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Culture and emotion in educational dynamics

Edited by
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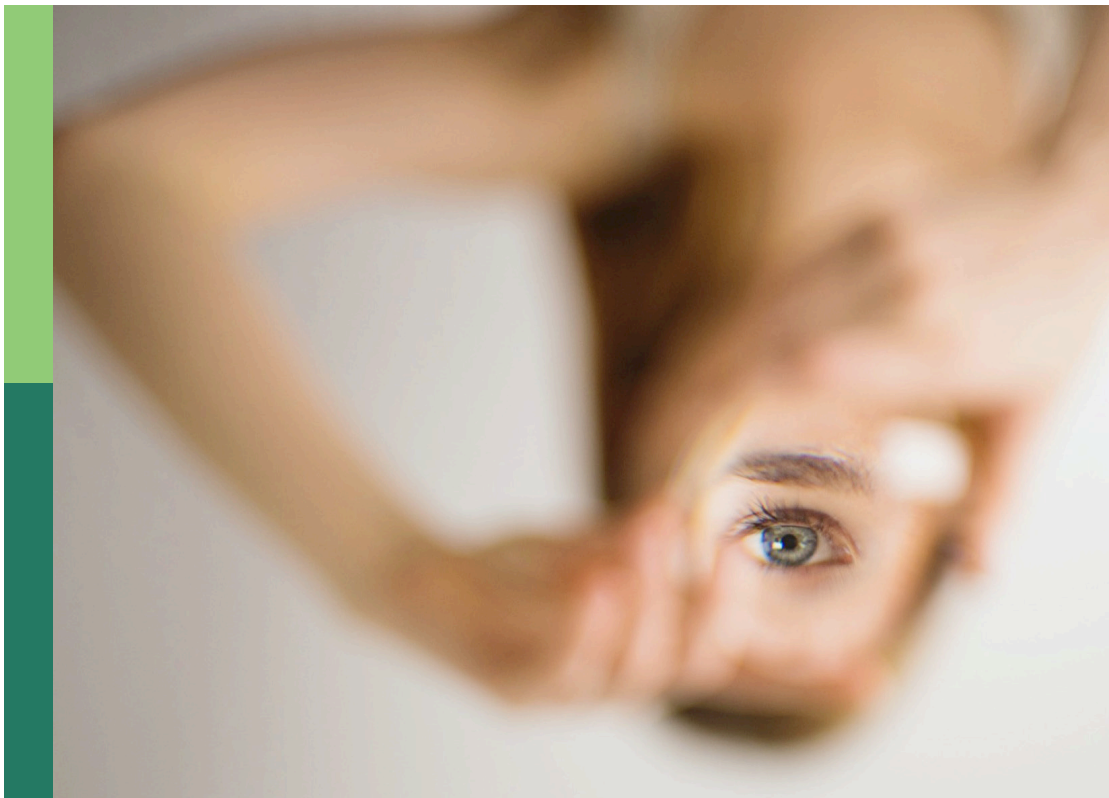

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Culture and emotion in educational dynamics

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Editorial: Culture and emotion in educational dynamics

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Editorial on the Research Topic
Culture and emotion in educational dynamics

Culture plays an important role in regulating the emotions and influencing the spread of education. Thus, the impact of culture on emotional dynamics in educational environments is a very important subject. It is particularly important in contexts of social and cultural diversity, where schools have to navigate through the cultural and emotional dynamics of the majority group.

The object of this area of investigation was to offer a global view of the current state of the art in the field of emotional dynamics in education, with a particular focus on how culture mediates these dynamics. This research seeks to integrate experiences and contributions from different regions of the world in order to offer full understanding of the role of culture in regulating the emotions in educational dynamics. In this editorial we offer a themed review of the fascinating and diverse contents of this Field of Investigation.

In the area of *Affectivity and education*, Frumos et al. examine how achievement emotions moderate relations between mastery and performance goal orientation and academic achievement in students. Self-efficacy proved to be the only significant mediator, and mastery avoidance goals were linked with high scores in motivational components at high levels of negative emotions. This approach offers a detailed view of the complexities of academic targets and their emotional connections.

Another area of investigation is Educational Management and Mental Health post-pandemic (Bonhomme and Rojas). This includes an analysis of how educational spaces have been transformed, as is shown by the proliferation of Social-Emotional Learning (SEL) policies in Chilean schools from the perspective of the (dis)continuities between institutions and personal effort, and between basic and continuous education. This manuscript highlights the diversity of approaches to research in education and mental health, from the practical implementation of policies to the exploration of emotions and the promotion of cultural competences in various educational contexts around the world. Students' experiences, whether in the integration of local culture into education or in the management of academic stress, underline the importance of holistic, culturally sensitive approaches to education and mental health.

The work of Chen shows us, from the perspective of a Chinese doctoral student, how personal growth experiences are developed. The thematic analysis revealed three recurrent themes: anxiety, enjoyment and personal growth. The results suggest the coexistence of anxiety and enjoyment, and fluctuation between them, during the doctoral research project.

The work of Jue and Kim on the relation between Art therapy students' burnout, practicum stress, and teacher support shows how practicum stress increases burnout while social support decreases it. The authors found particularly that professor support, rather than the support of colleagues or family, significantly reduced burnout. Likewise, they identified that academic support was more important than emotional support to reduce students' burnout.

Another area examined is the relation between Emotions and cultural identity. Based on a Web of Science analysis, Kuang et al. examine hotspots and frontiers of ethnic cultural identity. The investigation shows an increasing trend in this area, with universities in USA, UK, Australia and China leading exploration of subjects like emotional perception, multicultural identity processes and cultural adaptability. In the same line, Qian et al. investigate the Integration of the Shangshan Culture into STEAM education, stressing the importance of adding elements of Chinese culture, and of encouraging the application of interdisciplinary knowledge in artistic and creative exploration.

Ding et al. From Bronfenbrenner's bioecological model the study assesses the emotional, social, and physical wellbeing of Chinese migrant children in urban areas amid the COVID-19 pandemic, revealing significant disparities in academic advancement between migrant and local children, exacerbated by neglect from educators and policymakers, resulting in heightened anxiety, anger, and uncertainty about their future among migrant children. These educational inequalities underscore the urgent need for policy reform to address the disparities experienced by migrant children during the pandemic. Lawrie and Kim provide us an overview of a study concerning first-generation college students, emphasizing the significance of comprehending the psychological mechanisms behind their difficulties. It adopts a cultural psychology perspective and examines the impact of "emotional (mis)match" on the reduced wellbeing of these students. While emotional accuracy correlates with positive outcomes, it's notably lower among first-generation students. These findings stress the importance of grasping distinct emotional processes in the social adjustment of college students.

Finally, there is research into the relation of Extra-curricular and curricular activities with the emotions. The investigation carried out in Japan by Onoda and Omi highlights the value of extracurricular activities for secondary school students, focusing on the expression of increasing the attractiveness of school through writing. The consciousness of junior schoolmates increased the evaluation of extracurricular activities as attractions, stressing the importance of the transmission of values through writing.

In Australia, Pope et al. argues that the implementation of the Human Library as a teaching method resulted in a significant increase in the cultural competence of occupational therapy students. This flexible and economically attractive approach may be considered for developing competences in culturally congruent medical attention.

And Carrasco-Dajer et al. discusses the importance of digital literacy among older individuals to enhance their aging experience, highlighting that they face the largest digital gap. A study was conducted involving a digital literacy intervention for individuals aged 60 and above, with pre- and post-evaluations. The intervention resulted in significant improvements in digital literacy, with indirect effects observed on wellbeing, social support, and quality of life.

To summarize, this Research Topic highlights the importance of understanding the influence of culture on emotional dynamics in educational environments, especially in culturally diverse settings. Several studies were included examining emotional experiences in academic settings, the impact of the COVID-19 pandemic on migrant children's wellbeing, and the challenges faced by first-generation college students. Additionally, the Research Topic discusses the role of extracurricular activities and curricular interventions in shaping students' emotional experiences. Overall, these studies contribute valuable insights into the complex interplay between emotions, culture, and education, emphasizing the need for holistic and culturally sensitive approaches to promoting wellbeing and academic success.

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Exploring the relationships among art therapy students' burnout, practicum stress, and teacher support

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Introduction: This study examines how teacher support and practicum stress affect art therapy graduate students' burnout.

Methods: A total of 125 master's and doctoral students from art therapy graduate schools in Korea participated in the study. We conducted a correlation analysis and multiple regression analysis to explore the relationship between the variables.

Results: The correlation analysis results showed that burnout, practicum stress, and social support are significantly interrelated. The regression analysis results indicated that practicum stress increases burnout while social support decreases it. When we used the sub-factors of social support as independent variables, we found that professor support rather than the support of colleagues or family significantly reduced burnout. When we divided the perceived teacher support into emotional support and academic support, our analysis identified that academic support was more important than emotional support to reduce students' burnout.

Conclusion: Art therapy students' practicum stress can cause psychological burnout, while teacher support—especially academic support— can lower the possibility of experiencing such burnout.

KEYWORDS

teacher support, art therapy students, burnout, practicum stress, academic support

1. Introduction

Graduate students who enroll in art therapy graduate school complete practicum while taking classes. Practicum is important because it provides students opportunities to meet clients in the real world. Engaging with clients in art therapy sessions is the cornerstone of learning art therapy. However, unsurprisingly, practicum is sometimes very challenging and even stressful. Despite receiving help from field and school supervisors, students often encounter obstacles over the course of their practice, including difficulties in understanding their clients, lack of therapeutic progress, the emotional burden of the therapist-patient relationship, unexpected termination of sessions, feeling disrespected by other staff, administrative problems/legal issues, and work overload. Simply put, art therapy graduate students may find practice quite stressful, and exhausted students sometimes withdraw from school temporarily or drop out.

The term "burnout" refers to a type of physical and mental exhaustion featuring loss of motivation and cynical attitudes that frequently occurs in service professionals (Raquepaw and Miller, 1989; Skovholt and Trotter-Mathison, 2016). Maslach and Jackson (1981) viewed burnout as a syndrome whose main symptoms among helping professionals included emotional exhaustion, depersonalization, and lack of personal accomplishments. When therapists suffer burnout, they experience fatigue, lethargy, and a loss of energy, ideals, and sense of purpose in

their work. The resulting loss of motivation lowers job performance, and decreases positive feelings for or interest in clients. As a result, the quality of the services deteriorates, and the therapists themselves lose self-confidence and self-esteem.

Graduate students training to become professional therapists are no exception to the risk of burnout (Choi, 2013). Job stress, or practicum stress in case of students, is one of the risk factors for worsening overall mental states. Unfortunately, some art therapy students experience overwork, lack of resources, excessive demands and/or conflicts with the authorities during practicum. In such work environments, the likelihood of experiencing burnout increases (Choi et al., 2002; Lee et al., 2011; Wallace et al., 2011). The more the student therapists experience stress at work, the more likely they are to experience burnout. Previous studies have shown that psychotherapists often experience burnout because high stress levels are a distinctive feature of the profession (Raquepaw and Miller, 1989; Ross et al., 1989; Delia and Patrick, 1996; Moore and Cooper, 1996; Yoo and Park, 2002; Park, 2007).

Although risk factors exist, protective factors such as social support can help prevent burnout (Choi and Chung, 2003). Social support can be defined as all the positive resources and experiences an individual can obtain from interpersonal relationships (Taylor, 2011); it can alleviate the negative effects of job stress and reduce burnout (Sánchez-Moreno et al., 2015). Indeed, emotional tension and stress can be reduced if therapists receive social support (Delia and Patrick, 1996; Park and Park, 2018).

Previous studies have found that the influence of social support on burnout varies based on the type of social support therapists receive. For therapists, the sources of social support can be roughly divided into family members, colleagues, and supervisors. Some studies have reported that support from family or colleagues is more effective than supervisors' support (Yoo and Park, 2002; Choi and Chung, 2003). Others have reported that support from supervisors is more important in lowering burnout levels, especially among beginner therapists (Bang, 2006; Lee et al., 2009; Hyun and Hong, 2018; Lee et al., 2019).

In this context, the term "supervisor" refers to a qualified expert who can provide supervision. In art therapy graduate programs, professors play supervisory roles, helping student supervisees reflect on their inner states, treatment plans, and interventions and make optimal decisions. Overall, supervisors not only help students learn, but also provide their supervisees emotional support (Keum and Son, 2017). Supervisors encourage and empower beginner therapists by providing considerate feedback and constructive advice, helping them build self-confidence (Kim, 2018).

Although researchers have studied burnout among art therapists working in the field (Kim and Jeong, 2012; Kim, 2015; Kim and Kim, 2020), few studies have focused on beginner art therapists in graduate school. To understand the growth of art therapy graduate students as experts and the quality of their practicum, it is necessary to determine how much stress or burnout students experience during their practicum and to what extent protective factors such as social support are helpful and what are needed. This information can be an indicator of whether they will successfully complete their training and become experts. Examining the degree of psychological exhaustion experienced by art therapy graduate students and what factors increase or decrease their burnout is critical. In this study, we set out to examine how much teacher support can reduce student's burnout caused by practicum stress, and to verify what kind of teacher support is most beneficent.

2. Materials and methods

2.1. Participants

The participants were Korean art therapy graduate students. Art therapy was first introduced in Korea in the late twentieth century, followed by the establishment of the Korean Art Therapy Association in 1991 (Kim, 2009; Choi, 2013). In a decade, more than 10 art therapy graduate schools were established in Korea (Kim, 2009), and as of 2023, there are more than 30 art therapy graduate schools. Most graduate schools offer master's degree programs, and some offer doctoral degrees. All graduate schools operate on a semester system, and art therapy graduate students generally spend two to 3 years (four to six semesters) in their master's programs. Although practicum is not mandatory for graduation, they must take an art therapy practicum to obtain a national license after graduation. The curriculum of most Korean art therapy graduate schools includes supervision as one of the classes, and students enrolled in practicum attend supervision classes.

A total of 125 art therapy graduate students in Korea—81 master's degree students and 44 doctoral students—participated in this study. We recruited students who had completed two or more semesters. The master's students had been enrolled for an average of 3.8 semesters (S.D. = 1.0, Min., 2, Max., 6), and the doctoral students had been enrolled for an average of 3.5 semesters (S.D. = 1.3, Min., 2, Max., 5). Participants' ages ranged from 25 to 60 years, and the mean age was 39.5 years old (S.D. = 8.6 years). The gender distribution ratio was five males (4.0%) and 120 females (96.0%). The high percentage of females reflects the gender ratio of all graduate students in art therapy schools; the ratio is similar to that of Korean art therapists reported at a recent conference (Lee et al., 2017).

In Korea, the gender ratio of art therapists skews toward females. For example, Kim and Jeong (2012) collected data from 107 art therapists, and their gender ratio was 104 females (97.2%) and 3 males (2.8%). Another study with 128 Korean art therapists showed the participants' gender ratio was 120 females (93.75%) and 8 males (6.25%) (Kim and Kim, 2020). The low proportion of male participants was also consistent in qualitative studies. In addition, Choi's (2013) qualitative research on art therapy graduate students included in-depth interviews with 16 female students from three graduate schools.

2.2. Measures

2.2.1. The Maslach burnout inventory

Maslach and Jackson (1981) developed the Maslach Burnout Inventory (MBI), and Park (2001) translated it into Korean and validated it. MBI is composed of 22 items, assessing counselors' burnout. It has three sub-scales: emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items). It uses a 7-point Likert scale (0 = Not at all, 6 = everyday). The personal accomplishment items are summed using inverse scoring, and the other items are summed as they are. The total score ranges from 0 to 132. The higher the final score, the greater the degree of burnout. Internal consistencies, measured by Zumbo ordinal αs, were as follows: emotional exhaustion, $\alpha = 0.91$; depersonalization, $\alpha = 0.71$; and personal accomplishment, $\alpha = 0.91$.

2.2.2. The workplace stress scale

To examine art therapy students' practicum stress, we used the workplace stress scale, originally developed by Jayaratne and Chess (1983) and later translated into Korean and validated by Yoon (2000). This scale has 19 items, comprising four sub-variables: challenge (6 items), role conflict (5 items), role ambiguity (3 items), and work overload (5 items). Challenge evaluates work autonomy and opportunities to develop competency. Role conflict assesses the degree of conflict experienced when job performance demands are inconsistent with or contradictory to personal standards. Role ambiguity measures the uncertainty of role performance as a condition in which individuals are not sufficiently informed about how to perform their roles. Work overload evaluates whether a given amount of work exceeds an individual's time and capacity. This scale uses a 5-point Likert scale (1: not at all, 5: highly agree), and the positively described items are reverse-scored and summed. The final score ranges from 19 to 95, and a higher score means a higher level of stress in the workplace. The Zumbo ordinal αs for this scale were as follows: challenge, $\alpha = 0.77$; role conflict, $\alpha = 0.73$; role ambiguity, $\alpha = 0.89$; and work overload, $\alpha = 0.83$.

2.2.3. The social support scale

The Social Support Scale was originally developed by Caplan et al. (1980), and Park (2001) translated it into Korean. It measures the level of social support counselors perceive themselves as receiving from supervisors, peers, and family members. In Korean art therapy graduate schools, professors served as supervisors. To avoid any confusion with a field supervisor, we replaced the term "supervisor" with "professor" in this study. This scale uses a 5-point Likert scale (1 point: not at all, 5 points: highly agree), and each category includes 6 items. The score for each category ranges from 6 to 30 points, and the highest total score for the 3 categories is 90 points. A higher score means more social support they received. The reliability scores measured by Zumbo ordinal α for this scale was 0.90 in this study.

2.2.4. The teacher support scale

To measure students' perceived teacher support in detail, we used the Teacher Support Scale developed by Seok (2007) based on Hektner (1996) and later modified by Kim (2019). This scale consists of 10 total items divided into two sub-factors: academic support (five items) and emotional support (five items). The former measures the degree to which teachers provide academic support to help students cope with problems in class, provide appropriate feedback to questions, and help students improve knowledge and skills in the field. The latter evaluates the extent to which teachers listen courteously and encourage students. This scale uses a 5-point Likert scale, and a higher score means a higher level of support from professors. We found the Zumbo ordinal α as follows: academic support, $\alpha = 0.89$; and emotional support, $\alpha = 0.86$.

2.3. Procedures and ethical consideration

Before starting the survey, we received approval from the Institutional Review Board of the researcher's institution. We contacted five art therapy graduate schools and posted flyers asking art therapy students to participate in the study. We ensured that the study participants understood that answering the questionnaire was completely voluntary, that their anonymity was guaranteed, and that data would be destroyed after the study was completed. They responded to the questionnaire after signing a consent form.

2.4. Analysis method

To test our hypothesis, we calculated descriptive statistics and conducted a correlation analysis among the variables. We then used multiple regression analysis to explore the relationship between the variables.

3. Results

3.1. Descriptive statistics and correlation analysis

To understand the overall relationship among variables, we calculated descriptive statistics and conducted a correlation analysis. Table 1 presents the results. The total scores for practicum stress and burnout were positively correlated ($r = 0.45$, $p < 0.001$). In detail, all of the sub-variables of practicum stress except role conflict ($r = 0.16$, *n.s.*) showed significant correlation results with burnout. The significant three sub-factors include challenge ($r = 0.47$, $p < 0.001$), role ambiguity ($r = 0.27$, $p < 0.01$), and work overload ($r = 0.22$, $p < 0.05$).

Next, our analysis revealed a negative correlation between social support and burnout ($r = -0.36$, $p < 0.001$). Regarding the sub-variables of social support in detail, we found that professor support ($r = -0.45$, $p < 0.001$) and peer support ($r = -0.26$, $p < 0.01$) were significant in their negative correlations with burnout, but family support ($r = 0.09$, *n.s.*) was not significantly correlated with burnout.

The total value of teacher support was negatively correlated with burnout ($r = -0.38$, $p < 0.001$). Both sub-variables, academic support ($r = -0.38$, $p < 0.001$) and emotional support ($r = -0.35$, $p < 0.001$), showed negative correlations with burnout.

3.2. Multiple regression analysis

To verify relative influence of each variable, we conducted multiple regression analyzes and their results are presented in Table 2. A Durbin-Watson test score of 1.7, close to the value of 2, confirmed that there was no autocorrelation. Meanwhile, the Tolerance and the Variance Inflation Factor (VIF) values indicated no multicollinearity. Finally, the enter method-based multiple regression analysis verified that the model was valid and that each path was significant—practicum stress ($p < 0.001$) and social support ($p < 0.01$). The non-standardized coefficient of practicum stress ($B = 0.68$) was positive, while that of social support ($B = -0.37$) was negative. This indicates that practicum stress increases burnout, while perceived social support decreases it. In addition, the effect size of the variables implied that practicum stress had a stronger effect than social support, as the β of practicum stress was 0.38 and that of social support was −0.27. The total explanatory power of the model was 27%.

Next, we set sub-variables of social support and those of practicum stress as independent variables, and examined which sub-variable had a significant effect. Table 3 and Figure 1 show the results of this

TABLE 1 Correlation coefficients and descriptive statistics for measurement variables.

	M	SD	1	2	3	4	5
1. Practicum stress	46.89	8.22	–				
2. Challenge	13.74	3.49	0.66***	–			
3. Role conflict	12.80	3.41	0.78***	0.30**	–		
4. Role ambiguity	6.45	2.07	0.39***	0.35***	0.12	–	
5. Work overload	13.85	3.86	0.64***	0.06	0.45***	−0.12	–
6. Social Support	69.47	10.81	−0.26**	−0.35***	−0.02	−0.27**	−0.04
7. Professor support	22.20	4.91	−0.44***	−0.53***	−0.14	−0.25**	−0.18*
8. Peer support	22.98	5.10	−0.23*	−0.24**	−0.08	−0.11	−0.11
9. Family support	24.30	4.72	0.10	−0.01	0.18*	−0.23**	0.22*
10. Teacher support	40.15	7.22	−0.35***	−0.47***	0.09	−0.33***	−0.08
11. Academic support	20.57	3.61	−0.38***	−0.49***	0.12	−0.34***	−0.09
12. Emotional support	19.58	3.92	−0.30**	−0.41***	−0.07	−0.29**	−0.07
13. Burnout	37.06	14.57	0.45***	0.47***	0.16	0.27**	0.22*

	6	7	8	9	10	11	12	13
1. Practicum stress								
2. Challenge								
3. Role conflict								
4. Role ambiguity								
5. Work overload								
6. Social Support	–							
7. Professor support	0.70***	–						
8. Peer support	0.85***	0.47***	–					
9. Family support	0.64***	0.06	0.38***	–				
10. Teacher support	0.67***	0.86***	0.46***	0.14	–			
11. Academic support	0.62***	0.80***	0.41***	0.15	0.96***	–		
12. Emotional support	0.66***	0.85***	0.47***	0.13	0.96***	0.84***	–	
13. Burnout	−0.36***	−0.45***	−0.26**	−0.09	−0.38***	−0.38***	−0.35***	–

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

TABLE 2 The effect of practicum stress and social support on burnout.

Variable	B	SE	β	t	p-value
Practicum stress	0.68	0.15	0.38	4.57***	0.000
Social support	−0.37	0.11	−0.27	−3.29**	0.001
R^2	0.27				
Adj. R^2	0.26				
F	21.16***				
Durbin-Watson	1.68				

** $p < 0.01$, *** $p < 0.001$.

analysis. The Durbin-Watson test score was 1.7, indicating that it was appropriate to use this regression model. We found no multicollinearity; the model's tolerance was above 0.1 and VIF was less than 10. The significance probability of this model was 0.000, and we verified the significance of each path; challenge ($p < 0.01$), work overload ($p < 0.05$), and professor support ($p < 0.05$) had significant

TABLE 3 The effect of all practicum stress and social support sub-variables on burnout.

Variable		B	S.E.	β	t	p-value
Practicum stress	Challenge	1.39	0.42	0.33	3.36**	0.001
	Role conflict	−0.23	0.41	−0.05	−0.57	0.57
	Role ambiguity	0.85	0.63	0.12	1.35	0.18
	Work overload	0.76	0.36	0.20	2.13*	0.04
Social support	Professor	−0.66	0.31	−0.22	−2.13*	0.04
	Peer	−0.08	0.28	−0.03	−0.27	0.78
	Family	−0.15	0.29	−0.05	−0.52	0.61
R^2		0.34				
Adj. R^2		0.30				
F		8.12***				
Durbin-Watson		1.72				

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

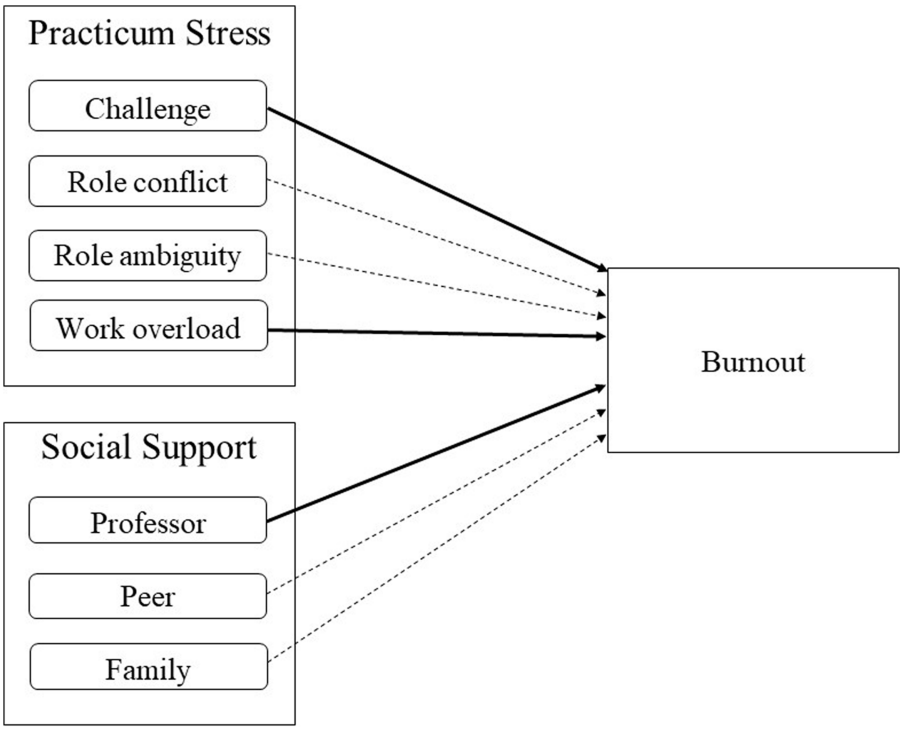

FIGURE 1
The effect of all practicum stress and social support sub-variables on burnout. Solid lines are significant, while dotted lines are not.

effects on burnout. Although role ambiguity and peer support showed significant correlations with burnout, their relatively weak explanatory power in the regression analysis demonstrated their insignificance. Among the significant variables, the most influential variable was challenge ($\beta = 0.33$), followed by professor support ($\beta = -0.22$), and work overload ($\beta = 0.20$). Finally, the independent variables' explanatory power was 34%.

In this second analysis with the sub-variables, we found that professor support was an important component of social support. Based on the results, we conducted a third regression analysis to determine content of teacher support. We set the two sub-variables of teacher support—academic support and emotional support—as independent variables, and burnout as a dependent variable. We conducted enter method-based multiple regression analysis, and their results are presented in Table 4 and Figure 2. We found the significance probability of this model to be 0.000, and the total explanatory power of the variables was 15%. The regression analysis identified academic support ($p < 0.001$) as the only significant variable, although both emotional and academic support showed significant negative correlations with burnout. These results suggest that the important factor in teacher support to lower students' burnout is academic support rather than emotional support.

TABLE 4 The effect of teacher support sub-variables on burnout.

Variable	B	S.E.	β	t	p-value
Academic support	−1.54	0.34	−0.38	−4.59***	0.00
Emotional support			−0.11	−0.71	0.48
R^2	0.15				
Adj. R^2	0.14				
F	21.10***				
Durbin-Watson	1.74				

*** $p < 0.001$.

4. Discussion

We examined the relationship between art therapy students' burnout, practicum stress, and teacher support in this study. Regarding social support, we focused on assistance from professors. The results and implications of this study are as follows.

First, we found that art therapy students' practicum stress significantly increases burnout. The analysis of sub-variables showed that the risk of burnout was highest when students lacked autonomy or opportunity for skill development at work. Excessive work was the second cause of burnout. These results are consistent with previous studies showing that work risk factors induce job stress and subsequently increase the potential for burnout (Raquepaw and Miller, 1989; Yoon, 2000; Do and Chung, 2009; Moyer, 2011; Jang and Yu, 2013; Yun, 2013). In particular, our results are consistent with findings indicating that counselors' psychological tiredness increases when they do not receive sufficient challenges at work or are subjected to excessive workloads (Brewer and Clippard, 2002; Baggerly and Osborn, 2006; Hakanen et al., 2006; Gibson et al., 2009; Yun and Chung, 2011). Psychotherapists belonging to institutions reported less autonomy and lower levels of personal achievement than those in private practice, and the former were more vulnerable to burnout (Rupert and Morgan, 2005). Therefore, it is very important for

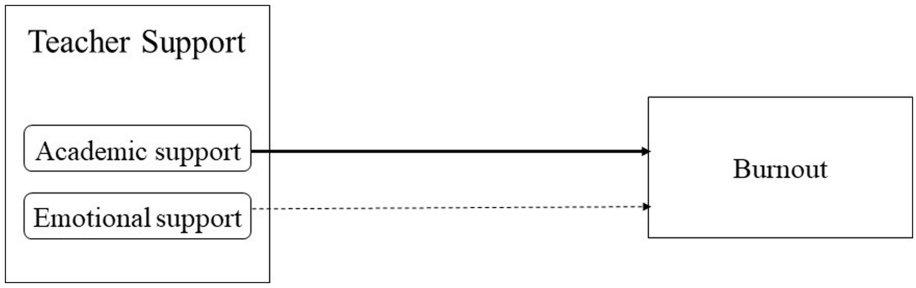

FIGURE 2
The effect of teacher support sub-variables on burnout. Solid lines are significant, while dotted lines are not.

therapists, whether trainees or professionals, to feel adequate autonomy, control at work, and be motivated while developing their abilities. If this autonomy and motivation are interrupted, the likelihood of burnout increases.

While previous studies have identified role conflict as the most important contributor to job stress (Park and Yoon, 2011; Park and Hang, 2017), it was not associated with burnout among art therapy students in our study. Presumably, this discrepancy is a result of their different professional status. Graduate students are both therapists and trainees who undergo supervision during art therapy practice, so even if their roles are limited, they probably accept these limitations and experience fewer role conflicts.

Second, we found that social support can reduce the possibilities of experiencing burnout. As mentioned in the introduction, social support helps relieve burnout (Cohen and Wills, 1985; Ross et al., 1989; Brown and O'Brien, 1998; Baruch-Feldman et al., 2002). When social support is low, it is hard to deal with stress adaptively, but when it is high, people can use it as a psychological resource to help them get through stressful situations (Choi and Chung, 2003).

Furthermore, our analysis with the sub-factors of social support found that professor support had the most significant impact, while the effects of colleague and family were relatively insignificant. This result should be carefully considered in that participants were graduate students in Asian society where the family is the greatest support for psychological consolation. Researchers who studied the relationship between social support and burnout of Korean professional counselors found that family support and peer support were more important than supervisor support (Park, 2001; Yoo and Park, 2002; Choi and Chung, 2003). Their findings underlined the importance of emotional support from family members in the family-centered culture of Korea. Therefore, our results are contrary to what is expected in light of the specificity of the Asian culture. To understand the contradiction, we paid attention to the differences in study subjects, the occupational status of the subjects. The previous studies' participants comprised paid professional counselors; our subjects were art therapy graduate students practicing as interns. For professional counselors, emotional intimacy with those around them or recognition and respect from significant others is more important in preventing psychological burnout than obtaining information needed to cope with problems. On the other hand, art therapy graduate students are pre-experts with room for improvement rather than performing independent functions as experts. It is plausible that teacher support could be more important than support from other sources to them, as teachers understand the specific stresses trainees experience and can provide more necessary assistance than others.

Further analysis appears to support this explanation: The examination of the components of teacher support identified academic support as more important than emotional support. It also contradicts the conventional wisdom held by family-oriented societies in Asia that emotional closeness to those around them or approval from important people are more crucial in preventing psychological exhaustion. In other words, for students, obtaining information necessary to understand and cope with various problems encountered in practice and achieving professional growth is indeed the way to overcome burnout. The importance of academic support has also been confirmed in previous studies (Johnston and Milne, 2012; Wilson et al., 2016). Wilson et al. (2016), who analyzed 15 studies on supervision, found that 13 of them considered learning opportunities to be the most important factor in supervision. Emotional support and the teacher-student relationship were key factors, but learning was also found to be a crucial component in overcoming adversity and becoming professionals. Our result also highlights the importance of teachers' academic support in higher education. Appropriate guidance from teachers can reduce emotional exhaustion, help individuals find meaning in their work, and increase their sense of accomplishment.

Referring to the practicum distress of art therapy students, Van Lith and Voronin (2016) pointed out that "students fluctuate through periods of uncertainty and feelings of being a fraud" (p. 53). Similarly, Rønnestad and Skovholt (2003) stated that students experience "performance anxiety, … a sense of being fragile and incomplete as a practitioner, insufficient conceptual maps, … and a feeling of neediness for mentors" (p. 45) during their practicum. Thus, art therapy graduate students are in need of academic support more desperately than emotional support. Feldstein (2000) also reported that school counselors who received clinical supervision experienced less emotional burnout than those with non-clinical supervision. Therefore, in order to alleviate the psychological burnout of art therapy graduate students in practicum, it is essential to provide academic support to help them improve their expertise.

The implications of this study for art therapy education and practice are as follows. First, the absence of challenge and work overload in the practicum locations might affect students' burnout. Therefore, preventing burnout requires the creation of practice conditions that can offer trainees appropriate degrees of autonomy, such as letting them design their schedules or processes. In addition, examining student therapists' workloads and maintaining appropriate workload levels are critical. Second, an interesting finding from this

graduate program with a mandatory practicum is the significance of teacher assistance, particularly academic help, in reducing the likelihood of psychological burnout in students. It implies that teachers should consider academic growth and professional development as major things in providing emotional, informational, material, and evaluative support to their students.

