pilot. As noted, more than 90% of students rated the BENDiT-EU program's theoretical content and trainers' delivery positively (good to very good). Based on students' qualitative feedback, students benefitted from the introduction of self-assessment tools, time management and organization strategies, physical activity, relaxation and breathing techniques, and mapping of their social support network. Students enjoyed the interactive activities and the group discussions and acknowledged the trainers' clear presentations. A small percentage of students (5.3%) rated the time allocation low, and 10.5% expressed low motivation and interest. In examining students' qualitative

TABLE 3 Phase II: Student feedback from piloting.

	Very bad	Bad	Neither good nor bad	Good	Very good
The presentation was effective			5.3%	17.9%	76.8%
The session sparked interest and motivation		2.1%	8.4%	18.9%	70.5%
The time allocated to content was adequate		2.1%	3.2%	13.7%	81.1%
The content was well organized and systematized			1.1%	22.1%	76.8%
The knowledge provided was sufficient for daily application		1.1%	6.3%	20%	72.6%
The trainer used clear and appropriate language			5.3%	15.8%	78.9%
The trainer was knowledgeable of the content				3.2%	96.8%

$N = 20$ undergraduate health-allied students.

comments, it was found that on Day 3, the assigned trainer did not allocate sufficient time to all topics and gave students more opportunities to work independently rather than in groups. As a result, students' interest lowered for that day. Finally, students suggested some ideas for improving the training content and delivery. For instance, ideas for content improvement included providing more information about risk and protective factors and the Balint groups. Ideas for enhancing the participants' engagement with content included role-playing the box, breathing techniques, maintaining a small team composition to allow richer discussions, and avoiding sharing responses individually in front of the whole group.

5.3. Phase III: content finalization

After receiving student feedback in Phase II, the research team revised further the program content. They then started translating the program into Bulgarian, Greek, Romanian, Portuguese, and Spanish, using the English document as their reference. As a result, the BENDiT-EU program is now accessible in six different languages.

6. Discussion

This paper presented the content, development, and refinement process of the BENDiT-EU program for addressing burnout in students from Psychology, Medicine, and health-allied fields. This program responds to previous research inquiries about establishing comprehensive programs (see Semu, 2020) by following a holistic approach to burnout. That is, the BENDiT-EU program (a) introduces participants to the main theoretical aspects of burnout, (b) provides practical opportunities for self-assessment of burnout, and (c) guides participants to identify concrete ways to prevent it via personalized intervention plans and toolbox strategies. Additionally, the BENDiT-EU training addresses individual differences by supporting participants from diverse health-allied fields and ethnic backgrounds, helping them to identify personal challenges, prioritize their needs, and implement effective intervention strategies.

The comprehensive focus of the BENDiT-EU program envisions training students to maintain a healthy work-life balance (Leiter and Maslach, 2004). Despite potential difficulties in the early stages of implementation, the program's immediate and long-term benefits can outweigh them. Students, who are taught to manage burnout in their studies, can act proactively and improve their self-care and resilience skills over time. Previous studies have emphasized the need for intervention programs to support healthcare workers with low innate

resilience (e.g., Nishimoto et al., 2022). By equipping new graduates with these skills, they can better handle complex and ever-changing work environments (He et al., 2018), ultimately benefiting both the healthcare industry and the public.

Another significant aspect of the BENDiT-EU program is its collaborative nature. Partner universities have pooled their knowledge, resources, and expertise to create an inclusive and theoretically-driven program. This mitigates the need for individual institutions to create distinct trainings and cultivates the ground for a future European standard in preventing academic burnout.

6.1. Limitations and directions for future research

As with all studies, this study presents some limitations. First, the study utilized a small sample size to establish the program's content validity. Future research should include larger samples with diverse student populations (e.g., local vs. international students, health-allied vs. social science fields). A second limitation is the absence of experimental control to determine the program's causality in reducing burnout. Future well-designed experimental studies could enable researchers to more accurately assess the impact of the BENDiT-EU program while controlling for potential confounding variables. Third, the program did not explore any cultural variations of burnout within the five participating countries, but it adopted the World Health Organization (2019) burnout classification. Next research directions could consider examining the cultural differences and adaptations of burnout in other European countries. Finally, this study focused solely on addressing academic burnout. Next research steps could explore variable associations, such as resilience and/or personality traits, when assessing the program's effectiveness. For instance, screening participants on a standardized resilience measure, grouping them according to their resilience status (e.g., innate, acquired, or both), and then providing them with training opportunities would offer important conclusions about how and to what extent such training programs could strengthen participants' resilience and reduce burnout.

6.2. Implications for practice

The BENDiT-EU program has significant implications for practice. First, the training content and structure are designed to cater

to the needs of different student populations on campus. As stated, each participant is guided carefully to prioritize their needs and life goals and then develop a customized plan using empirically-driven intervention strategies, including some that may be applied early. Second, the program could be offered campus-wide while maintaining flexibility to adapt the program's interactive activities and examples according to each discipline. Finally, implementing the BENDiT-EU program across campuses and countries could have notable cost-effective advantages. By adopting a universal approach through interdisciplinary collaboration, the program can potentially lessen the financial burden on campuses when dealing with students' mental health issues (Awa et al., 2010).

7. Conclusion

The BENDiT-EU program provides a comprehensive approach to addressing student burnout. Unlike traditional methods focusing on isolated strategies, BENDiT-EU provides a holistic, customizable toolkit for burnout prevention and management. Its emphasis on early intervention and individualized planning could better prepare graduates for demanding professional roles while also improving the quality and cost-effectiveness of academic institutions. While more research is warranted, the program is a valuable stepping stone for future mental health interventions in academic environments.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the University Research Ethics Committee/University of Nicosia. The studies were conducted in accordance with the local legislation and institutional requirements. The Ethics Committee/Institutional Review Board waived the requirement of written informed consent for participation from the participants or the participants' legal guardians/next of kin because written informed consent had been provided as part of the ERASMUS project requirements.

Conflict of interest

The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

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Teachers' occupational stress and perceived support in Finland and Estonia during the COVID-19 lockdown

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This study examined teachers' experiences of occupational stress in Finland and
Estonia during the COVID-19 lockdown, and whether their stress would be related
to their experiences of support from colleagues and leaders. The participants
were total of 1,319 teachers that were teaching grades 1–6 in spring 2020. The
data were analyzed using regression analyses with interaction terms. The results
showed that the teachers in Finland and Estonia experienced stress during the
lockdown, and that teachers' stress was higher in the Finnish sample than in the
Estonian sample. The findings of this study suggest that support gained from
colleagues or leaders seems to be important when aiming to reduce teachers'
occupational stress in both countries.

1. Introduction

Teaching has been recognized as a highly stressful occupation (Kyriacou, 2011). Previous
studies that have ranked various professions based on experiences of work-related stress have
described teaching as causing above average levels of stress (Johnson et al., 2005). Studies from
throughout the COVID-19 pandemic have shown that teachers may have experienced
substantial levels of occupational stress during lockdowns (e.g., MacIntyre et al., 2020; Zhou and
Yao, 2020; Pöysä et al., 2022). This is an expected finding considering that the existing literature
has also stated that experience of stress is likely to be related to sense of work-related demands
(e.g., Kyriacou, 2011). Such demands may have, indeed, increased for teachers as a consequence
of the exceptional times due to the pandemic.

Addressing teachers' experiences of stress is essential as their stress can potentially harm
both the teachers themselves and their students (Skaalvik and Skaalvik, 2016; Madigan and Kim,
2020). In order to diminish work-related stress, resources that have the potential to alleviate the
strain of work-related demands must be identified. Previous studies have shown that teachers'
occupational well-being can be enhanced with the support received from school leaders or
colleagues (Bermejo-Toro et al., 2016). Additionally, studies from during the pandemic have
indicated that such support was beneficial for teachers' well-being during that time (Baker et al.,

2021; Pöysä et al., 2022). This study examines whether teachers' experiences of occupational stress during the COVID-19 pandemic would be related to their experiences of support from colleagues and leaders in two different educational contexts, Finland and Estonia.

The present study focuses on teachers' experiences of occupational stress during the lockdowns caused by the COVID-19 pandemic, which resulted in severe, unexpected changes to their daily work. By employing a cross-country comparison, this study aims to examine whether teachers in two neighboring countries, Finland and Estonia, faced similar challenges regarding their occupational well-being during the lockdown. Moreover, it examines whether the relation between work-related stress and experiences of support from leaders and colleagues would be similar across countries. Such findings could complement the literature by providing additional understanding that would help teachers and researchers as well as policy makers when preparing for future crises across borders. Comparing Finland and Estonia is particularly relevant because they have relatively similar educational systems. Additionally, national restrictions, as well as severity of the COVID-19 pandemic, were similar in both countries during the spring of 2020 (Morgan et al., 2020; OECD, 2020a,b).

1.1. Teachers' occupational stress

Teachers' occupational stress can be defined in several ways. The present study adopts the widely recognized definition according to which teachers' occupational stress means "unpleasant, negative emotions, such as anger, anxiety, tension, frustration, or depression, resulting from some aspect of their work as a teacher" (Kyriacou, 2001, p. 28). Based on previous literature, teachers' experiences of such stress can be reliable and validly measured by using single-item questions (Kyriacou, 2001; Elo et al., 2003; Klassen and Chiu, 2010; Eddy et al., 2019). As teachers' stress can be seen as an emotional reaction triggered by some type of demand they face in their work (Kyriacou, 2011), the present study builds also on the view set in the Job Demands-Resources (JD-R) model (Demerouti et al., 2001). It suggests that occupational well-being is shaped by demands and resources typical for specific professions (see also Bakker and Demerouti, 2007; Schaufeli and Taris, 2014).

While teachers' occupational well-being is an undeniably complex phenomenon and stress is only one aspect of that (Cumming, 2017; Taris et al., 2017), it is crucially important to recognize the antecedents and consequences of occupational stress in order to enhance teachers' well-being. Along with acknowledging that stress might be tied to factors related to individual teachers themselves, such as gender or work experience (e.g., Klassen and Chiu, 2010; Travers, 2017; Saloviita and Pakarinen, 2021), previous literature has identified several other stressors that can be related to increased stress as well. Such stressor can be, for example, sense of workload and time pressure or inevitable changes and environmental structures tied into work (e.g., Montgomery and Rupp, 2005; Kyriacou, 2011; Ferguson et al., 2012; Skaalvik and Skaalvik, 2016). These types of work-related demands have been recognized also in studies drawn from the data collected during the COVID-19 pandemic (e.g., Klapproth et al., 2020; Carroll et al., 2022), and the presence of certain demands have been reported to even increase during the pandemic (e.g., Kim et al., 2022).

Experience of emotional exhaustion is perhaps among the most studied consequences of occupational stress in the field of education. In previous literature, stress has been shown to be related to increased emotional exhaustion both before (e.g., Skaalvik and Skaalvik, 2016) and during the pandemic (Chan et al., 2021; Pöysä et al., 2021). Moreover, emotional exhaustion is typically considered as one of the critical components of burnout syndrome (e.g., Maslach et al., 2001; Schaufeli and Salanova, 2013). In addition, higher levels of stress and increased experiences of emotional exhaustion in teachers are related to, for example, increased risk of leaving the profession (Skaalvik and Skaalvik, 2011; Skaalvik and Skaalvik, 2016) and lower levels of student achievement and motivation (Arens and Morin, 2016; Madigan and Kim, 2020). Therefore, it is possible that the teachers' occupational stress can have consequences that reach beyond the individual teachers themselves.

1.2. Colleagues and leaders as teachers' job-related resources

The JD-R model suggests that the sense of occupational well-being is built from a balance between the resources and demands of the job (Schaufeli and Taris, 2014). Thus, according to the JD-R model (Demerouti et al., 2001) different types of job-related resources are vital and can be seen to enhance teachers' occupational well-being. Resources are known to be particularly helpful under stressful conditions (e.g., Bakker and Demerouti, 2007; Schaufeli and Taris, 2014), and previous studies conducted among educators have shown that job-related resources can even provide a buffer against the negative impacts of job-related demands (Bakker et al., 2007).

Different types of resources can be identified across occupations, both within the individual and at multiple levels of the organization (i.e., group-level, leader-level, and organizational-level, e.g., Nielsen et al., 2017). With respect to teaching profession, supportive relationships between colleagues and supervisory support have been recognized as important group-level and leader-level resources. The group-level resource of supportive relationships between colleagues has been examined by measuring teachers' experiences of receiving adequate help from colleagues when having problems and needing assistance from a colleague (e.g., Skaalvik and Skaalvik, 2011). The importance of supportive colleagues has been evidenced, for example, in a study by Skaalvik and Skaalvik (2018) showing that positive relationships with colleagues predicted higher occupational well-being. Additionally, Bermejo-Toro et al. (2016) showed that colleagues' support is one of the job resources related to greater levels of work engagement and lower rates of burnout. Support from colleagues has also been shown to have been meaningful in terms of occupational well-being throughout the COVID-19 pandemic. For instance, in a study by Baker et al. (2021) support from colleagues was most commonly discussed when teachers were asked what was most helpful during the pandemic.

As with the group-level resource of collegial support, the leader-level resource of supervisory support has been examined by measuring teachers' experiences of receiving adequate help and support from their leaders (e.g., Hakanen et al., 2006; Skaalvik and Skaalvik, 2011; Jensen and Solheim, 2020). Jensen and Solheim (2020) and Hakanen et al. (2006), for instance, have showed that supportive leadership negatively predicts teacher burnout. Similarly, Skaalvik and Skaalvik (2016) demonstrated that a lack of supervisory support is related to increased exhaustion and decreased self-efficacy. Studies conducted during the COVID-19 pandemic have also evidenced that leaders

were important job-related resources during the pandemic as well (e.g., Baker et al., 2021; Collie, 2021; Ahtiainen et al., 2022; Pöysä et al., 2022).

Based on previous literature, colleagues and leaders can be considered as important job-related resources when it comes to teachers' occupational well-being. However, many of the previous studies have examined these resources alongside a variety of other positive and negative aspects of occupational well-being (e.g., work engagement, self-efficacy, exhaustion, burnout), but not by specifically concentrating on their relations with teachers' experiences of occupational stress during the COVID-19 pandemic. Thus, a relation between these resources and occupational stress should still have some directed attention. As emotional exhaustion and burnout are seen as consequences of prolonged stress (Maslach et al., 2001; Schaufeli and Salanova, 2013), it is important to determine whether support from colleagues and leaders could be key to resisting occupational stress.

1.3. Teaching during the COVID-19 pandemic in Finland and Estonia

The educational context for basic education in Finland and Estonia is rather similar. In both countries, basic education lasts 9 years and begins during the fall of the year in which a child turns 7 years old. Finnish and Estonian municipalities and schools specify national curriculums, with some local emphases, and teachers have quite robust pedagogical autonomy in their teaching. All basic education teachers are required to have a master's degree in both countries.

The COVID-19 pandemic resulted in severe changes to teachers' work in both Finland and Estonia during the spring of 2020. In both countries, the shift to remote learning was sudden, starting in the middle of March (OECD, 2020a,b). In Finland, the lockdown lasted 8 weeks. The Finnish Government (2020a) determined that schools would operate under "exceptional arrangements" during school closures. Usage of online platforms was presented as an example, yet it was not a requirement. Thus, teaching was conducted via different combinations of real-time teaching via online platforms and provision of assignments along with focused feedback (Vuorio et al., 2021). In Estonia, the lockdown lasted until the end of the school year in June 2020 (Estonian Government, 2020). Similarly to Finland, remote learning was conducted through a combination of real-time online teaching and both individual and group work (Tammets et al., 2021). According to the OECD Teaching and Learning International Survey (TALIS), teachers in Finland seem to have experienced somewhat less stress than their Estonian colleagues (OECD, 2020c) before the COVID-19 pandemic. However, no studies have investigated the possible difference in teachers' well-being during the pandemic as of yet.

1.4. The present study

The aim of the present study was to examine teachers' experiences of occupational stress in Finland and Estonia during the COVID-19-related lockdown. Based on previous findings (e.g., Hakanen et al., 2006; Skaalvik and Skaalvik, 2011; Bermejo-Toro et al., 2016), the present study also examined whether teachers' experience of

occupational stress would be related to their experiences of support from colleagues and leaders. By examining teachers from two countries with similar educational systems and pandemic-related educational restrictions, this study strengthens the understanding of shared challenges inherent to the lockdown. The following research questions and hypotheses were formulated:

> RQ1. To what extent did Finnish and Estonian teachers' occupational stress differ during the COVID-19-related lockdown? Based on the findings of the TALIS survey (OECD, 2020c), it was expected (Hypothesis 1) that Finnish teachers would have experienced less occupational stress than Estonian teachers during the lockdown.

> RQ2. To what extent were teachers' experiences of occupational stress related to different background factors (i.e., work experience, gender, grade level taught, class size, and number of students needing special support), and were the relations similar in Finland and Estonia? Based on previous findings suggesting that females report higher levels of occupational stress (e.g., Klassen and Chiu, 2010) and that environmental factors (Montgomery and Rupp, 2005) are related to occupational stress, it was expected (Hypothesis 2) that teachers' occupational stress would be related to different background factors. Due to a lack of applicable previous research, no hypothesis regarding a difference between countries was set.

> RQ3. To what extent were teachers' experience of occupational stress related to their experiences of support from their colleagues and leaders, and were the relations similar in Finland and Estonia? Based on previous showing relations between occupational well-being and the group-level resource of collegial support, as well as the leader-level resource of supervisory support (e.g., Skaalvik and Skaalvik, 2011; Bermejo-Toro et al., 2016), it was expected (Hypothesis 3) that teachers' experiences of higher support from their colleagues and leaders would be related to lower occupational stress. Due to lack of applicable previous research, no hypothesis regarding a difference between countries was set.

2. Method

2.1. Participants and procedures

The participants of the present study were 1,319 teachers (396 from Finland and 923 from Estonia) teaching grades 1–6. The Finnish sample were collected as part of Teacher and Student Stress and Interaction in Classroom study (TESSI; Lerkkanen and Pakarinen, 2021), and the Estonian sample was part of a survey commissioned by the Estonian Ministry of Education and Research "Experiences of distance learning due to an emergency situation and its impact on the Estonian education system" (Tammets et al., 2021). In both countries, ethical approval for the studies were provided by the universities' ethical committees (University of Jyväskylä and Tallinn University), and the research was conducted following the national guidelines for the ethical principles of research with human participants (Centre for Ethics, University of Tartu, 2017; Finnish National Board on Research Integrity TENK, 2019). The descriptive statistics for both samples are presented in Table 1.

2.1.1. The Finnish sample

The data for the TESSI-study were collected from several municipalities located in different areas of Finland in spring of 2020. The local educational authorities granted the permits to collect the data prior to any teachers being contacted. Teachers were asked via e-mails whether they would answer on a questionnaire that focuses on their occupational well-being and teaching practices. Privacy notices were delivered along with the request to participate, and participation was voluntary and anonymous.

2.1.2. The Estonian sample

A representative survey was conducted in Estonian primary and secondary schools in spring of 2020. School leaders were asked to distribute the web-based questionnaire among their teachers, along with informed consent. Teachers agreed to participate electronically, and participation was voluntary and anonymous. Only teachers in grades 1–6 were included in the analyses of the current study (923 teachers out of 1,788 total respondents).

2.2. Measures

2.2.1. Teachers' occupational stress

In both samples, teachers' occupational stress was measured using the following single-item question: "Stress means a situation in which a person feels tense, restless, nervous, or anxious, or is unable to sleep at night because his/her mind is troubled all the time. Do you feel this kind of stress these days?" (Elo et al., 2003). Based on the previous literature this single-item question, drawn from the Occupational Stress Questionnaire, is reliable and valid for identifying occupational wellness, as it accurately discriminates between worker groups and is associated with theoretically related constructs, such as job satisfaction and emotional exhaustion (Elo et al., 2003; see also Eddy et al., 2019; Sebastian et al., 2023). In the Finnish sample, teachers were asked to answer the question on a scale from 1 (*not at all*) to 6 (*very much*) while in the Estonian sample, a scale from 1 (*not at all*) to 5 (*very much*) was used. Prior to the analyses, the scale used in the Finnish sample was recoded to match the scale used in the Estonian sample.

2.2.2. Experience of gaining support from a colleague

In both samples, the examined group-level resource focused on teachers' experience of receiving support from their colleagues. In the Finnish sample, this was measured by utilizing one item drawn from the short Finnish version of the Team Climate Inventory (TCI; Kivimäki and Elovainio, 1999). The item was: "I can get help whenever I have problems.," and teachers were asked to answer on a 5-point Likert scale (1 = *disagree*; 5 = *agree*). In the Estonian sample, the question: "I knew I could get help if I felt I could not handle it." was used, and teachers were asked to answer on a 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*). This question was part of the survey block focusing on collaboration at school (Leithwood et al., 2020). Prior to the analyses, the scale used in the Estonian sample was recoded to match the scale used in the Finnish sample.

2.2.3. Experience of gaining support from a leader

In both samples, the examined leader-level resource focused on teachers' experiences of receiving support from their leaders. In the Finnish sample, this was measured using one item from the Finnish version of the Leader–Member Exchange measure (LMX; Graen and Uhl-Bien, 1995; see also Norvapalo, 2014). The item was: "I can trust that my leader would help me out of a difficult work situation even with his/her own expense," and teachers were asked to answer on a 5-point Likert scale (1 = *disagree*; 5 = *agree*). In the Estonian sample, the question: "In case of problems, I received enough support from the management," was used, and teachers were asked to answer on a 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*). The question was part of the survey block focusing on collaboration at school (Leithwood et al., 2020). Prior to the analyses, the scale used in the Estonian sample was recoded to match the scale used in the Finnish sample.

2.2.4. Covariates

Teachers were asked to provide the following information: years of work experience, gender (coded in data file as 0 = female, 1 = male, missing = prefer not to answer), grade level that they taught (i.e., Grades 1–3 or 4–6), total number of students in their class, and number of students needing special support in their class.

2.3. Analytical strategy

Descriptive statistics, t-tests, and regression analyses with interaction terms were performed in the R statistical platform (R Core Team, 2022). Gender and grade level were used as binary variables while work experience ranges were dummy coded for regression analyses. To answer RQ2, the regression model of all background variables with country

TABLE 1 Descriptive statistics of Finnish and Estonian samples.

		Finnish	Estonian
Number of participants		396	923
Gender	Female	309	864
	Male	85	55
Grade level	Grade 1–3	229	358
	Grade 4–6	167	565
Work experience	1–5 years	99	150
	6–10 years	68	77
	11–15 years	59	60
	16–20 years	51	110
	> 20 years	118	526
Class size	Mean	21.29	18.90
	Standard deviation	6.13	7.79
	Minimum	5	1
	Maximum	46	45
% of students needing special support in their class	Mean	25.25	17.76
	Standard deviation	21.14	22.51
	Minimum	0	0
	Maximum	100	100

interaction term predicting teachers' stress were tested. To answer RQ3, the effects of support gained from colleagues and support gained from leaders on teachers' stress, with the country interaction term, were tested in two separate models. Background variables with no effect on teachers' stress were removed from these models.

3. Results

The results showed that teachers in Finland and Estonia experienced, on average, occupational stress occasionally during the COVID-19-related lockdown, and that teachers' stress levels were higher in the Finnish sample than in the Estonian sample (Tables 2; 3). The analyses regarding the effects of background variables on teachers' stress showed, first, that there was a significant relation between stress and gender as well as stress and class size (Table 3). Females reported higher levels of occupational stress than males, and larger numbers of students were found to be related to greater stress as well. Teachers' work experience and the grade level they taught were not found to be related to occupational stress. Interaction analyses indicated that none of these relations depended on the country. Third, the findings indicated that the relation between teachers' occupational stress and the percentage of students needing special support differed slightly between the Finnish and Estonian samples (Table 3). In the Finnish sample, when the number of students needing special support increased, teachers' stress decreased; in the Estonian sample, an increased number of students needing special support was related to increased stress.

With respect to the group-level resource of collegial support, the results showed, first, that teachers in both countries agreed quite highly, on average, that they received support from their colleagues (Table 2). The findings from the regression analysis indicated that the higher was the teachers' experience of support gained from their colleagues, the lower was their experience of occupational stress (Table 4; Figure 1). Second, the interaction analysis showed that the relation between occupational stress and experience of support from colleagues was similar in the Finnish and Estonian samples (Table 4; Figure 1).

With respect to the leader-level resources of supervisory support, the results showed, first, that teachers in Finland experienced significantly less support from their leaders than those in Estonia (Table 2). In addition, the regression analysis examining the relation between occupational stress and experience of support from a leader showed that the higher was the teachers' experience of support gained from their leader, the lower was their experience of occupational stress (Table 4; Figure 2). This relation was similar in both countries.

4. Discussion

The aim of the present study was to examine teachers' experiences of occupational stress in Finland and Estonia during the COVID-19-related lockdown, and whether the level of their stress would be related to their experiences of support gained from colleagues and leaders. The findings indicated that teachers in Finland and Estonia were somewhat stressed during the lockdown, yet teachers' stress was higher in the Finnish sample than in the Estonian sample. Moreover, the results showed that the higher the support teachers received from colleagues and leaders, the lower was the level of their occupational stress in both countries. The findings of this study are valuable for policy makers across nations for preparing for possible future crises and other unexpected changes that teachers are forced to face. The findings could also be utilized to provide more insight into how teachers' experience of occupational stress could be alleviated in their everyday work.

First, contrary to what was expected (Hypothesis 1) based on the TALIS survey conducted prior to the pandemic (OECD, 2020c), the results showed that Estonian teachers experienced less occupational stress than Finnish teachers during the lockdown. This finding could perhaps be explained by examining the results of the third research question concerning the support for the teachers. As described in the theoretical background, the existing literature has shown the positive relation between increased supervisory support and better occupational well-being (e.g., Skaalvik and Skaalvik, 2011; Jensen and Solheim, 2020). Therefore, Estonian teachers' lower levels of occupational stress could be explained by their higher experience of support received from leaders during the lockdown shown in the present study.

Another explanation with respect to the first hypothesis could be discussed based on prior literature regarding teachers' competences for using digital tools. For example, a study by Salmela-Aro et al. (2020) has shown that lower digital skills was one factor that was related to an increased risk for teachers' lower occupational well-being (i.e., lower work engagement and higher burnout) during the lockdown. According to OECD (2019, 2020c), both Finland and Estonia have emphasized the use of digital technology over the past years, and the number of teachers participating in professional training concerning information and communication technology (ICT) has increased in both countries. However, based on the TALIS survey (OECD, 2019), the percentage of teachers who felt prepared to use ICT was higher in Estonia than in Finland prior to the COVID-19 pandemic. While there are no comparative results concerning teachers' ICT skills in Finland and Estonia during the lockdown period, it is possible that the difference shown in the TALIS survey

TABLE 2 Country-based differences in teachers' stress and experience of gaining support from colleagues and leaders.

Variable	Country	Mean	SD	t-statistic	df	value of p
Occupational stress	Finland	2.97	1.00	3.80	719.76	<0.001
	Estonia	2.74	1.04			
Experience of gaining support from colleagues	Finland	4.32	0.97	1.08	898.58	0.278
	Estonia	4.26	0.79			
Experience of gaining support from leaders	Finland	3.41	0.99	11.61	614.59	<0.001
	Estonia	4.22	1.23			

Occupational stress: 1 (not at all) to 5 (constantly); Experience of gaining support from colleagues 1 (disagree) to 5 (agree); Experience of gaining support from leaders 1 (disagree) to 5 (agree).

TABLE 3 The effects of background variables on teachers' stress without and with country interaction terms.

Variable	Without interaction terms			With interaction terms		
	B	SE	value of p	B	SE	value of p
Country	0.25	0.07	<0.001	0.52	0.32	0.103
Gender	−0.43	0.10	<0.001	−0.49	0.14	0.001
Grade range	−0.04	0.06	0.485	−0.05	0.07	0.462
Class size	0.01	0.004	0.009	0.01	0.005	0.004
% of students needing special support	0.08	0.14	0.600	0.23	0.17	0.166
Work experience 6–10 y	0.13	0.11	0.215	0.15	0.14	0.282
Work experience 11–15 y	0.07	0.12	0.564	−0.08	0.15	0.591
Work experience 16–20	−0.03	0.10	0.746	−0.08	0.13	0.533
Work experience >20	−0.06	0.08	0.461	−0.12	0.10	0.208
Country X gender				0.09	0.20	0.652
Country X grade range				0.06	0.13	0.634
Country X class size				−0.01	0.01	0.210
Country X % of students needing special support				−0.69	0.34	0.042
Country X Work experience 6–10 y				0.02	0.22	0.933
Country X Work experience 11–15 y				0.38	0.23	0.104
Country X Work experience 16–20 y				0.13	0.22	0.553
Country X Work experience >20 y				0.21	0.17	0.216
R2	0.04			0.04		

B, unstandardized regression coefficient; SE, standard error. Gender was coded as Female = 0, Male = 1. Country was coded as Estonia = 0, Finland = 1. Grade range was coded as Grades 1–3 = 0, Grades 4–6 = 1. y, years.

TABLE 4 The effects of support from colleagues and support from leaders on teachers' stress.

Variable	Support from colleagues			Support from leaders		
	B	SE	value of p	B	SE	value of p
Country	0.24	0.33	0.456	0.09	0.22	0.676
Gender	−0.44	0.10	<0.001	−0.42	0.10	<0.001
Class size	0.01	0.004	0.009	0.01	0.004	0.011
% of students needing special support	0.22	0.16	0.169	0.24	0.16	0.134
Support from colleagues	−0.14	0.03	0.001			
Support from leader				−0.12	0.03	<0.001
Country X % of students needing special support	−0.46	0.29	0.112	−0.45	0.29	0.119
Country X support from colleagues	0.04	0.07	0.628			
Country X support from leader				0.06	0.05	0.265
R^2	0.05			0.05		

B, unstandardized regression coefficient; SE, standard error. Gender was coded as Female = 0, Male = 1. Country was coded as Estonia = 0, Finland = 1. Grade range was coded as Grades 1–3 = 0, Grades 4–6 = 1. y, years.

from a few years before the pandemic could have remained prevalent. If so, Estonian teachers would have perhaps felt more prepared to use ICT, as required by remote teaching. According to Vuorio et al. (2021), about half of Finnish teachers felt that their ICT skills were good enough for remote teaching during the pandemic, although ICT skills increased rapidly during the lockdown. A qualitative Estonian study by Lepp et al. (2021) concluded, in turn, that most of the teachers participating in their study felt that they possessed the tools and skills necessary to effectively conduct remote teaching. Therefore, it is possible that the present results, showing that Estonian teachers

experienced less occupational stress than Finnish teachers during the lockdown, could be also somewhat related to the experience of being prepared to use ICT. This possibility should be considered when providing professional training for educators to be better prepared for future crises in society.

Second, the Hypothesis 2 regarding the relations between teachers' occupational stress and different background factors, was partially confirmed. In addition, some country-based differences became apparent. In line with the hypothesis, as well as previous literature showing that females have experienced higher levels of occupational

FIGURE 1
Relation between occupational stress and experience of gaining support from colleagues in Finland and Estonia.

FIGURE 2
Relation between occupational stress and experience of gaining support from leader in Finland and Estonia.
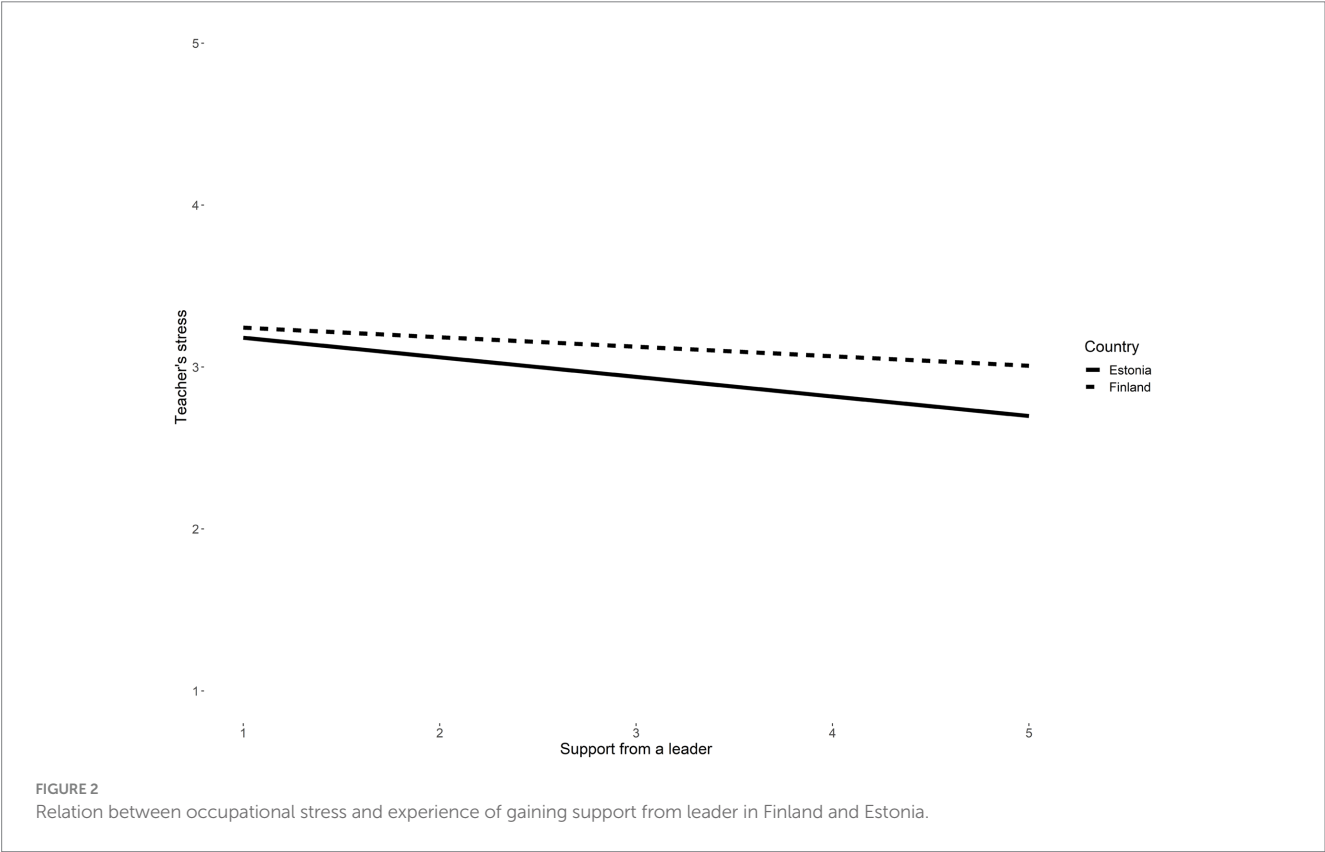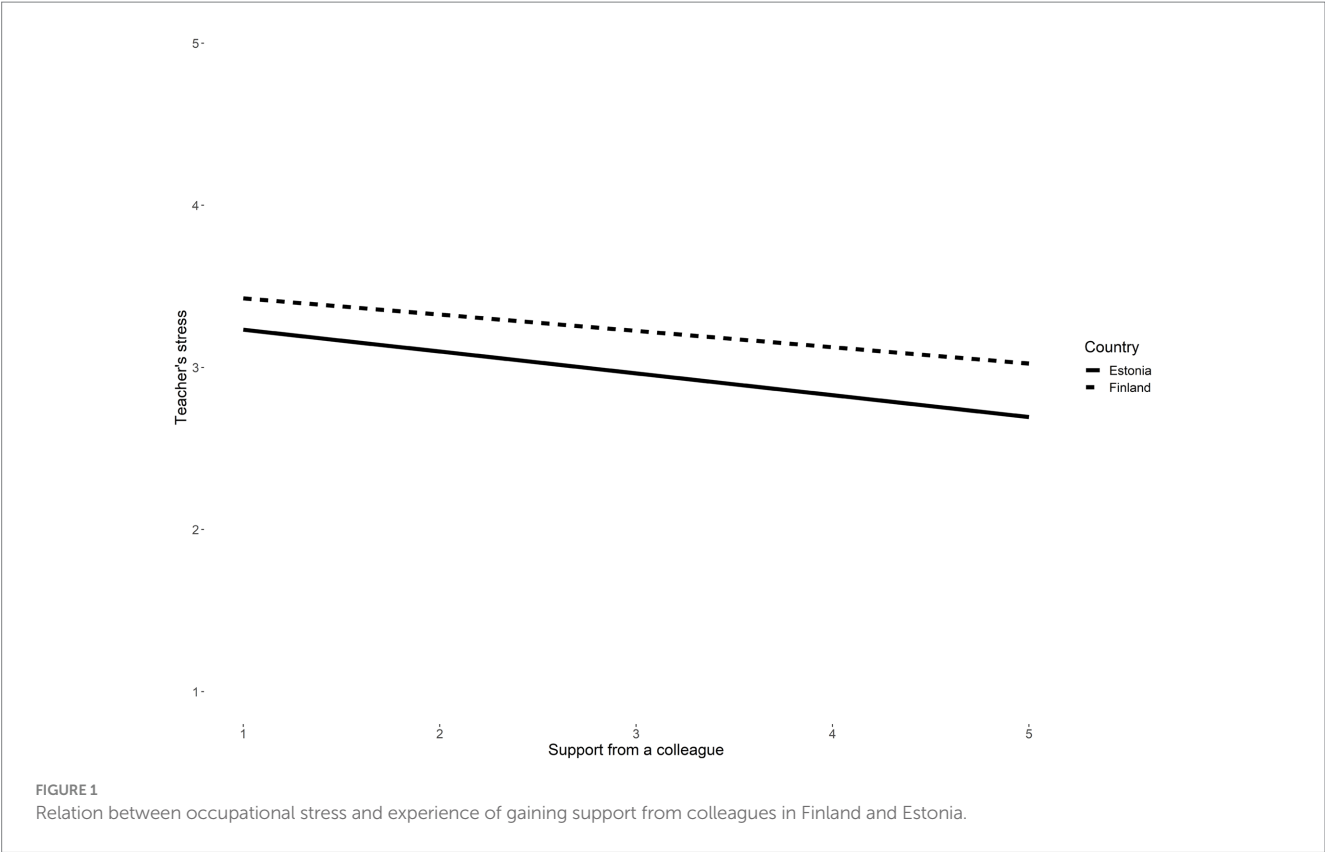
stress prior to the pandemic (Klassen and Chiu, 2010), females reported higher levels of occupational stress than males in the present study. This is also in line with previous findings showing that male teachers had greater occupational well-being (i.e., higher work engagement and lower burnout) during the lockdown (Salmela-Aro et al., 2020).

In line with Hypothesis 2, as well as prior literature suggesting a bigger class size could be seen as a job-related stressor (Huang et al., 2022; Minihan et al., 2022), our findings showed that a greater number of students in the class was related to greater occupational stress in both countries. Based on prior studies (Hojo, 2021; Minihan et al., 2022), it is possible to argue that a greater number of students per class could be particularly straining for the teachers during lockdown. As with many other countries, Finnish and Estonian teachers utilized a combination of real-time teaching and individual assignments, along with focused feedback, during the lockdown (Tammets et al., 2021; Vuorio et al., 2021). According to Vuorio et al. (2021), teachers reported that their workload increased due to the extended amount of individual feedback that they had to give during the lockdown. Thus, it can be assumed that the number of students in a class is related to their workload, which, in turn, could potentially increase their occupational stress.

Generally, the present findings showing the relation between a greater number of students and increased occupational stress, as well as prior findings showing bigger class size as a job-related stressor, are troubling in the light of teachers' occupational well-being. This concern is present with respect to exceptional working conditions and beyond. While it is known that reducing the number of students in the classroom would be beneficial, such solution might not be possible for practical reasons, such as financial restrictions or decreasing age groups, in many countries. Currently, classes in Finland and Estonia are smaller than average as compared to other OECD countries (OECD, 2021). Yet, more research should be directed toward identifying ways in which students' independent learning strategies and self-regulation of their studies could be supported. Such skills could be beneficial for both teachers and students when studying either in school or at distance (Zimmerman, 2008; Veenman, 2011; Hong et al., 2021; Pelikan et al., 2021).

Contrary to what was expected (Hypothesis 2), the present findings showed that teachers' experience of occupational stress was not related to their work experience nor the grade level they taught in either of the countries. Research conducted before the pandemic has shown that less work experience is related to higher levels of stress (Klassen and Chiu, 2011), and that working with older students is related to lower levels of occupational well-being (Saloviita and Pakarinen, 2021). However, based on the present findings, it seems that teachers across the borders faced such novel challenges with the distance teaching that their work experience was not able to provide protection against occupational stress. This view is also supported by recent results by Collie (2021), which showed that work experience was not related to teachers' experiences of either stress or emotional exhaustion during the lockdown. Therefore, there is an evident need for more research focusing on the causes of work-related stress during the pandemic to find ways to handle these kinds of situations in the future.

In contrast to what was expected (Hypothesis 2) based on previous studies showing the relation between an increasing number of students needing special support and decreasing occupational well-being (Saloviita and Pakarinen, 2021), percentage of students needing special support was not found to be related to teachers' occupational stress when examining the whole sample of the study. However, somewhat surprisingly, the results showed a relatively interesting country difference: in the Finnish sample, the higher number of students needing special support was significantly related to lower levels of occupational stress while in the Estonian sample, a higher number of students needing special support was significantly related to higher occupational stress. Unexpectedly, the finding for Finnish teachers was in direct opposition to evidence regarding teachers' occupational well-being prior to the pandemic (Saloviita and Pakarinen, 2021). Therefore, it may be assumed that the present finding is related to an exceptional situation due to the lockdown.

One potential explanation for this country-based difference could be the practicalities of how teaching was conducted during the lockdown. In Finland, while studying at home was strongly recommended for all students, studying at school was an option for both students with intensified support needs and first through third graders who were not able to study at home (Finnish Government, 2020a,b). Therefore, given the greater number of students needing special support, Finnish teachers were perhaps also faced with enhanced possibilities, for example, for sharing the responsibility of teaching certain students with other teachers or teaching certain students in a small group at school while the rest of the class studied at home. In Estonia, government guidelines sent all students to study at home during the first lockdown (Estonian Government, 2020) which, in turn, might have resulted in increased occupational stress for teachers when the number of students needing special support was larger. This unexpected finding is important from the perspective of teachers' experience of occupational stress during exceptional times as it can be used to ponder whether it would be beneficial to allow certain students to study at school, even during lockdowns.

Finally, the third research question of this study focused on the extent to which teachers' experiences of occupational stress are related to either the group-level resource of collegial support or the leader-level resource of supervisory support. The literature from before the pandemic showed that greater support from colleagues and/or leaders is related to, for example, lower rates of exhaustion and burnout and greater self-efficacy and work engagement (e.g., Hakanen et al., 2006; Skaalvik and Skaalvik, 2011; Bermejo-Toro et al., 2016; Skaalvik and Skaalvik, 2018; Jensen and Solheim, 2020). Similar findings have been seen during the COVID-19 pandemic as well (Baker et al., 2021; Collie, 2021; Pöysä et al., 2022). However, while prior literature indicates that such resources should be considered important for teachers' occupational well-being, the relations between either collegial support or supervisory support and occupational stress have not been widely examined. That is regrettable, as it can be argued that it would be ideal that teachers could receive support for their occupational stress before it evolves into emotional exhaustion or burnout.

As was expected (Hypothesis 3), the results showed that the greater the level of support that teachers received from their colleagues or leaders, the lower their experience of occupational stress. This is an important finding as it highlights the notion that a group-level resource of collegial support and a leader-level resource of supervisory support are important job-related resources that can potentially reduce or prevent teachers' occupational stress when facing challenges with work. Perhaps such resources could be the focus when aiming to obviate experiences of stress during the exceptional times and beyond.

While the relation between receiving collegial and supervisory support and occupational stress were similar in both countries, the results also revealed that teachers in Finland experienced less support from their leaders than teachers in Estonia. Such a difference was somewhat surprising as the educational contexts and consequences of the COVID-19 pandemic were rather similar in the two countries.

However, according to the TALIS survey that was conducted in OECD countries prior to the COVID-19 pandemic, teachers in Estonia were formally appraised significantly more than teachers in Finland (OECD, 2020c). In addition, the TALIS report shows that Estonian teachers received more feedback, which had a positive impact on their teaching practices (OECD, 2020c). Therefore, it can be assumed that Estonian teachers might have also received more feedback during the lockdown, which, in turn, may have made them feel more supported. Based on recent findings, new practices to enhance teachers' collegiality and mutual support, such as established communication and collaboration platforms, were experienced and tried out during the pandemic, and principals sought ways to provide emotional support for teachers in changed settings (Ahtiainen et al., 2022). However, more studies are needed to examine the role of both feedback and collegial support on teachers' occupational stress levels both during the lockdown and in everyday practice.

4.1. Theoretical and practical implications

The findings of this study lead to substantial theoretical and practical implications. As a theoretical contribution, this study provides evidence of teachers' experiences of occupational stress in two countries with rather similar educational contexts. In addition, the findings enhanced the understanding of factors related to teachers' experiences of stress during the COVID-19 pandemic. This kind of knowledge is central, as it can be theoretically argued that a sense of stress comes before experiences of exhaustion or burnout. Thus, finding ways that may prevent the sense of stress from evolving into more serious risks for occupational well-being is crucial.

Second, the findings of this study provide several practical implications for teachers and supervisors in schools as well as policy makers. This study highlights the importance of providing support for teachers during exceptional times such as lockdowns. Policy makers should consider, for instance, how they could provide additional professional training for teachers in order to be more prepared if similar kind of lockdowns would occur in future. In addition, they should consider whether some students should study at school despite national lockdowns.

From the perspective of teachers and supervisors, the findings showing the importance of the group-level resource of collegial support and the leader-level resource of supervisory support can be seen to lead into the most valuable practical implications. Based on the findings it can be argued that the sense of receiving adequate support is crucial for lowering teachers' occupational stress. Thus, recognizing the power of collegial and supervisory support should guide the ways in which teachers collaborate with each other and with their leaders on a day-to-day basis. Collegial trust could be increased, for instance, via constructive collaboration and supportive interaction in everyday practice. Overall, the results of our study could be used to suggest that teachers should believe that they can ask for and receive help from their colleagues or leaders if needed.

4.2. Limitations and future directions

This study has some limitations. First, while the educational contexts and national restrictions, as well as severity of the

COVID-19 pandemic, were rather similar in Finland and Estonia during the lockdown, they were not identical. In addition, there are always some country-specific differences due to evolving situations in the societal and educational sectors. Thus, it is possible that there are some country-based features, such as the number of COVID-19 cases in the area in each country, that may partially explain the results. Second, it should be noted that single items were used to measure teachers' occupational stress and their experiences of receiving support. Usage of single items is suggested in larger data collection batteries mostly to lessening the participants' burden (Sebastian et al., 2023). As single-items are time- and cost-efficient way of measuring certain aspects of occupational well-being, those are also widely used in research focusing on teachers' occupational well-being (Elo et al., 2003; Eddy et al., 2019; Sebastian et al., 2023). When planning the present study, researchers relied on the suggestions from the pragmatic measurement framework to ensure that the items involved in the analyses were as unambiguous, comparable between both countries, and maximally informative as possible (Kosovich et al., 2019). However, while the reliability and validity of the used instruments were seen as actualized in the present study, caution is warranted when comparing the findings with the previous studies using broader measures of occupational well-being. Thus, in future studies, broader scales could be used to capture teachers' experiences of stress and support in more nuanced manner.

4.3. Conclusion

The findings of the present study compliment the teachers, researchers, and policy makers across nations in different ways. The findings provide information on teachers' occupational stress during the lockdown due to the COVID-19 pandemic. Such knowledge is important when preparing for possible future crises and emergent situations in which teachers will face unexpected changes in their work. Endorsing teachers' occupational well-being and finding ways to diminish their occupational stress is essential as their occupational well-being affects both themselves and their students. Moreover, due to the two-country setting, the findings highlight the notion that these matters should be considered in different settings.

Data availability statement

The datasets presented in this article are not readily available because of the ongoing research. Requests to access the datasets should be directed to SP, sanni.poysa@jyu.fi (Finnish data set); KT, kairit@tlu.ee (Estonian data set).

Ethics statement

The studies involving humans were approved by the University of Jyväskylä and Tallinn University. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin

because only electronic agreements to confirm the voluntary and anonymous participation were requested based on national and institutional requirements.

Author contributions

SP, A-LJ, KT, EE, EP, and M-KL contributed jointly to the conception and design of the present manuscript. A-LJ, SP, and KT organized the database. A-LJ performed the statistical analyses. The Finnish data were collected under project lead by M-KL, and the Estonian data were collected under project lead by KT. SP wrote the first draft of the manuscript and she functioned as a corresponding author. A-LJ, KT, EE, EP, and M-KL wrote the sections of the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The impact of self-efficacy on the well-being of primary school teachers: a Greek-Cypriot study

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Introduction: This research was conducted to examine the extent to which teachers' self-efficacy affects their well-being following the COVID-19 pandemic. The originality of the research lies in the fact that there are not enough studies that simultaneously examine the relationship between well-being and self-efficacy in primary school teachers in Greece and Cyprus.

Methods: A total of 258 primary school teacher participants took part in this study, aged 23–62. The Teachers' Sense of Efficacy Scale and the PERMA Profiler questionnaire were used to study the relationship between teachers' well-being and self-efficacy.

Results: Results show that after the COVID-19 pandemic, teachers' well-being is moderate to high. Moreover, teachers' self-efficacy is also high and related to their well-being.

Discussion: An important finding from the current research is that teachers' self-efficacy in promoting student engagement was the most important predictor for teachers' well-being. The implications of the results are discussed, and recommendations are made.

KEYWORDS

well-being, self-efficacy, PERMA, Greece, Cyprus

1. Introduction

The profession of the teacher is associated with a variety of demands derived from factors arising from technology, the formulation of educational programs, and the formulation of specific individual targets for each student (Arvidsson et al., 2019). In addition, teachers are required to participate in different administrative and parent meetings, deal with the administrative bureaucracy, prepare the teaching material, and manage increasingly more diverse classrooms where multicultural learning and discipline must be maintained (Jomuad et al., 2021). Moreover, teachers are required to manage many changes, such as time pressure, challenging relationships with coworkers and administrative personnel, bad working conditions, the ambiguity of the role of the teacher, and job insecurity (Shilpa, 2021). All the above make them feel ineffective in managing students' behavior in the classroom and affect the satisfaction they derive from their profession and their self-efficacy (Sulla and Rollo, 2023).

Furthermore, the sudden appearance of the COVID-19 pandemic led to many challenges to the educational environment and new needs for teachers, such as increased fatigue due to novel working conditions and remote distance learning (Bartosiewicz et al., 2022; Shimony et al., 2022). Teachers were faced with a variety of challenges, such as remote-modern teaching methods, the lack of supporting school frameworks, the lack of knowledge for the proper utilization of technology and learning with the help or participation of the parents (Kasprzak and Mudlo-Glagolska, 2022; Shimony et al., 2022). These challenges appear to have an impact

on teachers' well-being (Bartosiewicz et al., 2022; Shimony et al., 2022). A predictive factor that seems to enhance teachers' ability to cope with professional difficulties is their self-efficacy (Baka, 2017; Sulla and Rollo, 2023), as is investigated in the current research.

2. Literature review

2.1. Well-being

Well-being concerns all of us and affects our daily lives (De Stasio et al., 2017). However, although it is often referred to as well-being, this concept is subjective and difficult to define (Soutter et al., 2014; McCallum et al., 2017). It is a psychological construct that refers to happiness, positivity, and resilience (Wigford and Higgins, 2019) and includes a feeling of wellness, where the person tends to feel happier, more devoted, more compassionate, understanding, and grateful (O'Brien and Guiney, 2021). Moreover, well-being is associated with positive emotions, perceived social support, and meaning in life (Pezirkianidis et al., 2021). It refers to a healthy emotional and physical situation with adequate emotional, cognitive, and behavioral resources to respond to difficult circumstances or conditions (Wigford and Higgins, 2019; O'Brien and Guiney, 2021).

Similarly, due to the complexity of the concept of well-being, it is difficult to provide a specific definition for teachers' well-being, and as such several definitions have been formulated (Cann et al., 2020). According to Viac and Fraser (2020), teachers' occupational well-being is a multidimensional concept, which is defined as "teachers' responses to the cognitive, emotional, health and social conditions pertaining to their work and their profession" (p. 18). This plays an important role in the sustainability of the teachers' profession, and those who make educational policies should ensure that the well-being of teachers is maintained high in their workplace (McCallum et al., 2017). When teachers' well-being is high, it seems to be related to the effective management of the classroom (Sulla and Rollo, 2023), promoting supportive relationships between teachers and students, enhancing students' well-being, and reducing their psychological stress, cultivating emotional intelligence, and promoting social learning (Hoglund et al., 2015; Harding et al., 2019; Jennings et al., 2019). Teachers' well-being is enhanced when they feel that they are closer to their everyday work life and attribute a positive meaning to it, resulting in improved job satisfaction (Brady and Wilson, 2021; O'Brien and Guiney, 2021). A positive working environment, appreciation of teachers' work and effort, good communication among coworkers, and a higher sense of belonging in a supportive school, are central pillars of positive teachers' well-being (Cann et al., 2020; Skinner et al., 2021), which influence not only the teachers' life but also positively motivate students and shape a good learning climate (De Stasio et al., 2017).

The interest in well-being has increased considerably in recent years (Cann et al., 2020), and that is why the Organization for Economic Co-operation and Development (OECD) recommended instruments to measure teachers' occupational well-being (Viac and Fraser, 2020). Such instruments are the Satisfaction with Life Scale (Diener et al., 1985), which assesses satisfaction as a whole, the Subjective Happiness Scale (Lyubomirsky and Lepper, 1999), which assesses whether a person is happy or unhappy, and the PERMA Profiler (Butler and Kern, 2016) which will be used in the current research.

This instrument is based on one of the most influential theories that examine the overall sense of well-being and its elements, the PERMA theory (Seligman, 2011). This theory supports that there are five components of individual psychological flourishing. These components form the acronym of the name of the measure PERMA; that is, Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment. The first component, Positive Emotions, involves experiencing positive emotions in everyday life; that is being able to focus on positive emotions such as happiness, comfort, and optimism and being able to view the past, present, and future in a positive way. According to Frederickson (2003), these feelings can be taught and developed. The second component, Engagement, includes being able to experience the psychological flow, be engaged, and feel satisfied with everyday activities. Engagement in everyday activities is important as it helps individuals learn, mature and foster their personal happiness. The component of Relationships involves feeling supported, accepted, and loved by an individual's social network and helps individuals build positive relationships. Positive and strong relationships involve trusting others and giving or receiving support from social networks when it is needed, especially through difficult times. The fourth component, Meaning, concerns the feelings and beliefs of individuals that life is important and the importance of living a meaningful life and having a sense of purpose. When individuals are high in Meaning, they seek to find the real meaning in life instead of searching for pleasure and material wealth. The last component, Accomplishment, involves individuals' satisfaction when they are able to accomplish their personal goals (Seligman, 2011; Symeonidou et al., 2019; Pezirkianidis et al., 2020, 2021). The PERMA Profiler provides both separate scores for each component and an overall well-being score (Pezirkianidis et al., under review).

In the literature, there are only a few studies that used the PERMA Profiler to examine teachers' well-being. However, these studies showed that high levels of teachers' well-being appear to have a significant positive effect in a number of domains (Turner et al., 2021). In a recent phenomenological study of Australian teachers' well-being, carried out by Turner and Thielking (2019), teachers stated feeling less stressed, calmer, and more positive while teaching when they intentionally used positive psychology strategies in their everyday teaching practices.

Kun and Gadanecz (2019) in their mixed method study of 300 Hungarian teachers used the PERMA Profiler to measure teachers' well-being and happiness within their workplace. Their research concluded that when teachers perceive their work in a meaningful way, engage in positive workplace relationships, and when there is an overall positive workplace climate, their perception of workplace happiness and well-being is affected positively. Furthermore, their study concluded that all dimensions of PERMA well-being, the psychological factors of hope, self-efficacy, resilience, and optimism, were positively related to workplace happiness; a finding also supported by Kun and Gadanecz (2019). Zeng et al. (2019), in their correlation analysis study of 471 Chinese secondary school teachers, found a positive association with mindset, perseverance of effort, and work engagement when they used the PERMA profiler to measure teachers' well-being.

2.2. Self-efficacy

Self-efficacy is a concept mentioned by many theorists and researchers (Gibson and Dembo, 1984; Bandura, 1997; Tschannen-Moran et al., 1998) and concerns a person's self-perceptions of their

teaching ability (Tschannen-Moran et al., 1998). Rotter's Theory of Locus of Control (Tschannen-Moran et al., 1998) is a forerunner of self-efficacy theory, but this concept was extensively developed by Bandura (1997) in his Social Learning Theory. Self-efficacy, according to Bandura (1997, 2006), is defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). According to the theory, self-efficacy is formed by four sources: (a) mastery experiences, (b) vicarious experience, (c) verbal persuasion, and (d) physiological and affective states. It concerns personal self-efficacy, which is the "personal value, ability, and effort that the individual puts into achieving a goal in relation to a certain condition of the environment" (Tzovla and Kedraka, 2023, p. 153), and outcome expectancy, which is the "estimation of the individual that a given behavior will lead to specific results" (Bandura, 1997, p. 193).