The limitations of this study and suggestions for future studies are as follows. First, this study used a quantitative approach to verify the relationship between stress, burnout, and teacher support in art therapy graduate students, but it did not carefully capture the difficulties they experience in practice or the psychological changes they feel when receiving help from professors. In future research, it is necessary to take a qualitative and in-depth approach to examine under what circumstances they experience stress, feel the risk of psychological burnout, and disclose the nature of support that reduces the risk of burnout. Second, we considered a non-comprehensive set of protective factors against burnout, focusing on social support and professor support. Therefore, future studies should endeavor to identify other protective factors and to develop a model for the psychological burnout path. Third, we used a cross-sectional approach, administering a survey to participants at a specific point in time and performing statistical analysis based on the results. Thus, we merely sought to estimate cause and effect; our findings provide no conclusive evidence for a causal relationship. In the future, researchers should seek to clarify the causal relationship by undertaking longitudinal studies. Finally, this study used self-report questionnaires, which means participants may have answered in ways they deemed socially desirable. Future study should consider combining quantitative and qualitative approaches by conducting interviews.

5. Conclusion

This study examined the relationship between practicum stress, psychological burnout, and teacher support in art therapy graduate students, a topic that researchers have not previously studied. Psychological burnout develops gradually and greatly impacts professional and personal life quality. We found that practicum stress can cause psychological burnout, while teacher support can lower the possibility of experiencing such burnout. Therefore, this study's results will help graduate education administrators establish a direction to enable art therapy graduate students to cope with and prevent psychological burnout.

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 Hanyang Cyber University Institutional Review Boards. The patients/participants provided their written informed consent to participate in this study.

Author contributions

T-EK conceived of the presented idea. T-EK and JJ developed the theory and conducted survey. JJ verified the analytical methods, analyzed the data, and wrote the manuscript in consultation with T-EK. 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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"Anxiety or enjoyment, I feel pleasant to welcome them both": thematic analysis of a Chinese PhD student's personal growth experiences

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Engaging with research is an emotionally demanding experience and a trajectory full of difficulties, challenges, and stress. This autoethnographic study explored my personal experiences as a PhD student in a four-year program and conducted a qualitative thematic analysis by analyzing 550 research diary entries collected between September 2018 and June 2022, in which supervisor feedback and reviewer comments were part of the content. Three recurring, unique, and salient themes pertaining to my personal experiences were identified: being fraught with anxiety, gaining a sense of enjoyment, and achieving personal growth. Whereas anxiety was from publication and dissertation writing, foreign language writing, and individual stressors, enjoyment was gained from the support network and conducting research. My personal growth was reflected from sustained engagement and improved autonomy. In the process, I experienced some negative emotions, but found more enjoyment. The findings indicate that anxiety and enjoyment are fluctuating, co-occurring, and reciprocal. The findings call for more attention to the role of research diary writing in scaffolding PhD research, providing emotional support, and facilitating personal growth and well-being of PhD students.

KEYWORDS

anxiety, enjoyment, personal growth, well-being, research diaries, autoethnography

1. Introduction

PhD students' well-being is crucial for higher education (e.g., Schmidt and Umans, 2014; Schmidt and Hansson, 2018), as well-being might affect students' research and teaching productivity, research policy, and higher education quality (e.g., Levecque et al., 2017; Schmidt and Hansson, 2018). However, the majority of PhD students experience poor well-being (e.g., Langford, 2010; Beasy et al., 2021). They encounter difficulties and challenges (e.g., Park, 2005) and experience struggles and stress (e.g., Barry et al., 2018; Liu and Abliz, 2019; Huang, 2020). The unpredictability and non-linearity of progress during the PhD might bring varied and mixed emotional changes (Juniper et al., 2012). Students face challenges and might experience some negative emotions, such as depression, anxiety, and anguish. The struggles against these negative emotions might result in the decrease in confidence, amplification of frustration, and a higher level of anxiety. Such frustrations and anxiety might bring negative influences on their PhD trajectory and well-being. Given the role of PhD students' personal growth and well-being, it is of critical importance to find a way to help them gain confidence in research engagement and manage unpleasant emotions.

Although current research has primarily focused on the importance of emotion for PhD students, little is known about what experiences, particularly emotional experiences PhD students might have during the entire PhD studies, and how they face up with the challenges to enhance their well-being in Chinese context. Studies have shown that emotion plays an important role in the doctoral experiences (Cotterall, 2013), and stress harms students' health (Russell-Pinson and Harris, 2019). PhD students' research and emotional experiences have been investigated in some countries, such as Japan (e.g., Casanave, 2010), Sweden (e.g., Langum and Sullivan, 2017), U.S. (e.g., Russell-Pinson and Harris, 2019), and China (e.g., Wang et al., 2019; Geng and Yu, 2022). These studies have provided useful insights into the understanding of PhD students' experiences. However, research diaries of PhD students, as an important scaffolding for students (Engin, 2011) and a cathartic tool (Browne, 2013), have not received sufficient attention from scholars. This study, situated in a Chinese context, used an autoethnographic approach to explore my personal experiences as a PhD student through analyzing the research diary entries across 4 years to reveal the personal growth.

2. Literature review

2.1. Studies on diaries

Diary is defined as "a document created by an individual who has maintained a regular, personal and contemporaneous record" (Alaszewski, 2006, p.1). Diaries record "events, experiences, thoughts and feelings" of diarists (e.g., Alexander et al., 2016, p. 19) and provide a rich and valuable data source about diarists' personal experiences (e.g., Alaszewski, 2006; Allen, 2013). It serves the function of healing effects for diarists (Glass et al., 2019). Diaries have been used to investigate teachers' beliefs (e.g., Carson and Longhini, 2002; Allen, 2013) and students' language learning (e.g., Bailey, 1983, 1990; Bhattacharya and Chauhan, 2010; Shelton-Strong and Mynard, 2020). The studies showed that diaries helped teachers record their experiences (Allen, 2013), facilitated the autonomy augmentation (Bhattacharya and Chauhan, 2010), and promoted students' positive feelings and motivation in language learning (Shelton-Strong and Mynard, 2020).

Research diaries have been used to document the researchers' reflections (e.g., Silverman, 2005; Gibbs, 2007). A research diary may include the research process (e.g., Borg, 2001), methodological steps (e.g., Browne, 2013), and researchers' knowledge development (e.g., Engin, 2011). Several studies have explored the functions of research diaries, such as a tool for scaffolding (Engin, 2011) and a cathartic tool (Browne, 2013). These studies focused on the role of diary writing for PhD students in different contexts, and used researchers' personal diary entries to describe the PhD work. Engin (2011) investigated the role of research diaries in helping students learn about research and how to be a researcher from the socio-cultural theory of learning. Browne (2013) explored the benefits of writing and maintaining research diaries for recording the emotional and practical challenges of fieldwork in unfamiliar settings. Ridgway (2022) focused on the interconnections between memorable events and junctures with her doctoral journey. She used three diary entries in the depths of her PhD to reveal the role of writing diaries for "identifying the echoes between personal and graduate school experiences" (p. 1). These studies have paved a way for using research diaries among PhD students and call for more attention to the use of research diaries to probe into PhD students' experiences in different disciplines and contexts.

2.2. Studies on PhD students' experiences

Research into PhD students' experiences has focused on both research experiences and emotional experiences. As writing is "central to the process of developing a scholarly identity and fundamental to the doctoral experience" (De Magalhaes et al., 2019, p. 4), studies of PhD research experiences have investigated writing related experiences, such as writing styles (e.g., Casanave, 2010), writing expertise (e.g., Casanave, 2019), writer identity (e.g., De Magalhaes et al., 2019) and related challenges and emotions (e.g., Badenhorst, 2018; Beasy et al., 2021). Casanave (2010) illustrated how three PhD students developed their writing styles over a two-year period and emphasized the importance of PhD students' dissertation writing experiences. Langum and Sullivan (2017) investigated the challenges that non-native English PhD students faced in the routes into their international academic English publications. The study reported that hesitancy and distance were common among Second Language (L2) doctoral researchers. They experienced feelings of insecurity in communicating research results and translating their ideas and primary thoughts into English, and remoteness in the development of bi-literate academic writers. In the study of Badenhorst (2018), students experienced writing anxiety, especially when receiving negative feedback on their dissertations or papers for publication. The study stressed the emotional nature of writing for graduate students and presented three pedagogical strategies: free-writing, negotiating negative internal dialog, and using objects to externalize feelings. With these strategies, students could better recognize their emotions, make decisions, and develop agency. De Magalhaes et al. (2019) investigated two English as an Additional Language (EAL) PhD students' challenges associated with developing scholarly identities during their candidature. It reported students' vulnerability in trying to adjust their voices to meet the norms. Casanave (2019) pointed out that raising PhD students' awareness of accepting the performance and considering it to be a part of an academic life, might "help prevent debilitating anxiety that comes from expectations that are set unrealistically high" (p. 43). Investigating into academic research among PhD students opened up space for insights into their personal growth and well-being.

Existing studies have also shown that PhD students experience intense emotions apart from conducting research (Bettinson and Haven-Tang, 2021). PhD students' emotional experience studies have explored a set of emotions, particularly the negative emotions, such as anxiety, frustration, and anguish (e.g., Aitchison et al., 2012; Cotterall, 2013; Russell-Pinson and Harris, 2019; Geng and Yu, 2022). Casanave (2014) pointed out that emotion was a part of PhD students' dissertation journey. Emotions provided motivational energy for students to persist until graduation (McCormack, 2009). Previous studies suggested that PhD students be supported to learn skills of attending to the stress to maintain and enhance their well-being (e.g., Russell-Pinson and Harris, 2019). Given the challenges of academic research faced by PhD students and the complexity of emotional changes experienced by them, more studies of PhD personal experiences are required to reveal a full picture of their personal

growth in both research and emotional experiences in various contexts.

2.3. Studies on PhD students' well-being

Well-being refers to "the individual's experience of his or her health" (Medin and Alexanderson, 2001, p. 75). PhD students' well-being has been termed as internal reflection (Haynes et al., 2012), being true to oneself (Schmidt and Umans, 2014), and self-care (Kumar and Cavallaro, 2018). Well-being can be reflected from the positive relationship with others, personal growth, environmental autonomy, autonomy, purpose in life, and self-acceptance (Ryff, 1989).

PhD students' well-being has been related to many factors, such as productivity and efficiency, research policy, problem-coping strategies, support network, the culture, and the consideration of well-being by students themselves (e.g., Levecque et al., 2017; Schmidt and Hansson, 2018; Jackman et al., 2022). Levecque et al. (2017) assessed the prevalence of PhD students' mental health problems among 3,659 students in Belgium. Results of the study showed that 32% of students were at a risk of having or developing psychiatric disorder, particularly depression. Jackman et al. (2022) investigated the early stages of PhD students' doctoral research and stressed the importance of self-care for PhD students. The study provided some common self-care strategies (i.e., physical activity, hobbies, and rest periods) and suggested that PhD students be educated on some self-care practices, such as physical activity and rest periods. Such suggestions have provided useful implications for the intervention strategies to enhance PhD students' well-being in the early stages of their study. Based on these studies, how to enhance PhD students' well-being during the entire studies remains to be explored.

Overall, most studies have limited their investigation of PhD students' experiences through researchers' perspective. Given the complexity of PhD students' research experiences and the variety of emotions experienced by PhD students, their personal experiences could be manifested in a nuanced way. Previous studies have centered more around some anxiety-filled experiences. It remains unclear what other emotions PhD students might experience, what sources might cause the emotions, and how they might enhance their well-being. Furthermore, although several studies have explored the usefulness of research diaries in their disciplines and contexts, a longitudinal research diary study in English as a Foreign Language (EFL) field and in the context of mainland China covering the entire PhD study is scarce. To address these research gaps, the present study aims to explore my personal experiences as a PhD student in a four-year program through analyzing chronologically organized data in the context of China.

3. Methods

3.1. Research context

I enrolled in a Foreign Linguistics and Applied Linguistics PhD program at one of the key universities in the north of China in fall 2018. The program length was from 4 to 6 years. I need to meet the graduation requirements to get a PhD degree, including courses, publications, and a dissertation. I worked full-time at another university in the same city, where I studied as a PhD student. I was a little bit anxious before I embarked on the journey, as I knew getting a PhD degree would be a difficult and challenging task. I worked hard to complete the compulsory and selective courses (most in English and some in Chinese) and started early on writing academic journal articles. However, the challenges of selecting research topics, writing and revising manuscripts, publishing research articles, and completing a dissertation, were more challenging than I had previously thought.

The major challenges were threefold. The first challenge was to publish innovative academic articles on SSCI-indexed or CSSCI-indexed journals. The second challenge was to conduct an appropriate research project and complete a PhD dissertation. The third challenge arose from my expectations of transforming from a novice researcher to a PhD graduate who could construct a desired academic identity. After a careful self-assessment, I started writing research diary entries to record my personal experiences. At the beginning of my first year, the research diaries focused more on the justification of the research design and details of the research development, difficulties and challenges I experienced in learning to conduct research, and corresponding strategies I employed. However, with more difficulties from academic writing, submission, and rejection by journals, I could hardly control my emotions. It was in this situation that I wrote more about my emotions and emotion regulation strategies. Through writing about my emotions, especially the mixed negative emotions going forth and back, I found that writing research diaries embodied the dual role of being an emotional outlet and an emotional support. It helped to document and reflect on my research and emotional experiences, and calmed me down. Realizing the mediating role of writing research diaries in the co-development of my research competence and emotional management, I took this activity as an important task and wrote diaries on a regular basis. Therefore, the diaries could present a clear overall picture of my research trajectory and emotional changes in the 4 years' PhD program.

3.2. Data collection and analysis

This study adopted autoethnography to explore my personal experiences as a PhD student, especially the emotional experiences across 4 years. This approach has the advantage of calling up personal embodied experiences (Maslen, 2022), helping to observe and analyze their own emotions (Buckley, 2015), offering an insider perspective, and revealing the meaning of lived experiences (Ellis et al., 2011). It also has the advantage of promoting personal well-being (Ellis, 2013) through recounting personal experiences (Lapadat, 2017) and emotional experiences (Akehurst and Scott, 2021).

Diaries were the data source, and supervisor feedback and reviewer comments were part of the content of the diary entries. I started writing Chinese diary entries from the first semester, as writing in my mother language was an easier way for me to narrate personal experiences, particularly the complicated and varied emotions. I wrote 35 research diary entries in this semester. In the dairy entries, I quoted supervisor feedback and reviewer comments in the original languages (i.e., English or Chinese). With more stress from course assignments and publication demands, I embarked on a journey of writing about two research diaries per week. In all, I collected 550 research diary entries with the total length of 271,903 words written between September 2018 and June 2022. The diary

entries were based upon my personal experiences and interaction with other people, such as my supervisor, reviewers, friends, and family members.

Qualitative thematic analysis was used to help identify, analyze, and report the major themes and sub-themes (Braun and Clarke, 2006; Yin, 2011). Thematic analysis could summarize the key features of the data (Nowell et al., 2017) and generate unanticipated insights from the data (Braun and Clarke, 2006). Qualitative research software NVivo12 was employed to help analyze the diary entries. I followed the coding scheme: (1) familiarizing myself with all diary entries; (2) generalizing the initial codes from the diary entries; (3) identifying the common themes used to present my experiences, especially emotional experiences; (4) reviewing all the themes; (5) defining and naming three major themes; and (6) producing the report of my PhD personal experiences. Three recurring, unique, and salient themes pertaining to my personal experiences during the 4 years' PhD program were identified: being fraught with anxiety, gaining a sense of enjoyment, and achieving personal growth.

3.3. Rigor of the study

I used the criteria of credibility, transferability, dependability, and confirmability (Lincoln and Guba, 1985) to ensure the rigor of the study. Credibility was guaranteed through the prolonged engagement with the data. As this autoethnographic study did not have other participants or co-authors, I invited a researcher colleague, who had over 30 years' teaching and research experiences at the university where I worked, to help verify that the diary entries reflected my personal experiences. I shared with and asked her to give comments on some diary entries. For example, she helped with assessing whether some diary entries describing my regular work (teaching) in workplace, my EFL writing experiences, and social support I received, were the true description of my experience. To increase the credibility, a researcher colleague was invited to provide an external check. Transferability was guaranteed by the transparency of the data, the description of the research context, data collection, coding, and formulating themes and sub-themes. Dependability was enhanced by a detailed description of data analysis. Confirmability was established by coding the data. There were ongoing discussions with my researcher colleague in terms of the preliminary findings, emerging codes, sub-themes, and themes. Inter-rater reliability was established with the same researcher colleague to study and code 25% of the data. This produced an inter-rater reliability of 0.88.

4. Findings

Looking back on my 4 years' experiences as a PhD student, I experienced anxiety mostly in the preliminary stages, and anxiety waxed and waned. I regarded this kind of emotion advantageous to increase attentiveness to academic research. Emotional self-support through writing research diaries and social support helped me find an effective way of gradually lessening and relieving anxiety. I gradually gained a sense of enjoyment. The reflection and reconciliation helped me develop myself in an all-round way, and in this process, I learned to take a more self-distanced perspective to evaluate myself and viewed these experiences as life path and predictors of well-being.

4.1. Being fraught with anxiety

The excitement at the news of admission to further my study as a PhD student after working some years was soon replayed by anxiety when I came to realize how challenging and difficult the PhD trajectory would be for the upcoming 4 or even 6 years. My anxiety mainly came from publication and dissertation writing, foreign language writing, and individual stressors. Such anxiety lasted mostly in the first 2 years and gradually lessened with the improvement of EFL writing skills and better perceptions of my identity as a novice researcher in the field.

4.1.1. Anxiety from publication and dissertation writing

Choosing an appropriate research topic was the first cause of anxiety. Anxiety accompanied me from embarking on the first research topic to new ones. This source of anxiety was more obvious for me when I had to work on a new research topic. I noted down my anxious feelings in one diary entry.

> *I found myself quite confused about what research topic I should focus on and what PhD dissertation project I should conduct. The more I thought about this, the more anxious I became. I have been reading a lot of research articles, but still I do not have a clear idea about how to narrow down a research topic and design my own research based on and informed by previous studies and theories. I am somewhat lost and unclear about what I could do in this field, and I seem to remain an onlooker when reading academic papers* (Diary, 18 April 2019).

Writing research articles for possible publications aroused anxiety. I felt anxious in every step of such type of writing, especially in the first year of PhD. Anxiety at this stage was mainly caused by the unfamiliarity with academic writing and inaccurate perceptions of myself as a novice researcher. The anxiety was elevated when I realized that all my submitted articles were not in the first round of peer review. For instance, after discussing with my supervisor whether we should email the publishing house for further update information, I wrote a diary entry:

> *3:30 a.m. in the early morning. It is still dark. Quite unconsciously the idea occurred to me that I did not spend sufficient time writing research papers, bringing about some kind of negative emotions of anxiety and anguish spontaneously. The more I thought of this, the more overwhelmed I became. I have a lot of repressed feelings… The fear of publication failure is similar to that when I was not sure whether I could be enrolled in a desired university. I feel worried, as up till now, all my submitted articles have not been into the first round of peer review. So bad feelings* (Diary, 22 May 2019).

Finding an appropriate journal increased my anxiety, especially when I did not have confidence or felt inexperienced in academic research. This was more evident when one manuscript was rejected. The following diary entry described how I felt about finding a journal to submit my manuscript to.

> *Time passes quickly. It has been almost one year since I enrolled in the PhD program. I find it quite difficult and challenging to find an*

> *appropriate journal, which might accept my first English manuscript. I do not have any confidence right now. What I have been doing is to submit one manuscript to another different journal if it is rejected. I feel so sad that my manuscripts have been rejected several times. The experiences made me feel more depressed every time I thought of these discouraging moments. I have no idea what I should do now, and perhaps I need to spend more time in finding more appropriate journals. It is such a difficult and challenging trajectory for a first-year PhD student* (Diary, 16 May 2019).

Waiting for the decision of journals caused substantial anxiety for me. This kind of anxiety intensified each time when the manuscript was rejected, and was more elevated when the revised version got rejected more than once. Checking the status of the submitted manuscripts was a daily routine for me. I tried to note down my anxiety and worries in one diary entry.

> *4:00 a.m. in the early morning. The first thing I do after getting up is to check the status of the submitted articles. This has become a daily routine. Publication has been torturing me a lot. The more anxious I feel, the worse result it seems to have. I quivered a little bit when learning that one manuscript was rejected a moment ago. How I wish this were not true. Tears rolling down my cheeks, I could not control my feelings. I have made every possible effort to revise the manuscript. Now the more I think about it, the worse feelings I have. I become worried about another manuscript, as it might be rejected as well. This made me get a little bit desperate when I realize that the manuscript has been under review for ages…* (Diary, 15 May 2019).

Receiving feedback from my supervisor and comments from reviewers caused anxiety. The supervisor has been an authoritative figure in academia and set a good model for me. I took my supervisor's feedback and suggestions carefully and implemented the feedback, but the feedback sometimes aroused a kind of anxiety for me. It was mainly caused by my EFL writing ability and perceptions of my research competence. When I received supervisor feedback, such as "? expression," "? The subject of this sentence is different from that of the previous sentence. Please revise this sentence. It is a grammatical error here." (Supervisor feedback, 2 March 2021), and "which implication comes first?" (Supervisor feedback, 5 June 2021), I had anxiety, even though I knew that the use of interrogative and imperative sentences lessened my anxiety to some extent, and I could improve my writing competence through making more effort.

I also experienced anxiety when receiving reviewers' comments on manuscripts. Such anxiety lasted long and came back and forth. This kind of emotion was more obvious in the past one and half years of my PhD. Anxiety came to me when I read "The theoretical background of the paper is inadequate," (Reviewer comments, 5 September 2019) and "There are sections of the paper which are confusing and should be reformulated," (Reviewer comments, 21 December 2020). I noted my anxiety in one diary entry.

> *I had mixed emotions while I was reading supervisor feedback…I experienced some kind of anxiety. I could not help pondering over how I could improve my EFL writing competence and better manage my emotions. Reading the feedback, I know that more improvement is needed…But, the difficulties seem to have put me into more anxiety…My emotions changed repeatedly from excitement and relief after submitting the manuscripts to anxiety and depression after receiving reviewer comments. The comments are constructive, but I still experience anxiety. These emotions have been with me every single day in the past one and half years. How I hope that one day there will be less anxiety and more enjoyment* (Diary, 29 December 2020).

4.1.2. Foreign language writing anxiety

Foreign language writing anxiety was caused by unfamiliarity with the language, setting up appropriate arguments, and finding more authorized resources to support arguments. The gap between my foreign language proficiency and the required EFL writing competence has caused long-lasting anxiety. This source of anxiety ran across the draft and manuscript writing, revision, and submission. I could hardly get rid of the anxiety. It lessened gradually after I had more EFL writing experiences and self-care strategies. The following diary entry recorded this source of anxiety.

> *A bad day today. One manuscript was rejected…I felt quite overwhelmed, but I knew that I had to accept it. I still have a lot of difficulties with EFL writing. There are other difficulties as well, such as subject-verb agreement, redundancy, repetition, and overuse of linking words. It is still a long way to go in foreign language writing* (Diary, 4 September 2019).

Finding authorized resources presented anxiety for me, especially in the first manuscript. I felt anxious when I failed finding more authorized resources and even more anxious when the reviewers suggested that I add more authorized resources. I wrote about this experience in my diary.

> *Feeling a little bit frustrated today. It is a revision day. I added more authorized resources. It is a really difficult and challenging task. How embarrassed I felt when I did not find proper authorized resources to set up arguments. I need to read more related research articles, select appropriate materials, and use these articles to address the issue. Oh, what a day!* (Diary, 5 May 2020).

4.1.3. Anxiety from individual stressors

The individual stressors came from work (teaching at one university) and family, which triggered my anxiety from time to time, as I worked full time and had a family to take care. I was well aware that obtaining a PhD degree was more challenging for a full-time teacher and mother, and I tried to balance among research, work, and family. Still, I was haunted by anxiety once I failed doing research as scheduled, and this kind of anxiety intensified, especially when I did not find any time doing research in a week or when one manuscript was rejected. Noted in many diary entries were cases of anxiety from these stressors: "Today I have to complete a 2,000-word work report. I feel a little bit anxious when I realize I do not have time working on papers," (26 May 2020), "I feel so overwhelmed. I did not have any time on papers. Several days have passed," (18 November, 2020), and "Today it is weekend, and I spent a day with family. I did not do any academic work, and I did not even make any improvements in my papers. I feel anxious." (26 November 2020).

4.2. Gaining a sense of enjoyment

The enjoyment came primarily from the support network and conducting research. Such enjoyment provided an important opportunity for me to manage my complicated and varied emotions. The support from different sources was encouragement to me, whereas conducting research offered me opportunities to evaluate my academic writing performance and helped me develop positive appraisals of anxiety, which both led to better enjoyment.

4.2.1. Enjoyment from the support network

The support network included self-support through writing research diary entries and social support through receiving positive comments from various sources. Writing diaries offered me an opportunity to reflect on past research and emotional experiences. Self-reflection improved my ability to activate emotions and cognition. I could better engage in assessing my academic writing performance. In doing so, I regarded diary writing as an emotional outlet, whereas social support reinforced my research engagement. The diary entry described how I valued this kind of writing.

> *3: 45 a.m. in the early morning. I happened to read an online blog diary entry. The writer wrote that keeping diaries helped her record personal experiences, and writing had the healing power for her, especially when she felt at a loss or sought some kind of support. I was impressed by what she wrote in her diary, as we had similar feelings…Once I had no idea about how to write or revise the manuscripts, I wrote diaries and read previous ones to help me relieve the anxiety and calm down. In such a way, my anxiety got relieved to a large extent. I came to realize the importance of the progress I made and gained increasing confidence in myself by means of keeping diaries, which further motivated me to make greater effort to conduct research. More importantly, I have developed a stronger research interest and an increasing awareness of studying myself in the future* (Diary, 31 May 2020).

Social support I received included the positive comments and encouragements from my supervisor, reviewers, colleagues, family members, and friends. Their support brought me some sense of enjoyment. The constructive and positive feedback from the supervisor and reviewers were promoters for my development from anxiety to enjoyment and personal growth. The stressors from work and family were important social support sources facilitating my personal growth. I wrote about how one friend's support helped me treasure my life as a PhD student. I noted that "One friend gave me very useful advice on topic sentences, logic, and structures within paragraphs. She has always been there whenever I feel worried and anxious. Such friendship is a treasure in my life, especially during my PhD," (Diary, 3 December 2020).

The balance among teaching, research, and family helped me gain more enjoyment. I noted in the first year that "I have to balance among teaching, research, and family. Spending time with family is relaxation and gives me encouragements…I could get some useful feedback from the ongoing discussions with my colleagues," (Diary, 19 March 2019). In the third year, I wrote that "I have well learned to balance among teaching, research, and family. I could gradually get used to the way how I reconcile with myself and find a way to release my emotions. Writing diaries benefits me, especially when I am experiencing a lot of stressors," (Diary, 19 December 2021).

4.2.2. Enjoyment from conducting research

My enjoyment from conducting research covered two stages of manuscript writing, i.e., revision and acceptance of manuscripts. Revision of manuscripts was the first most important enjoyment source for me. During the revision process, my enjoyment came from revision and the progress I made after rounds of revision. I noted down my enjoyment in one diary entry.

> *A new day starts. I completed making revisions and was ready to submit the revised version to the journal in a minute. I felt more relieved and confident when I read through the response. I clicked the 'submit' button and took a deep breath. Although I was not very sure whether the revised manuscript would be accepted, I had a sense of enjoyment in revising, as I moved a step forward with persistence and diligence. Even though it might be rejected, I would not feel regretful as long as I have tried. In the past two months, I responded to the reviewer comments and revised the version repeatedly. It is not exaggerating to use the word 'repeatedly', as each time I was about to submit, I always identified some new errors in the manuscript, in which case, I had to revise it all over again. It is in the constant revision process that I became a better EFL writer with more interest in research* (Diary, 24 February 2021).

Acceptance of research articles brought me a great sense of enjoyment in academic research. Such enjoyment was an encouragement and a stress reliever for me to build up confidence and move forward with more research projects. The diary entry was a vivid description of how I thought of conducting research after the acceptance of one manuscript in the third year of my PhD.

> *A day of achievement indeed. I was jogging when my friend told me excitedly that one manuscript was accepted. I felt so much relieved when I heard about it, and a lot of memories flashed back into my mind. It has been almost three years since I was enrolled in the PhD program, and it is such a difficult journey…I still remember the days and nights I collected and analyzed the data, the emotions I experienced in the process, the discussions with other researchers, etc. Learning to collect and analyze data, writing in a foreign language, and revising manuscripts, have all become important parts of my daily life…These experiences have enlightened my life with hope. I do not remember how many times we have discussed and revised the manuscripts. But I know that although sometimes I was exhausted, I felt empowered. My true feelings are that doing research is challenging but rewarding. I am happy to see what I have been doing in the past three years* (Diary, 14 August 2021).

4.3. Achieving personal growth

During the course of publication and dissertation writing, the anxiety I experienced brought me some sense of enjoyment, which led to better personal growth in various aspects, such as sustained engagement and improved autonomy. I not only stayed engaged in academic research, but also gradually had sustained engagement with

research. Then I weaved new projects into my research. The research interest is driven by experiencing both anxiety and enjoyment, and retaining research interest through more research topics and a strong support network. In stressful situations, my reflections empowered me with the ability of better management, i.e., to mitigate different stresses, seek various social support, and build a research community to decrease tension from publication and dissertation writing. I could better position myself and have more willingness to seek knowledge and find ways to improve EFL writing skills. The growth helped me become a better version of myself.

4.3.1. Sustained engagement

Sustained engagement was an important part of my personal growth during the PhD. It brought me a step closer to well-being, and consisted of cognitive engagement, emotional engagement, and research engagement. The cognitive engagement provided me with internal cognitive engagement and facilitated both the emotional engagement and research engagement. The emotional engagement I gained brought me abundant emotional resources to deal with the research demand, especially EFL writing. It further harnessed myself into research engagement. Such a combination of emotional engagement and research engagement improved my autonomy. Th diary entry described how I developed my research interest and engaged in doing research in the beginning of the second year of my PhD.

> *1:20 p.m. in winter. It has been one year since I enrolled in the program…I could not believe I have so many obstacles. I should take a more self-distanced perspective to assess my writing ability. I seem to have better known myself, with more English writing experiences and emotional experiences. I have fallen in love with research design and data analysis. It has become an important part of my life. Anxiety or enjoyment, I feel pleasant to welcome both. I hope that I could make more progress in the future. Though there would be more difficulties and a new round of challenges, I have gained confidence* (4 January 2022).

4.3.2. Improved autonomy

Enjoyment I gained from engagement facilitated the improvement of autonomy. I realized the importance of engaging in research in a more self-determined way, because I knew that this kind of autonomy helped generate better engagement, especially research engagement. The improved autonomy included self-regulation strategies and time management skills. Compared with my past self, I improved the self-regulation strategies and developed some expertise during the 4 years. Such self-regulation strategies were helpful for the improvement of emotion management and research scheduling. The diary entry depicted how I improved these two aspects in the second year of my PhD.

> *I could complete the research writing task on a daily basis. There was boredom sometimes, and I felt a little bit lonely in the writing process. However, I could gradually adjust myself and focus more on it after regulating my emotions. I tried to be productive every single day. Also, I could get rid of the negative emotions through writing about my personal experiences, including the challenges and difficulties, the ways of how I calmed myself down through various ways, and the anguish I had in the writing and revision process…I gradually got autonomy satisfaction from writing and could better regulate my emotions. I like doing this in a self-determined way. It brings me a lot of fun* (Diary, 12 December 2020).

Improving the ability to communicate and interpret emotions is an important part of improved autonomy. In developing my research interest, I experienced both positive emotions (e.g., acceptance, satisfaction, and happiness) and negative emotions (e.g., frustration, anxiety, and disappointment). These mixed emotions were gradually alleviated through a deeper understanding of feedback from supervisors, reviewers, and editors. I could better comprehend their comments, with which I could surpass past experiences and set new challenging goals. I recorded how I interpreted my emotions in one diary entry.

> *4:00 a.m. in the early morning. I have been working day and night these years, and finally some manuscripts were published. Up till now, four manuscripts have been accepted by SSCI-indexed journals. Then I have gained more confidence in academic writing as an EFL PhD student. Although I know there are still a lot of work to be done in the future, I have confidence in improving myself. I believe doing in my way can help me make improvements in using more idiomatic language, building up a more logical and coherent argument, etc.* (Diary, 16 September 2021).

Time management skills improved my work efficiency. Such improvement brought me more autonomy satisfaction and engagement. I wrote a diary entry before graduation, which reflected on my time management skills in the past 4 years.

> *Time really flies. Soon I am going to graduate from this university. Reflecting on the past 4 years, I believe that good time management strategies are important for completing different tasks and maintaining positive emotions. A proper allocation of time is essential for completion of the work and managing the emotions that work brings to me. My time schedule is the regular workout in the morning, writing academic papers in the day time, enjoying family time after work, and then doing research. It has become a fixed daily pattern for me. Even if I had no idea of what to write, I still wrote diary entries to record my work experiences and emotional experiences. Then I could better reconcile with myself* (Diary, 10 June 2022).

During the 4 years from September 2018 to June 2022, I wrote 550 research diary entries. Looking back on my personal experiences described in the diary entries, I treasure the experiences as a PhD student, although there were a lot of anxiety. I also treasure diary writing, as it has become an emotional outlet for me. Anxiety, as part of my life, provided me a valuable opportunity to reflect on myself, and thus I could seek ways to face and manage anxiety, which led to a sense of enjoyment, personal growth, and well-being.

5. Discussion

The 4 years' PhD trajectory brought forth both challenges and difficulties for me. The experiences are similar to those reported in previous studies (e.g., Park, 2005; Barry et al., 2018; Liu and Abliz, 2019; Huang, 2020; Beasy et al., 2021). The experiences covered both

research and emotions, which echo with the call for attention to PhD students' experiences, i.e., research experiences (e.g., Casanave, 2010, 2019; De Magalhaes et al., 2019) and emotional experiences (e.g., Aitchison et al., 2012; Cotterall, 2013; Russell-Pinson and Harris, 2019).