Gibson and Dembo (1984) used Bandura's theory and identified two types of teachers' self-efficacy. The first is Personal Teaching Efficacy (PTE), which corresponds to personal self-efficacy. The second is General Teaching Efficacy (GTE), which corresponds to outcome expectancy. Tschannen-Moran et al. (1998) define it as "the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (p. 233) and note the importance of the active involvement of students including those with difficulties (Tschannen-Moran and Woolfolk Hoy, 2001).

Teachers' self-efficacy is a subjective concept shaped by the teachers' interaction with their environment and affects their expectations, motivations, goals, self-regulation, educational behavior, teaching practices, attitudes towards the various subjects, and learning outcomes (Gibson and Dembo, 1984; Riggs and Enochs, 1990; Bandura, 1997; Shahzad and Naureen, 2017). Moreover, high self-efficacy is related to adopting innovation in teaching practice, increased support, encouragement, and autonomy of students (Caprara et al., 2006), and strengthening parental involvement in the educational process (Egyed and Short, 2006). Attending teacher professional development programs seems to positively affect its improvement (Aji and Khan, 2019; Mertasari and Candiasa, 2020; Tzovla and Kedraka, 2021; Tzovla et al., 2021a,b). In addition, teachers' self-efficacy is documented to influence students' self-efficacy (Trygstad et al., 2014), their behavior, and their performance (Shahzad and Naureen, 2017).

Note that "teachers do not feel equally effective in all teaching situations" (Goddard et al., 2000, p. 482), and given that self-efficacy concerns a specific task (Bandura, 1997, 2006), the measurement instruments of self-efficacy differ depending on the field of action and the target group (Bandura, 1997). For this reason, a number of tools have been constructed, such as the Teacher Efficacy Scale (TES) (Gibson and Dembo, 1984), which measures personal teaching efficacy and general teaching efficacy; the Teachers' Sense of Efficacy (TSES) (Tschannen-Moran and Woolfolk Hoy, 2001), which measures three parameters of the learning process teaching strategies, classroom management and student engagement; the Teachers' Efficacy Beliefs System-Self (TEBS-Self) (Dellinger et al., 2008) which measures the level of teachers' self-efficacy regarding tasks related to effective teaching and learning in their classroom context; the Science Teaching Efficacy Belief Instrument (STEBI A and B) (Riggs and Enochs, 1990) which measures self-efficacy of in-service and pre-service elementary school teachers in Sciences.

2.3. Well-being and self-efficacy

Billett et al. (2023), in their research with 534 teachers in Australia during the COVID-19 pandemic, indicated that teachers' well-being is positively related to self-efficacy. Self-efficacy was found to be associated with establishing classroom management systems and noted that teaching experience and age affect self-efficacy, with teachers who had been teaching for 15–19 years and aged 60–70 years having the highest self-efficacy. Moreover, Soykan et al. (2019), in a study with 1,502 teachers in New Zealand, found a positive relationship between teachers' well-being and self-efficacy. Arslan (2018), in a study with 295 Turkish educators, found a positive relationship between the well-being and self-efficacy of teachers and vice versa. Worth noting that the relationship between self-efficacy and well-being has also been studied in relation to other aspects, such as job satisfaction and years of teaching experience (Lauermann and König, 2016; Toropova et al., 2020; Bartosiewicz et al., 2022), low student motivation, and lack of supervisory support (Skaalvik and Skaalvik, 2016) among others.

2.4. Purpose of the study – hypotheses

The aim of the current study was to examine the influence of self-efficacy on the well-being of Greek and Cypriot primary. Teachers are required to hold a Bachelor's degree in Primary Education in order to work in schools. Placement in private schools follows an independent application and interview process prior to employment, whereas placement in public schools requires teachers to enlist in the hiring catalog of the Ministry of Education, which is responsible for their employment (Eurydice, 2022). The process of entering public primary schools is time-consuming and may take a few years before teachers are placed. As such, many further their qualifications to attain a higher ranking in the catalog and ensure placement. Throughout their teaching career, teachers are mandated to participate in educational seminars and professional development programs in order to enhance their knowledge and skills in order respond to the ever-increasing pedagogical demands of their profession (Tzovla et al., 2021a).

Although the impact of self-efficacy on well-being is well documented in the literature, this research is significant due to the period it was conducted. Specifically, the current research took place during March and April 2023, a time when the education sector was returning to "normality" after the significant changes that took place because of the COVID-19 pandemic. It is well documented in the literature that the changes caused by the pandemic created a lot of challenges for teachers at all levels (i.e., primary, secondary, tertiary) that inevitably negatively influenced their well-being. Research around the globe has shown that because of the changes that took place during the pandemic, such as changes in the way lessons were delivered (e.g., online, hybrid), affected teachers' well-being, with several teachers showing signs of stress, anxiety, and even depression (see Kang et al., 2022, for a review). Similar results were also obtained from studies examining Greek-speaking participants. For instance, Papazis et al. (2022) found higher stress levels in primary school teachers during the COVID-19 pandemic lockdown. Similarly, Raikou et al. (2021) found low self-esteem and medium anxiety in primary and secondary school teachers. Stachteas and Stachteas (2020) found that one-third

of their secondary school teachers' sample was feeling very anxious. Lastly, in a large study with 1,157 participants that included teachers, parents, and adolescents, Hatzichristou et al. (2021) found that teachers had a high tendency for anxiety, but importantly teachers also had high levels of coping with it. All of the above research was conducted during the period that the COVID-19 pandemic was influencing the education sector because of the different measures that took place to stop the spread of the virus, such as school closures and lockdowns. To our knowledge, no other study examined Greek and Cypriot primary school teachers' well-being after the end of these measures. It was therefore considered imperative to conduct this study for a more comprehensive view of the well-being of teachers now that the pandemic is coming to an end.

Based on this aim and the existing literature, the following hypotheses were formulated:

> *H1*: There will be a positive association between self-efficacy and well-being. Following previous research findings, we expected that the greater teachers' self-efficacy, the higher their well-being.

> *H2*: There will be differences between demographics and all variables of interest (well-being and self-efficacy). This hypothesis was more exploratory in nature, and therefore no clear predictions were made.

3. Methods

3.1. Participants

A total of 258 primary school teacher participants took part in this study. The vast majority of the sample had a Greek nationality (77.9%), while the rest had a Cypriot (22.1%) nationality. The age of the sample ranged between 23 and 62. Namely, 85 participants (32.9%) were young-adults (23–39 years old), 93 participants (26%) were young-middle-aged adults (40–51 years old), and 80 participants (31%) were late-middle-aged adults (52 to 62 years old). Concerning education level, more than half of the participants (147 participants, 57%) had a Master's degree, followed by 89 participants (34.5%) who had a Bachelor's degree, and 22 participants (8.5%) had a Doctorate degree. Two hundred and twenty-four participants (86.8%) were employed in the public sector, and 34 participants (13.2%) in the private sector. Regarding years of experience, 121 participants (46.9%) had more than 20 years of experience, 45 participants (17.4%) had 16–20 years of experience, 38 participants (14.7%) had 11–15 years of experience, 18 participants (7%) had 6–10 years of experience, and 36 participants (14%) had 0–5 years of experience. For administrative duties, almost half of the participants (105 participants, 40.7%) reported that they never had administrative duties, followed by 69 participants (26.7%) who reported having daily administrative duties, 49 participants (19%) reported having administrative duties once per week, and 35 participants (13.6%) once per month. For other duties, almost half of the participants (119 participants, 46.1%) reported that they had duties once per month, 67 participants (26%) had daily duties, followed by 49 participants (19%) who reported having duties once per week, and 23 participants (8.9%) who reported that they never had other duties.

3.2. Measures

3.2.1. Demographic information

A demographic questionnaire was administered, which asked participants to provide their age, gender, nationality, education level, years of experience, employment sector, and administrative and other duties.

3.2.2. Teachers' sense of efficacy scale

To measure teachers' self-efficacy, the long version of the Teachers' sense of efficacy scale (TSES) scale (Tschannen-Moran and Woolfolk Hoy, 2001; Tsingilis, 2005, for the Greek version) was used. This version comprises 24 items which are grouped into three factors. The first factor is Efficacy in using Instructional Strategies. It consists of 8 items and measures teachers' efficacy in helping students academically (e.g., "How much can you do to adjust your lessons to the proper level for individual students?"). The second factor is Efficacy in Classroom Management, which comprises 8 items and measures teachers' competence in managing their classroom (e.g., "How well can you keep a few problem students from ruining an entire lesson?"). The last factor is Efficacy in promoting Student Engagement. This factor also consists of 8 items and measures teachers' efficacy in motivating, building relationships and solving student problems (e.g., "How much can you do to help your students value learning?"). Additionally, the scale provides an Overall Sense of Efficacy by averaging the total of the three scales. Each item is rated on a 9-point Likert-type scale ranging from 1 (Nothing) to 9 (A Great Deal). The items' internal reliability for each factor of TSES as well as the Overall Sense of Efficacy, were very high and similar to those obtained by Tschannen-Moran and Woolfolk Hoy (2001). For the factors Efficacy in using Instructional Strategies, Efficacy in Classroom Management, and Efficacy in promoting Student Engagement, the Cronbach's alpha was 0.89 ($\alpha = 0.91$ in Tschannen-Moran and Hoy), 0.96 ($\alpha = 0.90$ in Tschannen-Moran and Hoy), and 0.93 ($\alpha = 0.87$ in Tschannen-Moran and Hoy), respectively. The Cronbach's alpha for the Overall Sense of Efficacy was 0.97 ($\alpha = 0.94$ in Tschannen-Moran and Hoy).

3.2.3. PERMA profiler

To measure teachers' well-being, the PERMA Profiler questionnaire (Butler and Kern, 2016; Pezirkianidis et al., 2021, for the Greek language) was used. The PERMA Profiler comprises 15 questions (3 for each factor) and an additional eight questions that are used as complementary items, which measure Negative Emotions (3 items), Health (3 items), Loneliness (1 item), and Happy (1 item). The measure also provides a score for Overall Well-Being by averaging all 23 items. The factor Positive Emotions measures an individual's tendency toward feeling joyful, positive, and content (e.g., "In general, how often do you feel joyful?"). Engagement assesses an individual's absorption, involvement, and interest in activities or generally the world itself (e.g., "How often do you become absorbed in what you are doing?"). The factor Relationships measures an individual's positive relationships with others for feeling supported, loved, and valued (e.g., "To what extent do you receive help and support from others when you need it?"). Meaning assesses a person's sense of purpose in life and the value of life itself (e.g., "In general, to what extent do you feel that what you do in life is valuable and worthwhile?"). The factor Accomplishment measures an individual's sense of accomplishment

of goals, responsibilities, and tasks (e.g., "How much of the time do you feel you are making progress towards accomplishing your goals?"). The items' internal reliability for the factor Positive Emotions and Overall Well-Being was high ($\alpha = 0.88$ for Positive Emotions, $\alpha = 0.85$ for Overall Well-Being), similar to those obtained by Butler and Kern (2016). For the factors Relationships, Meaning, and Accomplishment, the items' internal reliability was moderate ($\alpha = 0.75$ for all three factors) and for the factor Engagement, low to moderate ($\alpha = 0.58$). These values are lower than those obtained by Butler and Kern.

3.3. Procedure

Upon receiving necessary ethical approval from the Cyprus National Bioethics Committee (ΕΕΒΚ ΕΠ 2023.01.11 18.01.2023), the measures used in this study were combined into a survey created via Google Forms. Data were collected via convenience and snowball sampling methods where teacher participants were asked to disseminate the survey to their colleagues between 23 March 2023 and 7 April 2023. Since this study involved primary school teachers, only the responses of participants working in primary education in Cyprus or Greece were included in the analysis. The questionnaire was distributed to the participants online using email, social chatting apps (e.g., WhatsApp, Viber, Messenger), and social media (e.g., Facebook, Instagram). All participants were contacted online, informed about the purpose and duration of the study, and assured of their anonymity in participating. Their consent to participate in the research was received prior to completing the questionnaire. The completion of the questionnaire took approximately 15–20 min.

3.4. Data analysis

All data were entered into the Statistical Package for Social Sciences, Version.

25.0 (SPSS 25, IBM Corporation, Armonk, NY, USA), the level of significance for the tests was set to 5%, and all the necessary analyses were conducted. Normality tests showed that the data were approximately normally distributed, Shapiro–Wilk $p > 0.005$ and Kolmokorov-Smirnov $p > 0.005$. Since our data were normally distributed, we further conducted parametric tests. Descriptive statistics were computed. Subsequently, we conducted a Pearson correlation to examine the relationship between the factors of TSES and PERMA Profiler. Then ANOVAs were computed to compare the effect of age on self-efficacy and well-being. Lastly, all necessary assumptions to run a linear multiple regression were satisfied and it was computed to examine the predictors of well-being among teachers.

4. Results

The means and standard deviations of all variables are presented in Table 1. For the variable efficacy, as measured by TSES, participants reported a moderate level for all factors; that is, efficacy in using instructional strategies, efficacy in classroom management, efficacy in promoting student engagement, and overall sense of efficacy. For the

variable well-being, measured by PERMA Profiler, results showed a moderate to a high level for all factors (i.e., positive emotion, engagement, relationships, meaning, accomplishment, and overall well-being). These values are comparable to those obtained by the developers of the tools (Tschannen-Moran and Woolfolk Hoy, 2001 for TSES; Butler and Kern, 2016, for PERMA Profiler).

Hypothesis 1 was supported. Pearson's correlation was used to explore possible associations between the three factors of TSES (Instructional Strategies, Classroom Management, Student Engagement) and Overall Sense of Efficacy, and the five factors of PERMA (Positive Emotions, Engagement, Relationships, Meaning, Accomplishment) and Overall Well-Being. The results indicated moderate positive significant relationships between all factors of TSES and all factors of PERMA (Table 2). The higher the efficacy in using instructional strategies, the greater their positive emotions, engagement, relationship, meaning, accomplishment, and overall well-being. Also, the greater teachers' efficacy in classroom management, the higher their positive emotions, engagement, relationship, meaning, accomplishment, and overall well-being. Moreover, the higher teachers' efficacy in promoting student engagement, the greater teachers' positive emotions, engagement, relationship, meaning, accomplishment, and overall well-being. Lastly, the greater teachers' overall sense of efficacy, the higher their positive emotions, engagement, relationship, meaning, accomplishment, and overall well-being. Worth noting is that high associations were found between the factors of the TSES instrument (ranging from 0.677 to 0.902), as well as between the factors of the PERMA Profiler (ranging from 0.491 to 0.901).

Hypothesis 2 examined the impact of the demographic variables (age, gender, education level, employment sector, years of experience, and administrative and other duties) on the variables of interest (Well-Being and Efficacy). However, the characteristics of our sample were such that only the numbers of the variable age were evenly distributed (see Section 2.2.1). For this reason, analysis was conducted only for this variable.

TABLE 1 Mean scores with standard deviations for all variables of interest.

Variables	Sample (N = 258) mean scores (SD)	Developers mean scores (SD)
Efficacy (TSES)		
Instructional strategies	7.4 (0.9)	7.3 (1.1)[a]
Classroom management	7.2 (1.2)	6.7 (1.1)[a]
Student engagement	7.2 (1.1)	7.3 (1.1)[a]
Overall sense of efficacy	7.3 (0.9)	7.1 (0.9)[a]
Well-being (PERMA)		
Positive emotions	7.0 (1.8)	6.7 (1.9)[b]
Engagement	7.2 (1.5)	7.3 (1.7)[b]
Relationships	7.3 (1.7)	6.9 (2.2)[b]
Meaning	7.5 (1.5)	7.1 (2.2)[b]
Accomplishment	7.3 (1.4)	7.2 (1.8)[b]
Overall well-being	7.3 (1.3)	7.0 (1.7)[b]

[a]Tschannen-Moran and Woolfolk Hoy (2001), $N = 111$; [b]Butler and Kern (2016), $N = 31,965$.

	1	2	3	4	5	6	7	8	9	10
Efficacy (TSES)										
Instructional strategies	---									
Classroom management	0.667**	---								
Student engagement	0.751**	0.782**	---							
Overall sense of efficacy	0.877**	0.902**	0.927**	---						
Well-being (PERMA)										
Positive Emotion	0.350**	0.454**	0.506**	0.477**	---					
Engagement	0.388**	0.444**	0.501**	0.482**	0.652**	---				
Relationship	0.301**	372**	0.434**	0.404**	0.698**	0.491**	---			
Meaning	0.462**	0.560**	0.601**	0.586**	0.750**	0.598**	0.598**	---		
Accomplishment	0.496**	0.566**	0.632**	0.610**	0.666**	0.656**	0.517**	0.734**	---	
Overall well-being	0.459**	0.557**	0.619**	0.574**	0.901**	0.803**	0.780**	0.861**	0.828**	---

**Correlation is significant at the 0.01 level (two-tailed). 1, instructional skills (TSES); 2, classroom management (TSES); 3, student engagement (TSES); 4, overall sense of efficacy (TSES); 5, positive emotion (PERMA); 6, engagement (PERMA); 7, relationship (PERMA); 8, meaning (PERMA); 9, accomplishment (PERMA); 10, overall well-being (PERMA).

For the variable age, we first explored the impact of age on well-being as measured by the PERMA Profiler. A one-way ANOVA was computed to compare the effect of the three age groups (young-adults, early-middle-aged adults, and late-middle-aged adults) on the five factors of the PERMA Profiler (Positive emotions, Engagement, Relationships, Meaning, Accomplishment) and Overall Well-Being. The analysis revealed statistically significant differences between age and the PERMA Profiler factor Meaning $F(2, 255) = 3.76$, $p = 0.025$. Tukey's HSD post-hoc multiple comparisons tests were computed to further explore this significance, as it is considered a good method (Kim, 2015). Post-hoc comparisons indicated that the mean value for the young-adults ($M = 7.16$, $SD = 1.54$) was significantly different from the late-middle-aged adults ($M = 7.77$, $SD = 1.38$). There was no statistically significant difference in mean scores between young-adults and early-middle-aged adults ($p = 0.16$) or between early-middle-aged adults and late-middle-aged adults ($p = 0.61$). There were also statistically significant differences between age and the PERMA Profiler factor Accomplishment [$F(2, 255) = 7.43$, $p < 0.001$]. Tukey HSD post-hoc test showed that the mean value for the young-adults ($M = 6.92$, $SD = 1.42$) was significantly different from the late-middle-aged adults ($M = 7.74$, $SD = 1.21$). There was no statistically significant difference in mean scores between young-adults and early-middle-aged adults ($p = 0.07$) or between early-middle-aged adults and late-middle-aged adults ($p = 0.19$). The analysis for age and Overall Well-Being was also statistically significantly different [$F(2, 255) = 3.19$, $p = 0.04$]. Tukey HSD test, however, showed no statistically significant difference in mean scores between young-adults and early-middle-aged adults ($p = 0.068$), nor between young-adults and late-middle-aged adults ($p = 0.082$), or between early-middle-aged adults and late-middle-aged adults ($p = 1$). There were no statistically significant differences for age group and the factors Positive emotions [$F(2, 255) = 2.03$, $p = 0.13$], Engagement [$F(2, 255) = 2.82$, $p = 0.061$], and Relationships [$F(2, 255) = 1.87$, $p = 0.16$]. The results suggest that, at least for the factors Meaning and Accomplishment, there is a general trend where young-adult teachers' well-being is different from late-middle-aged teachers.

A one-way ANOVA was also conducted to compare the effect of the three age groups (young-adults, early-middle-aged adults, and late-middle-aged adults) on the three factors of the TSES Profiler (Efficacy in using Instructional Strategies, Efficacy in Classroom Management, Efficacy in promoting Student Engagement) and Overall Sense of Efficacy. The analysis showed statistically significant differences between age and all factors of TSES; Efficacy in using Instructional Strategies [$F(2, 255) = 13.20$, $p < 0.001$], Efficacy in Classroom Management [$F(2, 255) = 11.75$, $p < 0.001$], Efficacy in promoting Student Engagement [$F(2, 255) = 7.11$, $p < 0.001$], and Overall Sense of Efficacy [$F(2, 255) = 12.63$, $p < 0.001$]. Post-hoc comparisons using the Tukey HSD test were conducted to explore this difference further. For the factor Efficacy in using Instructional Strategies, pairwise comparisons showed that the mean value for the young-adults ($M = 7.01$, $SD = 0.99$) was significantly different from both the mean value of the early-middle-aged adults ($M = 7.56$, $SD = 0.97$) and from the late-middle-aged adults ($M = 7.71$, $SD = 0.81$). There was no statistically significant difference in mean scores between early-middle-aged adults and late-middle-aged adults ($p = 0.55$). For Efficacy in Classroom Management, a post-hoc test showed that the mean value for young-adults ($M = 6.74$, $SD = 1.26$) was significantly different from both the mean value of early-middle-aged adults ($M = 7.46$, $SD = 1.17$) and from late-middle-aged adults ($M = 7.52$, $SD = 1.08$). The mean scores between early-middle-aged adults and late-middle-aged adults showed no statistically significant difference ($p = 0.94$). For the factor Efficacy in promoting Student Engagement, pairwise comparisons showed that the mean value for young-adults ($M = 6.84$, $SD = 1.08$) was significantly different from both the mean value of early-middle-aged adults ($M = 7.32$, $SD = 1.11$) and from late-middle-aged adults ($M = 7.41$, $SD = 0.92$). There was no statistically significant difference in mean scores between early-middle-aged adults and late-middle-aged adults ($p = 0.83$). Lastly, for the factor Overall Sense of Efficacy, post-hoc tests revealed that the mean value for young-adults ($M = 6.86$, $SD = 1.02$) was significantly different from both the mean value of early-middle-aged adults ($M = 7.45$, $SD = 0.99$) and from late-middle-aged adults ($M = 7.55$, $SD = 0.84$). The mean scores between early-middle-aged adults and

late-middle-aged adults showed no statistically significant difference ($p = 0.77$). Similar to the results obtained from teachers' well-being, the results with respect to teachers' self-efficacy show a general trend where young-adult teachers' efficacy is different from that of late-middle-aged teachers.

To examine the different predictors of well-being among teachers, a forward stepwise multiple regression analysis was conducted to evaluate how well the variables included in the study predicted teachers' well-being. The predictor variables were the three levels of TSES (Efficacy in using Instructional Strategies, Efficacy in Classroom Management, Efficacy in promoting Student Engagement) and age, whereas the criterion variable was Overall Well-Being (measured by PERMA).

The stepwise regression equation (Table 3) was statistically significant [$F(1, 256) = 157.33$, $p < 0.001$] for the variance of overall well-being ($R^2 = 0.38$, adjusted $R^2 = 0.38$). Well-being was primarily predicted by efficacy in promoting student engagement.

5. Discussion

The current study aimed to examine teachers' well-being during a period considered important since it was after the changes that took place due to the COVID-19 pandemic, and the education system was returning to "normality." Our results show that, at least for the current sample, despite the many changes due to the pandemic, returning to the usual education process did not influence teachers' well-being. We found that the overall well-being of our sample was moderate to high. This is a significant finding that needs to be further explored. One suggestion is that teachers were able to develop or/and use strategies to overcome the difficulties that arose because of the pandemic and keep their well-being unaffected. That is, even though the pandemic brought many changes in the educational system, with previous research showing that it influences teachers' well-being (see Kang et al., 2022, for a review), the return to the usual mode of delivery might have enabled teachers to find or utilize strategies to overcome this period and keep their well-being in high levels. Another explanation of this finding lies in the characteristics of the current study's participants. Recall that almost half of our sample had more than 20 years of experience (46.9%), and almost half had no administrative duties (40.7%). Therefore, it is possible that the moderate to high well-being observed in our current sample is because of these specific characteristics. The current results do not provide clear evidence of which reason is responsible for the observed findings.

The examination of the relationship between teachers' self-efficacy and well-being showed that all the components of teachers' self-efficacy (efficacy for using instructional strategies, efficacy in classroom management and efficacy in promoting student engagement) were positively related to all dimensions of the PERMA Profiler (positive emotions, engagement, relationships, meaning, and

accomplishment,). This is a significant finding suggesting that teachers' well-being impacts their teaching practice, their capacity to foster a happy learning environment and their interaction with students and parents. Moreover, teachers' well-being is influenced by student engagement and a pleasant classroom environment. Our findings are in accordance with the findings of other studies (Arslan, 2018; Kun and Gadanecz, 2019; Turner and Thielking, 2019; Toropova et al., 2020; Skinner et al., 2021; Bartosiewicz et al., 2022; Sun et al., 2022; Han et al., 2023). It appears that a high sense of self-efficacy strengthens teachers' sense of coping with the difficulties of their work, which might contribute to strengthening their mental health and job satisfaction, which could also strengthen their professional role (Kun and Gadanecz, 2019; Skinner et al., 2021). Furthermore, the current findings suggest that forming a good, positive, supportive, open, and cooperative school climate can improve well-being and teachers' self-efficacy (Han et al., 2023).

The current findings also suggest that teachers' well-being is influenced by age. Specifically, we found that young adults (23–39 years old) significantly differ from late-middle-aged adults (52–62 years old) in the two components of the PERMA profiler, meaning and accomplishment. Following PERMA's explanation of the components, it appears that late middle-aged adults have a clearer purpose and direction in life and a sense of fulfillment and accomplishment than young adults. A possible explanation for this could lie in the promotion process. Primary school teachers, and generally teachers in Greece and Cyprus, throughout their years of employment in schools, reach a point where they seek to be promoted. That is, they can apply to get promoted to principals, vice-principals, educational counselors, and training inspectors. It might be that advancing in their position provides them with a sense of purpose and meaning in life and a sense of accomplishing their personal goals (Seligman, 2011; Symeonidou et al., 2019; Pezirkianidis et al., 2020, 2021). On the other hand, young adults are at the beginning of their teaching career and they might still be trying to get along with their new teacher role; this appears to influence their well-being.

Furthermore, our findings show that teachers' self-efficacy is also influenced by age. We found that young adults (23–39 years old) showed lower teaching self-efficacy in all three teaching efficacy parameters (instructional strategies, classroom management and student engagement) and overall teaching self-efficacy as compared to early-middle-aged adults (40–51 years old) and late-middle-aged adults (52–62 years old). This finding is supported by previous literature (Billett et al., 2023). The reason behind this finding might lie in young adults teaching experience. As mentioned before, young adults are at the beginning of their careers, and this could influence their sense of self-efficacy. They might still be trying to find effective strategies for providing instructions to students, managing their classroom as well as engaging their students to participate in the lessons. Therefore, supporting the literature, young adults' ability to organize and deliver their lesson plans, as well as their ability to implement different strategies to handle their classroom, is influenced (Tschannen-Moran et al., 1998).

Importantly, the current study suggests that self-efficacy in promoting student engagement is the most important factor for teachers' well-being. Even though our current results do not provide a clear indication of how these two are related, the literature that examined remote learning during the period of the COVID-19 pandemic can provide some information regarding their relationship.

TABLE 3 Summary of multiple regression for well-being.

Independent predictor variables	B	SE	B	t	Sig.
Student engagement	0.77	0.06	0.62	12.54	<0.001

Specifically, previous research suggests that student engagement was one of the most important variables that have been negatively influenced by remote education (Cardullo et al., 2021). It is not a surprise, therefore, that after returning to the usual mode of education, student engagement changed, which might have resulted in higher self-efficacy in this domain and consequently increased teachers' well-being. It is imperative for future research to directly examine this relationship.

Notably, this finding also suggests that improving teachers' self-efficacy in promoting student engagement will positively influence teachers' well-being. As Fredericks et al. (2004) suggest, student engagement is a multi-dimensional concept that is defined through three main categories: behavioral engagement, emotional engagement, and cognitive engagement. Behavioral engagement includes positive conduct, involvement in learning, participation in school activities, following rules, concentration, attention, persistence, effort, and contribution to class discussions. Emotional engagement includes students' interest, positive feelings toward the institution and instructors, and feelings of belonging within the institutional environment. Cognitive engagement includes students' motivational goals and self-regulation learning, metacognition, critical thinking, etc. (Fredericks et al., 2004). There are studies that support that student engagement is correlated with students' success (Gunuc, 2014; Hao et al., 2018). That is when teachers recognize that they can make their students be actively engaged in the learning process and help their students' progress in their learning experience, it provides teachers with a sense of fulfillment and satisfaction, which could eventually lead to a boost in their confidence and overall well-being. When teachers feel they are effective in their student's engagement, they often build strong relationships and emotional connections with them. Feeling connected with their students and knowing that their students could make a difference in their life and succeed could bring a sense of happiness and fulfillment, which in turn, could positively affect teachers' well-being. Our study suggests the importance of finding and utilizing techniques to improve teachers' self-efficacy in promoting student engagement, such as communication skills and skills for connecting with their students, among others, that will ultimately improve primary school teachers' well-being. In this frame, we suggest that teachers attend professional development programs related to such techniques, as they promote the active involvement of students and improve the well-being of teachers.

5.1. Limitations

Although this research provides interesting results, it is not without limitations. First, most of the participants were from the Greek population. This limited us from comparing Greek and Cypriot teachers' well-being. Additionally, the generalizability of the results of the study is also impeded as the education systems in Greece and Cyprus differ as compared to other countries in terms of the qualifications required for teaching in schools, the curriculum, and the structure of the schools. Moreover, we were not able to examine any possible differences between public and private education as most of our participants worked in public schools. Most of our sample had more than 20 years of experience, so we could not study possible differences due to teaching experience. Furthermore, our sample included more females than males. Even though the literature shows that more females than males work in education (Eurostat, 2023), this limited us from making comparisons between the sexes. Teacher reports regarding student engagement, rather than direct observations, and the use of self-report measures are among the limitations identified in the study, which should be considered with caution.

5.2. Future research

Based on the limitations of this study, possible suggestions for future research can be made. First, future research would be very interesting to examine the differences between Greek and Cypriot primary school teachers in terms of their self-efficacy and well-being. Furthermore, it will be worth comparing how different environments in public and private schools affect teachers (in their self-efficacy and well-being) and if there are differences in these fields between Greek and Cypriot primary school teachers. Also, it will be interesting to study if teaching experience could affect teachers' self-efficacy and well-being and if there are differences in these fields between Greek and Cypriot primary school teachers. Lastly, future research should more thoroughly examine the relationship between self-efficacy in promoting student engagement and well-being and strategies that can be used to increase teachers' self-efficacy in this domain.

6. Conclusion

Our results show that self-efficacy has a positive relationship with teachers' well-being. This is in accordance with the findings of other studies (Arslan, 2018; Toropova et al., 2020; Skinner et al., 2021; Bartosiewicz et al., 2022; Sun et al., 2022; Han et al., 2023). Our results suggest that the most important component of self-efficacy for predicting well-being is efficacy in promoting student engagement. This suggests that developing strategies to promote this domain will positively influence teachers' well-being. The findings of the current study can be used by educational institutions to create and disseminate professional development courses to increase teachers' self-efficacy in the domain of student engagement. These courses will aim at strengthening teachers' self-efficacy in the classroom and equip them with strategies to develop or increase their self-efficacy in student engagement.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

This study was approved by the Cyprus National Bioethics Committee (ЕЕВК ЕП 2023.01.11 18.01.2023). The participants provided their informed consent to participate in this study.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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International Chinese students' experiences of participating in mandala-based art therapy in Korea: a phenomenological study

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Background: Although China and South Korea share a similar East Asian culture, owing to major social and cultural differences, international students encounter several difficulties, which can lead to various psychological problems.

Objective: To explore the experiences of eight Chinese doctoral students in South Korea participating in mandala-based art therapy.

Method: Data for this phenomenological study were gathered through individual interviews and visual art from April 5 to 20, 2022. The MAXQDA software program was used for data analysis.

Results: The data analysis results yielded 355 codes, 53 subcategories, and 17 categories. Five final themes emerged: (a) sealed lips by others' eyes, (b) inner exploration and outward expression, (c) healing power of the mandala, (d) filling the inner space together, and (e) opportunities to understand art therapy.

Conclusion: The researchers hope that completing this intervention will enable participants to complete their studies more effectively and achieve their ideals as well as future career goals, helping them ultimately return home safely with both personal and academic growth.

KEYWORDS

international Chinese students, South Korea, mandala, art therapy, phenomenological study, study abroad

1. Introduction

Chinese students accounted for the largest proportion of foreign students in South Korea in 2020; with 67,348 (44.2%) students, China ranks first among the 229 countries whose students come to South Korea (Ministry of Education of Korea, 2021). There are several reasons for this. First, as China and South Korea are geographically close and have a long history of cultural exchanges, it is convenient to send students to these corresponding countries (Zhang, 2015). Second, in the field of education, after the signing of the Korea–China Cultural Exchange Agreement in 1994, Chinese students began to flood South Korea. With a rapid development in China's economy, an increasing number of students choose to study abroad (Ko and Kim, 2020).

Even though China and South Korea share a similar East Asian culture, major social and cultural differences exist. These differences cause several difficulties for international students; the pressure they experience can lead to various psychological problems (Ismail and Yang, 2003;

Tian, 2020; Zhang et al., 2022). Psychosocial support programs, freely available to any student who wants them, may help address these needs.

Art therapy helps express emotions and explore needs through visual art work (Van Lith, 2016). With an art-based modality, Chinese students can express themselves fully, even if their Korean is not fluent (Yang and Lee, 2010). Mandala-based art therapy (MBAT) specifically emphasizes the integrity and unity of the human body and mind; it can coordinate and adjust human energy, while providing energy and strength (Moss, 2007). Mandala work, which harnesses the subconscious through painting, can provide a relief outlet for depression and anxiety, guiding neuro-emotions into a stable and comfortable state (Girija and Adlin, 2018).

Regarding existing research on MBAT, some studies have noted its positive impact on adolescent mental health, allowing teenagers in crisis to express their inner repression and maintain psychological stability, so as to develop and show their inner potential (Park, 2014). Other studies have focused on populations of different ages, such as children, adults, and older adults, with most of the outcomes being related to mood, stress, and mental health (Choi and Choi, 2012). Moreover, a few studies have shown a positive impact of MBAT on specific groups such as people with schizophrenia (Lee and Byeongkug, 2010) and female victims of domestic violence. Although the use of mandalas in art therapy has been explored, these studies have utilized quantitative data, and none offer qualitative information focusing on Chinese students studying in South Korea.

1.1. Chinese students in South Korea

In recent years, the number of foreign students in South Korea has continued to grow along with the globalization trend of the education field. At the same time, the number of Chinese students studying abroad has also increased (Lan, 2021), with China accounting for the largest proportion of foreign students coming to South Korea (Ministry of Education of Korea, 2021).

Studies show that Chinese students in South Korea often experience stress owing to key differences in communication and interpersonal relationships (Ko and Kim, 2020). In terms of interpersonal relationships, the Chinese are more group-oriented and interdependent than South Koreans (Kim, 2015). There is also a natural language barrier (Zhao and Lee, 2018). These differences may cause Chinese students studying in South Korea to experience cultural, academic, and interpersonal difficulties. Chinese international students often experience various forms of depression and anxiety owing to differential treatment and cultural shock (Jin et al., 2022); thus, psychological and emotional supportive interventions could help prevent and address such issues.

1.2. MBAT

Art therapy is a way of using the fine arts, a nonverbal medium, to express personal growth, insight, and change. The special process of creating art works can help visually express human images and become an appropriate means to express individual minds. Participants can then go on to recognize their inner experiences and perceptions, connect their inner world with the external world, and

work with the inner self to help discover and confirm relationships with the environment, society, and others (Judith, 1998; Malchiodi, 2006).

The purpose of group art therapy is to collectively create iconic art works, share feelings, and establish a sense of intimacy. The goal is to enable participants to easily express emotions, problems, and conflicts in a nonverbal manner, harmoniously resolving psychological and emotional issues and thus alleviating painful emotions or experiences (Malchiodi, 2006; Yalom, 2020). Such a group is not a simple collection of individuals but a dynamic gathering that seeks to solve inner problems through interaction (Jun and Choi, 1998).

The word *mandala* originates from Sanskrit in ancient India, referring to all round objects with centers in nature; it implies a "round wheel" and "round phase." A mandala can thus be defined as the center and essence of perfection (Jung, 1973; Stout, 2014). According to Jung (1973), mandala painting could capture a change from an irregular and chaotic state to a simple and clear one. The archetype within the mandala emits a visual image to convey information when it contradicts or splits within itself. When this kind of image is expressed through art, it is easy to grasp., especially when art psychotherapy is practiced. In this way, people can better understand their internal situation by integrating their painting with themselves. A mandala is basically a "circle" image, which makes people feel relaxed and happy, with a sense of balance and order (Jung, 1973).

In art therapy, the process of painting a mandala allowing the practitioner to experience an interaction with the universe, and to discover one's center and source. It allows people to seek stability, reconnect their inner self with order, and attain balance (Moss, 2007; Girija and Adlin, 2018). MBAT is not only a treatment for mental diseases but also a preventive intervention that can build psychological preparation and strength to accept crises and difficulties. As a psychoeducational tool, it can bring mental quietude, boosting concentration and creativity (Kim et al., 2018).

Using art-based modalities makes it easier for individuals to express themselves nonverbally, thus helping alleviate emotional crises quickly, even with language barriers (Van Lith, 2016). As group therapy, the group members can build awareness of others by focusing on themselves. Although work is done as a group, the mandala represents an inherently personalized process of growth and self-integration (Cha, 2012). MBAT allows practitioners to freely express themselves and experience positive interactions with group members through various media (Malchiodi, 2006), with this creative work helping mitigate and resolve conflicts or pressures (Judith, 1998; Van Lith, 2016). Within the group, MBAT can improve individuals' emotional intelligence and social skills (Kim and Chun, 2015), allowing the practitioners to communicate smoothly; they learn to understand, care for, and accept each other to improve their interpersonal relationships (Kim, 2012). Studies have also shown that MBAT can improve the social adaptability of teenagers, helping them build self-expression, self-understanding, and mutual relations (Jun and Choi, 1998).

Although mandala is familiar with the Chinese culture, there are very few studies on mandala use by Chinese students. As previously mentioned, Chinese students studying in South Korea often feel stressed owing to key differences in communication and interpersonal relationships from their native culture (Kim, 2015). Therefore, it is hoped that the use of MBAT can improve the social

TABLE 1 Participants' basic information.

Pseudonym	Gender	Age (years)	Major	Duration of residence in South Korea (months)
Yun	Man	38	Music therapy	22
Gong	Woman	32	Music therapy	22
Liu	Man	32	Music therapy	34
Li	Man	30	Music therapy	28
Shi	Man	31	Art therapy	28
Han	Man	26	Art therapy	28
Xie	Man	32	Physical education	22
Wang	Woman	30	Physical education	22

adaptability of Korean Chinese students, enabling them to find channels for self-expression and self-understanding, and eventually improve their interpersonal relationships. Alongside the established benefits of using MBAT, our findings may prove significant in assessing whether MBAT can help participants gain psychological security, understand their inner world, and perceive stress; these are all the critical skills required by Chinese students studying in South Korea to improve their ability to cope with stress and help them decompress. In this study, therefore, we explored the experiences of Chinese students participating in MBAT in South Korea. The research question was as follows: What are international Chinese students' experiences of participating in MBAT in South Korea?

2. Research methods

2.1. Phenomenological study

In this phenomenological study, we used a descriptive research method, which helps reveal the essential meaning behind human experiences (Van Manen, 1990; Moustakas, 1994; Giorgi, 2009). A phenomenological study attempts to understand the life experienced by human beings in the real world, and lived experience research has been widely used in various fields of the humanities and social sciences (Paley, 2016). People are individual, subjective beings, whose responses to an event are different; these distinct responses to noumena themselves act as stimulus cues (Frederick, 2005). Phenomenology involves observing the exact phenomenon, describing the participants' experiences in an original way, understanding the circumstances, and exploring their meaning. It revolves around subjective experiences and finding elements of objective experiences common to individuals (Lewis, 2015). Accordingly, phenomenological research was appropriate for this study, which aimed to explore the lived experiences of Chinese students in South Korea.

2.2. Recruitment of participants

Participants—Chinese students currently studying in South Korea—were recruited by snowball sampling. This is the method of choice when conducting research with people or organizations within interactive networks or when respondents are limited and

difficult to find (Yu, 2021). The selection criteria for Chinese students were as follows: (a) born and brought up in China, (b) studying for a degree in South Korea, and (c) voluntary participation. To recruit participants, the researchers provided the study instructions through WeChat, an instant messaging software mainly used by Chinese students. The sample consisted of eight participants recruited at the MBAT program at J University in South Korea from April 5 to 20, 2022. All students participated voluntarily and without a reward. All eight participants (two women, six men) were doctoral candidates in South Korea. Their ages ranged from 26 to 38 years (mean = 31) and their duration of residence was 22 to 34 months (mean = 26 months). All participants were given pseudonyms to protect their privacy (Table 1). It should be mentioned that the participants included four music therapy students and two art therapy students. These students, who had been involved in music or art therapy once or twice but had never participated in MBAT, thus developed interest in MBAT.

2.3. Intervention

Eight Chinese international students living in South Korea completed a group art therapy program assisted by experienced South Korean art therapists. The therapy program was conducted in the fine arts treatment room of J University for eight sessions. A certified art therapist was fully involved during all eight sessions. The early stage of the program (sessions 1–2) was meant for the participants to release tension and form a sense of intimacy; the middle stage (sessions 3–6) was geared toward self-expression and exploration; the final stage (sessions 7–8) was for self-integration and concluding the activities. Each session of the treatment plan lasted 120 min (this length was based on interpretation time and group size) and consisted of three stages: introduction (20 min), task and activity (60 min), and organizational and verbal sharing (40 min). Activities included enhancing the sense of collective belonging and cohesion, exploration and expression of safe areas, exploring identity through past and present life, expressing the core themes and emotions of life in the present, exploring and expressing current life stress and coping methods, expressing and integrating their own resources and shadows, identifying new identities through life goals and achievement process, and the internalization and integration of the overall treatment process (Table 2). No participants withdrew throughout the study.

TABLE 2 MBAT program: themes and directives for each of the eight sessions.

Session #	Themes and directives
1	**Dear name**
	Self-introduction of one's name by image or symbol.
2	**Safe space**
	By completing the activity of "I in the Eyes of Others," we dispel awkwardness and enhance the cohesion of the group. Explore and visualize your own safety zone using the five senses.
3	**The time of life**
	Set the circle as the clock of life, explore, and express the important moments in life.
4	**The wheel of life**
	Explore and express the core themes and feelings of your present life in the center of the circle.
5	**Circular cuboid**
	Current pressures are explored within the circular box and represented in a collage.
	Explore the coping methods you could use to relieve these sources of stress outside the round box, and express them with a collage.
6	**Light and shadow**
	Explore your own resources and shadows, and the integration and expression of resources and shadows.
7	**The four seasons of life and the trees of growth**
	Looking back on the first six mandala sessions, show how you have achieved life goals and what you have achieved.
8	**Insight and integration**
	Looking back on the first seven mandala sessions, what do you see?
	How would you integrate this?

TABLE 3 Five themes and 17 supporting categories derived from the interview data analysis.

Themes (5)	Categories (17)
Sealed lips by others' eyes	Worried about the prejudices
	Afraid of self-expression and openness
Inner exploration and outward expression	Focusing on the self
	Understanding myself
	Channels of self-expression
Healing power of the mandala	Relief in the mandala
	Safe place in the mandala
	Leisure in the mandala
	Satisfaction in the mandala
	Confidence in the mandala
	Courage in the mandala
	Vision in the mandala
Filling the inner space together	Communicate sincerely with group members in the same situation
	Emotional support from group members in the same cultural background
	Interpersonal interaction activity in compatriot group members
Opportunities to understand art therapy	Improve expression skills through unfamiliar opportunities
	An insight into art therapy and mandala

2.4. Data collection

Data were gathered via individual semi-structured interviews, visual art works, and researcher notes. The researchers conducted 90-min individual semi-structured interviews with each participant after they completed eight sessions (Table 3). This interview was conducted in a quiet space of the art therapy room from June to July 2022. Interviews were conducted in Chinese (participants' native language), which supported a rich and deep verbal sharing, and were videotaped with participants' permission. The 64 visual art works generated during these sessions were also collected (eight participants over eight sessions, one mandala per participant per session), and were used to support the lived experiences that participants shared during sessions.

2.5. Triangulation

Member-checking was conducted to ensure an accurate understanding of interview data (Mabry, 1998). The primary researcher transcribed interviews as soon as possible to confirm accuracy and to allow participants to conduct a critical review and modify or delete their responses as needed. Peer debriefing (Lincoln and Guba, 1985; Spall, 1998; Janesick, 2004; Lewis, 2015) for data analysis took place throughout the study, from the beginning of sharing the original transcription with codes, to ensure feasibility and consistency.

2.6. Researchers' reflection

The researchers have studied expressive arts therapy abroad, equipping them with great sensitivity regarding this topic. However, to prevent previous experience from influencing data interpretation, the primary researcher bracketed her own bias and preconceived knowledge on this topic to ensure that one was explicitly aware of the influence this would have on the data analysis process and results. It brought me to a bias that art therapy students have a deeper internal reflection. As a student majoring in art therapy. As the interviews were conducted in Chinese as the native language by a researcher, translated into Korean, and then translated into English for journal publication, the researchers were meticulous in verifying their translations.

2.7. Data analysis

MAXQDA for qualitative data analysis was used to analyze data. The analysis process was as follows: (1) organize data to access files easily; (2) read data to get familiar with the content; (3) transfer data into the MAXQDA program, with all meaningful statements being coded; (4) conduct peer debriefing with two experienced qualitative researchers; (5) combine similar and repeated semantic units, reviewing and modifying them through peer reports; (6) repeatedly confirm the original data and ensure proposed analytical feasibility, with the subcomponents being obtained through combining semantic units, and components obtained through combining subcomponents; and (7) obtain saturated final themes, categories, and subcategories.

2.8. Ethical considerations

This study is part of the author's doctoral dissertation conducted with the approval of the Jeonju University Institutional Review Board (jjIRB-220421-HR-2022-0408). All participants were given details of the research project, informed of their rights, and provided written informed consent. Participants were told they had the right to refuse or withdraw from the study at any time without fear of penalty. All information was collected with the participants' consent, and the answers were processed anonymously.

3. Results

The researchers analyzed the interview transcripts, yielding 355 codes related to the research topic. As a result, five themes, 17 categories, and 53 subcategory codes were identified: (a) sealed lips by others' eyes, (b) inner exploration and outward expression, (c) healing power of the mandala, (d) filling the inner space together, and (e) opportunities to understand art therapy. Each topic contained its own unique categories, derived from the data analysis. Table 3 lists the five themes and 17 supporting categories.

3.1. Theme 1: sealed lips by others' eyes

3.1.1. Worried about others' prejudices

In any psychotherapeutic group, participants need time to get comfortable with openly sharing their true selves. This was evident in this group, with Han sharing that, at the beginning of the activity, "the members of the group were not familiar with each other" and that this fed "a sense of conflict." Shi "regarded inner things as private" and was unwilling to share. When speaking during group activities, he could not "let go of the fear that others do not understand" and could not open up his heart.

While participant defensiveness is common in the early stages of any psychotherapeutic group (Park and Park, 2022), privacy seems to be particularly valued in Chinese culture (Wang, 2019). It was, therefore, especially important for the participants to establish trust and non-judgmental relationships, learning to value others' views and seek group harmony.

3.1.2. Afraid of self-expression and openness

Participants spoke about their fears of self-expression and openness in the group, as follows:

> The challenge is to express what you do not want decisively. This is my biggest challenge and it is difficult for me. […] I refuse to share my heart with others very much. It is a big challenge to open myself up in activities. The tension when communicating with others makes the sharing process difficult. (Liu)

While it is natural for participants to avoid the pain of sharing, they must eventually overcome this obstacle to obtain a wholesome therapeutic experience and enable the same outcome for the rest of the group.

3.2. Theme 2: inner exploration and outward expression

3.2.1. Focusing on the self

Participants discovered the value of paying attention to the present, focusing on themselves, and improving concentration through MBAT activities. Gong believed that the greatest significance of therapeutic activities was to focus on the present moment:

> I think, rather than worrying too much about the future, I find it more important to enjoy the process and live in the present, which is my greatest gain in this activity. Therapy has given me a way of thinking, that is, to face my problems, not to worry about the future, not to be overwhelmed by the trauma of the past. I learned to appreciate the present.

Wang made similar observations about concentration, saying "I also lived unconsciously and became more focused on myself." Xie found that drawing in a circle improved his focus and attention (Figure 1):

> I draw my tree of life in a circle. Without this circle, the sky part will become bigger, I might add other factors, some other embellishment. But in that case, the tree would not be so big… Based on this circle, it is visually easier for me to focus and allows me to be more focused.

FIGURE 1
"The tree of life" by Xie. Reproduced with permission.

3.2.2. Understanding myself

Participants acquired the tools to understand their hearts, learning how to objectively review and organize themselves while exploring and improving their shortcomings. This gave them a deeper understanding of themselves and allowed them to master new methods of self-understanding. For instance, Liu learned how to examine himself objectively (Figure 2):

> The best part is that I learned to look at myself. I use purple to indicate anxiety, depression, and escape. The blue part is the positive part, which represents rationality. I learned to look at myself dialectically.

Shi "combs his past step by step, which is a very meaningful thing." While adjusting himself, he "gives himself some strength." Xie said that his mentality and thinking mode changed, and he was able to recognize problems and improve them. Wang developed a better understanding of herself through her art work, saying that "It can make me know myself better." Li shared that he "discovered me and dug into myself" by painting. "This is a good way of (gaining) self-insight." Liu liked talking with the therapist and learning about himself through the therapist's analysis (Figure 3):

> The therapist analyzed it, and his understanding of me was very accurate and magical. Drawing a paper airplane, the therapist said, "you are not a paper airplane; in fact, you have a lot of strength and resources, so you should make good use of it." After the therapist dissected my work, I found that it virtually expressed my thoughts.

3.2.3. Channels of self-expression

Participants found a channel for self-expression, learning to express themselves actively and openly during the sessions. Xie learned to "learn

FIGURE 2
"Light and shadow" by Liu. Reproduced with permission.

FIGURE 3
"Fly" by Liu. Reproduced with permission.

FIGURE 4
"Home is a warm place, whenever I think of it" by Wang. Reproduced with permission.

FIGURE 5
"Insight and integration" by Gong. Reproduced with permission.

from other people's experiences" to help their self-expression in English when their oral skills were insufficient. Shi said that he adjusted his mentality in time, admitted that "his works are inner expressions worth seeing," and realized that he should focus on artistic expression and symbolism, rather than on the aesthetics of his works. Shi learned a new and safe way of expressing himself. Wang talked about her experience of learning to express herself: "I learned to express myself and open myself up. I will share my thoughts, opinions, and experiences with my friends." Liu said that he experienced "a new and safe way of self-expression" through the therapeutic activities.

3.3. Theme 3: healing power of the mandala

3.3.1. Relief in the mandala

Participants learned how mandalas could be a new tool to reduce stress, anxiety, and depression. Wang found that her inner repressed emotions were relieved: "Activities can not only relieve academic pressure but also relieve language pressure." Li learned how new ways of mandala painting could allow him to vent his repressed emotions and "decompress himself." Gong noticed group members becoming more comfortable and saw the mandala's power to "get rid of the uneasy state" and "eliminate negative emotions." Li said, "Depression is eliminated through activities."

3.3.2. The mandala as a safe space

Participants, like Liu, gained a sense of security. Gong experienced reduced anxiety, saying that the "therapist shields me without prejudice, protects me, and makes me feel safe." She also mentioned that "in Chinese culture, the circle is a symbol of balance"; thus, painting in the form of a mandala felt particularly comfortable to this group. Wang felt "the tolerance and warmth of the circle and felt a sense of security" during mandala painting. She said that painting in the circular form of a mandala made her feel warm, stable, and secure (Figure 4):

I like to draw in the circle. If you give me an empty piece of paper, I do not know what to do. In this circular range of the creation, I feel very practical, very safe. In the Chinese view, the circle is a symbol of safety and warmth. This circle is just like my home, giving me a sense of security.

3.3.3. Leisure in the mandala

Participants found relaxation, which helped them release their negative emotions into art work. Liu said that "MBAT makes me feel more at ease and more gentle than other treatments, so I feel more acceptable. This kind of relaxation cannot be experienced by other treatment activities." Xie said that he "no longer insists on things that cannot be changed, but is willing to accept other people's voices" and "has a relaxed mood." Li said that through treatment activities, "understanding the way of art creation is helpful to get psychological relaxation."

3.3.4. Satisfaction in the mandala

Participants gained satisfaction by completing the art activities. Gong said that MBAT was a "compensation for the past," satisfying her unfulfilled childhood wishes. Gong also talked about the satisfaction brought by the integrated works in the session (Figure 5).

This is the most perfect bike, guzheng (Chinese musical instrument), music, food, beach seagulls; everything I want. Particularly satisfactory. Finally, I returned, and I felt that the arrangement of heaven had come to an end for my mandala art activities.

Han experienced satisfaction when painting in the circle of a mandala (Figure 6).

FIGURE 6
"Stars" by Han. Reproduced with permission.

Because my name means "the stars," this starry sky can be combined into my name. And I like Van Gogh as a painter very much, and I am honored to express myself with his paintings. At that time, my companions all praised my good painting, and I felt very satisfied.

Participants found satisfaction through the demonstration, self-expression, and completion of their art works. Painting in a circular space gave participants a stronger feeling of completion. For many, this activity also met an unfulfilled childhood desire to love art.

3.3.5. Confidence in the mandala

Participants gained confidence through the mandala group activities. Han said that he "accumulated a lot of energy" and "gained confidence and strength" in his work. Wang said that the activities were "of great help to confidence," changing the mentality of self-distrust and helping her gain confidence in overcoming difficulties.

3.3.6. Courage in the mandala

Participants gained the courage and strength to face pain and overcome difficulties through sessions. Gong said that she gained the courage to face the trauma of her past. Liu noticed that he developed a better attitude, and that new ways of thinking gave him the strength to face and overcome difficulties. This was also reflected in his work (Figure 7):

I drew a circle of yellow light around me, something like lightning. This yellow light represents my courage to face difficulties, and it is a kind of power to help me achieve success. This work has given me the strength to face and overcome difficulties, and will play a positive role in my study abroad life and my future study and life.

3.3.7. Vision in the mandala

Participants found that the group activities stimulated their longing for the future. Liu was able to clarify his future direction, and Gong was able to look forward to the future once again.

FIGURE 7
"Lightning" by Liu. Reproduced with permission.

The most important thing about the whole activity is to have a little expectation for the future. I did not before, but now I seem to have a little expectation for the future. There are moments of harvest, healing brought by therapeutic activities, and my own reflection, which make me understand a lot. I do not worry about the past anymore. (Gong)

3.4. Theme 4: filling the inner space together

3.4.1. Communicate sincerely with group members in the same situation

Participants communicated with their group members sincerely, deepening their mutual understanding. They felt a sense of understanding and support and were sincerely moved when they received notes of encouragement and blessing from group members during the event. Yun said that "mutual understanding among group members" was improved through sharing experiences. Gong was healed by the understanding and resonance of the members:

I used to think I was alone on the road, but now I know that there may be countless people like me around the dark. They got my signal. I feel that I have been understood by everyone, and I really want to cry. It is bringing me to tears.

Xie shared finding "solutions to difficulties" within the group through communication, "learning the views on things," and receiving help through various experiences provided by group members. When Wang received letters from the group members, she felt "warm and moved" and "cured" by everyone's encouragement. Gong communicated with the therapists by sharing his works, finding a new understanding of these works, and discovering a new way of detecting problems (Figure 8):

I was particularly impressed by a painting, which was the time when I described my life. When sharing, the therapist said, my portrait is to cover my past wounds with quilts; at that moment,

FIGURE 8
"The time of life" by Gong. Reproduced with permission.

FIGURE 9
"Ant" by Shi. Reproduced with permission.

> I thought, "Oh, I can look at my life like this." When I face this pain again, I look at past problems not from the perspective of the past, but from the perspective of the present.

Through sincere communication with others, the participants found a new understanding of their own works, gained new perspectives on problems, discovered new strength, and developed a better understanding of themselves. Mutual understanding among the group members was deepened through sincere exchange and communication.

3.4.2. Emotional support from group members from the same cultural background

Participants found emotional support through the group. Xie confessed that "when you find yourself to be similar in the paintings of group members, you will resonate and influence each other." The group members felt recognition and mutual support, which enhanced the trust between them. Gong was recognized and supported by group members through participation in group activities, feeling "that their creation is very meaningful." Wang said that, through the sharing and unfolding of works, participants "trust each other more" and develop mutual understanding. It is this kind of support and trust that makes participants' relationships closer.