During the 4 years' PhD program, I experienced complicated and varied emotions, and these emotions were part of a PhD student's normal experiences (Casanave, 2014). Among these emotions, there were a large proportion of negative emotions, such as anguish, distress, and anxiety. I realized the harmfulness of the negative emotions (Russell-Pinson and Harris, 2019), the benefits of making use of positive emotions in providing motivational energy (McCormack, 2009), and the usefulness of research diary writing (Engin, 2011; Browne, 2013; Glass et al., 2019) in scaffolding my study and healing my emotions. Accordingly, I set up my mind and made great effort to compromise and negotiate with the ongoing negative emotions, especially anxiety, through writing research diaries and seeking sources of social support. This process of negotiating my negative internal dialog (Badenhorst, 2018) promoted sustained research engagement and improved my autonomy. Gradually I embraced a sense of enjoyment and achieved personal growth. This process was a trajectory of maintaining and enhancing PhD well-being.

I was fraught with anxiety during the PhD, including anxiety from publication and dissertation writing, foreign language writing anxiety, and anxiety from individual stressors. The findings of anxiety from publication and dissertation writing corroborate recent studies (e.g., Berg et al., 2016; Mura and Wijesinghe, 2022), which explored PhD students' negative emotional experiences. Foreign language writing was the second source of anxiety. Such anxiety sometimes caused me to procrastinate my research, which are in line with the findings of some studies (e.g., Taso et al., 2017; Tahmouresi and Papi, 2021). However, I could manage my emotions and move forward with manuscript writing and revising, and gradually developed the ability to interpret and reconcile negative emotions. Individual stressors were the last sources causing anxiety. Different sources of anxiety raised my awareness of identity as a novice researcher. Realizing that I possessed most of the commonalities of a novice researcher eased and decreased my anxiety. As such, I made every effort to perceive myself in a more self-distanced perspective and renegotiate the state of anxiety. This helped reduce the negative mediation of anxiety. I wrote research diary entries to record and reflect on my research and emotional experiences, which helped soothe myself. Through actively engaging in writing diary entries, I realized that diaries could help further reveal my hidden and suppressed emotions and then release these emotions to a large extent. Since then, I viewed diary writing as a useful method (e.g., Alaszewski, 2006; Hyers, 2018) and a cathartic tool (Browne, 2013), and made full use of its role in scaffolding my research (Engin, 2011) and healing effects (Glass et al., 2019). Surprisingly, with time passing by, I perceived some positive changes that keeping diaries brought to me, and I inter-weaved diary writing with my PhD life. To cope with foreign language writing anxiety, I developed the ability to set up clearer arguments, find more authorized resources, and better express my voice with the scaffolding from my supervisor, reviewer comments, and other sources. To reduce anxiety from individual stressors, I tried to discuss with family members and colleagues. Such ways eased my anxiety and shifted my focus from being fraught with anxiety to a sense of enjoyment.

But I gained a sense of enjoyment during the PhD, including enjoyment from the support network and enjoyment from conducting research. I felt enjoyment from self-support through writing research diaries and social support through receiving constructive and positive comments. The findings of self-support corroborate previous studies (e.g., Engin, 2011; Browne, 2013), which stressed the role of research diary writing in helping PhD students heal in their fieldwork. Social support sources were various, but the findings showed how the feedback from the supervisor and reviewers helped me develop emotions from anxiety to enjoyment after managing the anxiety and focusing more on feedback or comments. This can be explained by the important role of supervisors in fostering doctoral satisfaction and degree completion (e.g., Barnes and Randall, 2012; McAlpine and McKinnon, 2013; Xu et al., 2021) and the usefulness of reviewer comments in the development of PhD students' academic writing (e.g., Yu and Jiang, 2022). Enjoyment from conducting research included revision of manuscripts and acceptance of research articles. Such enjoyment was due to the co-development of my research engagement and EFL writing performance, and it could exert some positive influences on my cognitive processing styles and research-related behaviors, as indicated by the positive emotion theory (Fredrickson, 2001). Enjoyment, as a kind of positive emotion, helped me extend my research scope and interest after graduation, which would lead to my life-long personal growth.

I also gained personal growth in sustained engagement and improved autonomy. Personal growth, as a part of PhD students' well-being (Ryff, 1989), led to an internal reflection on myself (Haynes et al., 2012), being true to myself (Schmidt and Umans, 2014), and self-care (Kumar and Cavallaro, 2018). My personal experiences illustrated the sustained engagement in finding research interest and engaging in more research projects. Such sustained engagement might motivate students to contribute more to the field (Beasy et al., 2021). The improved autonomy led me to a better productivity and efficiency in research and brought me opportunities of adhering to new expectations. Once fulfilling these expectations, I would have more emotional rewards, such as enjoyment, relief, and hope. All these emotions are conducive to my personal development and well-being. I thus enjoyed the trajectory more and regarded the four-year PhD experiences as a valuable part of my life journey.

6. Conclusion

This study has explored my personal experiences as a PhD student using an autoethnographic approach and revealed how I gained a sense of enjoyment and achieved personal growth after experiencing anxiety over a four-year period. Although these narratives were highly contextualized in my own personal experiences, it points to the common and wider experiences of PhD students. The analysis of my experiences enabled me to recognize the salient role of research diary writing in scaffolding PhD research and providing emotional support. I feel strongly that it is in this process that I could view all my emotions as agentive and embrace more enjoyment in a trajectory full of difficulties, challenges, and stress. Such enjoyment brought me a sense of relief, helped me avoid the harmful outcome of anxiety, and brought me back to sustained engagement.

Through analyzing research diary entries, I delineated my research experiences and complex emotional trajectories and took initiatives

to seek self-support and social support of the kind that can maintain PhD students' well-being. This study suggests that PhD students can and should develop their abilities to reduce anxiety and gain enjoyment. It is important that PhD students should have confidence in confronting the complex emotions and read related blog posts at a blog or website, which are shared by other PhD students. Such a way might help students alleviate anxiety and enhance well-being during their PhD. It is also necessary for PhD students to seek social support from supervisors, family, and institutions to deal with the ongoing negative emotions.

This study has contributed to the understanding of PhD students' experiences through providing an insider's perspective. PhD students are advised to cope with their negative emotions (i.e., anxiety and anguish) through diary writing and channel more positive emotions (i.e., enjoyment and relief) into their study. To help PhD students gain more sense of enjoyment during their PhD, supervisors can guide their students to reflect on their research and emotional experiences by incorporating research diary writing as a scaffolding tool. Such scaffolding opportunities would support students in the enhancement of well-being. Higher education institutions are suggested to use the low stakes research diary writing to help PhD students maintain and enhance their well-being.

This study has confirmed the usefulness of autoethnography as an empowering research method to explore PhD students' experiences and make full use of the embodied experiences (Adams et al., 2014). Such an approach uses self-written research diaries as the data source and could help PhD students document personal experiences, engage in self-reflection, and improve emotion management and self-regulation strategies.

This study has two limitations. This study represented my own perspectives and explored my personal experience as an EFL PhD student across 4 years. It neither reached generalizable conclusions, nor suited all. Also, this study could have been done with the collaborative autoethnographic approach. Future research could use a collaborative approach to explore the personal experiences of more PhD students in different disciplines and contexts.

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 Research Ethics Board of Shandong University (reference no. ECSBMSSDU2018-1-051). The participant provided her 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

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

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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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The Human Library and the development of cultural awareness and sensitivity in occupational therapy students: a mixed methods study

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Introduction: Monash university in Australia has adopted the Human Library as a teaching activity aimed at enhancing occupational therapy (OT) students' cultural awareness and sensitivity; however, its effect on cultural competence in healthcare profession students has not been previously investigated.

Aim: To examine whether participation in a Human Library can facilitate the development of OT students' cultural awareness and sensitivity and to understand the factors contributing to changes in cultural competence from the students' perspective.

Method: This is a mixed-method study. Quantitative data was collected by participant characteristic survey and pre/post-Human Library cultural competence assessment (CCA). The quantitative data was used to inform the selection of participants and questions for the second qualitative phase. Quantitative data were analyzed using independent samples and paired *t*-tests, analysis of variance and Pearson correlation. Qualitative data were analyzed using coding reliability thematic analysis.

Results: Statistically significant increases were noted in CAS, CCB and overall CCA scores from pre- to post-Human Library. Participant characteristics such as gender, work experience in aged care and the health sector had a positive effect on pre-Human Library CCA results. Qualitative data demonstrated that participants perceived they had a level of cultural competence prior to attending the Human Library however, still made gains in cultural awareness and sensitivity and were motivated and inspired to provide culturally congruent healthcare.

Conclusion: The Human Library can be considered for inclusion within a suite of learning methods for healthcare professional student curricula as a cost-effective, flexible teaching method for the development of competencies for culturally congruent healthcare.

KEYWORDS

cultural competency, Human Library, health professions education, education research, occupational therapy

Introduction

In 2020, 7.6 million migrants lived in Australia representing 29.8% of the population (1). According to the United Nations (2020) this puts Australia within the top ten countries around the world with the highest number of foreign-born residents (2). Healthcare professionals do not always possess the skills required to service diverse populations and systemic factors can impact on users' ability to navigate and utilize healthcare, resulting in health care disparity (3). Frameworks to help address this disparity have been proposed within healthcare, including cultural awareness, cultural sensitivity, cultural competence and cultural safety (4). All of these frameworks require health professionals to reflect on their own culture so they are in a better position to understand the culture of those they work with (5). Given the initiative to build methods of teaching culturally congruent care into occupational therapy curriculum/practice (6) further rigorous investigation is warranted due to a lack of evidence on the best pedagogical methods to achieve this.

The authors of this article are academics and occupational therapists who aimed to enhance teaching and learning on cultural competency and culturally safe practice in the curricula of undergraduate (UG) and master-entry level occupational therapy (MOTPrac) programs provided by a university in Victoria, Australia. Prior to 2018, the curricula focused on understanding culture as one of the contextual determinants of health, fostering cultural awareness and knowledge. Teaching was delivered mainly through lectures, seminars, tutorials, and online modules for most students. A small number of UG students were able to participate in inter-cultural experiences overseas. In 2018 the revised Australian Occupational Therapy Competency Standards (7) placed more emphasis on the requirement for OTs to practice in a culturally safe and sensitive manner. In addition to learning within the university setting, students were expected to develop and practice cultural competencies in their professional practice education fieldwork placements. In order to better prepare our students for culturally safe and sensitive practice, we explored adapting and integrating the Human Library program, to create an educational experience to encourage students to interact with people from diverse backgrounds and to have deep reflection on their cultural competencies and learning.

The Human Library was a social movement, started in 2000 in Copenhagen, aimed to provide a positive framework for conversations, which challenge stereotypes and prejudices and therefore, build positive relationships between people and promote inclusion (8). The Human Library is similar to a standard library except that the books are people with a story and the reading is a conversation (9). It unites individuals who may not otherwise interact with each other (8) and, as such, can be considered a social experiential learning opportunity. Although positive effects of a Human Library are reported for improving mental health literacy (10); social inclusion and promoting recovery (11); respect and reducing bias (12); reframing attitudes (13); and reducing prejudice (14) its effect on cultural competence in student healthcare professionals has not been investigated.

This research was guided by the cultural competence model (15, 16) which conceptualizes cultural competence, as a non-linear, interconnected, three-dimensional jigsaw, and ever-evolving process towards culturally congruent care. The model has three layers, each containing multiple elements (Table 1). The model values diverse cultural experiences and posits that recgonising differences *and* similarities between cultures allows personal insight and space for cultural sensitivity to emerge (15). What follows are culturally competent behaviors such as the ability to adapt and negotiate for better health outcomes (15). This model was chosen because it is well-cited in healthcare literature (16–22) and provides a framework for analyzing the development of cultural competencies of students after attending a Human Library embedded in a teaching unit.

TABLE 1 Elements of each layer of the 3D model Schim and Doorenbos (16).

Provider layer (the healthcare professional or student)	The person moves between the following stages towards culturally competent behavior: cultural diversity, awareness, sensitivity, and culturally competent behaviors
Client layer	Individual, family, group, or whole community who are the focus of healthcare services Composed of their attitudes, beliefs and behaviors that produces similarities or differences between individuals, cultural groups, and subgroups
Outcome culturally congruent care	Outcome is achieved as providers mindfully interact with culturally diverse clients and the provider and client layers unite

The Research questions for the study were:

1. What is the effect of participation in a Human Library on the development of cultural awareness and sensitivity in undergraduate OT students?
2. What is the students' perspective on the influence of the Human Library on their cultural competence?

Methods

We chose a mixed methods explanatory sequential pre-post design without a comparison group, to explore the effectiveness, and student's perception of, a Human Library program in developing cultural competency. We recognized that a combination of quantitative and qualitative data results in a more comprehensive understanding of a topic than either method alone (23). The quantitative data analysis was used to refine the second qualitative phase including, participant selection, and focus groups questions. In turn, the qualitative data was used to explain and interpret quantitative results (23).

Educational intervention

The design of the Human Library program embedded in the curriculum is based on experiential learning theory and principles to provide opportunities for students to interact with people from diverse ethnic, age, social backgrounds as well as people or carers with lived experience of health issues. Students are required to complete an online module introducing cultural concepts and to complete a self-reflection task before attending a Human Library session. The pre-Human Library reflection tasks ask students to reflect on their own culture, how their culture influenced them, their perception of cultural competency and any preconceived ideas of two human books selected from the "books" available to them in the Human Library session. Students

attend a Human Library session, after which they complete a reflection on the experience, noting any challenges to their preconceived ideas and how they could apply what they learned in future OT practice. Prior to COVID 19 travel restrictions the Human Library took place face to face on the university campus. In April 2021, 98 onshore and offshore OT students enrolled in an undergraduate 2nd year unit took part in the Human Library sessions via video conferencing.

Fifteen volunteers from the university staff network and from the community were recruited to be human books. Academic staff organizing the Human Library explained the purpose of the Human Library to volunteers, and discussed the guidelines about protecting privacy and emotional risk when books share their stories. Students were briefed about the expectation to be respectful, demonstrate professional behavior, communication and to protect the privacy of the books, which are essential competency for health professionals. Two Human Library sessions were run online via a video conferencing platform, each with 15 human books, and 48 and 50 students, respectively. Groups of three to five students engaged in conversation for 25 min each time with two different human books. The human books told a personal story followed by questions from, and discussion with, the students.

Recruitment

Second year undergraduate occupational therapy students ($n = 98$) enrolled in a teaching unit in which the Human Library program is embedded were invited to participate in the study through an announcement on the online learning management system. Due to a small single sample pool, quantitative sampling involved non-probabilistic convenience sampling. Students were invited to participate in the study by completing pre and post Human Library surveys and attending a focus group. Explanatory statements and consent forms were sent to eligible students via email approximately 2 weeks prior to the Human Library. Potential participants were invited to attend one of two online recruitment sessions, where information about the study were presented, and opportunities for questions provided. All the recruitment procedures were administered by a member of the research team not directly involved in teaching these undergraduate students (KP) to avoid conflict of interest and coercion.

To ensure participants with a range of characteristics and experience were included, maximum variation sampling (24) was used to group participants who provided informed consented to participate in a focus group according to their gender, age, ethnicity, location (onshore or overseas), work experience, cultural learning experience, and exposure to people from different cultures.

Data collection

A Qualtrics survey was used to gather data on participant characteristics (age, gender, onshore/offshore, home country and number of languages spoken) and past experience in cultural competency training.

The cultural competence assessment (CCA) (25), a 25-item self-report tool was used to measure cultural competency across two factors: cultural awareness and sensitivity (CAS), and culturally competent behaviors (CCB). The CCA, based on the cultural competence model (15, 16) was chosen as it is quick to administer and suitable for participants with varying levels of education from less than high school to graduate school level (19, 25). The CCA is recommended for measuring cultural competence in nurses (20) and is suitable to use with other healthcare providers (including clerical, administrative staff, hospice workers, therapists, nursing assistants and social workers) (19). The CCA uses a seven-point Likert scale. The CAS subscale consists of 11 items (7 = strongly agree, 1 = strongly disagree), with a maximum scale score of 77; and CCB subscale consists of 14 items (7 = always, 1 = never), with a maximum subscale score of 98 (19). Respondents are given choices to answer each question with the answer "no opinion" or "not sure," a score four out of seven, equivalent to the score of "natural" was allocated to these responses.

The CCA is sensitive to educational methods targeting cultural competence making it suitable to use in research (19, 20, 25) and has good internal consistency (Cronbach's α 0.86–0.93) (20) indicating that items proposing to measure the same construct produce similar scores (26). It also has good test-retest reliability when tested on 51 hospice workers of varying disciplines and education levels ($r = 0.85$, $p = 0.002$) (19) and has sufficient content validity (19, 20). Construct validity has been assessed with 25 items having factor analysis loadings above 0.42 (19).

Data were collected at three time points. Participants completed the pre-Human Library CCA survey 7 days prior to the Human Library event. Immediately following the Human Library, participants completed the post-Human Library CCA survey (Figure 1).

After students had received the results for the academic unit, consenting participants attended a 60 min online semi-structured audio-recorded focus group to share their views of the Human Library. Focus group questions were informed by the quantitative survey data and designed to facilitate discussion of the participants' prior level of cultural awareness and sensitivity, their perspective of the Human Library experience, levels of self-efficacy for cross-cultural interactions, the impact of COVID-19 on opportunities to interact with people from different backgrounds, and what participants would do differently as a result of the Human Library. Quantitative data analysis resulted in the addition of two questions to clarify unexpected quantitative results, firstly, the lack of significant change in pre-post cultural awareness and sensitivity and to investigate the effect of COVID-related restrictions on participants' intercultural interactions.

Quantitative analysis

All data were cleaned and de-identified prior data analysis using Statistical Package for the Social Sciences (SPSS) (version 27.0). Participant characteristic data were summarized using descriptive statistics. Total CCA scores and that of each factor (CAS and CCB) and each CCA item were assessed for normality by analyzing the distribution of frequencies (26). Paired t-tests were used to evaluate differences between pre-/post-CCA scores for the total scores, CAS and CCB subscale scores. t-test results were considered to be significant if $p \leq 0.05$ (26). Effect sizes, using Cohen's d, were calculated to assess the magnitude of the differences of CCA, CAS, and CCB score pre and post participation in the Human Library (26).

Independent t-test was used in subgroup analysis to compare CCA, CAS and CCB scores for the following factors: participants'

location at the time of the study (onshore or offshore). with or without previous work experiences in aged care, disability and health sector, with or without previous cultural learning experiences, and those who completed both pre and post Human Library surveys or not. In the survey, we asked participants whether they had previous work experiences in a variety of paid or non paid work in the aged care, disability and health sector. We grouped the responses of all types of aged care, disability and health work experiences into one group "with previous work experiences in aged care, disability and health" to compare with participants who did not have work experiences in these fields. One-way analysis of variance (ANOVA) was to be used for subgroup analysis to compare CCA, CAS and CCB scores for the following factors: age groups gender (male, female, prefer not to say), and, frequency of intercultural interactions at work/university and home/leisure time. The results of the quantitative data analysis were used to refine the second qualitative phase of the research including, participant selection and refinement of interview questions (23).

Qualitative analysis

The aim of qualitative analysis was to provide a rich description of the data set on a new area of research (27) as is the case with the Human Library. Each researcher first engaged in a process of reflexivity where their own unconscious bias was explored as an integral component of the qualitative phase of the research (27). The qualitative analysis followed Braun and Clarke's (27) six-phase thematic analysis, incorporating the steps recommended by Liamputtong (24), within step 1: familiarization of data. This involved each author reading and re-reading the transcripts to develop familiarity with the content and to gain an understanding of what participants as a group were saying (24). Through continued examination of the transcripts, the authors were able to move to steps two and three with the generation of codes, a codebook (27) and each author reviewing the codes to define and name themes (24, 27). Step four involved the comparison of themes, and step five, reaching a consensus on themes by discussion. The completion of steps 1–5 resulted in unbiased themes ready for reporting. Qualitative results were compared with quantitative results through methodological triangulation and as the final stage; multiple quotations demonstrating the themes were chosen to be presented in text (24, 28)to ensure data triangulation (24).

Ethical approval and considerations

Approval was granted by the university's Human Research Ethics Committee (27411) and considered low risk. To avoid potential coercion, the researcher involved with teaching and coordination of the undergraduate curriculum was not involved in recruitment. To avoid breaches of confidentiality, the researchers involved with teaching and coordination of the undergraduate (EC) and masters (KP) curricula did not have access to identifiable data and the UG coordinator (EC) was not involved in interviewing students in phase two. Quantitative and qualitative data were de-identified by a researcher not involved in teaching OT students (HH-V) and stored in a separate password protected file, accessible by all researchers for analysis.

Results

Participant characteristics

Fifty-five out 98 students participated in the study, the response rate was 57%. Ten responses were excluded due to incomplete CCA data occurring when participants started responding to demographic questions but stopped before completing the CCA, resulting in a final sample size of 45 (male = 12, female = 32, one prefers not to say). Twenty-eight participants (male = 8, female = 20) answered both the pre and post-Human Library surveys, with 17 participants completing the pre-Human Library only.

The majority of participants were aged 18–24 years, more than half of the participants were from North-East Asia including China, Hong Kong, and Macau. Approximately one third were from Australia, and the remaining were from Afghanistan, Brunei, England, France, India, or Saudi Arabia. There were 39 participants studying in Australia at the time of the research, with six offshore. Whilst the majority of participants did not report their work experience, those that did, noted the areas of aged care, health and/or disability.

Many participants reported infrequent intercultural interactions with 40% having weekly or less than weekly intercultural interactions at work, volunteering and/or university and 80% having weekly or less than weekly intercultural interactions at home or during leisure/social activities. The majority of participants (73%) reported speaking two or more languages and 96% of participants indicated interest in learning about different cultures and building intercultural skills. Detailed demographic information of the participants are presented in Tables 2, 3.

Thirty participants reported prior cultural learning experiences such as courses/workshops and living/studying abroad, whilst the remaining five did not (see Table 4).

Quantitative analysis

Cultural competency as measured by the CCA

Cultural awareness and sensitivity

There was a significant increase in CAS mean scores ($p = 0.043$) from the pre-Human Library experience ($M = 64.04$, SD = 5.93, range 50–73), to post-Human Library experience ($M = 65.79$SD = 6.23, range 49–75) out of 77. The mean increase in the CAS scores was 1.75, 95% CI (− 0.27, −3.77) with a small effect size (Cohen's $d = 0.336$).

Culturally competent behaviors

There was a statistically significant increase in CCB scores ($p = 0.004$) from pre-Human Library ($M = 59.68$, SD = 9.81, range 40–82) to post-Human Library ($M = 66.18$, SD = 12.58, range 42–97) out of 98. The mean increase in CCB scores was 6.50, 95% CI (1.86, 11.1) with a moderate effect size (Cohen's $d = 0.544$) indicating that the Human Library had a moderate positive influence on self-perceived culturally competent behaviors.

Cultural competence

There was a statistically significant increase in CCA scores ($p = 0.001$) from pre-Human Library ($M = 123.71$, SD = 10.18, range 99–145) to post-Human Library ($M = 131.96$, SD = 13.68, range 106–165) out of 175. The mean increase in CCA scores was 8.25, 95%

TABLE 2 Characteristics of participants at baseline—age, gender, location and work experience.

Participants characteristics	All students at baseline (n = 45)				Students who completed both pre and post Human Library survey (n = 28)				
	N (%)	CAS scores *M* (SD)	CCB scores *M* (SD)	CCA scores *M* (SD)	*N* (%)		CAS scores *M* (SD)	CCB scores *M* (SD)	CCA scores *M* (SD)
Age									
18–24	42 (93%)	61.95 (7.26)	59.29 (10.69)	121.24 (13.93)	26 (93%)	Pre	63.88 (5.81)	60.54 (9.34)	124.42(9.24)
						Post	*65.57 (6.29)*	*66.81 (12.03)*	*132.38 (12.88)*
25–34	2 (4%)	61.50 (3.54)	41.50 (2.12)	103.00 (5.66)	1 (3.5%)	Pre	59.0000	40.00	99.00
						Post	*64.00*	*42.00*	*106.00*
35–44	1 (2%)	73.00	57.00	130.00	1 (3.5%)	Pre	73.00	57.00	130.00
						Post	*73.00*	*74.00*	*147.00*
Gender									
Male	12 (27%)	58.92 (5.76)[b]	58.17 (10.32)	117.08 (11.98)	8 (29%)	Pre	59.25 (5.80)[c]	60.63 (11.24)	119.88 (13.42)
						Post	*63.50 (7.84)*	*66.00 (13.10)*	*129.50 (16.22)*
Female	32 (71%)	64.16 (5.93)[b]	59.25 (10.77)	123.41 (12.14)	20 (71%)	Pre	65.95 (4.91)[c]	59.30 (9.47)	125.25 (8.50)
						Post	*66.70 (5.42)*	*66.25 (12.71)*	*132.95 (12.87)*
Prefer not to say	1 (2%)	38.00	36.00	74.00	0 (0%)		—	—	—
Student location									
Onshore	39 (87%)	62.28 (7.57)	57.83 (10.97)	120.12 (14.37)	26 (93%)	Pre	63.96 (6.06)	59.62 (10.02)	123.58 (10.55)
						Post	*66.31 (5.83)*	*66.00 (12.96)*	*132.31 (14.15)*
Offshore	6 (13%)	61.50 (4.72)	62.50 (11.00)	124.00 (12.62)	2 (7%)	Pre	65.00 (5.66)	60.50 (9.19)	125.50 (3.54)
						Post	*59.00 (9.90)*	*68.50 (7.78)*	*127.50 (2.12)*
Previous work experiences in aged care, disability and healthcare[a]	14 (31%)	65.43 (5.46)[d]	59.64 (10.49)	125.07 (11.80)	10 (26%)	Pre	67.00 (4.67)[e]	61.00 (11.50)	128.00 (12.08)
						Post	*68.10 (6.77)*	*63.40 (15.17)*	*131.50 (15.60)*
No work experience in these fields	31 (69%)	60.71 (7.51)[d]	57.90 (11.31)	118.61 (14.73)	18 (64%)	Pre	62.39 (6.03)[e]	58.94 (9.01)	121.33 (8.40)
						Post	*64.50 (5.69)*	*67.72 (11.07)*	*132.22 (12.97)*

[a]Frequency of work experience: unpaid caregiver (n = 5), health professional assistant (n = 4), personal/community/disability support worker (n = 2), shadowing a health professional (n = 1), aged or community care volunteer (n = 1), others (n = 1). One participant had work experience as an unpaid caregiver and healthcare professional assistant.
[b]Significant difference observed in baseline CAS score between male and female students, $t(42) = -2.630$, $p = 0.012$, response "prefer not to say" was not included in the analysis.
[c]Significant differences observed between male and female CAS score (students completed pre and post test), $t(26)$ −3.099, $p = 0.005$.
[d]Significant differences in baseline CAS scores observed between students with/without work experience in aged care, disability or health sector, $t(43)$ 2.108, $p = 0.041$.
[e]Significant differences observed between students (completed pre and post test) with/without work experience in aged care, disability or health, CAS score, $t(26)$ 2.089, $p = 0.047$.

CI (3.12 to 13.38) with a moderate effect size (Cohen's $d = 0.624$) indicating that the Human Library had a moderate positive influence on overall self-perceived cultural competence.

The relationship between participant characteristics and CCA scores at baseline

Gender

Before attending the Human Library, female students had significantly higher CAS scores ($M = 64.16$, SD = 5.93) and CCA scores ($M = 123.41$, SD = 12.14) in comparison to male students CAS scores ($M = 58.92$, SD = 5.76) and CCA scores ($M = 117.08$, SD = 11.98); those prefer not to report their gender (CAS = 38, CCA = 74) based on analysis of variance. Only one participant selected the gender option of "prefer not to say" and the CAS and CCA scores for this participant were much lower than the mean scores of the male and female groups. We used the independent t-test to do further analysis to compare the male and female baseline CAS and CCA scores. There were significant differences in both baseline CAS scores between male and female, ($p = 0.012$). No significant differences were detected between males and females for pre-Human Library CCB and CCA scores. Age. Almost all the respondents were within the 18–24 years old age group ($n = 42$), two were between 25–34 years old age group and one was between 35 and 44 years old. We did not perform subgroup analysis for age as a factor due to the uneven distribution between the three different age groups.

Work experiences

Participants who have work experiences in aged care, disability and health have significantly higher pre-Human Library CAS, CCB and CCA scores compared to those who do not. However, only the differences of the CAS scores between the groups were significantly different ($p = 0.041$).

Previous cultural learning experiences/interactions

There were no significant differences detected in pre-Human Library CAS, CCB and CCA scores between participants with or

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TABLE 3 Participants ethnicity and country of origin at baseline ($n = 45$).

Ethnicity/ count	Country of origin										
	India	Hong Kong	Australia	Macau	England	France	China	Afghanistan	Saudi Arabia	Brunei	Total
Aboriginal and/or Torres Islander			1								1
Australian			10		1						11
North-West European						1					1
Southern and Eastern European			1								1
North African and Middle Eastern									1		1
South-East Asian	1	11	2	2			1			1	18
North-East Asian		3					1				4
South and Central Asian	1	2					1	1			5
Prefer not to say		3									3
Total	2	19	14	2	1	1	3	1	1	1	45

TABLE 4 Summary of number of participants participating in previous cultural learning experiences ($n = 45$).

Cultural learning experiences	Number of students
Cultural learning course only	5
Cultural learning workshop only	11
Lived abroad only	3
Studied abroad only	6
Cultural learning immersion program only	1
International homestay only	1
Other cultural learning experience only	1
Multiple cultural learning experiences	12
Not participated in any cultural learning experience	5

without previous cultural learning experience that may include cultural learning courses or workshops, lived abroad, studied abroad, cultural immersion programs or international homestay experiences. We also found no significant associations between the pre-Human Library CAS, CCB, CAS scores and the frequency of participants engaged in intercultural interactions at work or university, at home or during leisure activities.

Geographical location

There were no significant differences in pre-Human Library CAS, CCB and CAS scores between participants who were onshore or offshore.

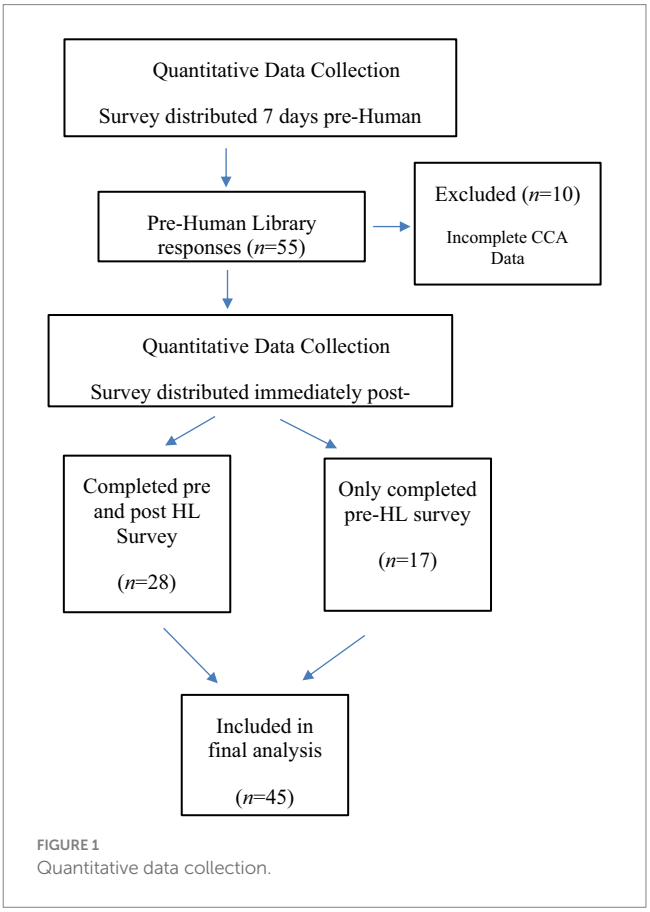

FIGURE 1
Quantitative data collection.

Completion of pre and post survey

There was a significant difference ($p = 0.025$) in pre-Human Library CAS scores for participants who completed pre and post CCA ($n = 28$, $M = 64.04$, SD = 5.93) and those who completed the pre-Human Library CCA only ($n = 17$, $M = 59.11$, SD = 8.23). No significant differences were detected between pre-Human Library CCB or CCA scores for participants who completed or not completed both pre and post-test surveys. This may indicate that completion of both pre and post-Human Library CCA had a moderately positive influence on pre-Human Library CAS scores. Therefore, participants who completed both pre and post-CCA started at a higher level of cultural awareness and sensitivity than those who completed the pre-Human Library CCA only. (See Table 2).

For participants who completed both pre and post Human Library surveys, significant differences in pre-Human Library CAS scores were observed between male and female ($p = 0.005$); and participants with or with or without previous work experiences in aged care, disability and health ($p = 0.047$). CAS, CCB and CAS scores between subgroups of participants based on their location or previous cultural learning/interaction were not significantly different.

Qualitative analysis

Three participants consented to participating in the qualitative phase of the research. Two participants joined a focus group and one participated in a single interview. Audio recordings were transcribed verbatim by the lead researcher and de-identified replacing names with pseudonyms during the transcription process (29). Two main themes resulted from analysis of the qualitative data including: cultural competence prior to the Human Library and the influence of the Human Library on cultural competence.

Cultural competence prior to the Human Library

Participants felt they already had a level of cultural awareness and competence prior to the Human Library, influenced partly by personal experience, including the cultural environment they grew up in "the school I went to was very diverse" (Abbi), with one international student noting:

> "I think in my culture people are still not very open to having touch, like they are not very used to hugging each other or like kissing or whatever… they keep the distance between people, but in Western culture, they are more open to having physical touch" (Belle).

Participants reflected on the influence media had on their assumptions about others with one saying: "The main assumptions I had was just the stuff I was seeing through movies and social media" (Abbi).

Participants noted that prior university-based cultural learning experiences facilitated improved awareness of, and sensitivity to, differences between cultures:

> "I learnt a lot this year and last year at uni about certain cultures…" (Abbi).