3.4.3. Interpersonal interaction activity among compatriot group members

Interpersonal relationships within the group improved across the sessions, creating a positive impact on interpersonal relationships in life outside the group. Gong said, "In the process of treatment, we can understand others and be more tolerant of other people's phenomena and voices." Through group activities, Gong learned to abandon prejudice, understand others, change his attitude toward others, and tolerate others. Shi described his experience of trying to open himself up in group activities by saying, "it is very important to actively communicate with each other in group activities" and "enhance openness" in group therapy. Li said that "the skills of communication and interpersonal communication have improved [and] the fear of
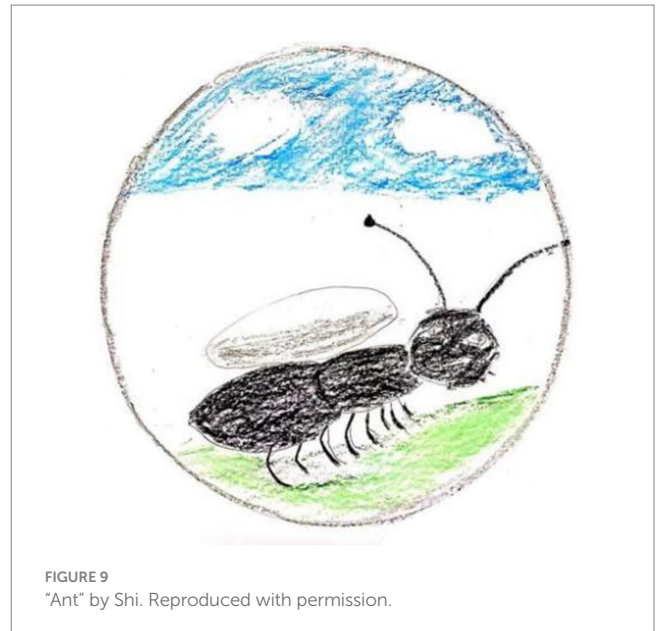
social life has been alleviated"; he learned how to "actively make friends." This indicated that the desire to establish and maintain harmonious relations with others increased through MBAT. Overall, an improvement in interpersonal relationships was seen across the participants.

3.5. Theme 5: opportunities to understand art therapy

3.5.1. Improve expression skills through unfamiliar opportunities

There had been some psychological discomfort with painting as an unfamiliar tool during the early days of the MBAT. In the process of the fine art of mandala, owing to a lack of painting skills and difficulty with image performance, participants experienced psychological anxiety and an inferiority complex. In addition, participants indicated that they felt bound when painting within the circle of the mandala. Although they felt psychological discomfort while painting, their techniques of art and imagery performance improved through the MBAT.

Gong felt that "painting is the biggest challenge" owing to his lack of skills, so it was "difficult to express his inner thoughts accurately." Shi felt "confused" when he encountered "difficulties in expressing an image of paintings" in his work. Li said that "it was difficult to draw and caused anxiety." Yun talked about feeling an "inferiority complex caused by insufficient painting skills" and even "discrimination by members in groups" in the creative process, owing to a lack of artistic ability. Shi also mentioned the sense of confinement or restriction created by the constraints of the mandala form (Figure 9).

In China, ants symbolize diligence and bustle. Shi expressed the tremendous pressure he felt in his busy life as an ant carrying a heavy burden. Shi believed that ants are trapped in circular rules, expressing his state of being bound and not free in life:

> In the process of drawing, I thought of my current state. I have a lot of pressure; I feel like an ant, with a big burden on my back,

leaving me out of breath. Drawing in the circular rule makes me feel bound and unable to move freely…there are many rules binding me.

Gong said that through the work process, his painting skills improved. Wang also mentioned the experience of improving her painting skills, "After MBAT, I feel that my drawing skills have been improved." Most of the participants said that during the process of MBAT, they felt the difficulty of art creation, but through the mandala activity, they gained a new experience of improvement in their art ability.

3.5.2. An insight into art therapy and mandala

Through the new experiences gained from MBAT, participants reported growing academically by participating in a group, especially as many of them were pursuing degrees related to expressive therapy. Han reported a deeper understanding of MBAT, which was of great help to his professional knowledge. This was an added benefit for participants in the physical education major, beyond personal growth. Wang shared that "in the art therapy activities, I have a certain understanding of art therapy and mandala."

4. Discussion

We explored the experiences of Chinese students studying in South Korea, who participated in a group MBAT. The participants were challenged during the early stages of group activities, as they worked to build trust and overcome their fear of being vulnerable, alongside exposing their shortcomings in front of people they did not know. This was consistent with findings by Park and Park (2022). However, the participants gradually became comfortable communicating and deepened their understanding of group members. As they built a sense of trust, they were no longer afraid of other people's views, and they found improved self-openness and positive self-expression. As in Kang (2021), participants with similar needs and conflicts can help solve each other's problems through building mutual understanding and support, experiencing resonance from the group, thus promoting self-expression and openness. Therefore, for participants to benefit from group activities, they must first be guided to relax, let go of negative expectations, and build trust, before they can receive support and encouragement.

Through the intervention, participants focused on themselves, uncovering a better self-understanding and channel for self-expression. The participants enjoyed the process of painting in the mandala style, and experienced the value of focusing on the here and now. MBAT enables participants to understand the beauty of the painting process itself and find value in focusing on the present and self. The mandala's circular form invites an obvious center, creating a point of focus (Riedel, 2002). It is thus clear that mandala art lends itself to creating self-awareness. These positive outcomes are consistent with similar studies (Kim and Kim, 2015; Kang, 2018; Park and Park, 2022).

The intervention helped participants understand their hearts. Riedel (2002) showed that through mandala art, people can easily gain self-awareness and input, and can better understand their internal situation through a sense of immersion. The participants in this study stated that they were able to examine themselves objectively through

collective mandala fine arts psychotherapy activities. The mandala can thus be a channel for self-insight and self-discovery. This finding aligns with Kang's (2018) study, in which the mandala helped participants find personal healing and discover themselves. This group of Chinese students studying in South Korea reported great value in understanding themselves better, exploring their needs, and identifying areas for growth.

The participants agreed that the mandala functioned as a channel for self-expression, consistent with Kim and Choi's (2003) MBAT study. They also reported mastering new self-expression methods, consistent with Kim and Chun (2021).

Stress, anxiety, and depression were relieved through the sessions, and the participants came to consider mandala work as a new decompression method to promote mental peace and stability. A previous study (Judith, 1998) showed consistent results to our study, finding that MBAT was helpful in alleviating conflict and stress. Besides, studies have pointed out that depression can be overcome through MBAT (Sreetha et al., 2021). MBAT allows group members to verbalize stress (Lee, 2011); this could allow stressed, anxious, and depressed Chinese students in South Korea to make positive changes, bringing attention and healing to their inner selves.

The participants experienced the pleasure of creation and psychological relaxation. They gained satisfaction through the completion of their art works, improving their self-confidence, gaining the courage to face difficulties, building a sense of security, and clarifying future goals and expectations. The creative process can create an overall comfortable environment that brings positive emotional experiences. The mandala's constrained form is special in that it creates both a safe haven for spiritual reconciliation and identity (Jung, 1973) and protects individuals from the outside world, creating a safe psychological space (Smitheman and Church, 1996).

Creating a mandala also helped the participants change their mentality and be more relaxed, while accepting the difficulties in their lives. This is consistent with Smitheman and Church (1996), who found that the constraints and features of the mandala circle contribute to relaxation. In addition, MBAT has been shown to promote psychological and physiological relaxation (Kim and Kim, 2015; Park and Park, 2022).

The participants had the opportunity to gain insight into other group members' hearts and visualize their unconscious world; the art works they created promoted feelings of self-satisfaction and pride of achievement. When drawing the mandala patterns, participants felt a strong sense of perfection, consistent with Smitheman and Church (1996).

Moreover, the participants improved their confidence in overcoming difficulties and gained a high degree of self-confidence through sessions. This was consistent with Park and Park's (2022) finding that group mandala promoted satisfaction, self-confidence, and positive self-awareness. Through this experience, participants could achieve their internal and external balance and regain self-confidence (Dahlke, 1999).

Creating complete mandala art works helped participants gain the courage to face difficulties and strength to overcome them. This was in line with the findings by Park and Park (2022). Kim and Choi (2003) also proposed MBAT to promote psychological preparation and the strength needed to accept difficulties among individuals.

Mandala therapy has been proven helpful in activating hidden spiritual strength, adjusting people's energy, and integrating their experience, promoting a positive attitude and helping overcome problems while gaining inner energy and strength (Moss, 2007; Babouchkina and Robbins, 2015).

Through the treatment activities, participants' direction for the future was clearly defined, their soul was cured, and their expectations for the future were raised. This aligns with Moss's (2007) finding that mandala art can help gain spiritual strength and find a sense of direction in both psychological and spiritual life. The participants also improved their sense of accomplishment and optimism about themselves and the future through the collective mandala art psychotherapy activities, in line with Park and Park (2022).

The participants had an expectation of healing when they joined the group. While they encountered emotional difficulties in this process, they also found courage and strength in facing difficulties. Participants expressed increased confidence, confirmed their inner strength, and reported having a better attitude toward overcoming difficulties in life.

The participants also reported receiving emotional support from group members through sincere communication, and interpersonal relationships improved through the group activities. This aligned with previous findings, whereby group mandala activities helped participants gain insight into distorted emotional and behavioral patterns, helping them become more energetic (Cha, 2012; Kim and Chun, 2015). These positive changes were brought about by taking part in activities together, sharing art works, engaging in communication, strengthening interactions with group members, learning to listen, accepting each other, overcoming isolation and shame, and discovering new energy (Park and Park, 2022).

The participants in this study were all Chinese students with similar cultural backgrounds, going through the similar experience of pursuing a doctoral degree abroad. This enhanced their ability to resonate with and support each other, build intimacy and trust, and generate a group identity. Shi shared the following:

> In this activity, we are all compatriots from China. We have received the same education and culture in the process of growing up, so I have a natural sense of affinity and trust for them. Moreover, our current situation is the same. We all left our families and came to South Korea to study for a doctorate. We are facing the same difficulties, such as language barriers, missing our hometown, academic pressure, and so on. So, we understand each other's plight, and we are more willing to share our inner feelings, hoping to help each other and grow together.

Through the process of drawing together, participants reported a positive emotional experience, which created a supportive atmosphere of belonging. This aligned with earlier findings by Park and Park (2022), who found that group mandala art promoted self-growth through the pleasure and benefits of collective participation.

Participants in the present study gained supportive relationships and a sense of identity, finding tolerance and understanding with the other group participants. This was consistent with Jun and Choi's (1998) finding that group mandala psychotherapy had a positive impact on interpersonal relationships. As individuals build empathy, they are able to communicate more smoothly with other members, understand each other better, and care for each other. This improves interpersonal skills and improves one's feelings toward both the self and others (Kim, 2012).

At first, the participants were uncomfortable painting a mandala because it was an unfamiliar skill; however, they ultimately developed the required artistic skills, which benefited them both academically and personally. When participants lacked the necessary artistic skills, they felt nervous, anxious, and inferior painting in front of others, fearing a negative evaluation from other group members. It is natural for people to avoid experiences that provoke anxiety (Newman et al., 2022). In learning something new, one must not only master the skill but also overcome fears and cognitive barriers (He, 2020). At the beginning of the event, although the participants felt psychologically uncomfortable with painting as an unknown tool, they mastered the ability and knowledge of art through actively experiencing mandala work, and confirmed an improvement in art expression technology and the deep understanding of mandala and art therapy. In sum, MBAT clearly benefited these Chinese doctoral students, providing them with a helpful tool to express their inner emotions while finding personal and academic growth.

It is worth noting that in the face of such positive findings, there are potential biases. As six of the participants were international students majoring in art and music, it may be easier for them to receive psychotherapy and be more familiar and open, perhaps making it easier to obtain positive results.

5. Conclusion

We found that Chinese doctoral students in South Korea worked through diverse emotional difficulties and built useful strengths through MBAT. They reported relieving their pain, challenging themselves, and expressing themselves better. Sharing pain in a supportive group gave them a sense of security and satisfaction, and improved their self-confidence and interpersonal relationships. MBAT provided a space in which they could paint their anxieties and navigate feelings of inferiority. Through the process of painting a mandala, they were guided to visit their inner self, reconnecting with the sense of order, achieving balance, and strengthening themselves. Drawing the mandala promoted self-awareness, self-expression, inner healing, and social ties. This safe psychological and emotional home gave participants a tool to express negative feelings, gain satisfaction, and build self-confidence, helping them generate the courage and strength they needed to face and look forward to the future.

However, this study had some limitations. The researchers were non-native English speakers. Therefore, while translating the direct quotations from the interviews, there is a possibility that the meaning was not captured accurately. Second, no follow-up interviews were conducted after the participants completed the eight art therapy sessions; therefore, the persistence of their meaningful experiences cannot be confirmed.

Regarding the future implications of this study, the researchers find huge value in conducting similar studies with pre- and post-assessments of depression, anxiety, and so on. Validating the clinical

impact of MBAT could greatly increase the reach of such an intervention. The researchers recommend a subsequent continuous in-depth research protocol to provide various MBAT programs. If a long-term scheme of MBAT is designed and participants can fully experience the program, richer research results can be obtained. It is hoped that concluding this intervention will help participants complete their studies more effectively and achieve their ideal as well as future career goals, enabling them to ultimately return home safely with both personal and academic growth.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Jeonju University, Korea, IRB was approved. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

YM: Writing – original draft. KK: Supervision, Writing – review & editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The effectiveness of a rational-emotive intervention on teachers' unconditional self-acceptance, perfectionism, and pupil control ideology

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Introduction: The present research aimed to investigate the effectiveness of a Rational Emotive Behavior Therapy (REBT) intervention on in-service teachers.

Methods: A quasi-experimental 2-group (intervention vs. control) × 3-time (pre, post-test, follow-up) design was applied to explore to what extent the REBT interventions help teachers increase their level of unconditional self-acceptance as the primary outcome and decrease their perfectionism tendencies and pupil control ideology as secondary outcomes. The sample consisted of 100 in-service teachers assigned to either the intervention group ($n = 50$) or the control group ($n = 50$). The experimental group received a 6-week intervention program. Every session was held weekly and lasted 90−120 min. The Unconditional Self-Acceptance Questionnaire (USAQ), Pupil Control Ideology Scale (PCI), and Perfectionism Inventory Scale (PI) were used to collect data. This study used a mixed model ANOVA 2 × 3 for data analysis.

Results: The results indicated that in the experimental group, there was a statistically significant increase in unconditional self-acceptance level from pre-test to post-test, which remains significant at the 6-month follow-up. Likewise, there were no statistically significant differences in unconditional self-acceptance levels between the post-test and 6-month follow-up in the intervention group.

Discussion: These findings prove that REBT interventions are effective in increasing teachers' unconditional self-acceptance.

1 Introduction

In the context of globally fast changes, including the educational context, the teaching profession is considered to be a very stressful profession (Brady and Wilson, 2022), among the high-risk jobs for mental disorders (Jerrim et al., 2020), stress being considered as a key factor in leaving the profession (Brady and Wilson, 2022). Teachers' stress has a lot of negative consequences: job turnover (Kim et al., 2020), job performance and school effectiveness (Asaloei et al., 2020), anxiety (Potter, 2021), and burnout (Candeias et al., 2021). Teachers have to face the demands coming from (1) *the school principal*, who wants very good school results from the students, for a higher place in the school hierarchy; (2) *parents*, who want their children to have

the most effective teaching methods, to gain a high level of information required for excellent school results; (3) *students*, who want well-trained teachers, applying technology in teaching, knowing how to manage classroom conflicts and other problematic situations; and (4) *society*, who wants from a teacher to be a good educator, a good parent, a good husband/wife, a model citizen because she/he is qualified to educate. Besides the fact that it involves so many responsibilities and a high level of stress, being a teacher is a profession with a fairly low level of rewards, compared to other professions that involve an equal number of years of study (Toropova et al., 2021).

Every teacher perceives these stress sources differently depending on the teacher's personality, beliefs, and ability to cope with stressful situations. Also, teachers' stress was identified as a strong predictor of teachers' PCI (Aftab and Khatoon, 2013), and teachers' authoritarian attitude (punishment as a strategy to disciple students) was identified as being positively related to high levels of stress and frustration (Bernard, 2016). Furthermore, in their study, Samfira and Sava (2021), concluded that teachers' authoritarian/custodial ideology is also positively correlated with irrational beliefs, insufficient self-control, hypercriticism, and perfectionism (high standards for others, approval seeking, concern over mistakes, and perfectionistic automatic thoughts) and negatively correlated with unconditional self-acceptance.

Because of the high relevance of stress in the teaching profession, many studies have focused on interventions meant to reduce stress (see Obiweluozo et al., 2021 for REBT-based interventions; Bonde et al., 2022 for mindfulness-based interventions; Dike et al., 2021 for cognitive behavioral therapy and yoga interventions) or increase the well-being of teachers (Kidger et al., 2021). Whereas mindfulness meditation promotes self-compassion, it is not the only way to promote self-compassion. Albert Ellis, the founder of rational emotional behavioral therapy (REBT) (Ellis, 1977), highlighted the role of unconditional self-acceptance, a closely related term to self-compassion, as being a healthy concept, a rational response to irrational thoughts related to self-evaluation and self-esteem.

The current study is the first attempt to investigate the effectiveness of an REBT program aiming at increasing the level of unconditional self-acceptance in teachers, as this construct is essential for good mental health both based on theoretical accounts (Ellis, 1994) and empirical pieces of evidence as provided subsequently. Likewise, an intervention that primarily addresses the aim of increasing unconditional self-acceptance could also provide indirect positive effects on other constructs, such as teachers' level of perfectionism and the teachers' pupil control ideology (PCI), such constructs being relevant to teachers' well-being and positive teacher-student interaction.

1.1 Teachers' irrational beliefs

Irrational beliefs represent a very important concept in psychology literature. Irrational beliefs are considered rigid, extreme, and illogical (Evans et al., 2018) and represent non-preferential dogmatic evaluations of adverse situations, being at the same time considered unrealistic and powerful cognitions that lead to self-destructive behaviors and emotions (Trip et al., 2021). It is recognized that in many situations cultural stereotypes contribute to the development of irrational thinking (Beeghly, 2021). Ellis (2019a), analyzing irrational

and rational beliefs, sustained that an individual's irrational beliefs have a high biological basis than his rational ones and that irrational beliefs are more involved in individuals' mental health problems.

The teaching profession, by its nature, generates specific irrational beliefs. Studies that addressed teachers' irrational beliefs are very numerous (Nwabuko et al., 2020; Samfira and Sava, 2021). Authors in this research area concluded that teachers' irrational beliefs are strongly related to well-being (Ifelunni et al., 2022) and burnout or negative emotions, which impede the teacher's performance and affect the relationships with students (Huk et al., 2019). Also, Samfira and Sava (2021) found that teachers who manifest a high level of irrational beliefs have a custodial view of pupil control ideology that can be seen as profession-specific control beliefs.

Bernard (2016) identified a plethora of teachers' irrational beliefs such as: I must have constant approval from students, other teachers, administrators, and parents; events in my classroom should always go exactly the way I want them to; People who misbehave deserve severe punishment; those who do not do well at school are worthless; I must be in total control of my class at all times; I must find the perfect solution to all problems; I must be a perfect teacher and never make mistakes (see p. 211). Unfortunately, we still find them nowadays (Schellings et al., 2023).

Teachers' expectations that students "must" behave well, generally lead to frustration and failure. The presence of "must" represents a classic example of the use of irrational beliefs (Ellis, 2019b). Wilde (1996, p. 138–139) identified that teachers' irrationality is characterized by self-downing, demandingness, and catastrophizing, sustaining that numerous teachers believe that to be a good teacher means to be able to control the classroom and that their value as an individual is related to their success as a teacher: I have to be perfect all the time; If I fail as a teacher, I fail in life; Pupils who are behaving improperly are bad, or Pupils who are behaving improperly are bad. Afterward, Bernard (2016) identified four categories of irrational beliefs in teachers: (1) Self-downing; (2) authoritarianism; (3) demands for justice; (4) low frustration tolerance. The self-downing sub-scale refers to the very high stands that different teachers have set for themselves, which leads to the need for social approval. The authoritarianism subscale is related to teachers' intransigence towards their pupils' misbehaviors. Authoritarian teachers sustain severe punishment because they are not able to cope with students' misbehaviors. The demand for justice subscale refers to the teachers' needs to be listened to, to have an ideal collaboration with administrators, and to be involved in decision-making procedures. The last subscale low frustration tolerance is related to teachers' assumptions about teaching struggles. Many teachers tend to view teaching as a complicated and complex procedure, which requires a lot of effort on their part (Gkontelos et al., 2021). All these irrational beliefs are generally manifested as a reaction to four domains of teaching: classroom discipline, student learning, time and work pressure, and school administration-related issues (Bernard, 2016).

1.2 Teachers' unconditional self-acceptance

Different cognitive-behavioral interventions have been applied to identify and change irrational beliefs that hinder teachers' performance in the classroom (Ifelunni et al., 2022). Chadha et al. (2019) sustain

that Rational Emotive Behavior Therapy (REBT), developed by Ellis (1957), shows that an individual's appraisals of specific situations generate different emotional reactions and that individuals' psychological disturbance is determined by using different irrational thoughts processes in developing those appraisals. REBT is effective in the educational context because it helps teachers learn to control their emotions, reduce dysfunctional distress and job burnout, and behave in an acceptable manner in response to students' challenging behaviors (Onuigbo et al., 2020). The role of REBT in education is highlighted even by Ellis who stated that "I have always believed in the potential of REBT to be used in schools as a form of mental health promotion" (Ellis and Bernard, 2006, p. ix).

Ellis (1994) proposed a healthy concept, a rational response to irrational thoughts, related to self-evaluation and self-esteem defined as unconditional self-acceptance, meaning that "the individual fully and unconditionally accepts himself whether or not he behaves intelligently, correctly, or competently and whether or not other people approve, respect, or love him" (p. 101). Translated into beliefs, self-acceptance represents the rational belief that an individual is a valuable person just for existing, despite all the flaws and mistakes she/he does, this construct being considered essential for mental health (Ellis, 2019a) because individuals are satisfied with themselves.

What is necessary to highlight about the concept of unconditional self-acceptance is that being subject to mistakes, no individual works and behaves perfectly (Ellis, 2019a), and this aspect could prevent or reduce perfectionism. If an individual fails to perform very well in her/his work, does not make him automatically an unsuccessful person (Ellis, 2019a). In this case, the individual should consider that her/his performance was low, not that she/he is an unsuccessful individual (Artiran, 2019). But, at the same time, it is important to clarify that this type of mentality does not automatically lead to resignation, which assumes that an individual's weaknesses are appreciated or ignored (Dryden and Neenan, 2020) but rather involves active involvement in the struggle to diminish and/or eliminate weaknesses (Ellis, 2019a).

Research on unconditional self-acceptance found that a low level of unconditional self-acceptance correlates with depression, anxiety, anger, and neuroticism (Popov, 2019; Prihadi et al., 2019; Andronikos, 2021). High levels of unconditional self-acceptance were in general strongly related to mental health, happiness, self-esteem, life satisfaction, well-being, respect for the differences between individuals, and low levels of anxiety and depression (Vural-Batik, 2019; Bernard M. E., 2020). Unconditional self-acceptance also correlates positively with dispositional forgiveness (Porada et al., 2018), self-compassion and flourishing (Venet, 2019; Andronikos, 2021). These results could be used in counseling teachers when they show certain uncontrolled reactions towards some students, which they cannot explain later in discussions with the principals or parents.

In the educational context, different researchers showed that teachers' self-acceptance was positively correlated with well-being and mindfulness and negatively correlated with perceived stress and burnout (Bingöl and Batik, 2019; Sun et al., 2019; Corcoran and O'Flaherty, 2022). It is auspicious to mention that the decision to unconditionally accept ourselves can be viewed like any other decision we make in our life. At any moment, non-self-accepting individuals can decide to accept themselves as they are, all they need is to be willing to see their own life from multiple perspectives, and then, change those perspectives (Gran, 2021). Unconditional

self-acceptance incorporates the acceptance of oneself as a whole, without concern about approvals from other individuals (Bingöl and Batik, 2019). An unconditional teacher is not afraid to be authentic in relations with their students, to be a humanistic person (not only a humanistic teacher) rather than a controlling/authoritarian figure (Samfira and Sava, 2021). Likewise, as self-acceptance is related to the acceptance of others (Porada et al., 2018). Akaki et al. (2020) concluded that acceptance of others follows self-acceptance, a principle that should be taken into consideration when we have the intention to help individuals to accept others (e.g., at home or at work) for who they are. An individual who accepts others does not judge them, because nobody is perfect, does not try to change others, because every person has his own ideas, and avoids resentment, especially when they are in a superior position. The benefits of accepting others "as they are" could build strong relationships with students, could facilitate the understanding of another point of view, and could reduce the need of controling others (Lapshin, 2020).

One of the most important aspects of educational context is that increasing the level of unconditional self-acceptance has a positive effect not only on teachers but even on their students. In the same vein, Mitchell et al. (2018) sustained that pupils who felt that there are unconditionally accepted by their teachers were more inclined to be interested in the learning process and to develop an emotional attachment to school. One explanation is given by Venet (2019) who highlights that unconditional acceptance represents what children require to flourish. Additionally, the voice of teachers from different research (Kohn, 2005) concluded that unconditional acceptance represents an effective approach to helping pupils to become better individuals. Pre-service teachers and in-service teachers must be learned to make the difference between accepting pupils for *who* they are, not for *what* they do. In doing so, teachers will respond not only to students' different needs (emotional, social, or physical) but to a *whole* child, to an integrated self (Kohn, 2005). An optimistic aspect for teachers is to know that every stage of life could represent an opportunity to develop a higher level of unconditional self-acceptance (Guterman, 2020).

All these principles can be transferred into an educational context, where the level of teachers' unconditional acceptance could be seen as a valuable preventive resource in the successful teacher-student relationship, which has not been of much interest to researchers. An unconditional teacher is not afraid to behave with their students as she/he really is, being a more humanistic person than a controlling/authoritarian person (Samfira and Sava, 2021). Understanding the importance of unconditional self-acceptance in education, Kohn (2005) developed the concept of "unconditional teaching." In this regard, the author sustained that many teachers, because they are human beings, may not like all their students, but the difference for an unconditional teacher is that she/he tries hard not to play favorites (Kohn, 2005). Developing positive relationships with students requires not only that teachers unconditionally accept themselves, but also unconditionally accept their students. Even for students is also important to feel unconditionally accepted, by their teachers, because they are more likely to be involved in their learning activities and to develop an emotional attachment to school (Mitchell et al., 2018). Not only students but also pre-service teachers have the same expectations that their university teachers to unconditionally accept them and try to help them in their preparation for the teaching profession (Sevim et al., 2020).

Sezer et al. (2020) in their research conducted with school principals, found that unconditional acceptance, as a professional value, should be gained and developed through in-service training, to help teachers to understand the positive and negative consequences of this concept, both on themselves and on their students. Despite the high relevance for unconditional acceptance in educational settings there is a lack of studies on interventions aimed to increase the unconditional acceptance applied to teachers. Only articles applied to children, adolescents (Bernard et al., 2013), and students (Godin, 2010) has been identified so far.

The negative correlation between teachers' unconditional self-acceptance and irrational beliefs, anxiety, stress, depression, burnout, and perfectionism (Samfira and Sava, 2021; Yeo, 2022) and positive relationship with teachers' well-being (Bingöl and Batik, 2019), helped us considering that an intervention for increasing the unconditional self-acceptance is needed and appropriated for several important issue in the teaching profession.

1.3 Teachers' perfectionism

Perfectionism, as a complex and multidimensional personality trait, has received increased attention in the last decades, being widely investigated within different contexts (Hill et al., 2016; Stoeber, 2017; Samfira and Paloş, 2021). Experts define perfectionism as representing an unrealistically and exceedingly high standard of performance, if not impossible to meet, overly critical self-evaluation, over-sensitivity about others' evaluations, and a focus and striving for flawlessness (Stoeber et al., 2021). In a cross-temporal meta-analysis (1989–2016), conducted by Curran and Hill (2019), the results revealed that the levels of perfectionism have linearly increased, with recent generations perceiving that cultural changes for competitive individualism are more demanding to be perfect.