> "After this subject I think I kind of more understand and more open to different culture and yeah, and I will understand more um the thought of different culture" (Belle).

A capacity for culturally competent behavior was demonstrated prior to the Human Library by some:

> "If you put it into action, um… you meet them and you get to talk with them, you will try to avoid kind of like, letting those stereotypes and assumptions affect your relationship with them" (Ash).

Whilst others reflected on their learning needs in this area:

> "I suppose I have not properly worked out how to control the, you know sort of modify how I act to suit everyone's different needs, cause obviously they will not all have the same views and values" (Abbi).

Despite reporting the positive impact of university activities on their levels of cultural competence, participants identified barriers to opportunities for intercultural interactions, including personal barriers such as confidence:

> "I think I am introvert and not very good at opening up a topic and even in my same language I'm not very good at speaking very confidently or speaking very fluently" (Belle).

The impact of online learning due to coronavirus disease in 2019 (COVID-19) on opportunities to have personal intercultural interactions was noted by participants:

> "At university, um maybe because I had only 1 day at uni and the rest of it was online via tutorials, so you did not really get the chance to connect with people" (Abbi).
> "Especially in the pandemic situation, I do not have many chances to really see people or communicate with different people so yeah, it give me one more chance to" (Belle).

Influence of the Human Library on cultural competence

Participants viewed the Human Library as another opportunity to practice intercultural interactions and highlighted the importance of listening:

> "I think it's just about giving me more chance to practice or to face different people from different culture" (Belle).

> "From listening alone, you can learn a lot about a person's culture and life story" (Ash).

The Human Library encouraged new realizations and new concepts for participants with one participant remarking on an older human book's use of technology:

> "I did not take into consideration that we were in the 21st century and they may have like other family members who have taught

> them with the technology or maybe they have like a lot of exposure already throughout the years and they may be more experienced than us" (Ash).

Participants experienced moments of surprise when their unconscious assumptions were challenged As illustrated by a participant who gained insight that a mother could still be very actively involved in providing care for her son, even though he is an adult.

> "My initial impression on this was that the mother has a very young son, less than 10 years old, but I did not expect him to be a full grown man" (Ash).

Another participant reflected that the story she heard helped her to consider that the skills of healthcare professionals does not guarantee acceptance from the client:

> "I thought she must be very capable and very skilled in handling this issue but after her presentation, she mentioned her brother not willing to accept her help she can do nothing" (Belle).

The Human Library encouraged participant self-reflection and highlighted differences between people when human books, and their stories, did not meet expectations. Self-reflection helped students identify that their own values could affect others and that a person's views and values can influence their behavior:

> "Reflecting on how my values affect other people and understanding that other people have different views and values to me and then obviously that will affect how they behave as well and finding the mutual respectfulness balance" (Abbi).

The Human Library encouraged another participant to reflect on her own life situation and common humanity when reflecting on the experience of the human book:

> "She has to take care of um a disabled family member which make me for um feel I'm so glad to um live in a relatively perfect um situation which I do not have to worry too much" (Belle).

Participants recognized how the pre and post-Human Library reflection activities, and completion of the CCA, helped them get more from the Human Library:

> "I think the interview itself was amazing but I do not think I would have taken away as much if I did not do the reflective part…cause otherwise I would have attended, listened and moved on. I really liked that part, it really made you think when you do the survey" (Abbi).

The Human Library served as a reminder to participants to be aware of their own unconscious beliefs, values, and biases; and to continue towards developing culturally competent behavior. One participant felt that, although their cultural awareness and sensitivity did not necessarily change as a result of the Human Library, it reminded them to continue to reflect and inspired them to take action to promote culturally congruent healthcare practice:

> "I think my willingness stayed the same, it maybe just reminded me to do more" (Ash).

When asked how they would do more, they responded:

> "Maybe get an interpreter beforehand discuss what you are gonna talk about so that there's no misinterpretations when the interpreter is translating. And also, if you are about to suggest like recommendations or an intervention plan to the client from a different culture, maybe do a bit of research beforehand to see if it aligns with their culture and their customs" (Ash).

Another participant reflected that they had never asked friends about their different cultures and that those conversations would be important moving forward into clinical placement:

> "Having those conversations like we do not normally do would be a first step and it's not a difficult step either" (Abbi).

Similarly, a participant identified that as a result of the Human Library; they would explore other opportunities to interact with people from different cultures:

> "I think maybe join more different volunteers or explore more chances to get in touch with different culture" (Belle).

The same participant, when asked what they thought might change as a result of the Human Library, talked about the importance of considering people's different backgrounds and perspectives, emphasizing that they learned not to judge others by their appearances:

> "I will take more consideration about people—everyone has their life story, and we have to respect their story and we should not um give a first impression about their appearance or… um yeah we do not have… we should not judge the person about their appearance but we have to understand that they have different stories" (Belle).

Discussion

The aim of this research was to examine the effect of participation in a Human Library on the development of occupational therapy (OT) students' cultural awareness and sensitivity. The quantitative findings from the pre-post CCA (25) indicate that some students had higher levels of cultural awareness and sensitivity, and culturally competent behaviors than others prior to the Human Library. Factors influencing these baseline scores were gender and work experience (client layer).

The influence of gender on the baseline cultural awareness and sensitivity scores was noted with women having statistically significantly higher levels than men as measured by the CAS (25). Interestingly, this difference was not carried through to the post Human Library scores which may indicate that males' levels of CAS improved more than females as a result of the Human Library.

The influence of previous work experience on cultural awareness and sensitivity was noted with statistically significantly higher levels recorded on the CAS (25) for participants with work experience in health, aged care or disability. Presumably some of these participants would have been exposed to people from different cultural

backgrounds in their work allowing for opportunities to reflect on these interactions and potentially build awareness and sensitivity to cultural differences.

Eighty two percent of participants reported having daily to weekly intercultural interactions at work/study compared to 38 percent at home or during leisure time. This potentially reflects that the research was undertaken at a time of enforced COVID 19 restrictions which dramatically reduced opportunities for intercultural interactions for many participants, particularly within their personal lives. As one interview participant pointed out, the students in this cohort had 1 day of face-to-face learning since starting university in March 2020 followed by mostly online learning into 2021, during which the Human Library took place. As suggested in a recent report by the Tertiary Education Quality and Standards Agency in Australia (30) one of the main negative effects of an online university environment is student social isolation, lack of engagement with others, and reduced motivation. Qualitative findings support this in that students identified feeling isolated from peers, despite the online learning environment, citing lack of informal interactions and reduced access to shared social spaces.

Significant positive changes from pre to post Human Library CAS, CCB and CCA scores supported that the Human Library had a significant impact on increasing students' cultural awareness and sensitivity, as well as self-perceived culturally competent behaviors. Even with participants who had previous work experience having significantly higher baseline CAS scores, the differences in CAS scores between those who had work experience and those who had not were not significant post Human Library. This suggests that students with less exposure to diverse populations through work might benefit more from this program. This reflects previous studies on the Human Library which noted how the activity highlights differences between people and serves to draw attention to discriminatory attitudes and stereotyping (9, 11, 13). Cultural competence can be seen as a behavioral construct that includes the ability to learn about people from different cultures, and adapt care to meet their needs (15). The Human Library helped some participants build on their prior levels of cultural awareness and sensitivity to begin considering how they could modify their behavior to provide culturally congruent services. Participants for example, discussed accessing resources to ensure their future therapy interventions aligns with cultural needs, having conversations with clients about their cultural preferences, and exploring more opportunities for further intercultural interactions to improve readiness for clinical placement.

Experiential learning methods, especially ones that target diversity awareness *and* behavior change can be instrumental in helping healthcare profession students become culturally congruent practitioners (31). Importantly the positive effect the Human Library had on students' development of cultural competence in this current study supports findings of others that local experiential methods for developing cultural competence, such as the Human Library, are more financially and logistically viable than immersive experiences (32, 33). Remuneration for human books who wish to tell their stories or make a social impact, the hiring of facilities (if not available in kind), and catered refreshment breaks is much less expensive than immersive experiences, especially those involving international travel to live or study abroad (32, 33). Furthermore, as was needed for this study due to COVID-19 restrictions, the Human Library can be conducted online and still produce positive changes in cultural competence. This reflects previous studies exploring low-cost educational methods for the development of cultural competence (34–37). From an educators' point of view a Human Library, whether in person or online, therefore provides the opportunity for a more accessible and equitable learning method for large cohorts of healthcare students.

Qualitative findings suggest that participants made gains in cultural awareness and sensitivity through the pre and post Human Library self-reflection activities with one participant noting that they would not have gained as much from the experience without the reflective component. Although the findings were based on three participants, the use of reflection as a transformative process and to develop deeper learning is commonly documented in the literature (38) with reflection enabling people to align their own values with their professional actions (39). In the context of culturally safe care this is an important aspect of the Human Library activities. Cultural safety builds on awareness and sensitivity and requires a continual process of reflection on practice with the health professional reflecting on their own cultural identity and privilege (4, 40, 41). Reflective tasks are therefore built into the educational element of the Human Library as mandatory submitted pass/fail tasks, but were not part of the research analysis. This was due to consideration of potential student/research bias with students knowing that the research analysis was conducted by academics associated with the program. As Cranton (42) notes, the importance of learners' privacy needs to be respected and consideration given to how reading personal reflections could induce the learner to write what they think the educator wants to see. Reflection should therefore be a fundamental part of a Human Library experience from an educational and cultural safety perspective but future research will need to consider how to use this data without compromising disciplinary power (42).

Limitations

The measurement tool used in this study, the CCA (25) measures cultural awareness and cultural sensitivity as one construct which potentially means that changes in cultural sensitivity as a result of the Human Library are not captured independently from cultural awareness in this study. The results of this study represent data collected from one cohort of undergraduate second-year students, from one university who had fewer opportunities to interact with people during the COVID pandemic. We therefore need to be cautious in interpreting the results. Although the results of this study supported the use of the Human Library together with reflection to enhance cultural competency development, we do not know how the effect of this pedagogy compares with other teaching methods. We aimed to collect data from a larger sample size, but the response rate was not high. A small sample size limited our ability to measure the influence of various factors that may contribute to one's cultural competency. In future research, conducting randomized controlled studies to compare Human Library and teaching methods would provide further evidence for the effectiveness of using a Human Library to facilitate the development of cultural competency. Qualitative sampling did not result in participant numbers suitable for purposive sampling or a focus group. The opinions of the three participants could be biased and therefore limit their ability to explain quantitative data. A larger sample size would be needed to reduce this bias in future research. It is also difficult to generalise the findings to the wider health student population

Conclusion

The findings of this small study suggested that gender and having experiences in working in the aged care, disability and health sector in a country with a diverse population have a positive influence on the person's cultural awareness. However, the factors may not have association on a person's cultural behavior. As recommended by Bezrukova et al. (31) teaching diversity and cultural competence is best accomplished using integrated, mandatory, cumulative and multi-modal approaches across a curriculum rather than stand-alone approaches. The Human Library, as a social experiential learning opportunity, can be considered for inclusion within a suite of learning methods for healthcare professional student curricula as a cost-effective, flexible teaching method for cultural competence. It offers a unique opportunity to listen to a person's story and learn not only about the storyteller, but also about ones' self. When offered early in the curriculum and in conjunction with other teaching methods including self-reflection activities, the Human Library can serve to facilitate student healthcare professionals to progress from cultural awareness and sensitivity towards the building of culturally competent behaviors and ultimately the provision of culturally congruent care.

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 Monash University Human 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

EC, KP, and HH-V: conceptualization, writing-review and editing. EC and HH-V: quantitative data analysis. HH-V and KP: qualitative analysis. 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 value of extracurricular activities to Japanese junior high school students: focusing on the expression of a school's attractiveness in writing

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This study explores the value of extracurricular activities to Japanese junior high school students and how this value can be transmitted to junior students through essay writing. The study participants involved Japanese seventh graders; the essay focused on school attractiveness and covered the following three conditions: (1) "control condition," where juniors (sixth graders) are assumed to be readers, (2) "emphasis condition," where the teacher requested participants to assume a more specific view of the juniors, and (3) "emphasis–visualization condition," where the teacher requested participants to assume a more specific view of juniors and where the participants visualized the characteristics of juniors before completing the writing assignment. More information regarding extracurricular activities was provided in the emphasis–visualization condition. This suggests that when Japanese junior high school students are highly aware of their juniors, they evaluate extracurricular activities as an attractive school feature and readily transmit this value to younger students.

KEYWORDS

extracurricular activities, junior high school students, value transmission, visualization in writing, school transition, Japan

1. Introduction

Extracurricular activities as part of school life are believed to positively affect adolescent development (Eccles et al., 2003). However, they also have several negative aspects, such as over-busyness (Kremer-Sadlik et al., 2010) and stress among the children. In Japan, approximately all junior and senior high schools participate in extracurricular activities, with students often choosing one activity (club) to engage in. Japanese students engage in diverse extracurricular clubs, including sports clubs such as a "basketball club," arts clubs such as a "brass band," and academic clubs such as a "computer club." In most countries of the Organization for Economic Co-Operation and Development (OECD) and its partner countries, extracurricular activities are more prevalent during the school year (before and/or after classes) than during holidays (Organization for Economic Co-Operation and Development, 2017). However, in Japan, such activities are common not only during the school year but also during holidays, as sufficient time is devoted to extracurricular activities throughout the year. According to an Organization for Economic Co-Operation and Development (2019) survey, teachers in Japan dedicate 7.5 h/week to extracurricular activities, which was much higher than the average of 1.9 h/day among teachers from other countries that participated in the survey. Additionally, since the Organization

for Economic Co-Operation and Development (2019) does not account for the time dedicated during holidays and long vacations, Japanese teachers might be more excessively engaged in extracurricular activities than this result suggests.

Although participation in club activities (extracurricular activities) is formally "voluntary," a survey by the Japan Sports Agency (2018) revealed that 92% of junior high school students and 81% of senior high school students participate in these activities. Many students in Japanese schools start participating in extracurricular activities from the time they are in junior high school and continue until their graduation. Previous studies revealed that those who are actively involved in extracurricular activities are more highly satisfied with school life (Sumiya, 2005) and more psychologically adapted (Takemura et al., 2007; Okada, 2009). However, those who were actively involved in extracurricular activities at the time of their enrollment but later withdrew or became reluctant to participate in such activities may experience an increased sense of maladaptation. Therefore, many students are unable to leave extracurricular clubs (Omi, 2019) despite the negative aspects of extracurricular activities, such as over-busyness (Kremer-Sadlik et al., 2010) and injury (Merkel, 2013). Thus, extracurricular activities in Japanese schools are extremely important considering the contemporary Japanese school culture and its relevance to school adaptation.

One of the factors that increases the importance of extracurricular activities in Japanese schools is the relationship between seniors and juniors. In many junior and senior high schools in Japan, senior students are called "senpai" and junior students are called "kouhai." This seniority-based relationship is hierarchical and highlighted in extracurricular activities. For example, there is a tacit understanding that juniors must comply with the instructions of seniors, while the seniors have authority over the juniors. Therefore, some students who wish to leave a club may not do so because of the possible negative reactions from seniors, even if it is technically easy to quit the club (Omi, 2019). Another characteristic of extracurricular activities in Japanese schools is that their values are transmitted from seniors to juniors. This includes not only manifested content such as practice methods, but also implicit content, such as attitudes toward extracurricular activities (e.g., our baseball club activities override academic activities). These values may also account for the psychological phenomenon of being unable to leave the club and provide a basis for increasing cohesion within the club and relationships that enhance mutual development (Omi, 2019).

Extracurricular activities in Japanese schools are unique from an international perspective in that participation is voluntary but semi-mandatory (e.g., Omi, 2015). The excessive practice time of extracurriculars is equivalent to the working hours in the Japanese work environment, implying that the Japanese culture can also be expressed in extracurricular activities (Omi, 2019). Thus, extracurricular activities in Japanese schools are significant from an educational psychological perspective. Such activities provide an understanding into the Japanese education system and, by extension, the Japanese culture. Therefore, this study focuses on extracurricular activities in Japanese schools to determine how junior high school students value extracurricular activities and whether the transmitted value is specific to extracurricular activities.

Extracurricular activities in Japanese schools represent a special school culture and participation in such activities can be considered an important factor for school adaptation. This consideration is based on the correlation between extracurricular activities, a sense of fulfillment, and psychological adaptation in schools (Takemura et al., 2007; Okada, 2009). In Japanese schools, several other factors (e.g., studies and friendship) are related to fulfillment and psychological adaptation. Therefore, we explore the importance of extracurricular activities in Japanese schools by ascertaining their value relative to other factors. Relative understanding is essential in clarifying the mechanism by which the value of an extracurricular activity is conveyed from seniors to juniors.

To clarify the importance of extracurricular activities in Japanese schools, self-report research methods may be considered, such as allowing students to assess the importance of several major school activities themselves. However, this method may lead students to provide socially desirable answers, such as prioritizing academic work. In this study, to naturally enable junior high school students to externalize the value of activities in their school life, we conducted a writing assignment to determine their perceived school attractiveness. The value of extracurricular activities was clarified using the information characteristics identified by the students regarding the attractive features of the school. Specifically, we conducted a writing assignment for seventh graders to present the attractiveness of junior high school to sixth-graders. An analysis was then conducted to explain how and to what extent students described their extracurricular activities as attractive features of their school.

In the writing process, audience awareness is an important factor that determines the structure and the content of the text (Hayes and Flower, 1980; Midgette et al., 2008). In Japan, instruction is systematically provided for students to adjust the text to the needs of the reader based on the educational level (e.g., Ministry of Education, Culture, Sports, Science, and Technology, 2017). Junior high school students can assess the audience and choose writing styles that correspond with the characteristics of the audience (Midgette et al., 2008). Therefore, conducting a writing assignment for junior high school students to present the attractiveness of their school to elementary school students will help us understand what attractive features of junior high school life they identify for the incoming students. The method of assessing students' value for certain information using writing assignments is unique and is considered suitable for identifying school attractions. The extracurricular activities are considered valuable if students selectively describe them in the writing assignment as an attractive feature of the school.

This study aims to clarify the value of extracurricular activities to Japanese junior high school students and how this value can be transmitted to junior students through essay writing. For this purpose, we conducted a writing assignment for seventh-grade students just after their entrance into junior high school. We examine the extent to which the value of extracurricular activities is recognized early in the first year of junior high school and how the value is transmitted to younger students. The rationale for targeting seventh-grade students is that the evaluation of extracurricular activities is closely related to the problem of school transition in Japan. School transition is one of the most important events in early adolescence and is likely to decrease well-being (e.g., Katsantonis et al., 2023), and transitional problems can have a significant impact on later life (Virtanen et al., 2019). School transition is also important in Japan. Compulsory education in Japan lasts nine years and, in most cases, is divided into six years of elementary school and three years of junior

high school. The relationship between students and teachers changes from a system in which a designated teacher presents most of the subjects to a system in which different teachers present different subjects. In addition, students do not use honorific titles (e.g., "-san") in elementary school, but lower graders (kouhai) in junior high school use them for upper graders (senpai). These are major environmental changes in relationships that trigger a variety of problems (e.g., Hou et al., 2020). School belongingness and connectedness may be important for the successful transition (Jindal-Snape et al., 2020), and in Japan, active participation in extracurricular activities is an important factor in enhancing school belongingness and adaptation (Takemura et al., 2007; Okada, 2009). Therefore, clarifying the mechanism of rapid sharing of extracurricular activity value is expected to provide suggestions that will contribute to solving adaptation problems in the school transition.

2. Method

2.1. Participants

A total of 120 seventh-grade students (74 boys and 46 girls) from a Japanese junior high school participated in the study. All the selected students actively participated in extracurricular activities. The school had not achieved outstanding results in sports or arts tournaments for any extracurricular activities; therefore, it was considered a suitable sample for clarifying specific aspects of common extracurricular activities.

To examine the emphasizing reader assumptions, the participants were divided into three groups based on the following conditions: (1) "control condition" ($n = 40$, 23 boys and 17 girls), in which only information about the readers (sixth graders) was presented; (2) "emphasis condition" ($n = 40$, 26 boys and 14 girls), in which, in addition to the information about readers, participants were given verbal interventions to increase their awareness of the readers before starting writing; and (3) "emphasis–visualization condition" ($n = 40$, 25 boys and 15 girls), in which, in addition to the interventions in "emphasis condition," participants were asked to describe the characteristics of the readers in the margin of the composition paper before starting writing. If the number of extracurricular activity descriptors increased under the "emphasis" and/or "emphasis–visualization" conditions, extracurricular activities are considered as attractive features that should be valued and presented to elementary school students. Practically, it was difficult to conduct similar writing assignments more than once in a short period at a junior high school; thus, experiments were conducted with a non-equivalent three-group post-test design after measuring the covariate variables in advance.

Ethical approval was not required as no formal ethical procedures were applicable to the type of research conducted. The study was conducted in accordance with the local legislation and institutional requirements, and with the approval of the principal and teachers at the cooperating school. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin because the practices in this study were part of a previously conducted class in which no personal information of the students was handled, and the researchers were given anonymized information. The students provided their assent for participation and were informed that they could withdraw from the analysis at any time.

2.2. Instruments

2.2.1. Pre-survey items

To control for the difference between the conditions before the writing assignment, students' self and task perceptions in the Japanese language were measured. It was expected that students with positive attitudes toward Japanese language classes would actively engage in the writing assignment. Using Ichihara and Arai's (2006) self and task perceptions scale, we developed a scale to measure ability/expectancy (e.g., I am confident that I will get a good grade in the Japanese language class in the future), intrinsic interest value (e.g., I like Japanese language classes), and attainment/utility value (e.g., It is important for me to get a good grade in my Japanese language class). All items were answered on a five-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

2.2.2. Writing assignment and categories of school attractiveness

Teachers conducted the writing assignments on the topic "Presenting the attractiveness of your junior high school to sixth graders at elementary schools." As future seniors, students were asked to write a 20-min 400-character essay about the school's attractiveness to imaginary sixth graders who might become juniors. Students could request extra essay sheets if their response exceeded one sheet.

The categories of school attractiveness were developed referring to the "school attractiveness" shown in the leaflets and websites of the junior high school. Initially, the first author extracted six school attractiveness categories, including "Philosophy," "Facilities," "Education," "Extracurricular activities," "Academic achievements," and "Friends" from leaflets. Next, the teachers at the school confirmed whether these categories expressed the attractiveness of their school without excess or deficiency, and it was confirmed that the defined categories were appropriate. As a pilot study, we conducted the essay writing assignment on school attractiveness with the cooperating school's eighth graders ($n = 157$, 89 boys and 68 girls), who were assumed to have a good understanding of the cooperating school's attractiveness. No student refused to consent to participate in the study. The first author and the teacher who conducted the writing assignment classified the sentences and found that all statements about school attractiveness were classifiable, and the kappa coefficient calculated using the same criteria as in the present study was sufficient (.88). Table 1 shows the examples of sentences corresponding to each category.

A single sentence was classified as a unit. When a long sentence contained more than one topic, the classification was based on semantic content. The first author and another rater, who did not know about the research, independently classified the responses. The kappa coefficient was .79, and reliability was judged to be sufficient. Disagreements between the raters were resolved through discussions.

2.3. Procedure

Generally, junior high school enrolment in Japan takes place in April. The composition task was conducted in the middle of May to clarify how seventh graders who had just begun participating in club activities (extracurricular activities) valued the attractiveness of their school. Two days after the pre-survey, a Japanese language class (50 min) was used for the composition task. Although 30 min were

TABLE 1 Examples and descriptive statistics for each category (pilot study).

	Example descriptions	*M* (SD)	*n*[a]
Philosophy	In this school, students can be independent.	0.16 (0.38)	24 (15.3)
Facilities	The library's collection is one of the largest in the country.	2.71 (1.22)	154 (98.1)
Education	The veteran teachers will teach you in a way that suits each student.	0.57 (0.86)	61 (38.9)
Extracurricular activities	You can choose from several extracurricular clubs to suit your own needs.	0.48 (0.70)	59 (37.6)
Academic achievements	This school has a large number of students going on to higher education.	0.03 (0.16)	4 (2.5)
Friends	The large number of students in this school allows you to find friends whom you are comfortable with.	0.18 (0.46)	24 (15.3)

$n = 157$. [a]The number of students describing attractiveness in each category. The numbers in parentheses indicate the percentage of describers.

TABLE 2 Reliability coefficients and descriptive statistics of student's self and task perception.

	α	ω	Control	Emphasis	Emphasis–visualization
Ability/expectancy	.76	.80	3.02 (0.63)	2.80 (0.83)	3.06 (0.69)
Intrinsic interest value	.83	.85	3.77 (0.72)	3.08 (0.89)	3.86 (0.79)
Attainment/utility value	.73	.76	3.70 (0.73)	3.58 (0.57)	3.78 (0.74)

allotted to write the essay, factoring in the instruction time, the effective writing time was 20 min. After the topic was written on the board, a composition sheet was distributed to students, and they were asked to write on the topic.

To vary the strength of audience awareness across conditions, we implemented Onoda's (2021) procedure, which also manipulates audience awareness in Japanese junior high school students. In all three conditions, we first presented "Let us present the attractiveness of junior high school to sixth graders" on the blackboard and in the emphasis and emphasis–visualization conditions, just before the writing activity, the teacher told students, "This writing assignment is to be done as a presentation for sixth graders. You need to write as if you are introducing the good points of a junior high school to elementary school students who have come for school information sessions." The inclusion of the term "school information session" was intended to encourage students to envision the readers. In addition to these instructions, in the emphasis–visualization condition, the students were instructed to write the readers' characteristics in the margin of their papers.

3. Results

3.1. Measurement items

By confirming the reliability of the score of "Student's self and task perception in the domain of Japanese language" measured in the pre-survey, the mean value of each of the three subscales was treated as the subscale score as sufficient reliability was found (Table 2). The scores of the items measured in the pre-survey were used as covariates in the subsequent tests on the difference in means between the conditions.

3.2. Difference between conditions

The descriptive statistics and number of descriptors per category are shown in Table 3. There was a deviation in the distribution of the number of relevant descriptions per category; the differences between the conditions were verified using logistic regression analysis, and the number of students describing each category was used as the objective variable. "Facilities," which most students described, and "Academic achievements" and "Philosophy," which most students did not describe, were excluded from the analysis because the coefficients could not be estimated. The number of descriptions of the entire text, excluding the number of descriptions of the categories that served as the objective variable, was used as the control variable (e.g., when the number of students writing about "Education" was the objective variable, the number of statements in the entire text, excluding the number of statements about the school's "Education" was used as the control variable).

Logistic regression analysis was performed, with the number of describers in each category as the objective variable. "Emphasis dummy" (emphasis condition = 1, other conditions = 0) and "emphasis–visualization dummy" (emphasis-visualization condition = 1, other conditions = 0) were used to evaluate the differences between conditions. The scores of self and task perception in the domain of the Japanese language, gender (girls = 0, boys = 1) and the number of descriptions in the entire text, excluding the number of descriptions in the category that served as the objective variable, were controlled for. The results are presented in Table 4.

No significant dummy variables were found for "Education" and "Friends." However, a significant positive coefficient was found for the emphasis–visualization dummy for "Extracurricular activities," indicating a tendency for the number of students describing extracurricular activities to increase in the emphasis–visualization condition than in the control condition. These results indicate that extracurricular activities in Japanese schools tend to be described as an attractive feature of schools more frequently when elementary school students are strongly considered as readers.

4. Discussion

Students in the emphasis–visualization condition, who were highly aware of junior students, described extracurricular activities as an attractive feature of the school. There were no significant differences between conditions for the descriptions of "Education" and "Friends," suggesting that information about extracurricular activities was

TABLE 3 Means, standard deviations, and number of descriptions of the school's attractiveness.

	Control			Emphasis			Emphasis–Visualization		
	M	SD	n^a	*M*	SD	n^a	*M*	SD	n^a
Philosophy	0.05	0.22	2 (5.0)	0.02	0.16	1 (2.5)	0.12	0.33	5 (12.5)
Facilities	2.17	0.59	40 (100.0)	2.00	1.01	36 (90.0)	2.55	1.13	40 (100.0)
Education	0.80	0.61	28 (70.0)	0.85	0.66	27 (67.5)	0.90	0.81	27 (67.5)
Extracurricular activities	0.25	0.44	10 (25.0)	0.22	0.48	8 (20.0)	0.48	0.51	19 (47.5)
Academic achievements	0.05	0.22	2 (5.0)	0.08	0.27	3 (7.5)	0.02	0.16	1 (2.5)
Friends	0.12	0.33	5 (12.5)	0.18	0.38	5 (12.5)	0.12	0.33	5 (12.5)

$n = 40$ for all conditions. [a]The number of students describing the attractiveness in each category. The numbers in parentheses indicate the percentage of describers.

TABLE 4 Results of the logistic regression analysis.

	β	β_{SE}	OR	95%CI
Education				
Intercept	−0.37	1.59	0.69	0.03, 14.83
Emphasis dummy	0.20	0.58	1.21	0.39, 3.86
Emphasis–visualization dummy	0.48	0.57	1.62	0.53, 5.09
Ability/expectancy	0.74*	0.37	2.10	1.04, 4.41
Intrinsic interest	0.23	0.39	1.25	0.58, 2.73
Attainment value	0.26	0.44	1.30	0.56, 3.23
Gender	−0.71	0.49	0.49	0.18, 1.26
Other information	−0.86**	0.27	0.42	0.24, 0.70
Hosmer–Lemeshow test: $\chi^2(8) = 6.14$, $p = 0.63$				
Extracurricular activities				
Intercept	−0.78	1.37	0.46	0.02, 8.36
Emphasis dummy	−0.43	0.60	0.65	0.19. 2.13
Emphasis–visualization dummy	1.30*	0.52	3.68	1.36, 10.71
Ability/expectancy	−0.02	0.34	0.98	0.50, 1.95
Intrinsic interest	−0.08	0.37	0.92	0.44, 1.98
Attainment value	0.36	0.38	1.43	0.65, 3.24
Gender	0.53	0.47	1.69	0.68, 4.39
Other information	−0.52*	0.23	0.59	0.37, 0.92
Hosmer–Lemeshow test: $\chi^2(8) = 13.07$, $p = 0.11$				
Friends				
Intercept	−0.51	2.04	0.60	0.01, 30.87
Emphasis dummy	0.03	0.76	1.03	0.21, 4.67
Emphasis–visualization dummy	0.46	0.72	1.60	0.38, 6.82
Ability/expectancy	0.16	0.48	1.17	0.48, 3.14
Intrinsic interest	0.12	0.51	1.13	0.43, 3.23
Attainment value	0.07	0.55	1.07	0.37, 3.25
Gender	−0.36	0.61	0.70	0.21, 2.36
Other information	−0.78*	0.32	0.46	0.24, 0.83
Hosmer–Lemeshow test: $\chi^2(8) = 14.01$, $p = 0.08$				

"Facilities," which almost all respondents wrote about, and "Philosophy" and "Academic Achievements," which few students wrote about, were not included in the analysis. VIF < 3 for all variables. *$p < 0.05$; **$p < 0.01$.

particularly valued as information that should be communicated to younger students. The fact that the seventh graders increased their descriptions of extracurricular activity immediately after their enrollment in junior high school by assuming imaginary junior students as readers suggests that the value of extracurricular activities was shared within the first month of school, and they are potential value transmitters. Information about extracurricular activities tends to be activated when junior students are perceived as audience, and therefore the value of extracurricular activities is likely to be transmitted from seniors and shared among students immediately after their enrollment. In Japan, extracurricular values are transmitted through the senior–junior relationship (Sumiya, 2005; Takemura et al., 2007; Okada, 2009), and it is assumed that having values like those of seniors increases junior students' school belongingness and connectedness to school, which enhances well-being (Jindal-Snape et al., 2020). In contrast, students who are reluctant to participate in extracurricular activities are less likely to have belongingness and connectedness to school, which may cause school transition problems (e.g., Katsantonis et al., 2023). Therefore, it is important to support students during the transition period by helping them to focus on attractions other than extracurricular activities, such as educational content and school life, showing them that the appeal of school is multifaceted.

4.1. Limitations and perspectives

This study was conducted in a single junior high school. The findings are thus limited regarding generalizability. The target schools were typical Japanese schools, where no bias existed regarding the exclusive enrollment of low-income (or high-income) students, and where the level of extracurricular activities was average. However, the tendency to actively communicate the value of extracurricular activities to younger students may have been more pronounced when schools with high levels of extracurricular activities (e.g., schools aiming to win a national championship) were targeted. Accumulating findings on students' evaluation of extracurricular activities and value transfer among students in various schools would enable a more in-depth analysis of school transition problems from the perspective of extracurricular activities.

The second limitation is that students' evaluations of extracurricular activities were not measured. If the value of extracurricular activities is deeply rooted in the Japanese school culture, students with low evaluations of such activities may transmit them as an attractive aspect of their school. It is thus necessary to clarify the relationship between the evaluation of extracurricular activities and the transmission of the attractiveness and value of club activities.

Data availability statement

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

Ethics statement

Ethical approval was not required for the studies involving humans as no formal ethical procedures were applicable to the type of research conducted. The study was conducted in accordance with the local legislation and institutional requirements, and with the approval of the principal and teachers of the cooperating school. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin because the practices in this study were part of a previously conducted class, no personal information of the students was handled, and the researchers were given anonymized information. The students provided their assent for participation, and were informed that they could withdraw from the analysis at any time.

Author contributions

RO: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Validation, Writing – original draft, Writing – review & editing. YO: Supervision, Validation, 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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Research hotspots and frontiers of ethnic cultural identity——based on analysis of "web of science" database

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Cultural identity is of great significance to the formation of group consensus and the establishment of cultural self-confidence. In order to understand the history, current situation and trend, and provide theoretical support for future research, this paper makes a quantitative analysis of knowledge map including annual publication volume, trend, distribution of authors and institutions, co-occurrence, clustering and timeline of keywords as well as emergent keywords on the literature concerning ethnic cultural identity published in "Web of Science" database for a period from 2012 to 2022, with CiteSpace software as a tool. The results show an overall upward trend with diversified ethnic and regional characteristics; major institutions including universities of the U.S., the U.K., Australia, China and other countries and regions engage in their research from different disciplines such as psychology, sociology, ethnology and education; the researchers have not formed a core group of authors despite their accumulating number; research hotspots are indicated by keywords such as national identity, identity, ethnic identity and attitude; specifically, keyword clusters fall into three categories: emotional perception, multicultural identity process and ethnic cultural adaptability; researchers probe into various issues at different stages with direct relation to international situations and regional cultures. This study has positive implications for understanding and mastering the current research hotspots and development trends of ethnic cultural identity in the world.

KEYWORDS

ethnic cultural identity, CiteSpace, acculturation, cultural adaptation, psychological adaptation

1. Introduction

Cultural identity is an individual's recognition of a group's attitudes, feelings, degree of belonging (Berry et al., 1989), ideals and values (Schwartz et al., 2006), and other social identities such as class, nationality and race, which is of enormous importance to a culture's unity, consensus and self-confidence (Villarroya, 2012; Över, 2016; C. Zhang et al., 2019; Zhang et al., 2021; Azada-Palacios, 2022). It is the foundation of cultural self-confidence, national stability and unity for a country to enhance its cultural identity (Schwartz et al., 2006; Li et al., 2015; Waechter, 2015; Yuan et al., 2022). However, numerous studies have shown that it is not easy to construct cultural identity (Minnaert, 2014; Van Der Zwet, 2016; Grajzl et al., 2018; Chitima, 2022). Due to obvious differences between groups and individuals in terms of geographical space, historical and cultural environment, etc., a

country has different cultural cognitions, attitudes, ideals, beliefs and even values, profoundly affecting people's lifestyles, behavior patterns, and emotional expressions, which consequently poses big challenges to form cultural identity and strengthen national unity. With complicated situations and escalated conflicts, cultural identity research has gained increasing worldwide attention from scholars.

Previous studies on ethnic cultural identity have mainly focused on its definition, process of acculturation, changes in psychology and behavior, and perceived discrimination, most of which have been investigated in local situations from one discipline. Few scholars have used bibliometric software to analyze the entire research hotspots and trends. For this reason, based on the literature on cultural identity included in "Web of Science" (WOS) database from 2012 to 2022, this paper uses the bibliometric CiteSpace software (6.2.R3) to conduct a quantitative analysis of trends, author and institution distribution, keyword co-occurrence, clustering and timeline, and emerging keywords, combined with systematic sorting of current affairs politics, cultural policy, cultural adaptation, to analyze the literature concerning cultural identity. This paper aims to explore the culture identity research's evolution process, grasp its hotspots, and predict its future development trends to provide implications for other scholars.

2. Research methodology

CiteSpace software, the abbreviation of Citation Space, is an information visualization software developed by Dr. Chaomei Chen, who is a professor of computer and information science at Drexel University in the United States. Based on Java language and citation analysis theory, it can visualize document data through co-occurrence analysis, co-citation analysis and other methods, so that the relationship between certain items including authors, institutions and keywords can be presented in the form of a scientific knowledge map, which clearly shows the evolution path of a certain subject field CiteSpace. This study uses CiteSpace software (6.2.R3) to analyze the data from the sub-databases of Web of Science (WOS), the comprehensive online literature database in the United States, namely Social Science Citation Index (SSCI) and Science Citation Index Expanded (SCI-Expanded). The selected literature types include English-written research and review papers from January 2012 to December 2022, with the collection and retrieval method of "Topic = cultural identity AND national identity." A total of 2,824 relevant documents are obtained through retrieval; because some documents are relatively weak, the research field is limited to psychology, social sciences, educational research, sociology, ethnic studies, cultural studies, regional studies, etc. After manually reading and reviewing the titles, abstracts and keywords of the documents, 1,012 valid documents were finally obtained.

3. Analysis of research hotspots and frontier

3.1. Analysis of publication volume

The publication volume is an indicator that effectively reflects the popularity of a specific topic within a certain period of time, and visually shows its development trend. Based on the literature downloaded from WOS database, a yearly distribution map on ethnic cultural identity research is drawn in Figure 1.

Figure 1 shows the general rising trend despite its fluctuations in the publication volume from 2012 to 2022. The number of papers published is 70 in 2012, and reaches a peak of 120 in 2019. Although the number of papers published in other years fluctuates slightly, the overall trend is upward. The data reflect the continuous concern of the international community on the issue of cultural identity. Among these documents, 996 are research papers and 16 are review papers. The researchers, who mainly come from the United States, Britain, Australia, China, Germany and other countries, focus on ethnology and psychology, followed by sociology, pedagogy, cultural studies and other disciplines, with diversified cross-discipline methods comprising mixture-analysis, meta-analysis, structural equation modeling and literature analysis.

The research features apparently differentiated national and regional characteristics, such as immigration issues in the U.S., South Korea, the U.K., Russia and other countries (Ha and Jang, 2015; Canefe, 2018; Grajzl et al., 2018; Grigoryan and Ponizovskiy, 2018), cultural policy issues in Spain, the Netherlands, Iran and other countries (Villarroya, 2012; Minnaert, 2014; Attarzadeh and Seyfodini, 2022), post-colonial contexts (Chitima, 2022), religious beliefs (Younis and Hassan, 2019), cultural tourism (Över, 2016), ethnic identity (Van Der Zwet, 2016; Christophe et al., 2020). Chinese scholars are interested in cultural festivals (Zhang C. X. et al., 2019), bicultural identity integration (Long et al., 2021), national unity education (Luo, 2019), dual identity adaptability (Dai et al., 2018), collective memory and traditional culture (Hou, 2021), cultural heritage (Wu et al., 2022). They appeal to strengthening national unity education, inheriting national culture, and enhancing national cohesion, which demonstrates the current research hotspots and development trends.

3.2. Analysis of authors and institutions

3.2.1. Analysis of author cooperation

In the CiteSpace software, author is set as the node type, and the parameters are Top $N = 20$, Top $N\% = 20.0\%$, g-index = 25. As shown in Figures 2, a total of 299 author nodes ($N = 299$) are generated, the

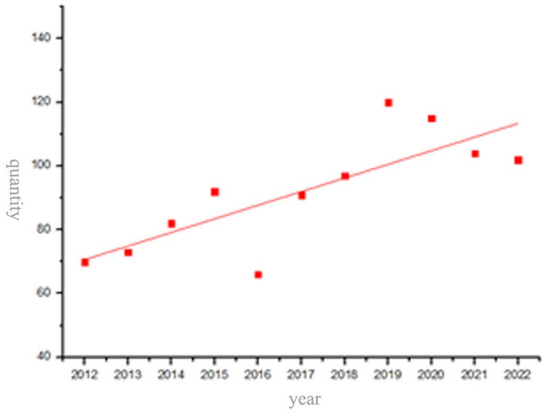

FIGURE 1
Annual publication volume of research on ethnic cultural identity.

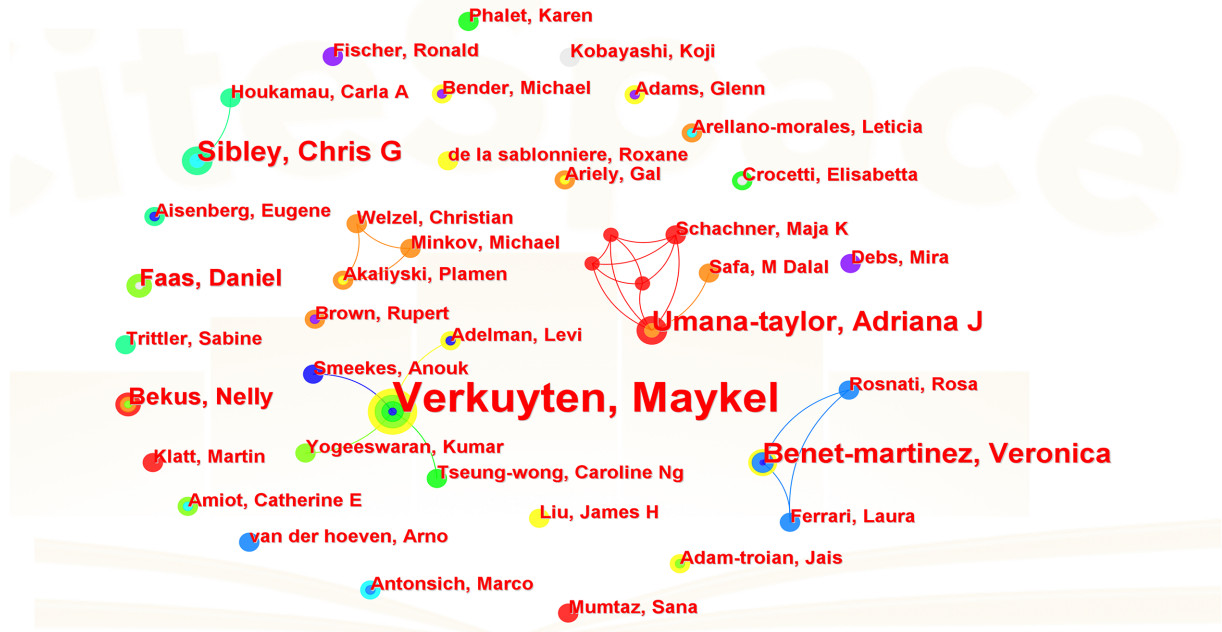

FIGURE 2
Knowledge map of authors.

number of connections between authors is 74 ($E = 76$), and the network co-occurrence density is 0.0017 ($D = 0.0017$). The index shows a low cooperation concentration of authors in spite of their growing number. Among them, authors with a large number of publications and significant cooperative relationships include Maykel Verkuyten, Anouk Smeekes, Kumar Yogeeswaran, Caroline Ng Tseung-Wong, Olivia Spiegler, Levi Adelma, etc., who come from Utrecht University, University of Canterbury, University of Mauritius, University of Oxford, and who focus on cultural belonging, religion and immigration. Among these significant cooperative relationships, scholars make collaborate research within a tiny number of countries, which shows the urgency that scholars strengthen international exchanges and cooperation in this research field.

3.2.2. Analysis of core authors

Tables analyzing the number of publications and research directions of the core authors can better demonstrate the overall trend of the discipline. Here, De Solla Price (1969) formula is used to select core author candidates. The formula is:

$$M_p = 0.749 * \sqrt{N_{pmax}}$$

In the formula, M_p is the minimum number of articles published by core author candidates, and N_{pmax} is the highest number of articles published by authors within the selected literature (Liu et al., 2015). The results show that $M_p = 2.247$ is calculated, taking an integer of 3, indicating that during the period from 2012 to 2022, the number of papers published by the core author candidates is no less than 3.

The number of citations is also an important indicator to measure the quality of a paper, and the citation frequency indirectly indicates the influence and attention of the paper (Li, 2008). The minimum publication volume is calculated according to the Price formula:

$$M_c = 0.749 * \sqrt{N_{cmax}}$$

M_c refers to the minimum number of citations of a single paper, and N_{cmax} refers to the maximum number of citations of a single paper (De Solla Price, 1969).

The statistics show that the maximum number of citations is 251, $M_c \approx 11.866$, taking an integer of 12, and that those who meet the above two indicators at the same time are the core authors, namely Verkuyten Maykel, Sibley Chris G, Benet-martinez Veronica, Faas Daniel, and Bekus Nelly. These authors mainly come from Utrecht University, University of Auckland, Catalan Institute for Advanced Research, Trinity College, University of Exeter. Among them, Verkuyten Maykel has the largest number of publications with a total of 139 citations. Most of his articles are related to nationality, ethnicity and culture. In one article published in 2020, he points out the enormous importance of developing a sense of identity and common belonging to strengthen community cohesion in diversified multi-culture contexts (Velthuis et al., 2020), which has laid a good foundation for the following research.

According to Price's law, when the number of published papers by core authors reaches 50% of the total number of published papers, it means that a core group of authors has been formed in this field (Liu et al., 2015). However, the number of papers published by the above-mentioned core authors only takes up 2.3% of the total, significantly lower than this standard. Therefore, it can be seen that the current research has not yet formed a core author group, and that the cooperation is relatively scattered. But at the same time, it also shows that the authors have diversifications without effective cooperation.

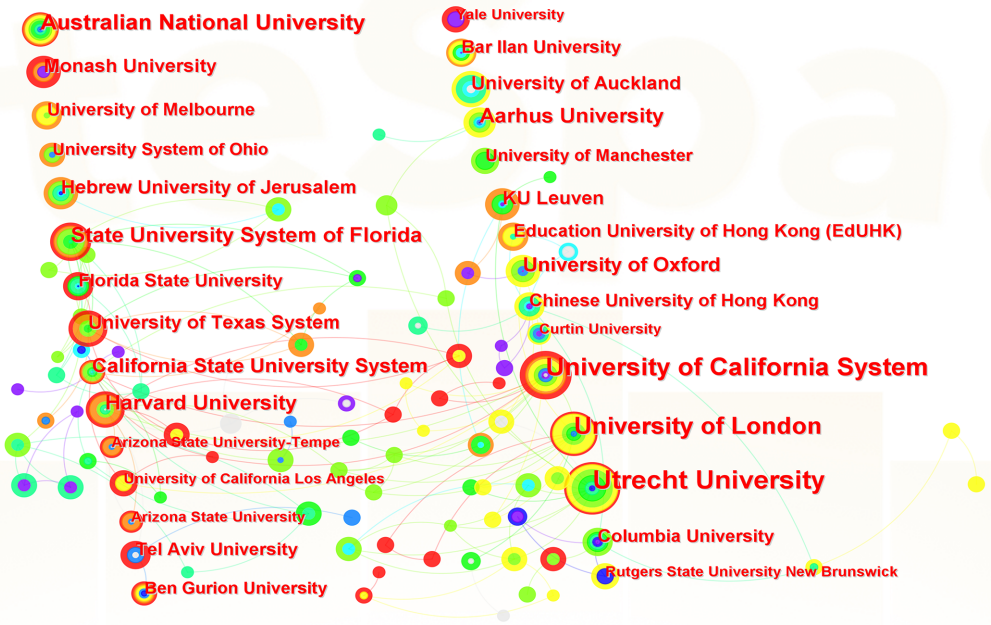

FIGURE 3
The knowledge map of author's institutions.

3.2.3. Analysis of research institutions and countries

According to the knowledge map of author's institutions (Figure 3) and the top 21 foreign institutions (Table 1) in terms of the number of published papers, Utrecht University ranks the first with the largest number of 24 papers, followed by California State University with 20 papers and University of London with 18 papers, respectively. The authors mainly come from the universities of the U.S., the U.K., Australia, China, Germany, Israel, the Netherlands, New Zealand, South Korea, Spain, Denmark, Italy, Turkey and Belgium (Table 2). Among them, 276 papers come from the U.S., followed by the U.K. (141), Australia (97), China (85), and Belgium (18). Major concerns include race relations (Neblett et al., 2012; Yogeeswaran et al., 2014; Gökay and Hamourtziadou, 2016; Grajzl et al., 2018; Walton et al., 2018; Huguley et al., 2019), culture conflict (Keddie, 2014; Dupré, 2018; Son, 2019; Tseung-Wong et al., 2019), immigration (Però, 2013; Morrice, 2017; Mole, 2018), social welfare (De La Sablonnière et al., 2020), economic development (Storm, 2018), cultural policy (Villarroya, 2012; Minnaert, 2014), mental health (Howe et al., 2014; Weber et al., 2021), cultural identity (Zhang S. et al., 2019), identity (Chen et al., 2019) and sense of belonging (Zou et al., 2021).

3.3. Analysis of research hotspots

3.3.1. Analysis of keyword co-occurrence

Being highly condensed and generalized, key words can enable readers to quickly grasp the core content of the research, and hence contribute to analyzing hotspots and predicting development trends. The betweenness centrality calculated by CiteSpace represents the number of times a node serves as the bridge of the shortest path between two other nodes. Nodes with a betweenness centrality greater than 0.1 are key nodes (Chaomei et al., 2009), and key nodes can predict hotspots with in-depth analysis and interpretation (Ren, 2021). Setting the node type to "keyword," the time slice to "1 year" with the rest as default values, and importing 1,012 English documents into CiteSpace, we get a knowledge map of 362 nodes ($N = 362$), 2,109 connections ($E = 2{,}109$) and keyword co-occurrence network with a density of 0.0323 ($D = 0.0323$) (Figure 4).

In the formula proposed by Donohue (1973):

$$T = \frac{\left[-1 + \sqrt{(1 + 8I)}\right]}{2}$$

I is the number of keywords, and T is the threshold of high-frequency keywords. By calculating the threshold, high-frequency words can be quickly found (Wei and Tang, 2016). According to the information presented by CiteSpace, I value is 362, and then $T \approx 26.41$ is calculated, that is, the list of high-frequency keywords with a frequency greater than 26 is obtained (Table 3). Therefore, combining the knowledge map of keyword co-occurrence (Figure 4) and the high-frequency keyword list (Table 3), screening the nodes with a frequency greater than 26 and betweenness centrality greater than 0.1, we can get key words such as "national identity," "identity," "attitude" and "ethnic identity."

The results show that "national identity" has the highest frequency of occurrence and the largest betweenness centrality, which appears in 205 articles, accounting for 20.3% of the totality. It occurs in the lowest number of 10 articles in 2013, while in the highest number of 31 articles in 2020. Meanwhile, "identity" ranks second in terms of

TABLE 1 Foreign institutions with no less than 7 publications on ethnic cultural identity.

No.	Quantity	Neutrality	Time	Institution
1	24	0.1	2012	Utrecht University
2	20	0.08	2012	University of California System
3	18	0.03	2013	University of London
4	13	0	2013	Australian National University
5	12	0.07	2012	Harvard University
6	12	0.03	2017	State University System of Florida
7	11	0	2013	Aarhus University
8	10	0.12	2013	California State University System
9	10	0.01	2013	University of Oxford
10	9	0	2012	University of Auckland
11	9	0.03	2018	University of Texas System
12	8	0	2014	Hebrew University of Jerusalem
13	8	0.02	2013	KU Leuven
14	8	0	2013	Monash University
15	7	0	2013	Bar Ilan University
16	7	0.06	2013	Chinese University of Hong Kong
17	7	0.02	2013	Columbia University
18	7	0	2016	Education University of Hong Kong
19	7	0	2014	Florida State University
20	7	0.01	2012	Tel Aviv University
21	7	0	2019	University of Melbourne

TABLE 2 Country distribution of ethnic cultural identity research (unit: articles).

No.	Country	Quantity
1	USA	276
2	ENGLAND	141
3	AUSTRALIA	97
4	PEOPLES R CHINA	85
5	CANADA	59
6	GERMANY	51
7	ISRAEL	50
8	NETHERLANDS	50
9	NEW ZEALAND	35
10	SOUTH KOREA	25
11	SPAIN	25
12	DENMARK	24
13	ITALY	24
14	TURKEY	23
15	BELGIUM	18

frequency and centrality with a total number of 159 documents, occupying 15.7%. It has the largest number of occurrences in 23 articles in 2019 and 2022, respectively. International researchers have creatively explored ethnic cultural issues in local contexts from different perspectives. From the perspective of cross-culture network, Mao and Shen (2015) find that the changed cultural identity of expatriates is the interaction between personal choices, organization of cross-cultural relations, and individual host country background, in which individuals play a key role in shaping their own cultural identity. Employing the structural equation model, Reijerse et al. (2013) verify that the cultural representation conforming to the symbolic form of local nationalism, highly valued by multi-ethnic countries, exert prominent influence on cultural identity, which can better explain immigration attitudes and promote the harmonious coexistence of immigrants and indigenous people. Long et al. (2021) conclude that collectivists can obtain a sense of anxiety relief from collective identity when faced with difficulties that require joint efforts after studying the relationship between ethnic identity and COVID-19 anxiety. Other keywords such as "acculturation," "politics," "identification," "culture" also reflect the research focus to some extent, although their betweenness centrality is not higher than 0.1. These keywords demonstrate the research hotspots from different aspects by interlinking with other related keywords, such as cultural identity of teenagers from bicultural backgrounds (Manzi et al., 2014), the relationship between cultural factors and sociopolitical status (Gidron and Hall, 2017), the relationship between positive ethnic identity and functioning of health and adaptability (Rivas-Drake et al., 2014).

3.3.2. Analysis of keyword cluster

Keyword clustering analysis is a measurement of closeness between keywords using a similarity scale, which can serve a basis for classified statistics (Yan et al., 2022). The analysis can help researchers understand the commonality among hotspots, which is conducive To

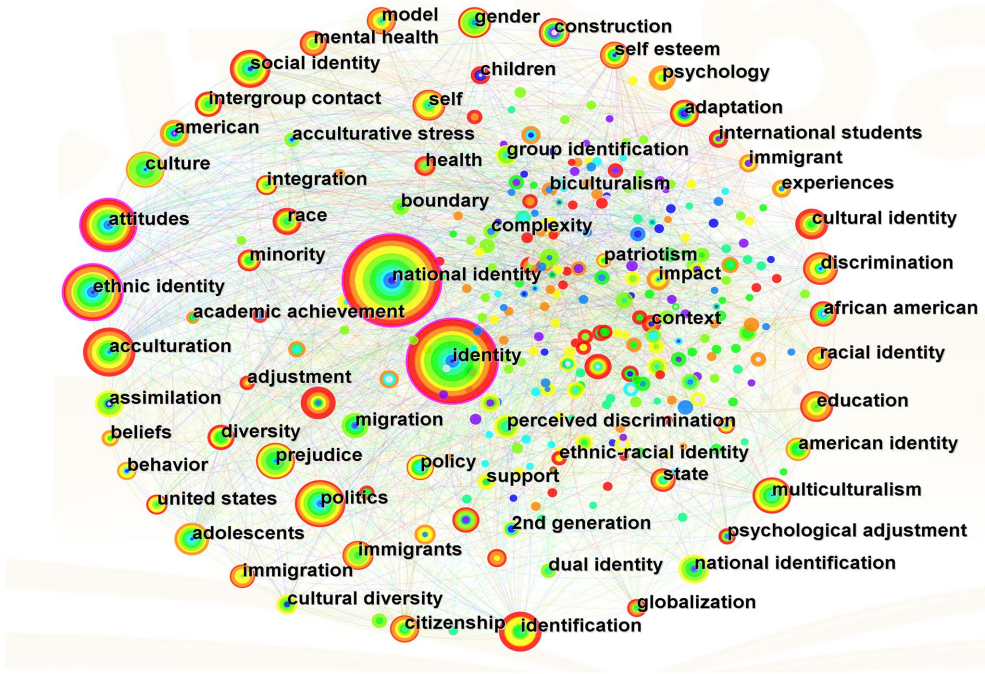

FIGURE 4
Knowledge map of keyword co-occurrence.

TABLE 3 High-frequency keywords related to ethnic cultural identity research (frequency ≥ 26).

No.	Frequency	Betweenness centrality	Year	Keywords
1	205	0.18	2012	National identity
2	159	0.12	2012	Identity
3	78	0.12	2012	Ethnic identity
4	61	0.11	2013	Attitudes
5	59	0.1	2012	Acculturation
6	58	0.08	2012	Politics
7	40	0.05	2014	Identification
8	40	0.05	2012	Culture
9	36	0.06	2012	Social identity
10	35	0.05	2013	Prejudice
11	33	0.05	2013	Multiculturalism
12	32	0.07	2012	Adolescents
13	29	0.07	2012	Discrimination
14	26	0.04	2015	Cultural identity
15	26	0.06	2013	Gender

systematic analysis. Selecting "LLR" algorithm for cluster analysis on keywords, we can obtain a cluster map. As is shown in Figure 5, the module value $Q = 0.3439$, which means that The cluster structure is significant; at the same time, the average profile $S = 0.7337$, which means that the clustering result is convincing (Jie and Chaomei, 2015).

The keyword cluster map shows a total of 7 cluster categories namely #0 prejudice #1 ethnic identity #2 well-being #3 adolescent # 4 school diversity #5 international student and #6 collective memory. The original clusters can divided into three categories after manual sorting and induction as is shown in Table 4.

The first category is on emotional perception, which mainly includes #0 prejudice, and #2well-being, involving high-frequency keywords such as "multiculturalism," "attitudes," "discrimination," "depression" and "adjustment." Scholars mainly explore the relationship between national cultural identity and negative or positive emotions and psychology from the perspective of emotional perception of individuals or groups from multicultural backgrounds. Huguley et al. (2019) point out that family groups can promote the formation of a strong sense of identity by guiding young members to understand their own ethnicity, race and related cultures, which is conducive to the shaping of ethnic (racial) identities. Ethnic (racial) identity and ethnic (racial) socialization help youth get rid of the plight of racial discrimination, and the positive meaning of ethnic group membership enable them to better understand and experience the world (Neblett et al., 2012). This positive ethnic (racial) emotion plays an important role in adjusting social psychology and reducing its inherent health risks (Rivas-Drake et al., 2014), hence better guiding internal members to shape correct values. Due to variances in local conditions and customs, people may have certain differences in national cognition and cultural acceptance, both of which bring a common core emotion, that is, self-confidence (Huang et al., 2022). This self-confidence, which comes from the confidence endowed by the entire nation and country, is also the endogenous force for group members to maintain independent thinking and strengthen national

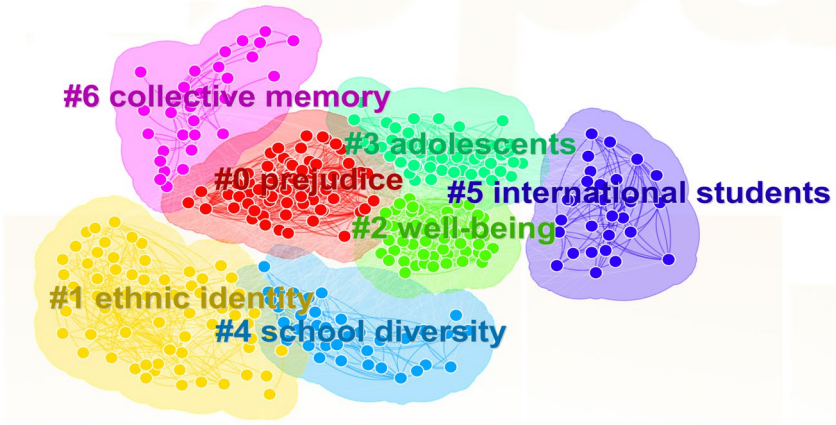

FIGURE 5
Keyword cluster map.

TABLE 4 Table of keyword cluster.

Categories of cluster	No. of cluster	Name of cluster
Emotional perception	#0, #2	Prejudice, well-being
Process of multicultural identity	#3, #4, #5	Adolescent, school diversity, international student
Cultural adaptability	#1, #6	Ethnic identity, collective memory

identity when faced with multicultural conflicts. Generally speaking, members with a high sense of national identity and happiness are more likely to be positive and optimistic about the future development of the country (Chen et al., 2019). At the same time, due to the intensification of globalization process, the ideological level of the society has largely surpassed the cultural differences in the traditional sense, and individual members are encouraged to actively go out of the traditional setting, carry out cross-cultural communication and multiculturalism baptism, respect others' cultural values and identities, and build a harmonious and pluralistic society in cooperation with multiple parties (Taylor-Gooby and Waite, 2014).

The second category is on the process of multicultural identity, in which #3 adolescent contains keywords such as "culture," "marginalization" and "cultural identity," #4 School diversity includes keywords such as "assimilation" and "care-work," while #5 international student brings together "life course," "expatriate adjustment" and "school adaptation." From the keywords covered in the above clusters, it can be seen that the process of multicultural identification by international students and workers is still a hot spot for many scholars. Due to socioeconomic factors, bicultural identities frequently grabbed the public attention. The research demonstrates a positive relationship between bicultural identities, psychological adaptation, and sociocultural adaptation, hence bicultural individuals have stronger adaptability, flexibility, and a stronger sense of cultural pride and belonging (Nguyen and Benet-Martínez, 2013). Young people are the future and hope of a nation, so the research on the process of their learning and cultural adaptation from multicultural backgrounds will help build a diverse and harmonious social relationship. Umaña-Taylor et al. (2014) point out that family relations with strong ethnic ties will prompt their members to actively explore ethnic relations during adolescence, and that it is very important to place ethnic identity in other identity contexts, which is conducive to strengthening their sense of belonging to group culture. Education plays a key role in the process of strengthening multicultural identity. Local and international students should be helped to eliminate potential conflicts in terms of class, race, language, culture, etc., to provide a reasonable space for dialogue in order to better promote the practice and development of international education in the world (Jia et al., 2022). At the same time, students should also be actively encouraged to establish good international friendships, which can produce positive emotional and social support for them to reduce the intense pressure of cultural adaptation brought about by culture shock (Sheng et al., 2022). In the interweaving cultural exchanges, it is thought-provoking how ethnic minority groups can find appropriate access to their own culture and other mainstream cultures. Ozer et al. (2017) points out that ethnic cultural elements, compatible with new cultural elements, can not only protect unique national culture, but also integrate its uniqueness into multi-cultures in globalization and cross-culture exchange.

The third category is on national cultural adaptability, in which #1 ethnic identity and #6 collective memory contain keywords such as "cultural policy," "identity politics," "national identity," "media" and "cultural trauma." These keywords are all about how to realize one's own cultural identity, how to better adapt to new life in different

cultural backgrounds, and how to realize the interaction and integration of one's own culture identity and new culture. Acculturation is a continuous and dynamic process. The dynamic dialogue between knowledge construction and identity recognition can be used as a reasonable theoretical tool to help us better understand this process. At the same time, complex acculturation involves identity changes of self and others, as well as religions, traditions and customs, which are connected with all areas of life and the social relationships other than cultures (Andreouli, 2013). Acculturation process is conditional and relative, since ethnic groups feature different cultures, histories, values and beliefs (Bornstein, 2017). Therefore, ethnic particularity and consciousness hidden in language should be taken into consideration in formulating cultural policies (Zhao and Lu, 2022). Researchers should start with common memory and perception to avoid conflicts caused by cultural system mismatch, which can hinder cultural exchanges. Cultural factors are crucial regulating factors. The high identity of foreign tourists with the culture of the host country will in turn enhance their pleasure and value perception, and stimulate their participation in cultural activities, thereby further enhancing the communication and recognition between multiculturalism (Zhang S. et al., 2019). Cultural activities are precipitated into cultural heritage, which shows the history, traditional culture and social cohesion of the host country from different aspects. Therefore, the inheritance and protection of cultural heritage will help bolster up a good international image (Liu et al., 2014). Festival celebrations are a better way to inherit traditional culture. Some methods like festival tourism can strengthen collective identity and memory, and improve experience quality and perceived value of festival activities with more innovations, ultimately enhancing the sense of belonging and identity of tourists (Zhang et al., 2021). The traditional festivals play an important role in the inheritance and dissemination of culture. Zou et al. (2021) demonstrates that that the Lantern Festival strengthens the local collective memory and identity through its strong social attributes, embodies the national culture, and promotes the inheritance of national culture. Zhang S. et al. (2019) finds that recreational festivals linked with local people's national identity can dilute colonial culture and better shape national and ethnic identities after Macao's return. Major cultural events often arouse citizens' patriotic sentiments and national identity, which can be maintained through mass media to enhance their coverage and influence (Chen et al., 2019).

3.3.3. Analysis of research trend

The emergent keywords can analyze the topics with greater influence over a period of time, and show the span between the first appearance and the end of the keyword, which can help researchers better analyze the development trend (Wang and Sun, 2020). The keyword time zone map can vividly reflect the evolution of hotspots along with the timeline, which is helpful to accurately grasp the development of hotspots. Based on the existing literature, the emergent keyword map (Figure 6) and the keyword time zone map (Figure 7) are drawn.

Through the comprehensive analysis of the two graphs, we can find that the research evolution path can be divided into three stages. The first stage is from 2012 to 2016, when the research develops stably. This stage includes 6 prominent words, among which "perceived discrimination," "cultural policy" and "segmented assimilation" rank top 3 in terms of intensity. At this stage, researchers focus on the interaction between original and dominant cultures (Samnani et al., 2013), risks and opportunities brought about by diversified development (Jensen and Arnett, 2012), cultural conflicts between individuals and multi-culture groups (Martiny et al., 2012), and identity integration effects (Swann et al., 2012). Meanwhile, researchers also pay attention to the identity and autonomy issues that easily trouble adolescent growth (Fuligni and Tsai, 2015), and the stronger resilience of members of bicultural identity to adversity and discrimination (Huynh et al., 2014) and adaptability (Sirikantraporn, 2013).

The second stage is from 2017 to 2019, when the research grows rapidly. Although this stage is not long, there are many words that emerge, with a total of 14 prominent words. Among them, psychology has the strongest degree of emergence, which shows that many scholars tend to link national cultural identity to psychology to build interdisciplinary disciplines since psychological approach to the search is significant. Researchers are mainly interested in adaptation of immigrants and groups with dual identity backgrounds to society (Ferguson et al., 2017) and their psychological and behavioral impacts and changes. On the one hand, complex bicultural identity will lead individuals to produce positive psychological and sociocultural outcomes. On the other hand, it will lead to potential risks in intergroup relations (Chu et al., 2017). It is of positive significance for youngsters to explore how to fully display their subjective initiative and consciously adjust their cultural identities in interactive behaviors to so that they can adapt to the social environment of globalization in the new era (Ferguson et al., 2017). Cultural identity is a dynamic process rather than a static one. Ethnic policies vary with social backgrounds and national conditions with the aim to eliminate prejudice and discrimination (Luo, 2019), strengthen social bonds, resolve cultural conflicts and build cultural intimacy (Kania-Lundholm and Lindgren, 2017), reconstruct local social entities (Sun et al., 2019).

The third stage is from 2020 to 2022, when ethnic cultural identity grows steadily. There are four emergent keywords at this stage, namely Hong Kong, impact, value, and scale. Researchers revolve around keywords such as national pride, trust, cultural intelligence, association, stress, ethnic-racial identity, host country nationals and depression. They focus on strengthening national identity, shaping the form and means of cultural identity and its dual impact (Zhang et al., 2021; Chow-Garcia et al., 2022). Cross-cultural psychologists point out that through the intermediary role of cultural identity, an individual's psychological state or identity perception will change, leading to corresponding behavioral changes (Zhang et al., 2021). The impact of cultural identity is multifaceted including national identity (Zhang et al., 2021), identity confusion (Cheon et al., 2020), sense of belonging (Chow-Garcia et al., 2022), network socialization (Cai et al., 2022), cultural plasticity (Gagnon, 2022), mental health (Li et al., 2022), and psychological adjustment of adolescents (Safa et al., 2022).