In educational settings, perfectionism represents an important issue because it has strong relations with achievements (Osenk et al., 2020). More than that, educational context sustains perfectionistic behaviors with both positive outcomes, when we refer to positive perfectionism, such as endorsement of mastery goals for teaching, high level of job satisfaction, flow experience during teaching, and proactive coping (Shim et al., 2020; Samfira and Paloş, 2021) but also negative ones, when we refer to negative or neurotic perfectionism, such as burnout, anxiety, academic procrastination, exhaustion, depressed mood, performance, and work-avoidance goal orientation (Cupido, 2018; Shirazizadeh and Karimpour, 2019; Horan et al., 2021; Serdar et al., 2021; Kilmen, 2022).

Ellis (2019a) mentioned that acceptance occurs when individuals think about themselves and others as imperfect, fallible individuals, who make mistakes. Continuing in the direction of acceptance, Ellis (2019a) sustains that unconditional self-acceptance allows individuals to seek excellence or others' approval not because of over-generalized needs, but to gratify personal desires. The strong relationship between perfectionism and acceptance is highlighted by Jibeen (2017) who claims that the distinction between conditional and unconditional self-acceptance reflects the distinction sustained by Hamachek (1978) between normal perfectionism, who strive for excellence without any negative effects and neurotic perfectionism, who need acceptance from others.

Translated the relationship between self-acceptance and perfectionism into the educational context, teachers' self-acceptance implies not only their acceptance as fallible or imperfect persons but also the acceptance of their students, as they also have the right to make mistakes. The acceptance of their negative/imperfect school experiences, according to the principles proposed by Ellis (2019a) supports a strong connection between unconditional self-acceptance, unconditional other-acceptance, and unconditional life-acceptance. The association between teachers' unconditional self-acceptance and perfectionism was addressed in previous research (Bingöl and Batik, 2019; Samfira and Sava, 2021), showing a negative correlation between unconditional self-acceptance and perfectionism. The more teachers accept themselves as they are, the less perfectionistic behaviors they will manifest. According to the model developed by Ryff and Keyes (1995), this approach has a positive contribution to teachers' well-being.

1.4 Teachers' pupil control ideology

Educational research has presented that teacher-student relationships are strongly connected with students' academic achievements, school engagement, prosocial behaviors, and attitudes toward school (Lippard et al., 2018; Longobardi et al., 2021). Students who have positive experiences with their teachers are able to trust and cooperate with them, can be engaged and persistent in challenging tasks, and feel safe in educational activities (Wanders et al., 2020). Perceiving their teachers as warm and caring people facilitates students' well-being and appreciation of their teachers (Wentzel, 2022). Although representing a classic concept, pupil control ideology is still valid in education (Conriquez, 2020; Samfira and Sava, 2021) and arouses interest.

Pupil control ideology strongly influences teacher-student relationships (Conriquez, 2020), so teachers will manage their classroom order and students' behavior according to their control ideologies (Ding and Wang, 2018). Pupil control ideology was defined by Willower et al. (1967), who developed the concept as being the teachers' beliefs about students' control in classrooms and schools. This ideology ranges along a continuum, from a humanistic orientation (low scores) to a custodial one (high scores). Teachers with a custodial view consider pupils' misbehavior disrespectful, and therefore, their relationships with students must be autocratic and hierarchical, strict discipline is considered a key to success. Their status is used as a tool to control and manage the classroom (Rideout and Morton, 2010). Custodial teachers show less democratic attitudes and behaviors in the classroom (Demir and Pismek, 2018). Certain researchers (Ding and Wang, 2018) consider custodial pupil control very harmful to children. On the other hand, teachers with a humanistic view are more inclined to consider that pupils have different needs and their relationship with students is warm with open communication. Humanistic teachers develop a democratic environment in the classroom, where students are asked to take an active role in the learning process and to take responsibility for their decisions (Rideout and Morton, 2010). Also, teachers prone to humanistic ideology are more focused on developing soft skills and those competencies considered to be necessary to succeed in their personal and professional life (Ding and Wang, 2018). But this

humanistic ideology could lead, in different schools, to their marginalization by the other teachers with a more custodial vision (Giannakaki and Batziakas, 2016). Even though it is a relatively old concept, we find current recommendations for organizing training programs in schools for teachers towards a more humanistic view (Gnanarajan et al., 2020).

To our knowledge, no research has focused on the relationship between the teacher's pupil control ideology and unconditional self-acceptance, except the study conducted by Samfira and Sava (2021), who showed a negative correlation between these two concepts. According to their results, accepting themselves and their pupils as they are, teachers accept that the world is a complex one and some things or events are sometimes out of their control, especially in the classroom.

To our knowledge, the present study represents the first research on the effectiveness of an REBT intervention in increasing unconditional self-acceptance for in-service teachers. Instead, we identify other interventions (e.g., acceptance and commitment therapy) to increase educators' self-acceptance (Barida and Widyastuti, 2019).

2 The present study

The present research aimed to examine the effectiveness of a cognitive-behavioral intervention with specific REBT techniques on the level of unconditional self-acceptance of primary, secondary, and high school teachers, as well as the robustness of these achievements during follow-up. We assume that *applying specific REBT techniques will significantly improve the teachers' unconditional self-acceptance scores (USAQ score) in the experimental group compared to the control group, which receives no intervention* (Hypothesis 1a). Also, we assume that *the improvements gained through intervention are maintained over time, six months follow-up* (Hypothesis 1b).

Second, due to the close relationships between unconditional self-acceptance, perfectionism, and pupil control ideology sustained in the previous study conducted by Samfira and Sava (2021), we aim to investigate if teachers' unconditional self-acceptance will influence the teachers' level of pupil control ideology and perfectionism. Increasing the level of unconditional self-acceptance will most likely impact the perfectionism level, as people who develop higher levels of unconditional self-acceptance tend to be more tolerant towards mistakes, therefore decrease their level of perfectionism. Likewise, people who decrease their levels of perfectionism, including decreasing the high expectations they put on others (pupils) are more likely to accept or tolerate pupils misbehaviors, and therefore, less likely to adopt a custodial view when interacting with pupils.

Therefore, we hypothesized that *increasing the teachers' level of unconditional self-acceptance through REBT intervention will lead to lower levels of perfectionism and a less authoritarian ideology* (Hypothesis 2).

Addressing these hypotheses is relevant for both theoretical and practical reasons. Increasing teachers' level of self-acceptance by applying a cognitive-behavioral intervention will directly contribute to the existing literature in this important domain and indirectly to a more positive learning environment in the classroom and teachers' well-being. The logic of obtaining this indirect effect is represented conceptually in Figure 1.

The practical reasons are to present an applicable model to help teachers understand these principles of unconditional self-acceptance and apply them to their well-being. As a possible consequence of this new, more rational view, teachers could develop the unconditional acceptance of others (e.g., their students, parents, colleagues) due to its positive outcomes, especially for their students, who need an unconditional teacher to develop and maintain a flourishing relationship (Venet, 2019). In his research, Bernard M (2020) sustains the need to teach and promote self-acceptance, and we consider that unconditional self-acceptance teachers are the most indicated adults to do this because, as Sezer et al. (2020, p. 176) sustain, teachers are seen as "social engineers who laid the foundations of society."

Another practical aspect is group intervention, which offers more opportunities for teachers to interact with colleagues and share their common experiences than individual intervention (Chenoweth et al., 2016). The intervention could be integrated into the Personal and Professional courses to help in-service teachers to understand and increase their unconditional self-acceptance and to decrease their perfectionistic beliefs and authoritarian ideology. These new gains will help them to have a positive mental state (well-being) and a better relationship with their students, colleagues, and principals.

3 Materials and methods

We followed TREND reporting guidelines, the standard for nonrandomized/quasi-experimental study designs (Haynes et al., 2021).

3.1 Participants

The participants of the study were 100 in-service teachers, with 50 teachers in the experimental group and 50 teachers in the control group. Participants were primary, secondary, and high-school teachers. First, the researchers determined the adequate sample size, for an effect size of 0.80 and a statistical power of 0.80, and the results claimed that 51 participants were needed for every experimental condition. A comparison of the experimental and control group variables revealed no significant differences for some variables such as the number of participants (experimental: 50, control: 50), gender (experimental: 82% females, control: 84% females), and age (experimental: M = 40.10; SD = 7.58, control: M = 44.40; SD = 8.37). Significant differences were observed for variables such as school level (experimental: 14% primary school teachers, control: 42% primary school teachers), teaching experience (experimental: M = 15.36; SD = 8.95, control: M = 21.67; SD = 9.16), and environment (experimental: 30% urban, control: 54% urban).

3.2 Procedure

The eligibility criteria for the teachers' selection were the school level - secondary school teachers – regardless of their teaching experience and the school location - from Timisoara city (Romania) or peri-urban - for a better adaptation to the teachers' schedule. Finally, there were accepted even primary school teachers, due to the interest from their part and the principals. As a method of recruitment,
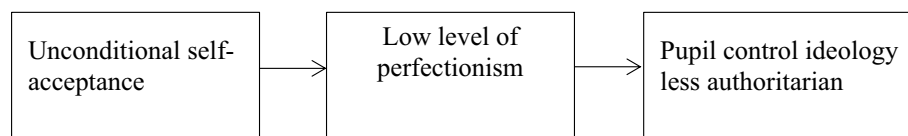
FIGURE 1
A conceptual and operational analysis of the relationship between unconditional self-acceptance, perfectionism, and pupil control ideology.

we opted for self-selection. In the first stage there was a discussion with the school principal about the main scope of the intervention program and to ask permission. In the second stage, the principal transmitted the information about the intervention/research to all teachers for self-selection. After selecting the teachers who agreed to be part of the experimental group, we proceeded to recruit the teachers for the control group who were selected from different schools than the experimental group, to avoid group contamination. All teachers, from the experimental and control group participated in the study voluntarily, without any financial remuneration.

Concerning ethical considerations, the research was approved by Research and Ethics Committee from West University from Timisoara, being under the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. All the teachers who accepted to participate in this research signed at the recruitment stage of the research, an Informed Consent Form, according to the Ethical standards in research with human subjects. Also, they were assured that could give up their study whenever they want, without any negative consequences. The three questionnaires were administered individually, in a paper-and-pencil format.

3.3 Measures

3.3.1 Unconditional self-acceptance questionnaire

We measured teachers' unconditional self-acceptance with *The Unconditional Self-Acceptance Questionnaire (USAQ)*, a 20-item measure, using a seven-point Likert scale, from almost always false to almost always true. The scale was developed by Chamberlain and Haaga (2001) in line with the REBT perspective. A high score reflects a high level of unconditional self-acceptance. Sample item includes *"I believe that I am worthwhile simply because I am a human being" and "My sense of self-worth depends a lot on how I compare with other people."* The higher score indicates a higher level of unconditional self-acceptance. The USAQ scale reliability is 0.72 (Chamberlain and Haaga, 2001). The scale was translated from English into Romanian by the authors and then independently back-translated by a third translator. The scale was previously used to assess Romanian teachers' unconditional self-acceptance by Samfira and Sava (2021).

3.3.2 Pupil control ideology scale

We measured teachers' pupil control ideology with the *Pupil Control Ideology Scale (PCI)*, a 20-item measure on a five-point Likert scale, from strongly disagree to strongly agree. The scale was developed by Willower et al. (1967). A high score reflects a more custodial orientation and a low one reflects a more humanistic orientation. Sample items include *"It is more important for pupils to learn to obey*

rules than that they make their own decisions" and *"Teachers should consider revision of their teaching methods if these are criticized by their pupil"* (reversed). The PCI scale reliability is 0.91 (Willower et al., 1967). The scale was translated from English into Romanian by the authors and then independently back-translated by a third translator.

3.3.3 Perfectionism inventory scale

We measured teachers' perfectionism with *Perfectionism Inventory Scale (PI)*, a 59-item measure, using a five-point Likert scale, from totally disagree to totally agree. The scale was developed by Hill et al. (2004). The sub-scales of the PI are: Concern over Mistakes, High Standards for Others, Need for Approval, Organization, Planfulness, Perceived Parental Pressure, Rumination, and Striving for Excellence. Sample item includes *"To me, a mistake equals failure"* (Concern over Mistakes) and *"I have little tolerance for other people's careless mistakes"* (high standards for others). The reliability coefficient for the overall level of perfectionism was 0.91 (Hill et al., 2004). The scale was adapted for Romanian teachers by Samfira and Maricuțoiu (2021).

3.4 Intervention

The aim of the intervention was to teach the participants of the experimental group the REBT principles of self-acceptance. The objectives were (1) to increase the teachers' level of unconditional self-acceptance and (2) by accepting oneself, teachers will more easily accept others (pupils). Theoretical perspectives underlying the intervention program were based on two reference books: Ellis and Dryden (1997) - the chapter "Teaching the Principles of Unconditional Self-Acceptance in a Structured Group Settings" and Ellis (1998) - the chapters "Using Unconditional Self-Acceptance" and "Using Unconditional Acceptance of Others to Control Your Anxiety." The intervention focused on teaching the following topics: the principles of unconditional self-acceptance, self-esteem, the ABC framework of REBT, irrational ego beliefs in the educational context, the zig-zag technique, tape-recorded disputing, the rational-emotive imagery, and the shame-attacking exercises. The researchers organized the exercises related to these topics, as well as the homework following the specifics of the participants' profession (for educational context). The organization of the program and the content of the homework for each session were supervised by an expert in REBT techniques, from the West University of Timisoara.

In experimental groups, the intervention was delivered face-to-face. The participants in the experimental groups were organized according to their schedules. This aspect has influenced the group size (16–18 teachers). The intervention was delivered in all groups by the first author with Ph.D. in psychology (educational psychologist), with experience in career counseling. Before de intervention begins, the

researcher had six meetings with the REBT expert, to discuss the main difficulties in applying REBT technics in the educational area. Also, the same REBT expert mentored the researcher during the period of interventions, to help her in managing challenging situations.

The researcher delivered the intervention in the schools, in the classrooms, to be as easy as possible for the teachers, who ended their classes or were going to have classes. For each group, the established schedule was maintained (day and hour) and the same classroom was used for all meetings. The researcher arrived at the school 30 min before every meeting, to have enough time to prepare the presentation and the incentives (sweets, juices, and mineral water). The punctuality was respected by every participant. The intervention to increase unconditional self-acceptance was administered for 6 weeks. Every session was held weekly and lasted between 90 min, in groups with 5 teachers and 120 min in groups with 12 and 15 teachers. The time was adapted to the group size, to have enough time to help every teacher.

The subjects from the control groups were not subjected to any kind of intervention program. The teachers filled in the same set of questionnaires in the same period and in the classroom, as the teachers in the experimental group, to respect the same conditions as the experimental group. Out of the total of 52 teachers who accepted to participate in the intervention to increase the level of unconditional self-acceptance, 2 of them did not attend at least four sessions and were excluded. The total number of the experimental group remains at 50. To increase compliance and adherence of the group, teachers who attended the minimum number of sessions (4/6) received a Certificate of attendance, for their annual self-assessment. The deliverer has mentioned this aspect from the first meeting, for increasing their motivation to participate. Also, the teachers were offered in each module, sweets, juices, and mineral water.

4 Results

The research used a mixed model ANOVA 2 (Group: intervention vs. control) × 3 (Time: baseline vs. post-test vs. 6-month follow-up), with Group as a between-subjects factor and Time as a within-subjects factor. The main outcome is unconditional self-acceptance (the USAQ score). The interaction effect indicated mixed findings. There was a significant interaction between the group and time for the multivariate test, Wilks Lambda = 0.93, $F (2, 94) = 3.60$, $p = 0.03$, partial $\eta^2 = 0.07$, and a marginally non-significant interaction effect for the univariate test - $F (2, 190) = 2.83$, $p = 0.06$, partial $\eta^2 = 0.03$. These inconsistent findings are most likely due to low statistical power in testing the interaction effect, as *post-hoc* pairwise comparisons using the Bonferroni correction support the interaction effect. In the intervention group, there is a statistically significant increase in the USAQ score from the pre-test to the post-test ($p < 0.001$), which remains significant at the 6-month follow-up ($p < 0.01$). Meanwhile, there were no statistically significant differences in the USAQ scores in the control group, either from pre-test to post-test ($p = 1.00$) or from pre-test to follow-up ($p = 0.36$). Likewise, there were no statistically significant differences in the USAQ scores between post-test and follow-up, neither in the intervention group ($p = 1.00$) nor in the control group ($p = 0.83$; Table 1).

In the case of secondary outcomes, there was no statistically significant interaction effect either for the perfectionism level – $F (2, 190) = 1.21$, $p = 0.30$, partial $\eta^2 = 0.01$, or for the level of pupil control

TABLE 1 Mean scores and standard deviations of outcome measures at pre-test, post-intervention, and 6-month follow-up assessment for USAQ (primary outcome) as well as for PCI and PI (secondary outcomes).

Measures/ Time	Experimental group			Control group		
	N	Mean	SD	N	Mean	SD
PCI						
Pre-test (T1)	50	62.74	8.72	50	62.66	8.59
Post-test (T2)	50	60.18	9.70	50	62.24	9.15
Follow-up (T3)	50	61.22	9.23	47	61.77	9.41
PI						
Pre-test (T1)	50	183.30	32.46	50	168.80	28.81
Post-test (T2)	50	178.48	30.78	50	168.82	29.43
Follow-up (T3)	50	176.82	34.64	47	169.77	24.80
USAQ						
Pre-test (T1)	50	84.18	10.53	50	92.47	9.13
Post-test (T2)	50	90.16	11.19	50	93.51	9.20
Follow-up (T3)	50	89.32	11.99	47	95.09	14.15

ideology – $F (2, 190) = 1.12$, $p = 0.33$, partial $\eta^2 = 0.01$. For investigating the association between unconditional self-acceptance, perfectionism, and pupil control ideology, we computed change scores (i.e., from pre-test to post-test). We found a statistically significant negative association between the magnitude of change in the USAQ score and the magnitude of change in the overall perfectionism – $r (98) = -0.33$, $p < 0.001$, two-tailed test. Participants who learned to a higher extent how to accept themselves unconditionally decreased to a higher degree their perfectionism level. Likewise, there was a statistically significant positive association between the magnitude of change in the perfectionism level and the degree of change in the pupil control ideology – $r (98) = 0.27$, $p < 0.01$, two-tailed test. Participants who reduced their perfectionism level to a higher extent were also less willing to endorse custodial beliefs and more willing to endorse humanistic beliefs on pupil control. Similar results were obtained when conducting the analyses on change scores from pre-test to 6-month follow-up measurements instead of pre-test to post-test change scores, which highlights the findings' robustness. To test whether the magnitude change in the USAQ scores indirectly affected pupil control ideology via the perfectionism level, we used Process Analysis v. 4.1 (Hayes, 2022). The indirect effect of change in USAQ scores on change in PCI scores was marginally not statistically significant both when looking at change scores from baseline to post-intervention – standardized indirect effect of −0.10 [−0.23 to 0.00] and when looking at change scores from baseline to follow-up – standardized indirect effect of −0.10 [−0.22 to 0.00].

These results demonstrate that the effectiveness of the intervention is successful in increasing the level of unconditional self-acceptance, our primary dependent variable, and the result is stable across the 6-month follow-up.

5 Discussion

The purpose of the present research was first to examine the effectiveness of a cognitive-behavioral intervention on the level of

unconditional self-acceptance for school teachers, as well as the robustness of these achievements during follow-up (6 months later). Based on the research results, we concluded that the intervention designed to support and increase the teachers' level of unconditional self-acceptance was efficient in helping teachers to internalize the philosophy of self-acceptance, accepting themselves as fallible and imperfect human beings, through a process of understanding how their beliefs and thoughts process influences their emotional and behavioral well-being. These findings are in line with other studies, which have shown that REBT interventions are efficient in increasing the level of unconditional self-acceptance in different contexts: educational (Pasaribu and Zarfiel, 2019), sport (Knapp et al., 2023), clinical (Artiran and DiGiuseppe, 2022), and the general population (Crişan et al., 2022). There are no studies analyzing the effectiveness of interventions to increase teachers' unconditional self-acceptance.

Relating to the follow-up, the results showed that there were no significant changes from post-test to follow-up. This outcome highlights that the teachers' unconditional self-acceptance achieved at the post-test remained stable over time, in this case, 6 months. This result is a hopeful one because demonstrates that teachers could maintain in time their rational beliefs about themselves, their children, and the teaching profession.

For the control group, the results showed that there were no significant changes from pre-test to post-test. This result reflects what DiGiuseppe et al. (2002) sustain that "achievement of unconditional self-acceptance (USA) is a difficult, though possible task, that requires time and commitment" (p. 229). Also, Bernard M (2020) recommended, that teachers and principals must be trained on how to improve their self-acceptance and combat their self-depreciation. The same thing could be said about the absence of any statistically significant differences in the USAQ scores between post-test and follow-up, highlighting the idea that unconditional self-acceptance is developed only through coaching (Palmer and Williams, 2021). Even for the individuals who attend intervention programs to change their irrational beliefs, it is quite difficult, due to the "biological tendency of humans to behave irrationally" (Ellis, 1976, p. 5). These findings support the first hypothesis (1a and 1b) of the present research, about existing a significant improvement in teachers' unconditional self-acceptance scores (USAQ score) from the experimental group compared to the control group, which did not receive any intervention and about maintaining these changes over time (6 months later in this case).

In the case of secondary outcomes, the results showed that applying an REBT intervention to increase teachers' unconditional self-acceptance does not have statistically significant consequences in decreasing teachers' perfectionism and teachers' custodial/authoritarian ideology. Even though many studies recommended REBT techniques to reduce perfectionistic beliefs and the theory sustained that by adopting an unconditional self-acceptance philosophy the individuals will accept themselves as fallible and imperfect persons (Cohen, 2019), an REBT intervention with specific tasks for increasing unconditional self-acceptance has not enough impact for teachers to reduce their level of perfectionism. The main reason could be related to the specific of the teaching profession which, due to the high standards promoted, encourages perfectionistic tendencies in teachers (Cupido, 2018; Shim et al., 2020). Student grades rank schools and for this reason, many principals put great

pressure on the teachers to get very good results from their students. In this stressful context, teachers are somewhat forced to become perfectionists. But, at the same time, recent studies (Hill, 2022) sustain that school has also the role to help students to cope with high expectations, pressure, and unhealthy perfectionistic standards.

Analyzing the result, which sustains that there is no statistically significant effect of an REBT intervention to increase teachers' unconditional self-acceptance on decreasing teachers' pupil control ideology (the custodial/authoritarian view), we could sustain what other researchers concluded after applying a specific intervention to decrease teachers' pupil control ideology – that changes in the direction of reduction the authoritarian view is easier to describe than to do, and are often unsuccessful (Hoy and Miskel, 1978). Even though the statement is very old, it remains current because no recent studies have been identified in the direction of pupil control ideology reduction. Similar to the previous outcomes (Samfira and Sava, 2021), admitting that there is a negative correlation between teachers' unconditional self-acceptance and pupil control ideology (the custodial/authoritarian view), the intention to increase the level of unconditional self-acceptance does not imply automatically significant changes in teachers' pupil control ideology (decreasing the authoritarian view). Both results align with other papers that applied REBT intervention to increase unconditional self-acceptance but without significantly affecting all variables included in their research (Crişan et al., 2022).

Accepting that some results were not statistically significant, as in the case of perfectionism and control ideology, we could not omit the close relationship that exists between the unconditional self-acceptance, perfectionism, and pupil control ideology sustained by previous studies (Samfira and Sava, 2021). Consequently, we explored the association between unconditional self-acceptance, perfectionism, and pupil control ideology and computed change scores (i.e., from pre-test to post-test). We opted for change scores because being quasi-experimental research, the two groups were not randomized and they were not equivalent in their mean scores in the pre-test (T1) and the mean scores for USAQ were higher in the control group than in the experimental group. Analyzing the data, we identified a statistically significant negative association between the magnitude of change in the USAQ score and the magnitude of change in the overall perfectionism scores. These results highlight what Cohen (2019) claims, that being an unconditional self-accepting person means, among others, "being comfortable with your imperfections, letting go your demand for perfection, understanding that making mistakes … does not diminish your value as a person" (p. 31). A significant result was also found for pre-test to 6-month follow-up measurements, the result highlighting the robustness of our findings.

Consequently, we found a statistically significant negative association between the change in the perfectionism score and the change in the pupil control ideology from the pre-test to the post-test. These results could be interpreted that teachers who decrease their perfectionistic level, attending the intervention with REBT techniques, are more willing to approve a humanistic belief in pupil control. This result is in line with other studies (Samfira and Sava, 2021), which found that teachers who adopt a more humanistic view of pupil control ideology, have lower levels of perfectionism. A similar statistically significant result was found for pre-test to 6-month follow-up measurements, sustaining our findings' robustness. Maybe

teachers have had positive experiences regarding unconditional self-acceptance, which helped them to accept mistakes and imperfections in their lives and also in their students' behaviors (a lower level of perfectionism), which consequently lead to a more humanistic ideology in relationships with their students. Adopting this humanistic ideology, more flexible, more open, and more closed to the children, teachers could help themselves to cooperate with other teachers, to meet the different needs of their students, become the educators they wish to be, and also could help the students through developing a positive teacher-student relationship (Allender and Sclarow-Allender, 2015).

To sum up the discussion of results, this is the first research that applies an REBT intervention to increase in-service teachers' unconditional self-acceptance. There are few studies on children (Bernard et al., 2013) and university students (Pasaribu and Zarfiel, 2019), but none on teachers. Another strength point is related to the success of the intervention. The intervention has received accreditation from the Ministry of Education to be part of the professional development programs for teaching staff. It could be used as a prevention program as teachers often are confronted with environments where they could experience high levels of anxiety (Liu et al., 2022). The third strength point is represented by the length of the intervention (6 weeks) compared with other interventions on unconditional self-acceptance, which took place for only 7 days (Crişan et al., 2022). As DiGiuseppe et al. (2007) sustain, achievement of unconditional self-acceptance requires time. The fourth strength point is represented by the participants, who were in-service teachers, with experience between 1 and 40 years in dealing with students, not pre-service teachers, who are supposed to be more idealistic in their beliefs.

5.1 Limitations and future directions

Similar to any other research, this paper has limitations. The major limitation of the present research was the non-random allocation of the teachers into the experimental and control groups. Due to their busy schedules, teaching in two or three schools, the randomization of the teachers was impossible. Because of this there were differences in the composition of the two groups. In the experimental group, there were mostly high school and middle school teachers than in the control group, the latter including more primary school teachers than the experimental group. This could be the main reason for the differences in unconditional self-acceptance pre-test scores, the unconditional self-acceptance baseline values being higher in the control group than in the experimental group.

Future studies with a more robust design, such as randomizing teachers into experimental and control conditions, are welcomed to replicate the current results obtained from a quasi-experimental approach. This will lead to a more balanced distribution of primary, secondary, and high school teachers in the experimental and control groups to have an overview of their beliefs about teacher-student relationships.

Another recommendation is to introduce REBT principles in teacher education programs, for personal and professional development, to help future teachers to become more rational teachers and to be able to apply these principles in school settings or to prevent work-life conflict (Ogakwu et al., 2022, 2023).

6 Conclusion

The findings of this research indicated that an REBT intervention designed to increase the teachers' level of unconditional self-acceptance had success, with teachers' mean scores significantly increasing from pre-test to post-test, after 6 weeks. The increased scores remained stable across the 6-month follow-up, these findings showing that teachers internalized the unconditional self-acceptance philosophy and applied it. In the control group, there were no statistically significant differences in the USAQ scores, neither from pre-test to post-test nor from pre-test to follow-up. These results show us that a specific intervention is necessary when there is an intention to increase an individual's unconditional self-acceptance.

Another important result is the association between changes in the scores for unconditional self-acceptance, perfectionism, and pupil control ideology in the expected directions. As the level of unconditional self-acceptance increases, there is a reduction in the perfectionism level. Likewise, as perfectionism decreases among teachers, they are less prone to endorse custodial views on their students. However, the link between these constructs is relatively weak despite these correlational findings. Therefore, increasing the levels of unconditional self-acceptance through an REBT intervention will not automatically decrease their levels of perfectionism and custodial/authoritarian ideology. These findings could be interpreted that it is necessary either to improve the intervention with specific techniques for perfectionism and pupil control ideology to decrease their perfectionistic beliefs and custodial ideology.

Overall, the 6-week REBT face to face group intervention provides an efficient way in which people could increase their level of unconditional self-acceptance, a gain of great value for their ability to cope with stressful events in educational settings. Despite some evidence for additional indirect positive outcomes, such as a lower level of perfectionism, and a friendlier interaction with students, additional 1 or to 2 sessions should be introduced in a future version of the program to confront more directly the perfectionism of teacher that often accompanies low levels of unconditional self-acceptance.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by West University of Timisoara Institutional Review Board (Research Ethics Committee). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

ES has contributed to the conceptualization, coordinated the collection of the data, applied the intervention, wrote the original draft, and edited the final manuscript. FS has contributed to the conceptualization, design, methodology, writing, and reviewing of the

final manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The effect of animal-assisted intervention on undergraduate students' perception of momentary stress

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Background: Student mental wellness is a priority in higher education. Animal Assisted Interventions (AAIs') are gaining momentum in universities across North America (Dell et al., 2015).