4. Conclusion and discussion

From the WOS database, a visual analysis of the literature on cultural identity in the past decades was conducted, based on bibliometrics and knowledge graph research methods. The results show that cultural identity has become a topic of common concern to many international scholars, whose research covers the disciplines including psychology, sociology, ethnology, education and political

Top 24 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2012 - 2022
cultural policy	2012	2.37	2012	2015	
children	2012	2.19	2012	2014	
segmented assimilation	2014	2.28	2014	2015	
perceived discrimination	2016	2.46	2016	2017	
self efficacy	2016	2.25	2016	2017	
group identification	2016	2.02	2016	2017	
migration	2013	2.17	2017	2019	
migrants	2017	2.12	2017	2019	
dual identity	2017	2.12	2017	2019	
value priority	2017	2	2017	2018	
knowledge	2018	2.6	2018	2019	
immigrants	2014	2.49	2018	2019	
socialization	2018	2.16	2018	2019	
boundary	2015	2.07	2018	2019	
national identification	2013	2.06	2018	2019	
culture	2012	2.04	2018	2019	
psychology	2019	4	2019	2022	
immigration	2015	2.35	2019	2022	
racial identity	2018	2.35	2019	2022	
perceptions	2019	2.05	2019	2020	
hong kong	2020	2.54	2020	2022	
impact	2014	2.41	2020	2022	
values	2015	2.24	2020	2022	
scale	2020	2.16	2020	2022	

FIGURE 6
Emergent keyword map.

science, with focus on cultural issues such as ethnic conflicts, immigrant groups, cultural identity process, cultural adaptability and national unity. On the one hand, the research on national cultural identity has distinctive characteristics of regions, nationalities and nations. On the other hand, the joint efforts between different countries and regions are emphasized to actively build mutually-understanding and harmonious community with a shared future for mankind while focusing on national identity and cultural identity. At the same time, a quantitative analysis of researchers shows inadequate international cooperation among research institutions in this field with a high degree of dispersion, which indicates that cross-cultural international research group has not been formed. Global cooperation among cross-cultural research institutions needs to be strengthened to achieve the ultimate goal of building a community with a shared future for mankind in a multicultural context. In addition, "national identity" is the keyword with the highest frequency of occurrence and the largest betweenness centrality, indicating the research of national identity is still the core issue that researchers are most concerned about. It also reflects the roots of extreme occurrences of nationalism in certain countries and regions, hence more emphasis should be put on cultural identity between countries, rather than narrow national identities.

In fact, complex cultural identity not only covers different countries, ethnic groups, regions and even social groups, but also involves individual cognition, emotion and cultural adaptability. It is important for formulating national policies, developing cultural and educational undertakings, or solving the contradictions and conflicts of globalization. Therefore, in order to properly solve this series of practical problems, scholars should work together and collaborate to strengthen cultural interaction and exchanges between ethnic groups and countries, so as to actively promote and construct a harmonious community with a shared future for mankind.

Limitations of this study: (1) The results of the analysis mainly rely on the downloaded journal documents and the knowledge map drawn on this basis, while the research results on ethnic cultural identity are of various types, including conference reports, dissertations, monographs. This study has not incorporated other content into the statistical source, so the results of the analysis have certain limitations. (2) We do not grasp the comprehensive international situation and conduct an in-depth analysis of some factors affecting national cultural identity in other countries, so the research results are not all-embracing. (3) This study only uses CiteSpace software to draw the knowledge map, and the results inevitably have some deviations. In subsequent studies, multiple software can be used in order to obtain more comprehensive and accurate analysis.

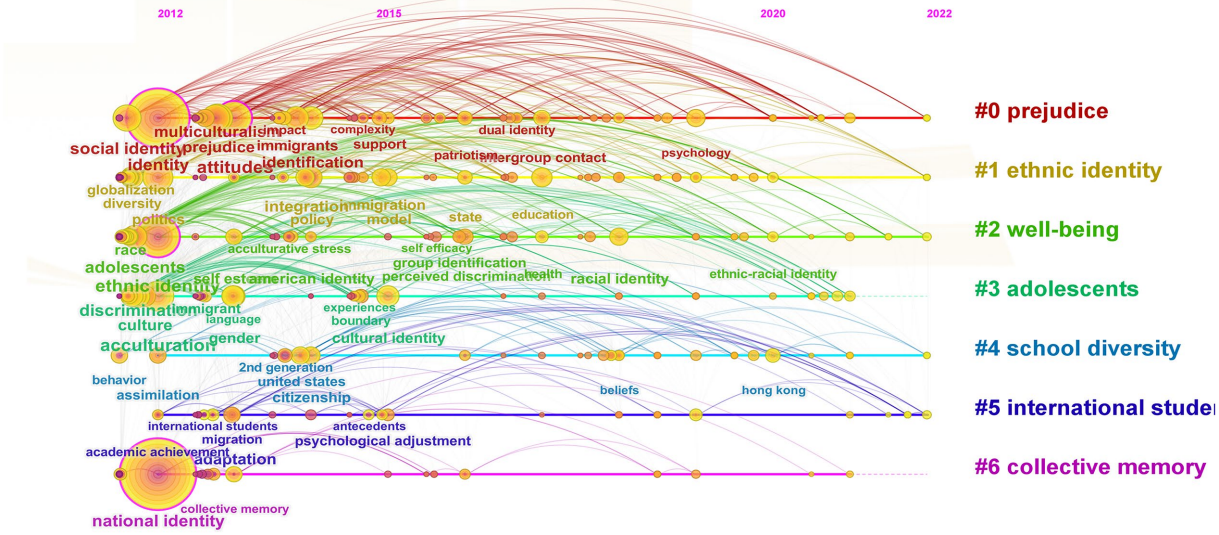

FIGURE 7
Keyword time zone map.

Author contributions

LK: Conceptualization, Data curation, Methodology, Visualization, Writing – original draft. XG: Writing – review & editing. BL: Supervision, Visualization, Writing – review & editing. JW: Funding acquisition, Supervision, 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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Integration of Shangshan culture into the STEAM curriculum and teaching: results of an interview-based study

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Introduction: Interdisciplinary science, technology, engineering, arts, and mathematics (STEAM) courses are a popular trend in international education than can help inculcate creativity in students. Although STEAM courses have been widely promoted in China, they are generally unsustainable because they are merely imitations of European and American courses and lack Chinese humanistic factors; a close integration between disciplinary ideas and thinking levels is also lacking. C-STEAM, which is designed to pass down China's culture, is a form of STEAM education with local Chinese characteristics that are focused on integrating interdisciplinary knowledge with the thought process oriented toward cultural heritage.

Methods: In this study, an innovative higher vocational college course with C-STEAM interdisciplinary principles was constructed, with art and design as the framework, and with the integration of Chinese local culture. Semi-structured interviews were conducted to sample 12 learners from a total of 90 students in the experimental class of the C-STEAM course. The study aimed to provide a deeper understanding of the effectiveness of taking a Packaging Design course combined with C-STEAM from multiple perspectives. After the interviews, based on the BAO model, coding statistics and thematic analysis were conducted to understand the learners' beliefs, actions, and outcomes after taking the course, and their plans for acquiring C-STEAM interdisciplinary knowledge and learning Chinese local culture.

Results: The integration of the Shangshan culture (上山文化) into the Packaging Design course proved the importance and significance of adding C-STEAM to the art design course, which helped us understand the specific feelings of students after completing the course and gain a deeper understanding of the changes in their knowledge and skills and their learning effects.

Discussion: Integrating C-STEAM education into courses related to art and design is highly warranted to encourage students to apply their interdisciplinary knowledge to artistic exploration and creation. Moreover, to effectively develop a curriculum system with local characteristics, teachers should provide more opportunities for students to explore and learn C-STEAM in the future, and integrate multiple elements into their teaching. In general, a cultural perspective-based interdisciplinary education helps facilitate the creative transformation of traditional Chinese culture.

KEYWORDS

belief-action-outcome model, C-STEAM, packaging design, fine traditional Chinese culture, practical teaching, STEAM course, teaching reform

1 Introduction

STEAM (Science, Technology, Engineering, Art, and Mathematics) is an interdisciplinary integrated form of education (Dinh, 2021; Hacıoğlu and Suiçmez, 2022), focusing on heuristic teaching and learning (Perignat and Katz-Buonincontro, 2019; Sha et al., 2021) and guiding students in hands-on operation and critical thinking (Yakman and Lee, 2012; Fan and Ye, 2022), as well as aiming to improve their reading comprehension (Henderika, 2021; Shinya and Tomohiro, 2023), imagination, and creativity, which can truly spur the social change caused by innovation (Yakman and Lee, 2012; Quigley and Herro, 2016). STEAM education is not just limited to the fields of engineering and science (Hernandez et al., 2014; Honoka et al., 2022), but is also closely related to the education of physical applications of art and design (Fan and Ye, 2020; Jazariyah, 2023). Art and design are activities that involve solving new problems in different ways and creating new products (He et al., 2019), and require cognitive abilities of creative expression and appreciation (Qian et al., 2022). Solving tedious problems requires innovation and skills. An art and design course that develops creativity and fosters scientific awareness can improve students' creative expression abilities (Hong et al., 2022), thinking skills, and techniques (Fan and Ye, 2020). In addition, quality-oriented education should run throughout the education system and be given special attention in both general and vocational education. Higher vocational education, in particular, is closely linked to the national economy (Chen, 2023). Only by providing better quality-oriented education for vocational education students can we help them find employment and, as a result, build a buoyant, robust national economy (Ye et al., 2023).

In recent years, STEAM education models have combined courses and physical design (Workosky and Willard, 2015; Tian et al., 2023). Such training can not only help students enhance their abilities to express themselves creatively and use broad knowledge to solve real-life problems (Jia et al., 2021; Shibata, 2022), but can also shape them into well-rounded talents with a distinctive innovative spirit (Daugherty, 2013; Yao and Liu, 2023). Many educators have emphasized that the reason for integrating STEAM education into art and design courses (Hong et al., 2019; Qian et al., 2022) is that designing products, such as textiles, packaging, and fashion products, involves different cognitive skills such as creativity, imagination, and other complex and multifaceted activities (Hong et al., 2019). Packaging design is a case in point. Its process is rigorous and complex, and requires consideration of the details of the material and design structure of packages, which is closely aligned with STEAM (Qian et al., 2022). Therefore, art and design courses are highly relevant to STEAM (Fan and Ye, 2020).

In the history of STEAM courses in China, studies have mostly focused on innovation in basic education, learning projects, and core literacy, while paying scant attention to higher education, especially higher vocational education (Qian et al., 2022). Meanwhile, overly imitating Western STEAM courses (Zhao and Fan, 2019) has resulted in inadequate humanistic thoughts (Zhan et al., 2023), a lack of integration with existing courses, and unsustainable development (Qian et al., 2022). Therefore, Zhan et al. (2022) suggested that we should consider China's actual conditions to promote STEAM education integrated with excellent local culture (abbreviated as C-STEAM). This approach has provided a new direction for the localized development of STEAM education (Wu et al., 2022; Zhan et al., 2023), creating a long-term impact on training talents with local characteristics (Deng et al., 2022) and innovating China's outstanding local culture education (Zhan et al., 2020; Yu et al., 2022).

Chinese local culture is a source of spirituality to the people of the nation that combines the values and ethics generally accepted by the native people. It embodies the profound ideology, artistic values, and esthetics of the nation's culture, and serves as inspiration for creative expression (Huo et al., 2020; Zhao et al., 2021). Shangshan culture represents a Neolithic cultural site in Zhejiang province, eastern China, that exemplifies China's local culture and has a strong influence across the world.

"Wannian Shangshan" is considered the origin of the world's painted pottery civilization, Chinese farming villages, and the world's rice cultivation culture (Jiang, 2013; Qian, 2019). Pottery, stone tools, wooden buildings, seed base, and various types of household equipment and production tools have been found at the Shangshan sites (Jiang, 2007). Ancient Chinese people who lived at these sites fully demonstrated diligence and wisdom through their scientific site selection, rice cultivation, construction of houses, decoration of pottery and stone tools, and measurement of tool making. The characteristics and cultural experiences of Shangshan culture are consistent with C-STEAM education's science-based, reality-oriented, multidisciplinary knowledge and multisensory experiences that unite students (Qian et al., 2022). Therefore, integrating Shangshan culture into the STEAM course, students were instructed to design product packaging with the Shangshan culture and local specialties around the Shangshan sites as the theme. This could help them enhance their understanding and identity of national culture; develop their hands-on and creative expression skills through planning, research, observation, extraction of cultural elements, problem identification, practical work, and reflection; and apply their knowledge to solve real-life problems.

Therefore, the purpose of our study was to explore the similarities among traditional Chinese culture, STEAM education, and art design courses in vocational colleges, examine the characteristics of the art creation process, and further analyze the packaging design STEAM course based on the Shangshan culture, so as to construct a C-STEAM course model for art design. Semi-structured interviews were conducted with students with different levels of thematic design works, and finally, thematic analysis was conducted using the theoretical framework of the belief-action-outcome (BAO) model. Specifically, the present study aimed to identify Chinese college students' feelings about taking the art and design course combined with C-STEAM. The results can not only help develop teaching practices with Chinese Characteristics in higher education and train art talents, but will also be helpful in protecting, utilizing, inheriting, and developing local culture, ultimately creating a win-win situation. At the same time, the results can provide theoretical support for the academic community from the perspective of art and design, and can make further contributions to diversifying the elements of disciplines.

2 Literature review

2.1 STEM education and art and design education

STEM education is an integrated form of education combining multiple disciplines (Fan and Ye, 2020). It intends to disrupt the

boundaries between subjects and respond to how to cultivate students' innovative thinking and problem-solving abilities (Shibata, 2022). Quigley and Herro (2016) reported that through STEM courses, students can become more engaged. These courses would make the curriculum more dynamic and interesting, thus stimulating students' interest in learning and their desire to explore questions. During the courses, students build on a foundation of mathematical logic and use hands-on creation and artistic forms to demonstrate the essence of science and technology, thereby developing an ability to face challenges.

Art and design education, on the other hand, focuses on esthetic education and the cultivation of comprehensive qualities in designers (Schat et al., 2023). This includes cultivation of appreciative, expressive, and creative abilities (Peng, 2022). Art and design is a highly integrated discipline (Fang et al., 2022). For example, the packaging design process involves considering various factors such as packaging materials, size, structure, manufacturing techniques, and visual esthetics (Qian et al., 2022). Therefore, in the packaging design field, the emphasis on materials, functionality, structure, esthetics, and precise dimensions all closely align with STEM principles (Fan and Ye, 2020). Consequently, this study explored the integration of STEM in the packaging design context, thereby developing it into a learning curriculum activity and investigating students' learning outcomes.

2.2 Curriculum design under the C-STEAM concept

C-STEAM implements localized interdisciplinary integration within STEM education (Zhan et al., 2022), primarily focusing on cultivating the ability of students to solve complex real-world problems through interdisciplinary thinking (Qian et al., 2022). It emphasizes inherently integrating interdisciplinary knowledge and thinking guided by the preservation of local cultural heritage (Zhan et al., 2023), rather than simply incorporating traditional culture into existing STEM courses (Huo et al., 2020; Zhan et al., 2022). C-STEAM guides students in understanding and appreciating local culture, conducting research, and incorporating scientific, technological, engineering, artistic, and mathematical knowledge into culturally enriched creative work (Zhan et al., 2022). This approach intends to bridge the gap between art, culture, and daily life, thereby nurturing students' humanistic spirit, reinforcing their understanding and identification with national culture, and thus enhancing national pride and confidence (Qian and Wang, 2022). Moreover, art and design education based on Chinese cultural values facilitates the construction of an indigenous knowledge system in China. This system is a crucial foundation for the country's development. The C-STEAM curriculum model discussed in this study is a comprehensive program integrating interdisciplinary and cross-disciplinary knowledge, mainly focusing on promoting China's rich local culture, particularly the Shangshan culture, as a core value in the localized STEM education. This approach enables students to creatively apply knowledge from multiple disciplines in thematic projects, and facilitates the creative transformation and innovative development of China's outstanding traditional culture. This, in turn, continually improves the country's cultural soft power and global cultural influence.

2.3 The belief-action-outcome model framework

The Belief-Action-Outcome (BAO) model consists of belief, action, and outcome. Belief is an expression of a self-perceived state that drives an individual to hold strong beliefs and plan how to carry out actions to achieve a desired outcome; action is the process of achieving their goal; and outcome is the result of their actions (Pilditch and Custers, 2018). The BAO model has been considered effective in terms of explaining an individual's action, their final outcome (Melville, 2010), and how their beliefs affect their subsequent action, which can have a significant impact on the outcome of their behaviors (Hong et al., 2022). In other words, the BAO model framework can help understand the cause of beliefs and explain how an individual's beliefs influence the outcomes (Molla et al., 2014). Recent research has shown that the BAO framework can be helpful in explaining the relationship between learning beliefs, actions, and effectiveness in higher education (Nong et al., 2023). As noted above, the BAO model framework effectively explains the learning experience of learners. Therefore, this study used the BAO framework to explain how the beliefs of the interviewees affected their actual behaviors, outcomes, and performances after the course.

3 Methods

3.1 Course design

In this study, the "Packaging Design" course combined with C-STEAM was constructed; the framework is shown in Appendix 1 in Supplementary material, and its outline is based on the "packaging design" textbook edited by Liu et al. (2021). The curriculum is categorized into four units and is closely related to the higher education curriculum. The modules combine STEAM education and Shangshan culture (Fan and Ye, 2020), evolve from the elementary to the profound level, and promote a high degree of integration of interdisciplinary knowledge and practical skills, focusing on training students with comprehensive qualities of culture, science, skills, and esthetics to encourage them to grow into highly qualified and skilled talents with knowledge, technical ability, artistic ability, and cultural taste. The duration of the teaching experiment was 9 weeks (72 h-long periods in total). The students' learning progress was monitored every lesson or every week by acquiring their design works, and they were instructed in a timely manner; expertise and skills in each field of C-STEAM were added by explaining each step so that students could fully understand the principles of packaging design and production (see Appendix 2 in Supplementary material).

The C-STEAM concept was used to develop the professional knowledge and skills of the Packaging Design curriculum, and was first developed by the lead teacher, subsequently examined by the course leader and the dean of the college, and finally reviewed and corrected by three experts and scholars with senior titles and with nearly 20 years of teaching experience. The integration of C-STEAM into packaging design was proposed to test the units of the Packaging Design course and the professional knowledge and skills required by students (see Figure 1).

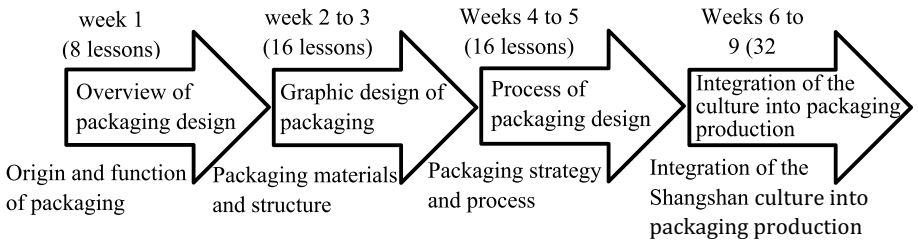

FIGURE 1
Curriculum planning chart.

TABLE 1 Basic information about the participants.

Number	Gender	Age	Awards	Previous majors
A	Female	21	National level	Art and design
B	Male	21	Provincial level	Art and design
C	Female	z	National level	Art and design
D	Male	21	College level	Digital media art and design
E	Female	21	None	Digital media art and design
F	Male	20	Provincial level	Art and design
G	Female	21	National level	Digital media art and design
H	Male	21	None	Art and design
I	Male	21	National level	Digital media art and design
J	Female	21	National level	Art and design
K	Female	21	Provincial level	Art and design
J	Female	20	None	Art and design

3.2 Research method

Semi-structured interviews were conducted to learn about the students' performance in the art and design course combining the C-STEAM concept. A total of 12 learners (who were at the high, intermediate, and low levels) were selected when they completed the course. Among them, four learners achieved excellent packaging performance, four learners achieved medium performance, and four learners delivered poor performance. At the end of the course, a 50–60 min interview was conducted with the learners to investigate their perceptions of the learning method and their acceptance of the curriculum change, including the cause of difficulties and what sparked their interest, to verify the results based on causal reasoning.

3.3 Research subjects

In this study, interest sampling was performed to select sophomore students in a higher vocational college in China majoring in art and design. After the classes were scheduled by the teaching office of the college at the beginning of the semester, 12 learners were selected from 90 students in the experimental class of the C-STEAM course who were at the high, intermediate, and low levels (Table 1). The sample comprised seven (58.33%) female students and five (41.67%) male students. A semi-structured interview was conducted with them at the end of the course, which was consistent with the purpose of this study.

3.4 Research tools

Interviews were conducted according to the interview guide or presentation (which was used as a framework prior to the start of the interview) proposed by Lin et al. (2005). No severe constraint was imposed on the wording and sequence of questions, and the content was consistent with the research questions. Questions were asked in a flexible manner. In this study, the interview outlines were adapted according to the opinions of Zhan et al. (2022, 2023), and the specific questions are presented in Table 2.

3.5 Data collection and analysis

First, written consent was obtained from the respondents, and the interviews were recorded using notes and audio recordings, ensuring that the information obtained was accurate. Immediately after the interviews, the respondents' comments and opinions were sorted, and the responses that were consistent with the research topic were screened through a review form to establish authenticity and dependability (Wang et al., 2022). Furthermore, while reviewing the data in cooperation with a supervising professor to clarify the concepts and ensure the correctness and reliability of the analysis, three colleagues majoring in art and a part-time teacher from a company were invited to assist in data review and feedback because triangulation can avoid biases and distortions in data analysis caused by personal emotions or opinions.

A 50–60 min interview was conducted one on one with the respondents, which involved questions in Chinese on the Tencent meeting online platform. To ensure the effectiveness of the interview data, the data were immediately recorded and used to perform a micro-analysis (Strauss and Corbin, 1998). After the interviews, the data were coded using MAXQDA 2020.

After collecting the raw data, researchers sorted the data and conducted subsequent analysis through cross-sectional and longitudinal comparisons to understand the learning effects of the curriculum. A coding system was created, as shown in Table 3.

TABLE 2 Interview outline.

Number	Questions
Q1	What did you like the most about the Packaging Design course integrated with C-STEAM?
Q2	What did you dislike the most about the Packaging Design course integrated with C-STEAM?
Q3	What difficulties did you encounter in this course? What methods did you use to overcome them?
Q4	What are the advantages (benefits) of the learning method in this course compared with conventional teaching (teachers lecture all the time)?
Q5	What are the advantages (benefits) of the learning style in this course compared with the conventional course design?
Q6	What is the biggest gain that the learning style in this course has brought you?
Q7	How did you learn about local culture, conventional Chinese culture, and Shangshan culture in this course? Could you integrate the culture into the creation of art and design and make use of it?
Q8	Did the use of interdisciplinary knowledge (culture, science, technology, engineering, art, and mathematics) help you to create "personalized" packaging? What did you find difficult?
Q9	Would you like to learn more in the C-STEAM course if you have an opportunity in the future?
Q10	Would you like to learn about traditional culture in the future (can you explain in detail what kind of traditional culture), and would you like to contribute to the transmission of China's excellent local culture?
Q11	Will you rely on the culture in your future designs?
Q12	What would you recommend if you continue to take this course?

4 Findings and discussion

The respondents' words were transcribed, and based on the BAO model, subject analysis was performed to obtain relevant information. The learners shared their positive and negative learning experiences, their learning beliefs, actions, and outcomes, and specific reasons for participating in the C-STEAM Packaging Design curriculum, and provided suggestions for the course. Interview data were analyzed, and the results are shown in Table 4.

4.1 Learning beliefs of the students taking the packaging design course combined with C-STEAM

The present study was conducted mainly to understand students' experiences of taking an art and design course combining STEAM based on Shangshan culture. Based on the interview texts, the students' learning beliefs can be divided into positive and negative aspects. Students' positive learning experiences refer to their positive states such as favorable feelings, interest, gains, and learning outcomes of the C-STEAM integrated Packaging Design curriculum. Positive beliefs include a deeper interest in studying Chinese culture. In this study, students' negative learning experiences refer to their negative perceptions of the Packaging Design curriculum combining C-STEAM, such as dislike, evasion, negation, repetition, and negativity. Negative beliefs include a lack of *a priori* knowledge of packaging, a lack of creative ideas at the early stage, and a limited understanding of the meaning of the culture.

Some participants found studying Chinese culture highly interesting (as shown below). They enjoyed learning about Shangshan culture, which in turn sparked their interest in the Packaging Design curriculum combining C-STEAM. The students considered Shangshan culture as the origin of Chinese culture and as having a long history and great cultural significance. The local Chinese culture is diverse and comprises the commonly accepted values and ethics of the Chinese people. Therefore, focusing on local Chinese culture is critical for promoting their long-term development.

> I got a feeling of freshness and specialty when learning about the history and culture unique to Jinhua that I had never known before (M-03-Q01).

The respondents indicated their lack of knowledge of packaging (as shown below), lack of experience of packaging design before taking the Packaging Design curriculum, and their knowledge of using software for graphic design but not of 3D rendering. Due to their limited knowledge and skills, they tended to be emotionally affected, and disliked the course.

> I didn't know how to apply it [the culture] to a specific project before I learned about packaging because I had never come into contact with it before (F-01-Q02).

Some learners indicated that they lacked creative ideas at the start of the design. Specifically, they were confused about choosing a product for packaging, the structure to wrap products, and the painting style to decorate their packages. Furthermore, some respondents would follow the herd because most used the rice grain as the main image of "Shangshan Xiaobai (上山小白)."

> The first step of choosing products based on the theme was the hardest part because I didn't know what to choose (M-08-Q03).

> After I overcame the difficulties encountered in this course, I came up with a new idea (F-05-Q03).

Some students believed that their understanding of the cultural meanings was superficial. Owing to the extensive and profound Shangshan culture, the subjects generally worried that their understanding of the culture was one-sided and that they could not

TABLE 3 Table of the data code.

Description	Code	Example	Description of the example
Subject	CN	C1N-33	33rd Student in class 1
		C2N-33	33rd student in class 2
Learning outcome	Learning	Learning C1N-33	Learning outcomes of the 33rd student in class 1 on March 2, 2023
records of students interviewed	interview	Interview F-01-Q01	Subject interviews
	F, M		Gender codes: female (F), male (M)
	1–12		Different interviewee codes
	Q1-Q12		Question numbers of the interview outline

completely grasp the cultural characteristics and meanings, indicating their lack of confidence in the extracted cultural elements and their design works.

> I would make mistakes in the design, fearing that I could not capture the characteristics of the Shangshan culture and would stray from the point, not reflecting the culture (F-07-Q03).

4.2 The learning actions of the students taking the packaging design course combined with C-STEAM

Based on the interview texts, students' learning actions can be divided into positive and negative aspects and learning suggestions. The positive aspect includes the joy of art creation and pleasure in producing works by hand, whereas the negative aspect includes the difficulty in choosing packaging materials and structures.

In this study, learning suggestions refer to the students' suggestions or insights after taking the Packaging Design course combining C-STEAM. These suggestions can be useful for optimizing and developing the course in a better manner. It can be concluded that the suggestions for improvement include more detailed explanations of each area of knowledge and various teaching methods. Expanded suggestions include integrating various local cultures, increasing the number of study tours and domestic and international design cases, and promoting interaction between teachers and students. The reasons were comprehensively analyzed.

Some students found producing works of art enjoyable because creating things by combining the long history and culture with modern art not only made them happy and was enjoyable, but it also resonated with other people.

> Combining the culture assigns a different cultural meaning to the design work and makes people understand deeper meanings (M-02-Q01).

Some participants enjoyed crafting, and they mentioned that they would practice crafts in their spare time, so they had experience of practicing crafts before taking the course. Furthermore, they stated that they would enjoy giving play to what they were good at and interested in during the course.

> I excel at running software and drawing designs, so I like it (F-07-Q01).

Choosing packaging materials and structures was perceived to be difficult by some students (as shown below). This difficulty was attributed to the various packaging materials that are currently available, such as different types of paper, as well as the materials for making different products. Therefore, they tended to be bored with repeated choices. Furthermore, some respondents stated that various packaging structures are available, and choosing the right package was tedious. Therefore, they tended to be confused or annoyed because it required considerable time to experiment during the production process.

> When I began designing structures, I could not find a suitable box. I tried out many different packaging forms to store the products, but I did not know whether they were suitable (F-12-Q02).

Some participants suggested detailed explanations of each area of knowledge (as shown below), especially mathematics. Most students felt that their mathematics skills were weak and that they required detailed explanations for accurately measuring the size and assembling the package. Typography skills were also deemed necessary. Though they had applied their previously acquired skills to graphic design, they were required to apply those skills to three-dimensional design, for which they required detailed explanations.

> What we need to learn is a bit too comprehensive, and there is no detailed explanation of a particular area (F-11-Q05).

Some respondents felt the diversity of teaching (see below) and enjoyed greater freedom in the packaging design class. They suggested that teachers should focus on the students who lacked initiative; teach using a variety of approaches such as class discussions, group discussions among students, and interactive discussions between teachers and students; and provide frequent instructions on their homework to promote student development.

> We enjoyed greater freedom in the class, so some students who lacked initiative would muddle along in the class (F-12-Q05).

Some students suggested that apart from Shangshan culture, other local cultures should be integrated (see below). They proposed that the integration of other traditional cultures, instead of only one culture,

TABLE 4 Coding statistics.

BAO	Code list		Sub-category	Frequency
Belief	Positive	Interest in learning	Studying Chinese culture is extremely interesting	12
	Negative	Learning difficulties	Lack of knowledge of packaging	5
			Lack of creative thinking in the early stage of the design	10
			Superficial understanding of cultural meanings	7
Action	Positive	Interest in learning	Producing works of art is enjoyable	3
			Handcrafting is enjoyable Learning effect	4
	Negative	Learning difficulties	Difficulty in choosing packaging materials and structure	5
	Suggestions	Suggestions for improvement	Detailed explanations of each field of knowledge	10
			More kinds of teaching methods	3
		Expanded suggestions	Various local cultures should be integrated	3
			Study trips and design cases at home and abroad are expected to increase	4
			Interaction between teachers and students should be strengthened	6
Outcome	Positive	Interest in learning	Acquiring new knowledge of packaging is extremely interesting	4
		Learning effect	C-STEAM multidimensional learning has aroused interest	6
			Familiarity with new knowledge of packaging	6
			Ability to appreciate and learn from good design cases has improved	4
			Humanistic literacy and cultural confidence have improved	13
			Self-exploration and thinking ability have improved	8
			Problem-solving ability has improved	4
			Hands-on ability and production level have improved	3
			Ability to express creativity has improved	7
			Integrated design ability has increased	8
	Negative	Learning difficulties	Limited hands-on ability or production level	9
			Weak in mathematical calculation	18
	Intention	Learning intention	Traditional culture is profound and fascinating	13
			Continued improvement of cultural heritage and development	14
			Personal cultural attainment continues to improve	7
			Personal artistic design level continues to improve	5
		Improvement of abilities	Constant creative inspirations	9
			Comprehensive thinking of the functions of packaging	4
			Completion of works continues to improve	12
			Recognition of artwork continues to increase	3
			Packaging accuracy and protection continue to improve	6
		Cultural utility	Chinese national wisdom continues to be passed down	9
			Cultural identity and cultural confidence continue to grow	9
			Vitality of the artworks is lasting	10

into the course is necessary because China is a large country with an exceptionally rich cultural heritage.

> In terms of culture, the course should be more diverse to give us more choices (M-04-Q12).

Some participants suggested that more study trips and domestic and international design cases should be incorporated (as shown below). They believed that field trips would be more effective than learning indoors. Furthermore, they expected that more domestic and international art and design cases should be shared so that they can extend their knowledge and broaden their horizons.

> It is better to share more creative cases, for example, western design cases or domestic award-winning cases (F-01-Q12).

> If there is a chance, we can go and visit the Shangshan site, so that the course content is richer (M-02-Q12).

Some respondents suggested that the interaction between teachers and students should be strengthened because most students lacked relevant learning experience before opting to take the course. They tended to be confused about future courses, and some introverted students did not take the initiative to approach teachers for help. Therefore, they suggested that teachers should focus on such students and strengthen communication with them.

> Sometimes students are too shy to take the initiative to communicate with their teachers. They should not always have their head buried in books. They need more communication with and assistance from their teachers (F-07-Q05).

4.3 The learning outcomes of the students taking the packaging design course combined with C-STEAM

According to the interview texts, the students' learning outcomes can be grouped into positive and negative aspects. The positive aspect includes an interest in learning and academic performance, such as a greater interest in acquiring new knowledge of packaging, a growing interest in multi-dimensional learning of C-STEAM, a deeper understanding of new knowledge of packaging, greater abilities to appreciate and learn from excellent design cases, improved humanistic attainments, boosted cultural self-confidence, greater ability to explore and think independently, better problem-solving skills, greater manual dexterity, greater creativity, and greater ability to produce designs. The negative aspect includes poor manual dexterity and arithmetic skills.

Some respondents found acquiring knowledge of packaging to be very interesting (see below). Generally, students believed that the transformation of a flat sheet of paper into a three-dimensional box could help them feel different visual sensations, and learning how to run the "Baoxiaohe" software and measuring and calculating sizes expanded their knowledge and impressed them, making them believe that learning is fun.

> It gives me a great sense of achievement to transform a piece of paper into a three-dimensional box by measuring each point, drawing lines, cutting, folding, and pasting (M-09-Q01).

Some participants were interested in learning C-STEAM (see below), especially multidimensional learning. In addition, if one or two knowledge nodes interested them, they tended to be interested in the whole course and pay more attention.

> The course was taught in a non-traditional way, and aroused the students' curiosity and increased their attention (F-03-Q04).