Aims: This study explored the relationships between AAIs', demographic variables, and perceived momentary stress among university students.

Methods: Using a descriptive correlational design, students completed a Perceived Momentary Stress questionnaire that included the Stress Numerical Rating Scale-11 (Stress NRS-11) and the Visual Analog Scale (VAS) to measure perceived stress before and after AAIs'. Data were analyzed using R (4.1.2) (R Core Team, Vienna, Austria) to identify relationships between students' perceptions of momentary stress, AAIs' and sociodemographic and demographic variables.

Results: First-year students, female students, and students identifying as sexual minorities were found to benefit the most from AAIs'.

Conclusion: Results from this study reflect relationships between exposure to animal-assisted interventions and student demographic variables.

Introduction

Animal Assisted Interventions (AAIs') are emerging as a student wellness initiative in post-secondary education. As a broad term, AAIs' can include animal-assisted activities that involve spontaneous, unstructured interactions between an individual and a dog facilitated by a volunteer or trained professional. AAIs' have been used for years in clinical environments such as mental health, cardiology, neurology, oncology, pediatrics and long-term care (Kamioka, et al., 2014). In these populations, the general benefits of AAIs" include a reduction in anxiety, depression and pain (Kamioka et al., 2014).

In non-clinical environments such as post-secondary institutions, AAIs' can support student learning, enhance socialization and provide therapeutic physical, physiological and psychological benefits (Fine, 2006; Morrison, 2007; Wells, 2009; Stern and Chur-Hansen, 2013; McCune et al., 2014; Beetz, 2017; Santaniello et al., 2020; Parbery-Clark et al., 2021; Howell et al., 2022; Peel et al., 2023). Furthermore, individuals participating in AAIs' have reported reduced anxiety and stress, enhanced mood, improved socialization, decreased loneliness and isolation, and increased perception of overall well-being (Crossman and Kadzin, 2015; Dell et al., 2015; Binfet et al., 2018; Parbery-Clark et al., 2021; Peel et al., 2023). For students attending post-secondary institutions, the higher education experience is a significant stressor (Garrett et al., 2017; Manigault et al., 2018). Although most universities offer student health and psychological services to address well-being, students have difficulty accessing programs due to scheduling conflicts and lengthy wait times (Oswalt and Riddock, 2007; Dell et al., 2015). Furthermore, these strategies may not facilitate socialization and connection with others. Student mental health can be enhanced through active socialization with animals, animal handlers, and peers (Adams et al., 2017; Peel et al., 2023). Evaluating the effectiveness of initiatives such as AAIs' to address student mental health is essential to informing and sustaining student wellness programming in post-secondary institutions (Durand-Bush et al., 2015; Grajfoner, et al., 2017; Parbery-Clark et al., 2021).

Background

Relocating from family and friends, peer socialization, transitional academic challenges, and new or increased autonomy and responsibility are potential stressors both new and returning post-secondary students may experience, thus impacting their stress and coping mechanisms (Cleary et al., 2011; Horgan et al., 2018; Parbery-Clark et al., 2021). As such, university students are more likely to be predisposed to financial, academic, physiological, psychological, and social stressors (Eisenberg et al., 2011; Bedewy and Gabriel, 2015). The stressors encountered by students may be chronic, acute, or momentary. Momentary stressors can be diverse and may include unexpected challenges, time pressures, social interactions, or other circumstances that elicit a stress response in an individual (Do et al., 2021). Momentary or perceived immediate stress can be measured by asking participants to rate the degree of stress they perceive to be experiencing at a particular moment (Barker et al., 2016).

An estimated one-fifth of university students experience stress, depression, or anxiety, and 4.4% seriously consider suicide (American College Health Association, 2019). Perceived high stress can negatively impact students' academic, personal, and professional success, and innovative interventions should be explored to reduce student stress and enhance well-being (Ward-Griffin et al., 2018). Researchers estimate that 22.3% of at-risk students seek formal support through university student services (Pendry et al., 2018). First-year students transitioning to university, students who perceive themselves as not fitting in, and those with less developed skills related to emotional intelligence have been identified as at risk for poor mental health, social isolation, and lower academic achievement (Casel Organization, 2020).

Theories have been established to support the effectiveness of AAIs', including emotional contagion (animals' positive emotions are transmitted to humans), facilitating social interaction, opportunities for positive reinforcement, and expectations that participation will have an impact on well-being (Crossman and Kadzin, 2015; Parbery-Clark et al., 2021). Building on these theories, increasing integration and corresponding research to investigate AAIs' and mental health outcomes in university students have emerged over the past decade (Parbery-Clark et al., 2021; Huber et al., 2022). In university students, phenomena of interest related to AAIs' have included relationships between AAIs' and physiological stress, psychological stress responses, and mental health (Parbery-Clark et al., 2021; Huber et al., 2022).

The results from randomized control trials (RCT), cohort, and case–control studies have been mixed regarding the benefits of AAIs' (Parbery-Clark et al., 2021; Huber et al., 2022). Crossman et al. (2015) conducted an RCT to assess the effects of animal therapy on college students' stress. Sixty-seven students participated in the study. Variables explored included anxiety, mood, attitude toward animals and prior experience with animals. Participants were randomly assigned to treatment (7–10 min of animal interaction), no-interaction control (images of animals were shown to participants) and no-treatment control (no animal exposure, visual or real life). A significant reduction in anxiety and affect was found in the Pre-post change scores. Positive affect was found in the treatment group. An RCT study by Binfet (2017) examined whether a single 20-min animal therapy session would decrease students' self-reported stress and homesickness and if the benefits would last two weeks. Students were randomly assigned to treatment (randomly assigned to the volunteer handler team) or control conditions. Using a pre-post design, the treatment group showed a significant decrease in perception of stress and homesickness. The control group reported increased perceived stress, and there was no significant difference in self-report measures between the groups two weeks post-interaction. The findings from this study align with other research findings aimed at enhancing overall well-being. Barker et al. (2016) evaluated the efficacy of a therapy dog program in improving the well-being of university students. In this study, 694 participants completed a pre-post survey indicating their perceived stress rating immediately prior to and after visiting with the therapy dogs one week before final exams commenced. 92.9% of participants reported a decrease in stress immediately after the interaction. Ward-Griffin et al., (2018) also evaluated the efficacy of a therapy dog program in improving the well-being of university students. Two hundred and forty-six participants completed a pre-post questionnaire immediately prior to and after animal interaction. Results indicated an increase in reduced negative affect, increased perceived support and decreased perceived stress compared to participants in the delayed-treatment control group. Limitations with RCTs examining the impact of animals on university students include sample size and control group measures. Furthermore, the evidence to support an acute reduction in psychological, physiological and cognitive health outcomes is inconclusive (Bjick, 2013; Crump and Derting, 2015; Huber et al., 2022).

While there is evidence to support the relationship between AAIs' and individuals' mental health, a gap in the literature regarding the relationship between AAIs', mental health and individuals' demographic variables is evident, notably in populations of university students.

Therefore, there is a need to investigate the influence AAIs' may have on university students from different backgrounds, including demographic variables and programs of study. The results of such studies may be used to enhance AAI programming in post-secondary institutions.

Purpose

This study aimed to answer the following question: What are the relationships between AAIs', perceived momentary stress, and demographic variables among university students?

Drawing on existing literature, we hypothesized that significant relationships exist between demographic variables, perceived momentary stress, and the encounters of undergraduate students with AAIs'.

Methods

Ethical statement

Ethical approval for this study was granted by the Institutional Research Ethics Board (#100319). Participants provided informed consent, ensuring their rights, confidentiality and the option to withdraw.

Animal assisted intervention program and sessions

At a Western Canadian University, an AAI program called PAWSS (Pets Assisting With Student Success) was established to support student wellness, social integration, and academic success. The AAI program involved implementing support resources consisting of handler-dog teams to interact with students. Dogs participating in the program were domestic pets owned by their respective handlers. A local animal wellness organization screened and evaluated the dogs for temperament, socialization and obedience to confirm suitability for participation as wellness animals in the AAI program. Requirements for the animals included current health checks and up-to-date vaccinations, while the handlers were required to have a recent criminal background check and vulnerable sector check. In addition to ensuring handler-dog team suitability, the researchers completed an institutional hazard assessment documentation and obtained private liability insurance. Signage indicating the purpose of the study, dates and times of AAI sessions was posted on general information boards across the university.

Weekly AAI drop-in sessions (no registration was required) were scheduled for 60 min, with students determining their level of engagement and length of time spent interacting with the handlers and animals. If students felt uncomfortable, they were reminded that they could terminate their participation in the session. Handler-dog teams were encouraged to take breaks and leave the session if their animal showed signs of stress, disinterest, or fatigue. The dogs were kept on leash and prohibited from interacting with other dogs.

Three to four dog handler teams were present at each session, with a handler-student ratio of 1:3–4 for the purposes of enhancing

socialization (Binfet et al., 2018). Sessions occurred in a Home Care lab within the Faculty of Nursing. The lab replicated a home environment with a living room, bedroom and kitchen area. During the sessions, handler teams were situated in the living room area, with the dogs either sitting on mats in front of their handler or beside their handler on a couch, as this encourages students to sit close to the dogs and facilitate human-animal touching. Upon student initiation, handlers shared information and answered questions about their animal and, depending on the animal, demonstrated tricks (roll over, catch a ball, shake a paw). For students requesting to participate in the practice of dog performance (tricks), this was agreed upon with the handler. Engagement between handler and student about their overall university experience (what they liked/did not like about university), program of study, and lived experience with animals was dependent on the individual student.

Study design

A quantitative descriptive correlational design was used for this study. Participants completed a Perceived Momentary Stress and demographic questionnaire (Appendix A). The Perceived MomentaryStress survey included The Stress Numerical Rating Scale-11 (Stress NRS-11), a Visual Analog Scale (VAS) to measure students' perceived momentary stress (perception of stress at this very moment). Participants were asked to indicate their momentary stress before and after AAIs'. The VAS is widely and empirically used in assessing perceived stress (Lesage et al., 2012). The Stress NRS-11 was used with permission and developed by Karvounides et al. (2016). The SNRS-11 has been evaluated in several studies, demonstrating moderate to strong construct validity and moderate concurrent validity (Karvounides et al., 2016). The tool consists of a 10-point Likert scale, with 0 indicating "No Stress" to 10 indicating "Worst Stress Possible." The researchers developed the demographic questionnaire composed of nine fixed-response questions, including faculty of study, year of study, academic term, gender, age, student status, pet owner, attendance, and length of time. Researchers chose these socio-demographic variables to understand further the relationships between AAIs', demographic variables and perceived momentary stress among university students.

Human subjects

The AAI sessions were held as drop-in sessions and were open to all students. Those who self-identified the need/desire to participate and met the inclusion criteria (18 years of age and older and enrolled in courses at the university) were invited to participate in the study. Students were excluded from the study if they were unable to treat the animal humanely; had a medical condition (s) in which exposure to AAIs' would worsen current health; were immunocompromised; had open wounds/sores; were severely allergic to dogs and were under 18 years of age. Researchers emphasized that participation in the study was voluntary and would not impact students' ability to interact with the animals. At each AAI session, students received an information letter, and informed consent was provided to students participating in each AAI session who met inclusion criteria.

TABLE 1 Descriptive statistics for stress scores before and after and their difference by sociodemographic and demographic variables.

Variable	n	Stress before		Stress after		Difference in stress (after − before)	
		M (SD)	Mdn (IQR)	M (SD)	Mdn (IQR)	M (SD)	Mdn (IQR)
PAWSS visit							
Not first time	257	3.957 (2.696)	4 (4)	2.809 (2.021)	3 (3)	−1.148 (3.371)	−2 (4)
First time	289	2.799 (2.12)	3 (3)	3.166 (1.772)	3 (2)	0.367 (3.057)	0 (3)
Year of study							
First	260	3.942 (2.691)	4 (4)	2.827 (2.062)	3 (3)	−1.115 (3.424)	−2 (4)
Second	142	2.585 (1.947)	2 (2.75)	3.359 (1.862)	3 (2.75)	0.775 (3.109)	1 (3)
Third	100	2.72 (2.075)	3 (3)	2.92 (1.412)	3 (2)	0.2 (2.629)	0 (3)
Fourth	44	3.682 (2.559)	3 (3.25)	3.023 (1.886)	3 (2)	−0.659 (3.277)	−1 (4)
Term							
First	474	3.361 (2.495)	3 (3)	3.019 (1.931)	3 (2)	−0.342 (3.351)	−1 (5)
Second	72	3.236 (2.353)	3 (2)	2.861 (1.689)	3 (2)	−0.375 (2.904)	0 (3)
Faculty							
Arts and Science	216	4.097 (2.679)	4 (4)	2.773 (2.073)	2.5 (3)	−1.324 (3.426)	−2 (4)
Business	52	3.019 (2.524)	3 (3)	3.192 (1.951)	3 (2.25)	0.173 (3.167)	0 (4)
Fine Arts	182	2.632 (2.058)	2 (3)	3.269 (1.787)	3 (2)	0.637 (3.104)	1 (3)
Health	21	3.095 (1.947)	3 (4)	2.857 (1.389)	3 (2)	−0.238 (2.406)	−1 (4)
Nursing	48	2.771 (1.765)	2 (2.25)	3.188 (1.646)	3 (2)	0.417 (2.413)	0 (2.25)
Other	27	3.963 (2.993)	4 (5)	2.37 (1.597)	2 (3)	−1.593 (3.261)	−2 (4.5)
Age							
18–19	211	4.047 (2.667)	4 (4)	2.806 (2.067)	3 (3)	−1.242 (3.392)	−2 (4)
20–21	143	2.895 (2.367)	3 (3)	3.273 (2.001)	3 (2.5)	0.378 (3.478)	0 (4)
22–24	96	2.583 (2.014)	2 (3)	3.146 (1.576)	3 (2)	0.562 (2.786)	0.5 (3)
25+	96	3.229 (2.231)	3 (2.25)	2.865 (1.6)	3 (2)	−0.365 (2.746)	−1 (3)
Gender							
Female	332	3.678(2.628)	3(4)	2.973(2.063)	3 (3)	−0.705 (3.529)	−1 (5)
Male	199	2.734(1.999)	3(3)	3.141(1.583)	3 (2)	0.407 (2.669)	0 (3)
Other	15	4.067(3.173)	3(5)	1.667(1.496)	1 (2)	−2.4 (3.397)	−2 (4.5)
International							
No	532	3.325 (2.45)	3 (3)	3 (1.907)	3 (2)	−0.325 (3.291)	−1 (5)
Yes	14	4.071 (3.316)	4.5 (6.5)	2.929 (1.639)	3 (2)	−1.143 (3.416)	−1 (4.75)

Data collection

Using a convenience sample of students enrolled at the university, recruitment occurred during 23 AAI sessions over two academic terms. Consenting participants were asked to complete the questionnaire (Appendix A) up to the "Time In" indicator and "Pre-AAI Momentary Stress Rating." Participants rated the perceived stress they were experiencing by responding to the question "What is your level of stress right now?" prior to entering AAIs'. Participants retained their survey for the duration of the session. After the visit, participants completed the "Time out" indicator and "Post-AAIs' perceived momentary stress rating." This rating captured the participant's perceived stress when responding to the question." What is your level of stress right now?" post AAIs'.

Data analysis

The investigators used R (version 4.1.2) for data analysis. Descriptive statistics were computed, including the mean (M), standard deviation (SD), median (Mdn) and interquartile range (IQR) of the stress scores before and after AAIs' and the difference in stress scores. Variables examined included whether a student was a first-time or returning visitor, year of study, term of study, which faculty they were enrolled in, and their age, gender, and domestic or international status (Table 1).

To determine the relationship between variables and whether there was a statistically significant difference in the median stress scores before attending AAIs' and the median stress scores after attending AAIs' between first and returning participants, the Brunner Munzel nonparametric test was conducted (Table 2). Additionally, this

TABLE 2 Brunner Munzel test results for stress scores before and after visiting PAWSS AAI session and the overall change in stress scores based on student type and demographics.

Brunner Munzel test results			
	Factor	W_{BM}	*p*-value
Stress before PAWSS AAI session	New vs. Returning	5.197	<0.001
	International vs. Domestic	−0.604	0.556
	First vs. Second term	−0.400	0.690
Stress after PAWSS AAI session	New vs. Returning	−2.481	0.013
	International vs. Domestic	−0.121	0.906
	First vs. Second term	−0.445	0.657
Change in stress scores	New vs. Returning	−6.362	<0.001
	International vs. Domestic	0.753	0.464
	First vs. Second term	0.283	0.778

W_{BM} = Test statistic for the Brunner Munzel test.

TABLE 3 Kruskal−Wallis test results for stress scores before and after visiting PAWSS AAI session and the overall change in stress scores based on student type and sociodemographic.

Kruskal-Wallis test results				
	Factor	*H*	*df*	*p*-value
Stress before PAWSS AAI session	Year of study	31.245	3	<0.001
	Faculty of study	35.853	5	<0.001
	Age	28.808	3	<0.001
	Gender	15.076	2	0.0005
Stress after PAWSS AAI session	Year of study	8.406	3	0.0383
	Faculty of study	12.580	5	0.0277
	Age	7.464	3	0.0585
	Gender	10.667	2	0.0048
Change in stress scores	Year of study	44.557	3	<0.001
	Faculty of study	53.551	5	<0.001
	Age	39.887	3	<0.001
	Gender	25.491	2	<0.001

H, Test Statistic for the Kruskal–Wallis test.

test was used to assess the relationship in both the median stress scores before attending AAIs' and median stress scores after attending AAIs' between students in their first and second term and between international and domestic students. To evaluate relationships and whether a statistically significant difference existed in the median stress scores post AAIs' based on students' year of study, faculty, age, and gender, the Kruskal Wallis (Table 3) and Multiple Comparison Dunn's tests were performed. Furthermore, these tests were conducted to analyze the distribution of the difference in stress scores by sociodemographic and demographic variables. A significant level of 5% was used throughout the analysis to indicate significant outcomes.

Results

Descriptive statistics were calculated using a sample size of 546 university students. Most students were domestic, female, under age 21, attending their first year at university, and this was their first time at an AAI session (Table 1).

Relationships observed in median stress scores before animal-assisted intervention: demographic analysis

A statistically significant relationship was found among median stress scores before AAIs' between first-time and returning visiting students ($W_{BM} = 5.1967$, $p < 0.00001$), with first-time students reporting higher momentary stress ratings (Table 2). A significant difference in the median stress scores before AAIs' between students in their first, second, third, and fourth year of studies were found (H (3) = 31.245, $p < 0.00001$) with statistically significant differences in median stress scores between first- and second-year students ($Z = 4.9991$, $p < 0.00001$), and first- and third-year students ($Z = 3.8070$, $p = 0.0007$). These findings suggest meaningful variations in stress levels before AAI sessions based on students' years of study. Additionally, a significant difference in the median stress scores before AAIs' between students from different faculties (H (5) = 35.853, $p < 0.00001$) was found with median stress score differences between students enrolled in Arts & Science and Fine Arts ($Z = 5.6363$, $p < 0.00001$; Table 3). These findings suggest that the faculty the student is enrolled in may be associated with variations in stress levels before AAIs'.

A statistically significant difference was found in the median stress scores between students of different age groups before they attended an AAI session (H (3) = 28.808, $p < 0.00001$) (Table 3). The age groups with statistically significant differences found in median stress scores between students aged 18–19 and 20–21 ($Z = 4.245$, $p = 0.00010$) and 18–19 and 22–24 ($Z = 4.5625$, $p = 0.00003$) were found. A significant difference in the median stress scores before AAIs' between students whose gender identity is female, male, or other (H (2) = 15.076, $p = 0.0005$) (Table 3) was found with statistically significant differences in median stress scores between students who identify as female and students who identify as male ($Z = 3.8155$, $p = 0.00041$).

Relationships observed in median stress scores after animal-assisted intervention: demographic analysis

The relationship between returning students and first-time students showed a statistically significant decrease in reported stress ratings among returning students ($W_{BM} = -6.3617$, $p < 0.00001$) (Table 2). The relationship among years of study showed a statically significant difference in the median stress scores between students in their first, second, third, and fourth years of studies (H (3) = 44.557, $p < 0.00001$) (Table 3). Additionally, a statistically significant relationship was found in the median differences in stress scores between first- and second-year students ($Z = -6.2884$, $p < 0.00001$) and first- and third-year students ($Z = -4.0417$, $p = 0.00027$). A significant difference in the median difference in stress scores based on students' faculty (H (5) = 53.551, $p < 0.00001$) with statistically significant differences in median stress scores between Arts & Science and Fine Arts students ($Z = -6.7038$, $p < 0.00001$) and Arts & Science and Nursing students ($Z = -3.8720$, $p = 0.0015$). Evidence of a significant

difference in the median difference in stress scores based on students' age group (H (3) = 39.887, $p < 0.00001$) was found with statistically significant differences in median stress scores between students aged 18–19 and 20–21 ($Z = -5.1474$, $p < 0.00001$) and 18–19 and 22–24 ($Z = -5.2396$, $p < 0.00001$). A significant difference in the median difference in stress scores based on students' gender identity (H (2) = 25.491, $p < 0.00001$) was found with statistically significant median differences in stress scores between students who identify as female or male ($Z = -4.4579$, $p = 0.00002$) and students who identify as male or other ($Z = 3.0962$, $p = 0.00392$) (Table 3).

Discussion

In this study, momentary reductions in stress were identified after students engaged in AAIs'. This finding is consistent with other studies that found stress was reduced after AAIs' (Binfet, 2017; Delgado et al., 2018; Ward-Griffin et al., 2018). Participation in AAI sessions reduced perceptions of momentary stress levels among first-year students, students between the ages of 18–19, students identifying as female, students who identified as gender non-binary, and students who attended multiple AAI sessions throughout the academic year. Stressors related to the post-secondary experience include daily frustrations, interpersonal conflicts, pressure, transitions, and self-imposed expectations that lead to physiological, emotional, and behavioral stress reactions (Gadzella and Masten, 2005). While some individuals can cope with stress and anxiety, others may experience adverse stress reactions that impact their well-being. Although there are mixed findings in studies exploring student experience in post-secondary institutions, AAIs' have been demonstrated to reduce student stress and help build support systems (Fine, 2006; Bjick, 2013; Binfet and Passmore, 2016; Huber et al., 2022).

Experience of animal assisted intervention and session time

Findings from this study add to the empirical evidence that merely being in a room with and interacting with an animal can reduce students' self-reporting of momentary stress. Animals present the potential for socialization and positive relationships based on acceptance and unconditional positive regard (McCune et al., 2014; Muckle and Lasikiewicz, 2017). Participation in AAIs' may have provided students with a distraction from personal and/or academic stressors by providing a stress-reducing experience (Muckle and Lasikiewicz, 2017), resulting in enhanced overall mood. This is supported by previous studies where interactions with animals increased the overall mood of students attending post-secondary institutions (Crossman et al., 2015; Ward-Griffin et al., 2018).

AAIs' provide a less intrusive experience than traditional student services may require (Muckle and Lasikiewicz, 2017). The interaction offers acceptance and encourages sharing. As dogs are natural social catalysts, the sessions may have provided greater opportunities for students to socialize, meet other students, engage with handlers, and receive social support. Positive social support can protect individuals from the pathogenic influences of stressors (Wells, 2009) and the inhibition of maladaptive coping strategies (Muckle and Lasikiewicz, 2017).

First-year students: transition and decreases in momentary stress following animal-assisted intervention

Entering post-secondary education is a significant life change for individuals (Denoyan and Macaskill, 2013; Kroshus et al., 2021; Parbery-Clark et al., 2021). It is a stressor, particularly affecting first-year students (Hamaideh, 2011), which may explain why 47.6% of study participants were first-year students. During the first two years of post-secondary education, increased student depression increased anxiety, and transitional stress have been reported (Rathnayake and Ekanayaka, 2016; Metzger et al., 2017; Sakellari et al., 2018; Othman et al., 2019; Kroshus et al., 2021). Transitional academic challenges, relocating from established support networks such as family and friends, and socialization challenges meeting new friends are variables attributed to increased student depression and anxiety (Cleary et al., 2011; Denoyan and Macaskill, 2013; Horgan et al., 2018; Conley et al., 2020; Kroshus et al., 2021). Building new social support networks can be challenging as individuals engage in interpersonal risk related to acceptance when meeting new friends, which can further heighten anxiety (Kroshus et al., 2021). While university provides the opportunity for personal and academic growth, perceived stressors can contribute to declining mental and physical wellness (Field et al., 2013; Horgan et al., 2018). Research has revealed that AAIs' can be especially beneficial for first-year students experiencing anxiety and loneliness (Binfet and Passmore, 2016; Parbery-Clark et al., 2021).

Gender: decreases in momentary stress following animal-assisted intervention

A statistically significant difference in momentary stress after AAIs' was found in all participants. In the study, 60.8% of study participants identified as female. Of the female participants, 38.6% were between 18 and 19. Studies examining stress among university students indicate that female students experience more stress than their male counterparts (Garrett et al., 2017; Wenjuan et al., 2020; Batabyal et al., 2021), which may help explain why many females participated in this study. In the transition to post-secondary education, increased anxiety and depression leading to a more significant decline in well-being have been reported in female students (Wenjuan et al., 2020). When faced with stressors, female university students have been found to secrete higher salivary cortisol levels than males (Garrett et al., 2017; Batabyal et al., 2021). Compared to males, females have also reported increased levels of perceived stress (Garrett et al., 2017; Batabyal et al., 2021). When transitioning to post-secondary education, females have been identified as having worse initial psychological functioning, including decreased self-esteem, increased depression, and anxiety than males (Conley et al., 2020). Female undergraduate students have been found to rely more on emotional connections and social networks to cope with stressors than males (Welle and Graf, 2011; Conley et al., 2020; Batabyal et al., 2021). In female undergraduate students, Crump and Derting (2015) concluded that animal-assisted intervention was associated with a statistically significant decrease in psychological stress reaction, as reflected in Stress Arousal Checklist scores. Still, physiological measures of decreased stress,

including heart rate and cortisol levels, were not statistically significant. For female students, AAIs' may be a significant intervention in facilitating interpersonal connections to help manage stress and promote psychological well-being.

Students identifying as gender non-binary were found to have a statistically significant decrease in momentary stress following AAIs'. Sexual orientation has also been identified as a factor influencing student stress, with sexual minorities experiencing a greater prevalence of mental health disorders than persons who identify as heterosexual (Flentje et al., 2020). Sexual minority stress refers to stress individuals experience related to prejudice, discrimination, concealment of sexual identity, and internalization of societal stigma. As such, individuals who identify as a sexual minority experience more stress than students who identify as heterosexual (Flentje et al., 2020). In the transition to post-secondary education, the experience of chronic stressors, including discrimination based on race, gender, ethnicity, and nationality, has been reported as higher in people who identify as sexual minorities (Flentje et al., 2020). Undergraduate students who identify as a sexual or gender minority have been found to report greater levels of stress and a higher frequency of internalizing emotional responses such as depression, anxiety, and distress compared to heterosexual students (Riley et al., 2016). Therefore, it is important to explore relationships between gender, stress reduction interventions, and institutional mental health supports such as AAIs'.

Limitations

As this was a convenient sample of self-selecting students who chose to attend AAI sessions, the demographics and results may not reflect all university students. The unequal distribution between international students (14) and domestic students (532) makes generalizability difficult. Furthermore, this study was conducted within the context of our undergraduate university, and therefore, generalizability to other post-secondary institutions may be limited. The current study sample size may not have captured students who are hesitant about interacting with dogs, and thus, this should be explored. Engagement between participant and handler was not captured as an intervening factor in student perception of stress, which may also be a limitation. Consistent with many AAI research studies, the risk of conscious or unconscious bias related to self-reporting is a limitation (Parbery-Clark et al., 2021). To enhance the external validity of our results, future research could explore AAIs and the intricacies of socio-demographic variables in diverse post-secondary educational settings, such as trade colleges or primary and secondary schools in both rural and urban settings.