Some students were familiar with packaging (as shown below). They could quickly grasp the whole design process, including market research, cultural integration, packaging material selection, designing structures, drawing unfolded and effect pictures, and printing, all of which brought them a sense of achievement.

> Making an unfolding drawing on the computer, then drawing an effect picture, and finally printing to make the complete work brought me a sense of achievement and is my biggest gain in the packaging design class (M-04-Q06).

The participants' confidence in their ability to appreciate and learn from excellent design cases increased (as shown below). By appreciating vivid and interesting packaging cases, especially anthropomorphic design works, they could not only broaden their horizons and improve their esthetics but also learn how to apply them to their studies.

The teacher would show us many interesting and award-winning packaging cases with anthropomorphic packaging designs in class (F-01-Q01).

All learners agreed that they had gained a deep understanding of humanities and increased their self-confidence in their own culture (as shown below). Students gathered at the school from all over the country to learn the traditional local culture, deeply experience the unique charm of various cultures, and produce their works of art combining the culture, which embedded the culture in their hearts and increased their self-confidence in their culture.

> I have learned a lot about Jinhua culture and have come under the influence of the culture. Therefore, my self-confidence in our own culture has increased and I am proud of being Chinese (F-10-Q06).

Some respondents felt that their ability to explore and think independently had improved (see below). They mentioned that when designing packages, they not only explored the wisdom of the ancient texts, extracted cultural elements, and incorporated them into their designs, but also understood how to improve their ability to manage cost based on market demands.

> I would not only consider its beauty or structure but also its economy and practicality (F-01-Q06).

Some students believed that their problem-solving ability had improved after the course. They mentioned that they tended to be confused about the design theme and specific direction in their works, but with the help of their teachers and through constant efforts to integrate culture, sharing cases, thinking independently, and studying online, their problem-solving ability had improved.

> I could communicate well with my classmates and could communicate easily with my teachers when I ran into intractable problems (M-06-Q04).

The respondents felt their hands-on skills and production level had improved after the course (as shown below). They mentioned that the continuous processes of measurement and production increased their enthusiasm because packaging design requires calculating dimensions, drawing, and folding.

> My manual skills have sharpened and my enthusiasm for making has grown, and I have learned how to do manual work better, such as calculating dimensions, making drawings accurately, and the knowledge of deciding which to use or discard (F-03-Q06).

Some participants felt that their creative expression ability had improved (see below). They believed that compared with previous designs, their thought processes changed after completion of the course. Specifically, the packaging structure could be extended outward, and the packaging decoration can be anthropomorphic, providing inspiration for their works.

> The integration of local culture and packaging design provided us with more creative inspiration, allowed us to think fresh thoughts, feeling that there was more room for creativity (F-07-Q06).

Some students believed that their comprehensive design skills improved (as shown below) because the Packaging Design curriculum combined the knowledge of culture, science, technology, engineering, art, and mathematics with that of running various design software packages such as "Baoxiaohe" and AI. They mentioned that the course allowed theoretical knowledge to be closely integrated with practical creation, which strengthened their dynamic and active thinking and broadened their design horizons.

> The knowledge I had acquired before was all about graphic design, but the knowledge I have gained in this class is about 3D design, which is up-to-date and full of freshness (M-09-Q01).

The respondents believed that their personal hands-on ability was limited and their production level was low (as shown below). Specifically, when making unfolded drawings and drawing folding boxes, they would often mix up the folding and cutting lines. Therefore, they tended to make repeated mistakes when cutting and had to draw and assemble again, leading them to become depressed and frustrated.

> I often had to remake boxes because the folding and cutting lines were mixed up, or I bored the wrong folding lines or wrong holes, so I had to redraw and refold (F-10-Q02).

All participants felt that their ability to perform mathematical calculations was limited (see below), which further limited their ability to measure and calculate the package sizes. They obtained results that were either too long or too short, making complete assembly packaging difficult for them. Therefore, the more frequently the participants redid their work, the more likely they were to experience negative emotions.

> It was difficult to calculate sizes. Being about 0.5 cm larger will result in a relatively empty box, which tends to cause waste and high costs (F-12-Q02).

4.4 Learning intentions of the students taking the packaging design course combining C-STEAM

In this study, intentional learning experience refers to students' behavioral responses, such as aspirations, hopes, and intentions, after completing the Packaging Design course combining C-STEAM.

In terms of the students' intentions after the course, this study concludes that the reasons for continued participation were the extensive, profound, and fascinating traditional culture; continued efforts to pass down and develop the traditional culture; and continuous improvements in people's cultural attainments and art design level. Interdisciplinary knowledge includes creative inspiration, comprehensive thinking about the functions of packages, increased completion of works, continuous improvement of artwork recognition, and increased packaging accuracy and conservation. The utility of culture includes the continuous transmission of Chinese national wisdom and the enduring vitality of artworks. These results are comprehensively explained.

Some respondents believed that the traditional culture is extensive, profound, and fascinating (see below). They cited examples of traditional Chinese culture including the Dunhuang murals of the Tang Dynasty and Song Dynasty, the Tujia culture of Hunan Province, Chinese monochrome pictures, and the Shangshan culture of Zhejiang province. Deep in meaning and rich in content, Chinese culture is a spiritual home to all Chinese people.

> I want to learn more traditional culture, like Chinese paintings. Since childhood, I have been very interested in landscape painting, which has a special pleasing quality (F-10-Q10).

All respondents were willing to continue to pass down and develop the traditional culture. Specifically, they hoped to hand down and promote culture through the art design they are good at, such as drawing cartoon characters, illustrations, packaging, logos, and emoji packs.

> The traditional culture of the Chinese nation should be passed down, which is also what Chinese people should do (F-01-Q10).

Some learners believed that their cultural attainments (as shown below) had improved. They genuinely believed that producing works based on culture can bring both designers and audiences closer to the culture and improve their cultural attainments through materialized works.

> Local culture is a source of inspiration and can make the work more meaningful and attractive (M-02-Q11).

Some students indicated an increase in their personal art and design level (as shown below), which could be attributed to the fact that the integration of interdisciplinary knowledge expanded their creative ideas, enriched them, and made them more determined.

> I can use what I have learned to contribute to the transmission of Chinese culture. By doing so, we can not only spread traditional culture but also foster artistic innovation (F-01-Q10).

Some participants were creatively inspired (see below). The Packaging Design curriculum is student-oriented, combines interdisciplinary knowledge and skills, and uses culture as a source of inspiration for design, thereby providing students with constant creative inspiration.

> Using a combination of knowledge inspires me to think independently (F-11-Q09).

The respondents believed that they could think comprehensively about each function of packaging because designing packaging requires not only drawing ability but also knowledge of mathematics, science, and engineering, including measuring the size of products to make packages and integrating the characteristics of products to decorate packaging. Considering these factors can enhance the visual impact of their work.

> I didn't have a clue at first about the design process, so I used interdisciplinary knowledge to solve problems (M-08-Q08).

Some learners found that they could complete their work steadily (as shown below). They could acquire considerable knowledge and multiple skills from the Packaging Design curriculum combining C-STEAM, and prepare packages by combining what they had learned with their own personalities, eventually presenting their works in a more complete manner.

> We gained an understanding of the culture and then combined our personalities through relevant software, which made the whole package look more complete (M-04-Q08).

Some participants indicated that their artwork recognition improved. Although most students used "Shangshan rice grain" as the main image on the package, the details of the image and the painting style differed considerably. Some designed the top box lid as a cartoon hat with small ears, whereas some replaced the clothing and costumes and integrated culture into their products for display, which was extremely personalized.

> Our works became more personalized, for example, the tissue box is in the shape of a lid with small ears on top (F-03-Q08).

Some respondents believed that their precision of packaging design improved, and packaging was accorded effective protection (see below). After taking the course, the students concluded that package dimensions should be measured and calculated using a strict formula, rather than by decreasing or increasing the sizes of some objects. In this manner, the package can fit the size of their products and protect their integrity.

> Applying the knowledge of math, I used a ruler to measure the length, width, and height of the package (M-06-Q08).

The students believed that Chinese wisdom continues to be passed down (see below), which is reflected in the fact that the Shangshan ancestors who lived by water made beautiful pottery, stone tools, and other household articles to change their original eating habits, exhibiting their wisdom in a physical manner that continues even to the present day.

> The Shangshan people lived by water and created pottery for production and living according to their living environment, turning the kiln into a cooker, which promoted the development and prosperity of human civilization (F-11-Q07).

Some learners felt that their cultural identity and self-confidence in their culture had increased, especially when they produced artworks based on local culture. Furthermore, it strengthened their bond with the culture, deepened their understanding and affirmation of the culture, and subconsciously enhanced their sense of national pride.

> When producing various works of art combining local culture, we felt the wisdom of our nation, and our self-confidence in our own culture grew (F-10-Q09).

Some respondents perceived artworks as being full of continuing vitality (as shown below) and believed that traditional local culture provides a solid foundation for modern art design, infusing life into the artwork.

The rich patterns on the pottery are of great significance to our current creations, adding historical value to the work (F-11-Q07).

5 Discussion

Focusing on the elements of Shangshan culture, the present study aimed to explore the feelings of the college students completing the art and design C-STEAM course, so that, based on their understanding of China's outstanding local culture, they could combine the multi-disciplinary knowledge and skills such as science, technology, engineering, art, and math to design and produce themed product packs. According to the results, 72 h of training in packaging design helped these art majors develop innovation, improve their interdisciplinary attainments, practice their ability, boost their cultural self-confidence, and sharpen their sense of patriotism. The findings of Zhan et al. (2020) showed that C-STEAM interdisciplinary education aimed at passing down the excellent local culture not only has great significance for training professionals, but also has a significant impact on the perceptions of cultural context.

Semi-structured interviews were conducted in this qualitative research to explore the learning experience of the students taking the C-STEAM interdisciplinary course and their willingness to acquire the knowledge of C-STEAM and to learn the local culture. Twelve students in the experimental class of the C-STEAM curriculum answered the interview questions in detail. The students' learning beliefs, actions, and outcomes, and proposed future learning intentions were comprehensively analyzed, providing an explanation of the quantitative study.

Based on the interview texts, this study concludes that positive learning experiences include a deeper interest in studying Chinese culture (in terms of the learning beliefs), the joy of art creation (in terms of the learning actions), improved humanistic attainments, greater ability to explore and think independently, and better problem-solving skills (in terms of the learning outcomes). Based on the statements by Zhan et al. (2020) and Zhan et al. (2022), integrating C-STEAM education can enhance cultural identity and national self-confidence, stimulate students' innovative ability, broaden their knowledge, sharpen their skills in hands-on experience, and overcome their fear of difficulty. This result is also consistent with comments by Kong (2020) that the design course integrating the STEAM concept can help students develop creativity and inculcate them with the ability to appreciate their culture. Furthermore, they integrated cross-disciplinary study and

stimulated their innovation and creative expression in their design works.

This study further concludes that the negative learning experiences included difficulty in choosing packaging materials and structures and poor arithmetic skills, which is consistent with the findings of Zhou (2023), and Zheng and Chen (2023), who highlighted the need to select the design based on products owing to the diversity of packaging design materials and structures that rendered the selection process tedious. Qian and Wang (2021) asserted that because the art and design major in most Chinese higher vocational colleges does not provide mathematics courses, students majoring in art are weaker in mathematics than those majoring in other courses.

All participants in this study expressed their willingness to continue taking the Packaging Design curriculum combining C-STEAM, and to learn more about the C-STEAM course in the future. They expressed their desire to learn more about traditional culture to contribute to the transmission of China's excellent local culture. They also shared their desire to integrate elements of culture into their works of art in the future. This result is consistent with those of Zhan et al. (2022) and Zhan et al. (2023) who stated that after 3 years of project practice (i.e., from 2016 to 2019), the total number of students interested in participating in interdisciplinary STEAM curriculum increased 15-fold, and the number of students interested in learning about traditional culture increased from 28 to 96%. Fan and Ye (2020) and Ye et al. (2020) reported that after STEAM integration into a fashion design course, students became more willing to invest more time and effort in promoting their art learning performance.

6 Conclusion and suggestions

6.1 Conclusion

Combining China's actual conditions, this study designed an art design C-STEAM course integrated with local culture for China's colleges. The integration of the Shangshan culture into the Packaging Design course proved the importance and significance of adding C-STEAM to the art design course, which helped us understand the specific feelings of students after completing the course, and gain a deeper understanding of the changes in their knowledge and skills and their learning effects. This study, thus, enriches the literature on the development of the art design C-STEAM course in China's colleges by means of qualitative research.

Based on the BAO model, this study selected four themes from the interviews and analyzed them comprehensively. The results are summarized as follows. First, the learning beliefs of the students taking the Packaging Design course combined with C-STEAM included both positive and negative beliefs. In terms of positive beliefs, a deeper interest in studying Chinese culture was mentioned most frequently. Negative beliefs included a lack of *a priori* knowledge of packaging, a lack of creative ideas at the early stage, and a limited understanding of the meaning of the culture. Second, the learning actions of the students taking the Packaging Design course combined with C-STEAM can be divided into positive and negative aspects and learning suggestions. The positive aspect included the joy of art creation and pleasure in producing works by hand, whereas the negative aspect included the difficulty of choosing packaging materials and structures. In terms of learning suggestions, the interviewed students suggested detailed explanations of each area of knowledge, greater diversity of teaching, study trips, integration of local culture, and increased interaction between teachers and students, providing inspiration for future research and teaching. Third, the learning outcomes of the students taking the Packaging Design course combined with C-STEAM included positive and negative aspects. In terms of the positive aspect, improved humanistic attainments and boosted cultural self-confidence were mentioned most frequently; in terms of the negative aspect, poor arithmetic skills were mentioned most frequently. Fourth, in terms of learning intentions, all interviewed students stated that they could effectively use interdisciplinary knowledge and skills for "personalized" themes. They expressed their willingness to take more C-STEAM courses in the future as well as to learn about traditional culture and produce artworks based on the culture. To summarize, the integration of C-STEAM into the Packaging Design course can help students develop creative expression and art integration abilities, which is consistent with the purpose of the present study.

To accomplish the goal of building a culturally powerful country, the country's cultural soft power and Chinese cultural influence will be enhanced by cultivating culturally oriented talents, and thereby promoting cultural confidence. This study innovated the role of C-STEAM education in the teaching of art design in a Chinese higher vocational college, effectively applied interdisciplinary knowledge to the teaching process, capitalized on geographical advantages, and analyzed the historical value of the local culture. Efficient use of the local culture can not only ensure its preservation, utilization, inheritance, and development, but can also provide characteristic education in higher vocational institutions and build artistic talent, ultimately achieving a win-win situation. Furthermore, our study provides theoretical support for the academic community from the perspective of art and design, and contributes to the diversity of disciplinary elements.

6.2 Contribution

The contributions of this study are as follows: (1) STEM education is seen as the cornerstone of a country's capacity for innovation and creative development, and is the key to developing and shaping students' higher-order cognitive abilities and promoting their future career development. To examine specific feelings of students after taking the course and to understand students' learning effects after course experiments, this study developed a vocational C-STEAM course on art and design with local characteristics, thus enriching research on the development of C-STEAM art and design courses in China's higher vocational colleges through qualitative research. (2) The study aimed to maximize the in-depth integration of multidisciplinary knowledge of science, technology, engineering, art, mathematics, and local culture. This can encourage students to apply the acquired interdisciplinary knowledge to artistic exploration and creation, as well as accelerate training talent who can satisfy the needs of society. (3) The findings revealed that the students believed that the

integration of C-STEAM into the Packaging Design curriculum is an innovative and creative method of teaching that is removed from the previous teaching methods. The course was designed to provide students with time to think, accept their ideas, and respond in a timely manner, thereby contributing to the development of a distinctive art course in China's higher vocational colleges.

6.3 Recommendations

Furthermore, in the subsequent part of the course, based on negative learning experiences in students' learning beliefs, actions and outcomes, when running the Packaging Design curriculum combining C-STEAM in the future, detailed explanations of science, technology, engineering, art, mathematics, and culture should be provided to students, especially in the areas where they are weak, such as measuring and calculating sizes and assembling packages. More knowledge of traditional local culture should be incorporated, rather than confining the content to the knowledge of the Shangshan culture, to prevent students from merely gaining local cultural knowledge. Moreover, classroom teaching, group teaching, and individual teaching should be provided according to reality. Additionally, teachers must focus on each student's learning progress in a timely manner and strengthen communication with introverted students and those who are lagging behind.

In terms of the suggestions about students' learning actions, the course should be improved and extended to continuously optimize the art and design curriculum. For example, a combination of indoor and outdoor teaching activities is necessary. More study trips and field trips to cultural heritage sites and local museums are recommended so that students can understand the unique charm of the culture and broaden their horizons and knowledge. Students' development should be prioritized, focusing on their participation in class, and multi-dimensional comprehensive evaluation should be conducted from sketches, prototypes, and typesetting to the finished product to avoid one-sided scoring, which would dampen their learning enthusiasm.

Studies on the STEAM curriculum in China have overly imitated European and American courses, which has resulted in a lack of appropriate localization and poor integration with existing courses (Huo et al., 2020; Zhan et al., 2022). Therefore, integrating C-STEAM education into courses related to art and design is highly warranted to encourage students to apply their interdisciplinary knowledge to artistic exploration and creation. Moreover, to effectively develop a curriculum system with local characteristics, teachers should provide more opportunities for students to explore and learn C-STEAM in the future, and integrate multiple elements into their teaching.

6.4 Limitations and further study

In this study, semi-structured interviews were used to gain insights into the changes in knowledge and skills of students taking the course, and the learning effects of the course. However, this method could not provide an understanding of the participants' thoughts, and the results could not be described quantitatively. Therefore, our study can be supplemented with other research methods such as questionnaires in the future to more comprehensively understand students' feelings about their learning and to gain a more adequate and deeper understanding of the learning effect.

Design innovation poses challenges to experts and art; therefore, how to help art and design students develop creative thinking and ability is an important research theme which needs to be explored continuously. In the future, researchers need to continuously examine the causes of difficulties in producing works and ways to cope with them, the process of design creation, the innovation in teaching and learning modes, teachers' guidance methods, and so on.

Although the school and major selected for this study are typical of art majors in Chinese higher vocational colleges, the participants were all from the same college. The number of interviewees was limited because of the strict rules enforced by the college regarding the teaching period and the number of students. Therefore, follow-up studies should involve larger samples to explore specific feelings of students majoring in other courses on the theme in various colleges.

C-STEAM is a localized form of STEAM education oriented toward China's excellent traditional culture (Zhan et al., 2022). Chinese culture is extensive and profound, comprising vivid and unique cultures from distinct ethnic groups and regions (Qian, 2019). In this study, C-STEAM was integrated into the Packaging Design curriculum, including only the Shangshan culture. In the future, more traditional Chinese local cultures can be integrated into the curriculum to create innovative ideas for the development of STEAM education in China. Moreover, the study can offer STEAM courses based on ideological and political education (IP-STEAM) and expand the C-STEAM educational model according to the characteristics of the students' majors.

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 Ethics Committee of Dhurakij Pundit University (DPUHREC050/65NA). The study was conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

Qian C, and Ye J-H: Concept and design and drafting of the manuscript. Qian C, and Ye J-H: Acquisition of data and analysis. Qian C, Ye J-H and Zheng C: Critical revision 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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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1251497/full#supplementary-material

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Commitment and training: professionalization narratives in the implementation of social and emotional learning policies in Chilean schools

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Since the beginning of the pandemic, the discourse on mental health has strongly permeated educational spaces. This is evidenced by the proliferation of policies and initiatives related to Social and Emotional Learning (SEL), which urgently emphasize socio-emotional development and the psychological and subjective well-being of students. This phenomenon makes it necessary to study how professionals should take responsibility and implement a series of practices to respond to these initiatives and policies, many of which are improvised and poorly understood by the community. The aim of this article is to analyze the narratives of professionalization produced by educational agents responsible for implementing SEL policies in Chilean schools. For this purpose, in-depth narrative interviews were conducted with 12 primary education actors, including principals, educational psychologists, school climate coordinators, and homeroom teachers. The participants were selected from different types of educational institutions, including public schools, subsidized private schools, and private schools. Through an inductive Reflexive Thematic Analysis (RTA), two main themes were identified that articulate the professional experience of implementing SEL policies among the interviewees: (1) commitment to SEL and the (dis)continuities between institutions and personal efforts, and (2) initial and ongoing training for the implementation of SEL. Moreover, from these two proposed themes, various sub-themes emerged, classified according to the types of professionals interviewed and the complexities associated with the types of schools where they work. These sub-themes demonstrate how discourses on the emotional dimension and SEL in schools translate into concrete implications, both subjective and material, regarding the daily work of the interviewees. Finally, the article discusses the complexity arising from the narrative differences among professionals, particularly in terms of their initial and ongoing training, as well as the importance of shared commitments among communities in recognizing the work carried out by these professionals.

KEYWORDS

social and emotional learning, commitment, training, teacher professionalization, narrative approach, educational policy enactment

1 Introduction

The last few decades have been characterized by what Pekrun and Linnenbrink-Garcia (2014) have labeled the emotional turn in education, which consists in the mass proliferation of studies on the importance, application, design, and evaluation of programs aimed at developing the emotional dimension in educational establishments, with this phenomenon remaining stable since the mid 1990s to date. Likewise, international entities such as The World Bank and the Organization for Co-operation and Economic Development encourage countries to implement educational policies that promote the development of "soft skills." These include socio-emotional skills, regarded as one of the most relevant tools for successfully entering the 21st century job market (see The World Bank, 2015). With this goal in mind, the OCDE (2017) administered the first PISA test of Subjective Well-Being in 2015, a landmark event in the evaluation of dimensions other than the cognitive which focused on students' mental health.

In this regard, several policies have been introduced in Chile to foster students' socio-emotional development. These include the definition of Education as an integral process, proposed in the General Education Law, encompassing emotional and spiritual dimensions of development, among others (Ley 20370, 2009); the updated version of the National School Climate Plan (Ministerio de Educación, 2019); and the Cross-Curricular Learning Objectives (OAT); among other policies currently in force. Furthermore, efforts have been made to expand the way in which education quality is measured and understood. One such attempt was made in 2014, when Social and Personal Development Indicators (IDPS) –e.g. academic self-esteem and motivation, school climate, civic engagement, civics– were introduced to complement the academic indicators measured by SIMCE[1] (Agencia de la Calidad de la Educación, 2017).

In addition to the above, after the pandemic and health crisis of the year 2020, the Ministry of Education developed a set of documents that are noteworthy due to the direct use of the term 'socio-emotional' (Ministerio de Educación, 2021), including a self-care guide entitled "Keys to Well-Being. A Logbook for Teacher Self-Care Based on the Emotional Intelligence and Positive Psychology Principles" (Ministerio de Educación, 2020). The Ministry also produced a guide for a socio-emotionally safe return to school (Ministerio de Educación, 2021) and a tool repository entitled "School Climate and Socio-Emotional Learning Toolbox" (Ministerio de Educación, 2021). Finally, in 2021, the Integral Learning Diagnosis System was implemented, incorporating evaluation tools that provide diagnostic information about students' socio-emotional learning outcomes (Agencia de la Calidad de la Educación, 2021); in addition, authorities implemented the Socio-Emotional Guidelines and Skills System, composed of a set of Pedagogical Fact Sheets for Socio-Emotional Skills, along with the Strategies for Socio-Emotional Development through the National Curriculum. All these documents were developed upon the basis of the notion of Social and Emotional Learning (SEL), following international guidelines (see CASEL, 2023a).

Emotions have a long history in education and are not necessarily a topic of recent interest (see Abramowski, 2015, 2022; Toro-Blanco, 2018, 2019). Dewey (1997/1938) already took pains to argue how emotional experience plays an important role in the formation of intelligence and learning. Vygotsky, on his part, was not only concerned with the role of emotions in learning but was also interested in producing a theory about the development of emotions and their interweaving with historical-cultural aspects of knowledge (Vygotsky, 1933/2017). In particular, it is feasible to think that Vygotsky conceived emotional development under the same principles of development as the rest of the higher psychic processes, characterized by the functional systemic transformation of the psyche in relation to socioculturally directed tasks and activities (Vygotsky, 1930/2014; Bonhomme, 2021). Given this, the idea of the *social situation of development* becomes important (González-Rey, 2000), as the subjective experience during the learning process is fundamental to understanding the meaning of these systemic transformations. Thus, emotions are a psychological function capable of developing like any other psychological function (memory, attention, language, thought, perception, etc.) to become a higher psychic process (Bonhomme, 2021). At the same time, they play a transcendental role in the experience—whether of school learning or not—in terms of giving subjective meaning to any process of change and development (González-Rey, 2000). This is fundamental to understanding a pedagogy in which students have an active role in their learning process and in the shaping of a liberating education (Bruner, 1990; Freire, 2000/1970).

According to the above, emotions are not entities that inhabit the interior of the subject and are oriented from the inside out in the experience (Le Breton, 2013). In the educational field, it is crucial to understand schools as institutions that transform learning processes and guide development through specific socio-historically situated ways (Rogoff, 1990). Based on this, education and the pedagogical means of teaching can be understood in the same sense that Vygotsky (1925/2006) attributed to the function of art: as a social technique of emotion. Education plays an active role in the transformation of psychological systems, having the potential to produce creative paths of development (Vygotsky, 1931/2012). This is fundamentally important when the socio-emotional development of students and the shaping of affective schools take on particular socio-political relevance (Kaplan, 2022).

However, the emerging concern for the socioemotional dimension in learning had its most recent boom since the nineties through a so-called *emotional turn* (Pekrun and Linnenbrink-Garcia, 2014), which has its main antecedent in the concept of Emotional Intelligence (Mayer and Salovey, 1990). Similarly, from that term, the global agenda of educational policies has placed emotions and the non-cognitive dimensions of development as nodal aspects for the competencies of the 21st century and in the promotion of well-being and social development of students and educational communities (OECD, 2016; OCDE, 2018; UNESCO, 2020). Although the term Emotional Intelligence is no longer preponderant for educational policy in the field of socioemotional development, the new conceptualization from the SEL (CASEL, 2023a) shares the assumption of pointing to the individual and cognitive capacity to manage and express emotions correctly (Bisquerra-Alzina and Pérez-Escoda, 2007; Goleman, 2010; Menéndez, 2018; Seligman, 2019; Barría-Herrera et al., 2021).

The term Social and Emotional Learning (SEL) was coined by the Collaborative for Academics, Social, and Emotional Learning (CASEL) and is defined as:

1 Education Quality Measurement System.

> The process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities, manage emotions and achieve personal and collective goals, feel and show empathy for others, establish and maintain supportive relationships, and make responsible and caring decisions. (CASEL, 2023a, para. 1).

CASEL is an organization that has among its objectives "to establish high-quality, evidence-based SEL as an essential part of preschool through high school education" (CASEL, 2023b, para. 10). A pioneering force in the promotion of SEL with a three-decade presence in the USA, it proposes that SEL is based on the development of 5 specific competencies: Self-management, Self-awareness, Responsible decision-making, Relationship skills, and Social awareness.

At the educational policy level, SEL can be regarded as a "multifaceted umbrella term that encompasses multiple types of social and emotional competences as well as moral attitudes and dispositions" (Pérez-González, 2012, p. 58). It is worth noting that educational policies can present emotional education in both a restrictive and a lax sense (Pérez-González, 2012). Restrictive policies are explicitly aimed at developing thoroughly defined competencies (e.g., RULER, PATHS, Second Step). In contrast, lax policies cover multiple actions and statements that loosely incorporate efforts associated with a broad spectrum of what SEL is. These aspects of SEL may include various related concepts such as classroom climate, participation and involvement, academic, self-esteem, and sense of belonging, among many others, which encompass and/or compose the socio-emotional dimension of learning. In this regard, the plans and adjustments of SEL-oriented educational policies can be highly variable and not refer to specific programs (Pérez-González, 2012).

Due to the complex political reality of education in Chile, it makes sense to adopt the lax SEL policy categorization to discuss the situation in the country's educational establishments. Thus, it is possible to identify a cluster of SEL-oriented policies, like those mentioned above, aimed at incorporating this dimension of learning in a variety of ways, beyond the implementation of specific programs.

It is important to understand schools as "places of intersection of networks and processes that exceed the physical and institutional boundaries of school space" (Rockwell, 2005, p.28). In addition, according to Ball et al. (2012), "policies create context, but context also precedes policies" (p. 19), which means that SEL policies converge in the specific context of a school, coexisting with other policies and other contexts. Likewise, many policies co-occur in schools, with certain subsets targeting similar principles (such as the SEL policies mentioned above) and others focusing on a wide variety of purposes. Furthermore, it is worth stressing that not only Ministry-developed policies coexist in schools, since there are also internal, municipal, and other policies in place (Braun and Maguire, 2018). Thus, the authors of policy enactment theory focus on how top-down political demands are absorbed in various ways depending on the particular context of each school, according to how valuable they are to schools and to individual educational agents (Ball et al., 2012; Vincent, 2019).

An important aspect of the enactment of policies is how they are translated and interpreted by educational agents (Ball et al., 2012). According to Hoffman (2009), most research on SEL policies focuses on the implementation and evaluation of specific programs, seeking to describe and defend said programs. Based on the nomenclature proposed above, these studies examine restrictive SEL policies (Pérez-González, 2012). In this regard, to study SEL policies, "it is important to bear in mind that what teachers or other educators actually do in the classroom may be different, and that program implementations can and do differ considerably across contexts" (Hoffman, 2009, p. 534–535). Even though more than a decade has passed since Hoffman advanced these views (2009), to date few researchers have analyzed SEL policies taking into account how educational actors and schools (re)interpret and translate them in order to enact them (for some exceptions, see Vincent et al., 2016; Barnes and McCallops, 2019; Spohrer, 2021).

Studies focused on educational actors are still emergent (see Collie et al., 2011; Muñiz, 2020; Sorondo, 2023), seeking to analyze internal school factors crucial to the successful implementation of SEL programs. Some of these studies highlight the importance of commitment to SEL (see Collie et al., 2015; Nielsen et al., 2019) and the training provided to professionals (see Esen-Aygun and Sahin-Taskin, 2017; Barnes and McCallops, 2019) as factors leading to adequate SEL program implementation.

Based on the above, the present article examines the way in which professionals narrate their experience during the policy enactment process, underlining two main aspects of their professional activity: commitment and training. In addition, the article seeks to reveal how these factors involved in the implementation of SEL policies are interpreted and experienced differently according to the interviewees' professional discipline and specific functions as well as the values of the school where they work.

2 Method

2.1 Design

This article is an outgrowth of a project aimed at analyzing the narratives about emotional factors and the enactment process conveyed by professionals in charge of implementing Social and Emotional Learning (SEL) policies. Its research design is grounded in a narrative perspective (Schöngut-Grollmus and Pujol, 2015) whereby narratives are regarded as performative and transformative actions, embracing the view that subjects who produce them simultaneously construct their own experience and its meanings (Schöngut, 2015). Also, the study is inspired by the theoretical-methodological contributions of Ball et al. (2012) concerning the implementation of educational policies, acknowledging that they are not blindly and linearly reproduced by educational actors, but that they are translated and interpreted by them.

Fieldwork was conducted during 2021, while lockdown measures were in force. The data production strategy employed was the narrative interview (Murray, 2018), which can be either structured or semi-structured depending on the issue that the researcher intends to study (Roulston and Choi, 2018). This technique was adopted in order to capture both the emotional dimension and the implementation efforts of the interviewees. The interviews, which lasted between 1 h 30 min and 2 h 15 min, were conducted over Zoom and audio-visually recorded.

2.2 Participants

The interviewees were professionals who worked with students in primary education and who were in charge of implementing SEL

proposals, initiatives, and policies in their schools. They were selected according to their position in the school hierarchy, considering the availability and overall presence of these positions in Chilean educational establishments as well as the agents' involvement in the promotion, management, and enactment of SEL policies. For this reason, institutional affiliation was not used as a selection criterion, and efforts were made to safeguard the interviewees' personal anonymity and that of their schools.

The sample included all three school administration types in Chile (Municipal, Subsidized Private, and Private), with one agent per position being interviewed for each.

Based on the above, agent positions and the number of interviewees per school type are shown in Table 1. In almost all cases, it was possible to conduct the minimum number of interviews required by the methodological design (one representative per position and school type). Nevertheless, in order to uphold the agreement with the participants and take advantage of the richness of the interviews, the decision was made to conduct two interviews with homeroom teachers from two different subsidized private schools, which were subsequently transcribed and analyzed.

2.3 Analysis strategy

The data were examined using Reflexive Thematic Analysis (RTA), considered to be a specific approach derived from Thematic Analysis (TA), which is a general term used to refer to a set of approaches focused on the identification of themes (meaning patterns) present in the data (Braun and Clarke, 2006, 2022). The defining traits of RTA are its theoretical flexibility and the opportunities that it provides for the researcher's subjectivity to play a major role. This means that the researcher's subjectivity can be used in various situations to answer and adapt to multiple types of research questions, where neither the researcher's analytic choices nor the topics constructed are neutral (Braun and Clarke, 2006, 2022). This perspective openly acknowledges the impossibility of attaining neutrality and is built on the assumption that the thematic selection of data already introduces a complex, theoretically motivated act of analysis. However, although the analysis performed adopts the criteria of an RTA, the topics presented in this article were inductively proposed, being derived from the data themselves (Patton, 1990; Braun and Clarke, 2006, 2022). Based on this logic, the theme production process for this article was similar to that of grounded theory; however, the study freely switched from theoretically oriented (deductive) thematic generation processes and processes directly derived from the data (inductive).

An inductive RTA revealed two main topics that articulate the professionals' experience during the implementation of SEL policies: (1) commitment to SEL and discontinuities between the institutional level and their personal efforts; (2) initial and continuing training for the implementation of SEL. The aforementioned themes were extracted in the search for factors that influence the implementation of SEL policies by the participants, either hindering or facilitating their professional practice. Thus, two main categories were recognized: contextual factors and individual factors. Within the individual factors, commitment and training (initial and continuous) were identified as two fundamental thematic nodes in the construction of professionalization narratives by the agents interviewed.