Conclusion and implications for future studies

Stress reduction and improving student mental health have emerged as institutional priorities in postsecondary education. Post-secondary institutions can proactively promote student mental health by establishing readily accessible support resources and networks to mitigate physiological and emotional stress responses during university or college transition (Kroshus et al., 2021). Findings from this study reveal that relationships exist between exposure to animal-assisted interventions and student demographic variables. Notably, decreased stress following exposure to AAIs' was identified among first-year students, female students, and students identifying as a sexual minority. To enhance the external validity of our results, future research could explore AAIs and the intricacies of socio-demographic variables in diverse post-secondary educational settings, such as trade colleges or primary and secondary schools in both rural and urban settings. Longitudinal design or mixed methods approaches delving deeper into university students' perceptions and experiences should also be conducted. The study should also be applied to other student populations.

By exploring relationships between AAIs', sociodemographic and demographic variables, and perceived momentary stress, this study aspires to illuminate the nuanced ways AAIs' could be tailored to optimize stress reduction and well-being among university students.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

AC conceived the original idea for the study, carried out the experiment and completed data collection. KB and NV completed the data analysis, interpretation and critical revisions to the analysis section of the manuscript. AC, JV, and SJ established the manuscript outline and participated in the critical revision of the manuscript as well as the completion of the final manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Appendix A

PAWSS

Perceived Momentary Questionnaire (DROP IN)

| Is this your first time attending P.A.W.S.S.?   YES   NO

If No, How many times this year have you attended P.A.W.S.S? _____ | **Year of Study**

1   2   3   4 | **Term**

1ˢᵗ   2ⁿᵈ |

In which faculty are you a student?

Arts & Science

Business

Continuing Education

Fine Arts & Communications

Health & Community Studies

Nursing

| **Age**

18-19   20-21   22-24   25+ |

| **Do you have a pet?**

Yes   No |

| **Gender**

Male   Female   Other |

| **Student Status** |

Time In: _____

Stress Numerical Rating Scale-11 (Stress NRS-11)

What is your level of stress RIGHT NOW?

        0   1   2   3   4   5   6   7   8   9   10
No Stress   Worst Stress
Possible

Please fill out the rest of the survey after your P.A.W.S.S. Session!

Time Out: _____

What is your level of stress RIGHT NOW?

        0   1   2   3   4   5   6   7   8   9   10
No Stress   Worst Stress Possible

Stress and emotion in a locked campus: the moderating effects of resilience and loneliness

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The aim of this study is to investigate the dynamic relationship between Chinese students' emotions and stress during a strict lockdown period in a university setting and the context of a global pandemic. Dynamic structural equation modeling was used to investigate the moderating role of resilience and loneliness in this relationship. The participants consisted of 112 students. Based on loneliness and resilience measures and the intensive tracking of emotional stress over a 21-day period, the results of data analysis indicated that the students' overall levels of positive emotions were low and relatively independent of negative emotions. Negative emotions were significantly autoregressive and their baseline was closely related to the individual's overall feelings of stress and loneliness levels, fluctuating with feelings of stress. The results confirm the hypothesis that resilience helps to stabilize emotions. Individuals with low resilience may be more emotionally sensitive in confined environments, while receiving social support may help to alleviate low moods.

1 Introduction

1.1 Covid-19, lockdown and emotion

The end of 2019 saw the onset of the novel coronavirus (SARS-COV-2) epidemic which subsequently spread globally and changed people's lives in many ways (Herbert et al., 2021). To control the scale of transmission, the Chinese government advised all residents, especially school students, to maintain a physical distance from other people (Wang et al., 2020). Confinement restricts individual freedom and conflicts with their actual life and social needs. As the duration of the epidemic and lockdown, the related perception of risk increase, uncertainty and anxiety also increased (Marzana et al., 2022).

In general, isolated and closed environments can have widespread negative psychological effects on the general population (Di Blasi et al., 2021). A series of research studies have explored the impact of social isolation and loneliness during the COVID-19 pandemic on the mental health of different populations. The results indicate that feelings of loneliness have a negative impact on both health and happiness, and can lead to issues such as anxiety, depression, sleep problems, and suicidal tendencies (Czeisler et al., 2020; Loades et al., 2020; Palgi et al., 2020; Duong, 2021).

To control the scale of transmission, the Chinese government advised all residents to maintain a physical distance from other people (Wang et al., 2020). During the COVID-19 pandemic, a large number of colleges and universities locked down their campuses in

varying degrees to restrict student access. A review during the epidemic also showed an association between social isolation and an increased risk of mental health problems in young people, including depression, anxiety, and other psychiatric disorders. It was also strongly associated with the duration of loneliness (Loades et al., 2020). approximately 25% of Chinese student participants had increased levels of anxiety during the pandemic (Cao et al., 2020). Studies from other countries have also demonstrated that isolation is associated with negative psychological conditions among college students (Sahu, 2020; Wathelet et al., 2020). There are also studies that show differences in the degree of performance and tolerance of limitations in life among different personalities (Quigley et al., 2022). loneliness do not necessarily correspond with external social isolation, emphasizing the discrepancy between social expectations and social experiences (Labrague et al., 2021). From social cognitive model perspective, individuals with strong feelings of loneliness may be more sensitive to threat and experience deeper levels of stress (Cacioppo and Hawkley, 2009). Compared to people with low levels of loneliness, they may exhibit higher levels of negative impact and lower levels of positive impact (van Roekel et al., 2014). Feelings of loneliness may play a moderating role between the experience of stress and emotional levels (van Roekel et al., 2015).

1.2 Resilience

Resilience is defined as the ability to recover from adversity, threat, or trauma (Feder Fred-Torres et al., 2019). Resilience can benefit individuals in two dimensions: on the one hand, it helps resist the negative effects of adversity, and on the other hand, it can enhance individual well-being and promote positive development (Kaye-Kauderer et al., 2021). Stress and setbacks are an integral part of daily life. The COVID-19 pandemic as a global disaster has brought even more challenges to people's everyday lives, providing an opportunity for us to study and understand resilience (Labrague et al., 2021).

Social support, personal adaptability, and coping abilities are considered protective factors against adversity and stressful conditions such as disasters and disease outbreaks (Turner, 2015; Zhang et al., 2020). Existing research suggests that resilient individuals and those with adequate support systems and coping skills are less likely to feel stressed or lonely in stressful events (Ogińska-Bulik, 2018; Masten et al., 2021). It has also been observed that sufficient support from peers and family is crucial in helping individuals effectively manage situations such as disasters, emergencies, and infectious disease epidemics (Langan et al., 2017). During the COVID-19 pandemic when both stress and loneliness levels are high, personal adaptability, positive coping behaviors, and adequate social support can help individuals cope effectively with the burdens associated with the pandemic and maintain their psychological well-being (Yu et al., 2020).

Some personal traits or talents related to resilience can help individuals interpret ordinary or even negative events in their lives in a positive light and help alleviate stressful experiences. Such traits include motivation (Ghanizadeh et al., 2019), hope (Hinkle Jr, 1974), humor (Bhattacharyya et al., 2019), and "self-determination" (Burtaverde et al., 2021). Additionally, resilience helps individuals to engage in functional and meaningful socialization, which can help

individuals to gain a sense of belonging (Habersaat et al., 2020). This has important implications for mitigating the negative effects of isolation under a lockdown situation (Graupensperger et al., 2020; Loades et al., 2020). In addition, Ong et al. (2006) used multilevel contingency modeling to verify that personal resilience can facilitate recovery from negative emotions by increasing an individual's level of positive emotions.

1.3 Dynamic structural equation modeling

With advances in psychological research methods, methods such as experience sampling and ecological momentary assessment enable researchers to collect longitudinal data in a less invasive and intensive manner (Trull and Ebner-Priemer, 2014). Such data patterns also allow longitudinal studies on response development processes to further investigate dynamical processes over a relatively stable timeframe (Molenaar and Campbell, 2009).

Most of the current articles related to students' emotions and negative psychological conditions in the context of the pandemic use cross-sectional studies and traditional tracing, but fail to draw causal conclusions (Zhang et al., 2020). Such an approach can account for current emotional states and overall changes, but cannot explore the dynamic processes under relatively stable high negative emotions (McNeish and Hamaker, 2020). In this paper, we use an intensive tracking study to measure students' emotional states during strict campus closures, employ dynamic structural equation modeling to explore the relationship between emotional experiences and stress among college students during the lockdown period, and to examine the moderating roles of resilience and loneliness.

2 Materials and methods

2.1 Participants

The participants consisted of 112 students who were recruited through alumni groups and campus postings during the winter break lockdown management, 2022. The participants' age range was 18–32 years old. There were 87 females (78%), 45 undergraduates (40%), 53 masters (47%), and 14 PhDs (13%). The recovered questionnaires were sorted and matched, firstly eliminating duplicate and inattentive questionnaires, and then discarding subjects with missing values greater than 60% (Barzi and Woodward, 2004). A total of 88 questionnaires were obtained as a result, with 63 data points per participant, and 4,978 data points were obtained by excluding missing data, with a valid response rate of 89.8%.

2.2 Procedures

Participants signed an informed consent form and voluntarily joined the study cohort. The study questionnaire was compiled on the questionnaire website https://www.wjx.cn/. The positive and negative mood scales and stress questions were pushed via letter three times a day from February 8, 2022 to February 28, 2022. February 8 and February 28 each contained a pre-test and post-test questionnaire containing a loneliness scale and a basic resilience scale in addition to

the daily mood questionnaire and stress perception assessment. The daily questionnaires were administered at 10:00 am, 16:00 pm, and 22:00 pm. Participants responded to the questionnaire by logging in with their experiment number.

2.3 Materials

2.3.1 UCLA loneliness scale

Twenty items of the UCLA loneliness scale (Russell, 1996) were used to measure loneliness in both the pre-test and post-test. Participants responded on a Likert-type scale of 1 to 4, with 1 indicating "never" and 5 indicating "often." The scale contains 11 negative (lonely) and 9 positive (non-lonely) items, all of which can be administered easily through a personal interview (Shevlin et al., 2015). The higher the score, the greater the isolation. In the present study, the Cronbach's alpha coefficient of the scale was 0.927.

2.3.2 Essential resilience scale

Several Chinese researchers have developed an operational definition of resilience, which include the factors of flexibility, anticipation, and "bounce-back." Based on this, they developed an essential resilience scale (ERS) with high reliability and validity among rural and urban Chinese residents (Chen et al., 2016). The 15-item ERS was used to measure overall global trait resilience in the pre-test and post-test. Participants responded on a scale of 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." The higher the score, the greater the individual's psychological resources. In this study, Cronbach's alpha for the scale was 0.870.

2.3.3 Positive and negative affect scale

The 20 items of the positive and negative affect scale (PANAS) (Clark and Tellegen, 1988) were used to measure daily positive and negative emotions. Participants were asked to indicate the extent to which these emotions were experienced during the day and to respond on a scale of 1 to 5, with 1 being "very mild or not at all" and 5 being "very severe." The negative activation subscale of the PANAS has 10 items (fear, shame, distress, guilt, hostility, irritability, tension, nervousness, fear, and restlessness) and the positive activation subscale has 10 items (positivity, change, concentration, determination, enthusiasm, excitement, inspiration, interest, pride, and strength). All these items represent a wide range of pleasant and unpleasant emotional states.

2.3.4 Stress questionnaire

Before PANAS, we used a stress questionnaire to get participants' assessment of stress during the last time interval. Participants were given 10 s to recall a stressful event in the past few hours. Then they responded to a single question on a scale of 1 to 5, with 1 being "very little" and 5 being "very much" (Ong et al., 2006), with the voluntary option to describe the stressful event.

2.4 Data analysis

Descriptive and correlation analyses were conducted using IBM SPSS Version 25. Dynamic structural equation models were built

using Mplus 8.3, which has a dedicated module for dynamic structural equation modeling (DSEM) for processing intensive longitudinal data (ILD) (Asparouhov, 2018). Intra-individual dynamics can be modeled for time series data while individual differences are probed by individual parameters (Brose et al., 2015; Jebb and Tay, 2017).

To test the moderation hypothesis, we established Equations 1–7. Simulation studies are considered to be effective in dealing with missing values using 50,000 Markov Chain Monte Carlo iterations (Schultzberg and Muthén, 2018). Daily questionnaire distribution was concentrated at 10:00 am, 16:00 pm, and 22:00 pm. Recoding and the statement TINTERVAL = time(1) were used to deal with the problem of unequal time intervals (Hamaker and Wichers, 2017; McNeish and Hamaker, 2020). Symmetrically, positive emotions were operated as dependent variables against negative emotions.

$$\text{NA}_{ti} = \alpha_i + \varphi_i \text{NA}^c_{(t-1)i} + \beta_i \text{STR}^c_{ti} + \eta_i \text{PA}^c_{ti} + e_{ti} \qquad (1)$$

$$\alpha_i = \gamma_{00} + \gamma_{01}\text{RES}^c_i + \gamma_{02}\text{LON}^c_i + \gamma_{03}\text{STR}^b_i \\ + \gamma_{04}\text{PA}^b_i + u_{0i} \qquad (2)$$

$$\varphi_i = \gamma_{10} + \gamma_{11}\text{RES}^c_i + \gamma_{12}\text{LON}^c_i + u_{1i} \qquad (3)$$

$$\beta_i = \gamma_{20} + \gamma_{21}\text{RES}^c_i + \gamma_{22}\text{LON}^c_i + u_{2i} \qquad (4)$$

$$\eta_i = \gamma_{30} + \gamma_{31}\text{RES}^c_i + \gamma_{32}\text{LON}^c_i + u_{3i} \qquad (5)$$

$$\text{STR}^b_{ti} = \gamma_{40} + u_{4i} \qquad (6)$$

$$\text{PA}^b_{ti} = \gamma_{50} + u_{5i} \qquad (7)$$

Equation 1 addresses individual-level (within) questions exploring autoregressive effects, and other variability variables within individuals (Schuurman et al., 2016). Equations 2–5 use the personality variables resilience trait and loneliness as predictors of individual-specific intercepts and use regression coefficients to analyze the relationship between inter-individual variance variables such as personality and variability variables (Schuurman et al., 2016).

Mplus will default to the latent person-mean for DSEM (Asparouhov, 2018), which is STR^b_{ti} and PA^b_i, while STR^c_{ti} and PA^c_{ti} are the values after being centered relative to the potential individual means. By putting STR^b_{ti} and PA^b_i into Equation 2 as covariates of α_i, we can distinguish the dynamic effects and mean effects of positive emotions and stress values. More specifically, we are interested in whether individuals are more likely to experience negative emotions on specific occasions of high stress or whether negative emotions are only affected by average stress values and not by single stress fluctuations. Thus, we have the following Equations 8 and 9:

$$\text{RES}^c_i = \text{RE}^n_i - \overline{\text{RE}^c_i} \qquad (8)$$

$$LON_i^c = LON_i^n - \overline{LON_i^c} \qquad (9)$$

The trait variables do not vary over time, and only individual differences exist. The residuals in the equations all obey normal distributions: $e_{ti} \sim N(0, \sigma2)$, $u_i \sim MVN\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \tau00 & \tau01 \\ \tau10 & \tau11 \end{bmatrix}\right)$.

3 Results

3.1 Descriptive statistics and correlation analysis

There were 63 measurement points for negative emotions, positive emotions, and stressful experiences. Resilience and loneliness were treated as trait variables in this study and were relatively stable within individuals (Kalisch et al., 2015), with the mean of the two measurements taken as representative. Resilience pre-test and post-test retest reliabilities were 0.772 ($p < 0.01$) and the loneliness retest reliability was 0.875 ($p < 0.01$). Correlations between all constructs in the study with the means and standard deviations are shown in Table 1.

3.2 DSEM results

The model estimates are shown in Table 2. The intercept α represents the mean level of negative affect for all individuals and is centered at 0.01 (γ_{00}) with significant fluctuating variance around it across individual baselines ($\tau_{00} = 0.31$). According to the latent variable hypothesis, 95% of subjects in the data had a specific individual intercept of $-0.01 \pm 1.96\sqrt{0.31}$ between $[-1.08, 1.10]$. Predictor variables of α included resilience, loneliness, mean stress level, and average stress level, corresponding to coefficients γ_{01}, γ_{02}, γ_{03}, and γ_{04}, respectively. Zero was not within the 95% confidence interval of γ_{02} and γ_{03}, the covariate coefficients of α. This indicates an increase of 0.17 points in mean negative affect for each unit increase in individual trait loneliness experience and an increase of 0.81 points in mean negative affect for each 1 point increase in individual mean stress experience.

The mean autoregressive coefficient for negative affect was 0.32, with a small variability of 0.04 (τ_{11}), while φ includes the predictor variables resilience and loneliness in the formula, corresponding to coefficients γ_{11} and γ_{12}. Similarly, the mean

coefficient for stress was 0.02, and for each unit increase in resilience, the effect of stress on negative affect was -0.05.

The mean positive affect across all subjects was 0.02 (γ_{00}) with significant individual variance ($\tau_{00} = 0.61$) and a specific individual intercept between $[-1.55, 1.51]$ for 95% of subjects. The autoregressive effect was significant ($\gamma_{00} = 0.34$), and fluctuated little ($\tau_{11} = 0.03$). The mean coefficient of negative emotions was -0.12. The model path diagram and simulation results are presented in Figure 1.

4 Discussion

Social isolation due to lockdowns is interrelated with loneliness, and this association is prevalent in past global epidemics (Bu et al., 2020; Xiao et al., 2020). The outbreak of COVID-19 resulted in feelings of stress and associated negative emotions that can exacerbate the experience of loneliness (British Red Cross, 2020; Brooks et al., 2020; Holmes et al., 2020). Emotional experiences vary across groups in closure management (Shah et al., 2020). It has been shown that young people, especially students, experienced higher levels of loneliness and were exposed to higher health risks during the COVID-19 pandemic (Bu et al., 2020; Hysing et al., 2020; Pierce et al., 2020). Understanding the relationship between individual feelings of emotional stress and loneliness is important for understanding and helping young people with emotional adjustment (Bu et al., 2020).

Overall, the results of this study suggest that the average level of negative affect among students in a locked campus situation depends heavily on the total average stressful feelings of the individual. It is also constantly fluctuating, influenced by stressful events of the day. The voluntary results completed by some students with incomplete returns indicate that the main source of stress was the academic progress of the day. The data results suggest that this immediate impact is moderated by resilience, and that individuals with high resilience are less likely to have their present-day stress translated into negative emotions, and are more likely to show greater resilience.

Levels of negative emotion were also associated with loneliness, and baseline levels of negative emotion were correspondingly higher in individuals with high feelings of loneliness. Combined with the significant autoregression of negative emotions, the findings confirm that loneliness is associated with negative emotions under the epidemic condition, and that the longer this loneliness is felt, the more difficult it is

TABLE 1 Correlation of variables.

	NA	PA	STR	RES	LON	M (SD)$_{within}$
NA	1	$-0.10**$	$0.561**$			2.99 (1.19)
PA	-0.01	1	$-0.12**$			2.50 (0.86)
STR	$0.69**$	-0.14	1			1.97 (0.86)
RES	-0.19	$0.24*$	-0.21	1		
LON	$0.31**$	-0.20	$0.22*$	$-0.26*$	1	
M (SD)$_{Between}$	1.97 (0.67)	2.49 (0.69)	3.00 (0.77)	3.13 (0.60)	2.26 (0.55)	

NA, negative affect; PA, positive affect; STR, stress; RES, resilience; LON, loneliness; bold indicates significant correlation; **$p < 0.01$, *$p < 0.05$.

TABLE 2 Model standardized estimates and their 95% confidence intervals.

Effect	Notation	Negative affect		Positive affect	
		Posterior median	95% CI	Posterior median	95% CI
Intercept (α)	γ_{00}	0.01	[−0.12, 0.13]	−0.02	[−0.19, 0.16]
Intercept (φ)	γ_{10}	0.32	[0.27, 0.39]	0.34	[0.30, 0.39]
Intercept (β)	γ_{20}	0.02	[0.02, 0.04]	−0.01	[0.04, 0.04]
Intercept (η)	γ_{30}	0.05	[0.03, 0.07]	−0.12	[−0.18, −0.05]
Intercept (STR)	γ_{40}	0.01	[−0.15, 0.14]	0.01	[−0.15, 0.14]
Intercept (P/N)	γ_{50}	−0.02	[−0.18, 0.16]	0.01	[−0.16, 0.17]
α on RES	γ_{01}	−0.02	[−0.15, 0.12]	0.14	[−0.05, 0.12]
α on LON	γ_{02}	0.17	[0.04, 0.29]	−0.15	[−0.33, 0.03]
α on STR	γ_{03}	0.81	[0.61, 1.00]	−0.30	[0.68, 1.00]
α on P/N	γ_{04}	0.13	[−0.03, 0.29]	−0.30	[−0.68, 0.07]
φ on RES	γ_{11}	−0.04	[−0.01, 0.01]	−0.02	[−0.07, 0.03]
φ on LON	γ_{12}	0.01	[−0.04, 0.06]	0.01	[−0.04, 0.06]
β on RES	γ_{21}	−0.05	[−0.09, -01]	0.02	[−0.02, 0.07]
β on LON	γ_{22}	0.01	[−0.03, 0.05]	0.01	[−0.03, 0.05]
η on RES	γ_{31}	−0.01	[−0.07, 0.04]	0.03	[−0.11, 0.04]
η on LON	γ_{32}	0.04	[−0.02, 0.09]	0.03	[−0.04, 0.10]
Var. (α)	τ_{00}	0.31	[0.23, 0.44]	0.61	[0.45, 0.86]
Var. (φ)	τ_{11}	0.04	[0.03, 0.06]	0.03	[0.02, 0.05]
Var. (β)	τ_{22}	0.02	[0.02, 0.04]	0.02	[0.01, 0.03]
Var. (η)	τ_{33}	0.05	[0.03, 0.07]	0.08	[0.05, 0.11]
Var. (STR)	τ_{44}	0.43	[0.32, 0.57]	0.42	[0.32, 0.58]
Var. (P/N)	τ_{55}	0.65	[0.49, 0.89]	0.62	[0.47, 0.32]
Res. Var. (N/P)	σ^2	0.21	[0.20, 0.22]	0.28	[0.26, 0.29]
R^2 within		0.35		0.26	
R^2 between		0.50		0.16	

N, negative affect; P, positive affect; bold means 0 is not in the confidence interval; Var., variance; Res. Var., residual variance.

to dissipate its negative emotional impact cumulatively (Loades et al., 2020).

It is worth noting that positive emotions are not incompatible with negative emotions, and the data suggest that individuals can retain high levels of positive emotions despite high negative emotional states. On the one hand, there is theoretical support for the relative independence of positive and negative emotions (Bergman and Wallace, 1999; Moskowitz et al., 2003; Reich et al., 2003). On the other hand, this may also be related to individual habits of emotional expression, and the data in this study also reflect a notable amount of individual variation in how individuals feel and express negative emotions. In this regard, analysis based on individual means is necessary to avoid overwhelming potential relationships between some variables.

Müller et al. (2021) suggest that emotional problems are adaption problems and that the trait of resilience is important for emotional adaptation, while Ong et al. (2006) suggest that resilience can reduce negative emotions by mobilizing positive emotions. Unlike previous studies, the results of the present study did not show an effect of resilience on the relationship between positive and negative emotions. However, when positive emotions were removed from the equation, the moderating effect of resilience also disappeared. This implies that there may be a more complex relationship between resilience and positive emotions, perhaps understood as higher positive emotions being a component of trait resilience (Tugade et al., 2004; Yi et al., 2020). This point needs further research.

There is an accumulation of negative emotions in students, and this process seems to be independent of other factors. It is especially important to help students stay positive to avoid excessive feelings of stress. Individuals with low resilience need more timely attention and support. In addition, the relationship between loneliness and negative emotions suggests that social connections are more important than ever for individual mental health significance in an epidemic. However, the establishment of such relationships is also more difficult than ever, and how to maintain supportive social connections in an epidemic would be an interesting topic (Chu, 2022).
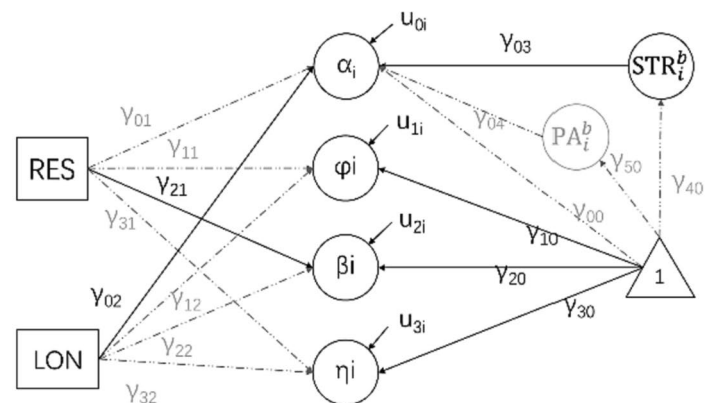
Raftopoulou et al. (2022) confirms that positive psychology interventions can significantly reduce negative emotions and enhance individual motivation and mental resilience. Self-compassion intervention can also help young people reduce
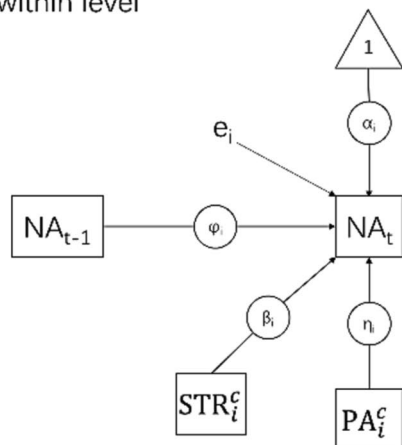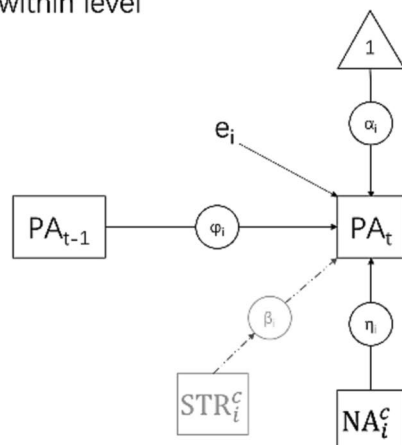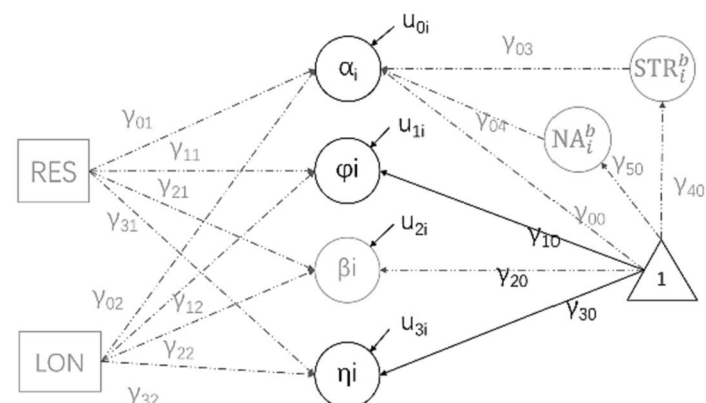
FIGURE 1
Model path diagram based on Equations 1–7 and the results of the operation.

anxiety and depression. It can even benefit them for a lifelong time (Athanasakou et al., 2020; Karakasidou et al., 2021a,b). During the epidemic, several new digital products were developed to combat loneliness or for psychotherapy (Shah et al., 2020). How to use provide useful positive psychological intervention is not only helpful for a population under epidemic conditions, but is also important for psychological services for workers in special environments such as oil fields, submarines, and polar regions.

In addition to external support, students can also cope with the negative effects of lockdowns by adjusting their own cognition. Student's attitude to new method of learning can influences their emotional experience. If they can view online-learning as a kind of resource but not obstacle, they will feel less fear and depressed (Novara et al., 2022). Maintain life continuity is a kind of psychological resilience strategy. People's attitudes toward time are related to their levels of distress anxiety and well-being. Finding connection with past experiences and future goals can help they overcoming the present constrain (Fortuna et al., 2021).

A limitation of the current research should be noted. The data in this paper are based on a survey of students during a winter break when school is strictly closed for epidemic prevention. For students in this study, they were living in a campus with relatively low population density. The density of the campus population will increase after the school year starts and students may feel less lonely, while at the same time the academic pressure will also increase accordingly. Because the school never be strictly closed for a long time in the following semester, the data of students in the higher campus density cannot be collected.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Institutional Review Board of the Faculty of Psychology, BNU. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

QW made a major contribution for study carrying, data analysis and manuscript writing. GY participated in the topic select, study design, and helped to draft the manuscript. YH guided the data interpretation and gave a lot of valuable advice on the writing of manuscript. GD helped to draft the manuscript and participated in its revision. YL participated in the writing of manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1168020/full#supplementary-material

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