The interviews were thematically coded using Atlas.ti V.22 and were then sorted according to a criterion of familiarization with the data, themes, and sub-themes. Thus, the analysis process can be charted in the following sequence: (1) familiarization with the transcribed interviews; (2) production of initial codes; (3) identification of common themes that encompass the experience of the professionals; (4) review of the constructed themes and analysis of narrative discontinuities; (5) definition of the two main themes and classification by professional role and type of establishment; and (6) elaboration of the narrative (dis)continuities as sub-themes that stress the professional roles in the implementation of SEL policies.

The analysis path can be seen in the diagram in Figures 1A–C by focusing on the individual factors present in the research project data.

TABLE 1 Total number of participants by position and school type.

Participants by school type	No.		
	Municipal	Subsidized private	Private
Principals	1	1	1
Homeroom teachers	1	2	1
Psychologists	1	1	1
School climate coordinators	1	1	1
Total by school type	4	5	4
Total no. of participants	13		

Source: own work.

2.4 Ethical considerations

The study followed the core ethical principles laid out in the TCPS2 (2018) pertaining to actions and tasks that involve human subjects: respect for persons, beneficence (or concern for welfare) and justice. Furthermore, the Institutional Review Board of Universidad Alberto Hurtado ruled that both the design and the Informed Consent (IC) protocol met its ethical standards. Each participant took part in the IC process voluntarily, signing the document prior to the interview. In addition, alongside the researchers, the participants read their rights and the IC and were given the opportunity to voice their doubts and/or questions regarding the process or the objectives of the project.

3 Results

This section presents the professionalization narratives of actors tasked with implementing SEL policies and initiatives in schools. These narratives revolve around two proposed topics, linked to specific factors that the agents describe as central in their daily SEL implementation work: (I) commitment and (dis)continuity between the institutional domain and their personal efforts; (II) initial and continuing training. Each of these themes will be organized by type of school and type of participant.

Figures 1B,C shows in a didactic way the main discursive nodes, narrative discontinuities, and implications (professionalization and de-professionalization) that emerge from the results in an

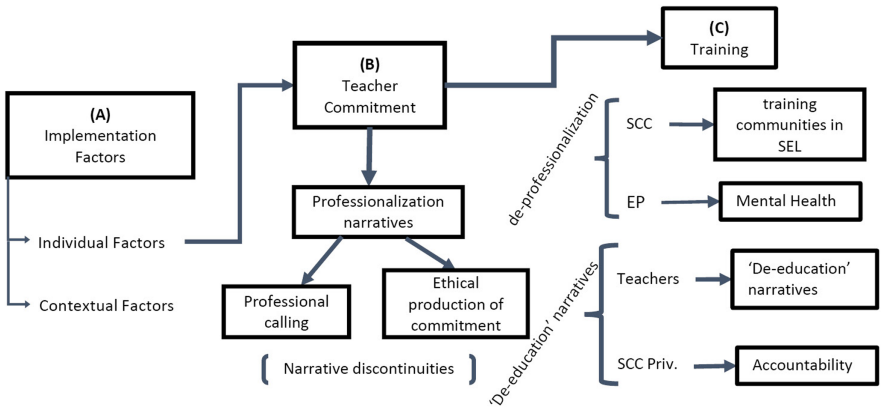

FIGURE 1
Diagram of the analysis structure and the main results.

intersectional manner (according to the role of the agents interviewed, type of institution and main topic: commitment/training).

3.1 Commitment to SEL and (dis) continuities between the institutional level and personal efforts

When referring to their work implementing SEL initiatives and policies, the interviewees organized their professional narratives around commitment, but this position varied across types of professionals and schools.

3.1.1 The importance of one's professional calling according to school principals

Principals of all school types appealed to educational community members to make a personal commitment to students' SEL. For example, the principal of a private school states the following:

> First, we need to be personally convinced that emotional aspects are important, so, if I'm certain of this and I see a child crying in my class, I'm going to stop the class, and of course I'm not going to say, "you, crybaby, get out," and resume my Math or Language lesson. So, I need to demonstrate that emotional aspects are valuable to me, that's really important for me as an educator (Principal, Private School).

Overall, the interviewed principals tend to highlight the value of community members' individual commitment to SEL. In this regard, for the principals, being committed to the emotional aspects of teaching is part of every actor's duty to education in general and a major component of their professional calling. Another principal illustrates this point as follows:

> The main thing is to be committed to education, to one's profession, that's the most important thing, one's commitment to education, because that drives everything. A committed person will make every effort in their power; last year, some teachers from this school went to students' homes because their parents did not answer the phone, did not come here, did not check their messages, did not answer their emails, so, because of that, some teachers said, "okay Mrs., I'm going to that girl's house myself to hand her the booklets, the material, the texts"; that's commitment, that's truly devoting your life to education (Principal, Subsidized Private School).

Commitment to SEL —and education in general— is an important factor in school principals' professionalization narratives. However, they reference the individual professional calling of their school's teachers, a quality they may be entitled to demand but one that is challenging to target and address using administrative tools. Thus, a lower level of control over the teaching team can lead to discontinuities between administrative/institutional guidelines and the actions of individuals. This issue is described as follows by a municipal school principal:

> I still have a couple of teachers who are still a bit, so to speak, rigid, but I cannot criticize them because I used to be like them too, but I'm trying to soften them and tell them that this is not a waste of time, because teachers sometimes come here and say, "hell, I started the lesson and wasted 30–40 min because the students were not feeling well at first, they did not have a good night's sleep, had trouble sleeping, the others were still saying they were afraid." So now I tell them that this is not a waste of time, in fact, it's a way to gain experience, at the very least you are making students feel that someone's listening to them (Principal, Municipal School).

3.1.2 The ethical production of teacher commitment

In contrast, for the interviewed teachers, commitment is an aspect of their daily efforts aimed at increasing their students' well-being. In their view, commitment is related to the ethics-based work that they carry out every day:

> If you ask me, I worked really hard last year to make sure the kids were all right and had everything they needed, plus, I wanted all the objectives to be met and to fulfill all my expectations; maybe it has to do with the things you want… you think, "I want those things to happen, I want them to happen my way, I have to do things my way," so, at least on my part, I achieved all I had set out

> to do, which was to ensure a good outcome for my students (Homeroom Teacher, Subsidized Private School).

In line with the above excerpt, another homeroom teacher is unable to separate her commitment to SEL from her commitment as an educator, because, as a teacher, she spends long stretches of time and several subjects with her students. She links this phenomenon to the cross-curricular nature of SEL in her daily actions and her pedagogical work:

> So, regarding the cross-sectional nature of this emotional education, I'm the one in charge, me alone, as the homeroom teacher, because I'd say that teachers of other subjects do not really take charge, it's the homeroom teacher who has to do nearly everything. There are some evident reasons; I spend 22 h per week with my class. The way things work in my school, I teach every subject, I teach Natural Sciences, Language, Social Sciences, Mathematics, and Orientation, I mean, I spend a lot of time with them, so (…) my personal intention (…) the decision to continue delivering this emotional education is mostly mine (Homeroom Teacher, Private School).

Aligned with this perspective, the interviewed teachers' responsibility entails an ethical commitment that manifests itself in the relationship with their students, which is inextricably linked to their implementation of SEL. Therefore, even though the interviewed principals regard commitment as a quality related to one's calling, for the teachers, responsibility and commitment to SEL are not necessarily intrinsic to their status as educators. Commitment to SEL is actualized and produced through practice, and like every cultural practice, it is grounded in a set of socio-historical ethos and the actualization of teaching work, based on the socio-cultural demands in which it is embedded. In this regard, a teacher illustrates how professional duties and commitments make it necessary to modify their teaching approaches and pedagogical priorities:

> Let me tell you, it's been 6 years since I changed; they are children, and, look, I live with two children here, and I'd also like someone to ask them what's going on. I would not like them to have a cold teacher, so I think that also made me change; I would like my children to have a teacher who's interested in them, not one who comes into the classroom, teaches her lesson, and leaves, but one who cares about how they are feeling (Homeroom Teacher, Municipal School).

This point of view is grounded in a moral attitude toward teaching, which means that commitment to SEL in the implementation of associated policies is not a generalized aspect of their 'teaching persona', but a product of a personal and individual process that makes it possible to articulate professionalization narratives in this area.

3.1.3 School climate coordinators and educational psychologists and their intrinsic commitment to SEL: continuities and discontinuities

According to a School Climate Coordinator (SCCs), there can be continuities or discontinuities between this actor and teachers regarding their commitment to SEL:

> It completely depends on the homeroom teacher's attitude, I mean, in the case I was just telling you about, the homeroom teacher is great, he really takes an interest in this, he communicates with us a lot, but if we had a teacher… there are some teachers who do not care at all, they do not listen to us, and there's not much we can do either (SCC, Private School).

This excerpt indicates that an SCC's professionalism can either be hindered or increased by the continuity or discontinuity between agents' level of professional commitment to SEL. Yet, while the interviewed teachers state that commitment to SEL requires practical work and 'changing' their approach, the SCCs consider that SEL is closely associated with their profession, since they tend to view it as the 'core of their work'. From this viewpoint, an Educational Psychologist (EPs) stresses that, since the pandemic, some progress has been made —even if only discursively— to foster the confluence of individual levels of commitment to SEL:

> In 2020, I think there was something of a perspective shift, or maybe we started giving more importance to the socio-emotional area, and therefore to school climate teams. Before the pandemic I felt a little alone in this regard, in my job, but now I feel we are working more collaboratively and that the people, the community are beginning to understand the importance of this (EP, Subsidized Private School).

As illustrated above, commitment to SEL involves aspects that, be them cultural or contingent, require a match between the professional commitment of each individual and that of the school community as a whole. Thus, when SEL becomes an urgent concern, the interviewed SCCs report feeling professionally recognized.

3.1.4 Professional commitment in the face of market logics and an outcome-driven focus

When factors are observed which link individual commitments to institutional and/or socio-cultural continuities, it is interesting to note that, in institutions with a strong association between market logics and academic achievement (such as private schools) and where institutional SEL initiatives —despite being internal— seek to fill a void in a changing market, there emerge greater barriers to the establishment of communities committed to SEL. This is vividly illustrated by professionals of schools of this type. Specifically, one of them points out the following:

> Your child getting straight sevens[2]… we have our whole lives ahead of us, let us focus on that. And it's me who devotes a very large part of my interview guidelines to emotional development. I talk about social, academic, and emotional aspects. However, I'd say I try to tone down the importance of academic outcomes, especially because I work with 3rd graders, it's not so important what grades they get. I mean, they are an indicator, evaluations are important (…) they show me whether I'm teaching well (…). It's important not to leave any gaps, but I think, in my school, parents and even people at the institutional level are rather

2 Equivalent to straight As.

> academically-oriented, even though our discourse highlights the importance of the emotional dimension (Homeroom Teacher, Private School).

Similarly, despite the seeming interest that SEL arouses in most private schools —considering the material and professional resources devoted to it— this interest does not appear to extend beyond a declarative level, as commitments are ultimately reliant on each individual's professionalism. Illustrating this situation, an SCC describes it as a specific event where, despite the resources and means promoted by his institution, his efforts as a promoter of SEL are hindered.

> Globally (…), they organize an event that's like the world well-being day, the [name of program], and they plan it in England (…) that's where the head office is, so to speak, and they organize really cool activities, schedule talks by experts, develop lots of things, and here things are done quite differently compared to England, the focus is different, I think the principal likes spectacle, so to speak, she likes things to look beautiful, but there's very little content, so, for example, last year we had these activities and we had a budget and I was trying to arrange a presentation by an expert, but she spent it all hiring some jugglers (…) so that on the day, as they came into the school, parents would see a show with confetti, jugglers, and all that stuff (…) that happens a lot, it's like they try to show that we really care about this topic (SCC, Private School).

Consistent with the above, the last two interviewees state that a market-driven and/or outcome-oriented perspective is not enough to develop a professional and professionalizing SEL approach and that a fundamental component for achieving this goal is a collective commitment to SEL from educational communities.

Finally, and in contrast with prior experiences, in State-subsidized schools (both private and municipal), commitment to SEL begins to converge within the communities in response to wider socio-cultural demands that materialize into Ministry mandates or guidelines. Specifically, the pandemic helped actors to align their commitments and, as more importance was attached to the socio-affective dimension, professionals detected the need to acquire up-to-date knowledge or transform themselves; in the case of psychologists and school climate coordinators, they began to receive recognition as professionals:

> What we have been able to improve is one thing we'd mentioned before, that emotional learning should be given more importance, and school climate teams as well, that has actually changed, I feel, at least compared to my previous job and my first year here, the perspective (…) because the approach used to be much more reactive (…) and now it's more preventive (EP, Subsidized Private School).

In the same vein, a school climate coordinator describes how the pandemic and her job were re-signified during the pandemic:

> This year, for example, the pandemic made the situation clear: teachers were not coming to school (…) they did not come because they asked for permission not to come, and I felt it was right, because they had so much work at home, but we, all the assistants, kept coming to school and stayed here, it's like we organized the school so that it would keep functioning (…) and so the pedagogical aspect suffered, but it was because of people's lives, you know? People kept on living and the school was a source of support (…) that's not the only function of the school, but it's still a great source of emotional support for families (SCC, Municipal School).

As the above SCC notes, recent discursive changes regarding education and the material complexities derived from the pandemic made it possible for actors to differentiate their individual duties and distinguish themselves professionally. This generates disparities in professionalizing discourses concerning SEL, especially in the area discussed below: the initial and continuing training that professionals receive.

3.2 SEL implementation: initial and continuing training

As noted earlier, difficulties in the creation of professionalization narratives about the enactment of SEL initiatives result from discontinuities between individual and cultural/institutional commitments; in contrast, with respect to initial and continuing training, there are gaps between the actors' professionalization narratives associated with their individual disciplinary domains.

3.2.1 Administrative training narratives connected to ministry mandates in subsidized schools

From an administrative point of view, schools that start receiving Ministry pressure and demands concerning the socio-affective dimension are forced to implement measures and initiatives of their own, within a climate of uncertainty. With respect to this issue, the interviewed school principals highlight the absence of guidelines:

> The Quality Agency's diagnostic test has a socio-emotional section, right? But whatever specific guidelines we have used in our work, we have had to find, compile, and develop ourselves, because, as I was telling you, we prepared booklets for 2020 and also 2021, and we used our own compilation of material, because there's nothing else… this urgency appeared suddenly for everyone, with no time to prepare, so it seems they left schools free to devise their own plans to develop the socio-emotional area (Principal, Subsidized Private School).

As the interviewee points out, schools were faced with uncertainty and needed to resort to their own resources and strategies to enact SEL. Likewise, they had no choice but to draw on their own professional experience to acquire the necessary resources to implement these policies. Thus, at the school administration level, actors are affected by a scarcity of tools and training that prevents institutions from meeting the new demands. A municipal school principal describes the situation as follows:

> I think we have certain tools we acquire throughout our lives and in our professional career, our day to day work allows us to learn

> from colleagues, what they are experiencing, what's going on with their families, and so on, but I feel we need a well-defined path to work on socio-emotional issues in the right way, or rather (…) in a consistent, linear way, I think the Ministry should begin by offering a good course, with psychologists, assistants, I do not know, they should offer a comprehensive view of the issue (Principal, Municipal School).

As this participant illustrates, there is a particularity in the professionalization narratives about the training available to schools that receive State subsidies and Ministry mandates. The interviewed principals begin to notice the pressure exerted by SEL policies, but, simultaneously, the internal weaknesses of their institutions start coming to light; in this context, schools must respond using their own strengths, although this does not preclude calls for additional training and professional advice.

In a different sphere, professional recognition begins to focus on initial teacher training. At this point, the efforts of professionals from other disciplines take center stage, since, according to the logic laid out by the interviewees, they are better equipped to implement SEL policies. Thus, the interviewees consider that it is a strength for communities to have access to professionals from a wide range of areas, as this should enable them to address the many SEL-related challenges facing schools:

> Right now, we are making use of our own experience as professionals in each of our roles and the enormous support that the psychologist has been giving us since August, at a municipal level, plus the experience of the 2 psychologists and the social worker in our staff. And the tasks that each one of us must fulfill according to our respective roles. But I feel we are coming up short in that regard, I think we need proper training, proper tools (Principal, Municipal School).

In conclusion, continuing training is deemed to be essential for addressing the gaps between the professionalization narratives of teachers and other professionals who are better equipped to enact SEL policies.

3.2.2 SCCs and institutional strengthening narratives

Even though knowledge or initial training shortcomings can be counterbalanced by the personal commitments discussed earlier, what the interviews reveal is an 'openness' on the part of schools to embrace domains outside the pedagogical, with certain professionals playing a more central role in educational cultures. In this regard, professionals with a greater affinity for SEL draw attention to a lack of continuity in the knowledge required for the promotion of these policies in schools:

> A problem I see in my community is that people have little knowledge about school climate concepts, I think that may be a factor, well, I do not blame them, my school is a subsidized private one and, to be frank, they only care about money (…) I think whatever little discussion there is about emotional issues is capitalized or monopolized; that focus on money obscures everything else, and we stop learning new concepts, new terminologies, and new tools that not only enable us to do that, but also help us with our primary duties: generating healthy and nutritious environments for learning (SCC, Subsidized Private School).

According to school climate coordinators, educational communities require professional training in SEL and school climate. They stress the importance of continually acquiring new concepts and tools, and analyze their schools critically, demanding a more professional approach to the emotional dimension:

> I feel there's more awareness of emotions, greater ability to identify them, especially, but very little capacity to work on them adequately, in general, there's this typical attitude that, I do not know, anger is a highly negative emotion, sorrow is an emotion that must be private, there's no further development beyond that (SCC, Private School).

3.2.3 Narratives of acknowledgment regarding mental health logics in SCCs

Educational psychologists, on their part, manage to develop narrative continuity between the role that their profession demands and their initial and continuing training; therefore, their continuing training is not part of a process detached from their professional role:

> I really like what I do and I'm highly aware of the importance of starting to give more importance to socio-emotional issues. I do not like to do things I know nothing about, so I study a lot, I buy lots of books, I read a lot, I want to do things only if I have support, that way I can also back what I say (EP, Private School).

The professional training process allows for narrative continuity to exist between what the professional says and does at school and the professionalism that grounds these words and actions. Thus, continuing training is a process linked to each actor's initial training and their personal SEL implementation efforts. Likewise, commitment and training are articulated in each actor through institutional change narratives, which make it possible to attach meaning to one's professional duties:

> I'm really happy with everything I've achieved because I think I've managed to make people understand that there must be a balance between academic outcomes and broader, comprehensive educational objectives (…) and that's what we are working on, that's where we are going (EP, Private School).

Since the pandemic, the role of EPs became much more meaningful, precisely as a result of the greater weight of the emotional dimension. This professional begins to occupy an exclusive and particular place within the school, mostly as a result of their contributions derived from their initial education process (as a psychologist):

> [during the pandemic] we also tried to reach parents by making recommendations (…) to foster well-being, self-care, talking about what emotions are, what types of emotions exist, teaching them the importance of the emotional dimension; we did the same with teachers and educational support staff, we gave them presentations to raise awareness so that this could also be applied in classes (EP, Subsidized Private School).

The intrinsic value that EPs begin to have since the pandemic resulted from their relationship with mental health, with professional requirements also focusing on that area:

> Last year, of course, we were unable to organize the workshops and other similar activities, so I worked a lot as a clinical psychologist. Some days I'd phone several children and we talked and I sort of interviewed their parents (EP, Municipal School).

Therefore, initial education has a larger impact than continuing education on the professional recognition of educational psychologists. This occurs regardless of the distinction between educational psychology and clinical psychology, for example, since the value attached to them results from the relationship between their discipline and the notion of mental health as well as from these professionals' presumed mastery of socio-affective factors.

3.2.4 Teacher 'de-education' narratives

For the teachers interviewed, initial and continuing education involve the acquisition of disciplinary aspects different from those of pedagogy and all the other knowledge acquired during their years of initial education. In this regard, in the face of the proliferation of SEL policies, the interviewed teachers narrate how their professionalization depends on tools that are unrelated to those of their initial education process. This is the case of a private school teacher who had the opportunity to complete a graduate program at a prestigious European university.

> I think the great progress I've made with this very complex class I was telling you about, I owe it to having studied mediation in socio-educational settings; first of all, that program taught me mediation as a method, a resource for solving problems through peaceful means. It's amazing (…) how useful that's been for navigating everyday issues, daily conflicts, children who come to class crying, those who are frustrated (Homeroom Teacher, Private School).

Professionalization narratives with respect to this issue concern finding among one's tools, or in aspects of one's specific education process, beyond one's initial education, the necessary strengths to navigate SEL policies and the new socio-emotional challenges that they pose. As an exception, a homeroom teacher with an undergraduate degree in Physical Education considers that the nature of her pedagogical education and the role of her discipline in her school have the potential to help her to promote SEL in her students:

> I cannot ask them to do 60 sit ups in 1 min, like we used to… and those who only did 40 but made a huge effort, got a 5 out of 7, so that means frustration for the person who made his best effort, while someone else did 60 and spent 30 doing nothing because he was a machine. Well, in my school, some teachers have been there for years, so they know what each student is like, but in my subject, since it's soft, flexible, we do a lot of work on self-improvement, the process, soft skills (Homeroom Teacher, Subsidized Private School).

Initial and continuing education establish the possibility of distinguishing oneself from other teachers, or staying 'relevant' by acquiring the capacities needed nowadays. In any case, these deviations from their initial education process involve competences associated with mental health disciplines such as psychology:

> In college, we learn the tiniest bit of psychology, probably in 1st year, and when you are out there, actually working, you do not remember much, you learn along the way, but there are some technical concepts, for instance, I had no idea the OPD even existed, I did not know schools had the obligation to report violations of children's rights, well, I did not really know what school psychologists do (Homeroom Teacher, Subsidized Private School).

The interviewed teachers' professionalization narratives are focused on their insufficient knowledge about a specific domain, but address the importance of seeking tools and engaging in continuous learning about topics unconnected to their initial education. Thus, they appreciate the support offered by schools and the resources provided the Ministry, which allow them to acquire tools and concepts from other disciplines:

> It would be greatly beneficial for us as teachers, since we get so many training programs all the time, a special socio-emotional program would be great because… yes, to be fair, we have received some training opportunities because of our ties with [name of facilitator], I do not know if you have met her, she's a really good psychologist, we have had those sessions in our school (…) there are talks that we have been able to attend. In general, the school tries to organize events for us to receive information and resources, both for teachers and families (Homeroom Teacher, Private School).

The resources provided by each type of school, along with personal resources, generate differences when establishing narrative continuity in the interviewed teachers' professional experience. However, training programs are not everything, because it is in the teachers' daily efforts and in the actualization of their ethical commitments that they devise ways of overcoming their educational 'weaknesses' through auxiliary tools or resources:

> I try to incorporate learning into my classes (…) especially with 1st and 2nd grades, in character as a clown, telling stories and creating stories, and after that, we return to the routine that we have implemented in our school, and we show, for example, several videos to facilitate a learning process (Homeroom Teacher, Municipal School).

This excerpt shows that the interviewed teachers' training narratives follow the same productive logic of their commitment to SEL; however, receiving training in this area is a task that, again, requires them to transform their initial education.

4 Discussion

Commitment and training are factors that influence the way in which actors depict their professionalization processes in connection with their work implementing SEL policies and initiatives.

The school principals interviewed in the study, for example, produce commitment narratives that make reference to the professional calling of the people working in their institutions. In these appeals, there is a notion of professional calling that articulates the configuration of an affective category in teachers (Abramowski, 2022) that plays a key role in their professionalization frameworks, and which is not precisely the remnant of a supposedly religious order that should be ignored (Abramowski, 2015); rather, this category has the function of politically organizing teachers around a profession that, at the time, constituted a modern educational project (Abramowski, 2015, 2022). This appeal operates as both a general and an individual call to actors in the educational domain, urging them to act professionally.

The individualistic notion regarding professional vocation aligns with evidence indicating that teacher commitment is commonly associated with dedication to teaching, students, and school. However, commitment is less associated and studied about adaptability to change (Sun, 2015). On the other hand, research indicates that teacher commitment is significantly influenced by instructional leadership and alignment with institutional value systems (Collie et al., 2015; Sun, 2015; Anyon et al., 2016). Studies suggest that narrative discontinuities may explain how principals disengage from their role within SEL commitment, which impacts teachers' job stress (see Collie et al., 2015).

On the other hand, the ethical production of commitment by teachers has an ethical and contingent quality, linked more to their professionalism than to their vocation, is strongly interconnected with the teachers' training narrative, because both are intertwined in the 'subjective theories' of professionals (Cuadra-Martínez et al., 2018a,b).

Examining professional narratives and their discontinuities allows not only the identification of factors but also the recognition of the contents and depth of discourses on the agents' practices. In this way, it is possible to understand the discursive effects of policies on the work of teachers and other educational agents, noting, for example, their potential de-professionalizing effect on some of them.

With respect to training, the interviewees' narratives highlight the introduction of new Ministry mandates; new demands which make it necessary to possess certain resources. In this context, it is worth anticipating the idea that schools respond to guidelines imposed by a hyper-vigilant State (Falabella, 2018) by requesting economic, material, and/or professional resources, along with specific training programs that cover areas related to SEL.

In contrast, to understand the commitments of teachers, it is necessary to acknowledge that they are (re)actualized daily, being produced in their professional practice in a situated manner. In this regard, it is worth mentioning the contributions of Cornejo et al. (2021), who show how the socio-affective efforts of the teachers who took part in their study represent a constant process of situated professional learning "that is not acquired in the initial education process (…), with emotional knowledge being constructed in specific contexts upon the basis of mutual experiences that take place over time" (p. 19). This is consistent with the findings presented, where commitments are inextricably associated with the interviewed teachers' daily efforts to improve their students' well-being and learning outcomes. As the interviews show, the teachers are aware of their weaknesses and the tools that they need, demanding some of this in the form of continuing education; however, their training narratives often reveal a search for further education in fields or subjects different from their core discipline. This process leads to a differentiation that may derive from the need to produce professional certifications that enable them to compete with each other under a performative market-driven education logic (Falabella, 2018), in contexts where SEL gained great relevance (for example, during the pandemic). In consequence, the interviewees highlight the importance of an initial education process sensitive to these issues. Such an approach may be enriched by the studies conducted by Bächler et al. (2020) on the profiles of initial emotional education in primary teacher education programs, adopting the idea that emotions are common to all teacher education processes, from a holistic, non-purposive point of view, together with the notion of teachers' emotional work (Cornejo et al., 2021). Developing a pedagogical approach to SEL that is situated and consistent with teacher training is essential, since, as shown by some meta-analyses, SEL programs and initiatives implemented by teachers are more effective for school functioning than those taught by external personnel (Durlak et al., 2011; Domitrovich et al., 2015; Cipriano et al., 2023). Thus, bringing together commitment and training in a way that nurtures teachers' professional narratives is crucial.

On the other hand, according to the evidence, the application of universal school-based (USB) programs and policies, oriented to the entire community, positively favors school and classroom climate, and the latter has a circular relationship with academic achievement (Cipriano et al., 2023). In addition, the school climate factor has a great impact on the educational experience of minorities (Cipriano et al., 2023); a good classroom climate results in an environment conducive to inclusion. Taking this aspect seriously, the concern of advancing in SEL policies, but also in aspects that manage to intertwine commitment and training from a pedagogical approach, which is not individualizing or psychologizing, is urgent to address current issues related to inclusion and the formation of a culturally responsive pedagogy (Barnes and McCallops, 2019).

As for school climate coordinators and educational psychologists, it is necessary to pay attention to the continuities and discontinuities connected to the values ascribed to SEL in schools. In line with the observations of Forman et al. (2008), the values and efforts shared and coordinated in connection with SEL are relevant factors for the successful implementation of specific programs that target this dimension of learning. The present study revealed that, under a market-driven approach, regardless of the amount of resources allocated to this issue, the outcome will not be positive if there continue to exist discontinuities between personal and administrative/institutional efforts and commitments. In addition, it is worth taking into account the illuminating study by Ascorra et al. (2019) on the institutional enactment of school climate policies, which shows how, in contexts of high-stakes accountability, two contradictory but juxtaposed approaches to school climate ultimately coexist: a punitive and a formative one.

With respect to the educational psychologists interviewed, it is necessary to recognize the role of the pandemic in the urgent investments that schools made in the mental health domain, where EPs tend to be highly valued by their communities. Yet, despite the importance of the recognition of the role of these actors in the educational field, it is necessary to note that discourses about emotions in education are grounded in mental health discourses (Toledo and Bonhomme, 2019), leading some authors to warn of the risks posed by the growth of therapeutic education or *therapization* of the education (Ecclestone, 2012; Bonhomme and Schöngut-Grollmus,

2023). Likewise, it is necessary to examine in more detail the complexity that psy discourses introduce into the educational field, under an ethos of vulnerability (Ecclestone and Brunila, 2015), and the types of subjectivation that these disciplines bring into educational practices (Apablaza, 2017). In addition, work should continue to be done to understand how languages derived from psychological and therapeutic logics color the professional efforts of educational agents, as well as the emergent association between different sets of discourses and practices. To do so, researchers must examine the narrative output of professionals' practices surrounding the emotional dimension of learning, as well as the shared educational horizons of two disciplines such as teaching and psychology, in order to determine the disciplinary and political implications of key factors such as training and commitment for the professionalization of educational agents in this area.

This research provides evidence about the contents that express the narrative discontinuities in the study of the implementation and enactment of SEL policies in Chile. The results manage to deepen and investigate the characteristics of an aspect that have been a crucial factor for studies on the implementation of SEL policies: the way in which the commitments and discursive values are aligned among different educational actors concerning the development of social–emotional learning in schools (Forman et al., 2008; Langley et al., 2010; Collie et al., 2011, 2015; Sun, 2015; Anyon et al., 2016; Barnes and McCallops, 2019; Exner-Cortens et al., 2019).

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 Universidad Alberto Hurtado Ethics Committee: Verónica Anguita, Daniella Carrazola, Diego García, René Cortínez, José Gaete, Natalia Hernández, Marcela Perticara, Alejandra Morales, Daniela (external member). Paula Dagnino has excused herself from participating in this evaluation because she belongs to the same faculty as the principal investigator. 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

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The relationship between university students' goal orientation and academic achievement. The mediating role of motivational components and the moderating role of achievement emotions

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The present study aims to expand the understanding of the role played by achievement emotions in the learning process and academic achievement of university students. We investigated how achievement emotions moderate the direct and indirect associations between mastery and performance goal orientation and academic achievement. Also, we used as mediators the motivational components from Pintrich and De Groot's theoretical framework of motivation and learning strategies. 274 Romanian university students (M_{age} = 20.23, 84.7% women) participated in the study. Moderated mediation analyses indicated that self-efficacy was the only significant mediator, and this relationship was moderated by hope, pride and hopelessness. In addition, the links between mastery and performance approach goals and motivational components are stronger when the positive emotions are higher and the negative ones are lower. Mastery avoidance goals were linked with high scores of motivational components at higher levels of negative and lower levels of positive achievement emotions, whereas the association of avoidance goals with motivational components was moderated by two positive emotions (pride and enjoyment). The patterns derived from the moderating role of achievement emotions in the relationships between goal orientation, motivational components and academic achievement, alongside several inconsistent results and implications in theory and education, are discussed.

KEYWORDS

achievement emotions, goal orientation, motivational components, academic achievement, moderated mediation analysis, university students

1 Introduction

Students' academic achievement depends on a diversity of interacting psychological variables. Among these, some of the most important are learning goals orientation (Elliot and McGregor, 2001; Keys et al., 2012; Dinger and Dickhäuser, 2013; Cerasoli and Ford, 2014), motivational components (Pintrich and De Groot, 1990; Stegers-Jager et al., 2012; Muwonge et al., 2019; Bai and Wang, 2023), and the emotions experienced while studying (Pekrun, 2011). Considering goal orientation theory of achievement motivation (Elliot and McGregor, 2001), mastery approach and performance approach goal orientations positively influence the academic results of students (Eum and Rice, 2011; Darnon et al., 2018), whereas mastery avoidance and performance avoidance goal orientation negatively predict this academic output (Elliot and Church, 1997; Baranik et al., 2010). However, learning goal orientations does not always directly predict academic achievement, their effect being mediated by others motivational factors (Honicke et al., 2019); components pertaining from the students' learning motivation such as academic self-efficacy and effort regulation show medium-size correlations with academic achievement (Richardson et al., 2012). Therefore, components as expectancies for success and subjective value of the learning tasks (Eccles, 1983) interact with goal orientation and influence academic results. In this regard, the model of self-regulated learning of Pintrich (2000a) indicate that goal orientation and self-efficacy represent essential motivational variables that influence academic achievement.

The importance of emotions in human life is widely recognized and investigated from psychological, but also from a broader philosophical perspective (de Sousa, 1979). Emotions are important because they made salient for us various dimensions of things (Elgin, 2008), for instance, emotions facilitate evaluative understanding (Brady, 2013), relate with the theories and beliefs they hold about knowing (Hofer and Pintrich, 1997) and represent epistemic forces toward the truth (Candiotto, 2020). Also, emotional cognition is useful for understanding thinking in law, religion and science (Thagard, 2006).

As complex fenomena, emotions involve affective, cognitive, physiological, motivational and behavioral components (Scherer, 2009). We encounter a large spectrum of emotions associated with learning: moods, that represent diffuse affective states as feeling joyful, angry or fearful (Pekrun, 2011); feeling of certainty or doubt (de Sousa, 2009) and other epistemic emotions, related to knowledge and knowing (curiosity or confusion; Pekrun, 2011), achievement emotions, linked with learning activities, as enjoyment of learning, but also boredom related with learning tasks; and content-related or topic emotions, as worrying about a protagonist wen reading a novel; social emotions, as admiration, envy or shame (Pekrun, 2011).

Research on emotions in academic settings significantly evolved in the last decades, and literature on achievement emotions clearly indicate they are related with academic achievement and motivational variables. The control-value theory of achievement emotions, (Pekrun et al., 2006) claim that students' emotions while study impacts their self-regulated learning, motivation and academic achievement. Further, achievement emotions affect psychological well-being, happiness, and life satisfaction (Pekrun, 2006), problem-solving ability (Lee and Chei, 2020), learning persistence (Tang et al., 2021), and can provide the motivational and physiological energy for engaging in future actions (Pekrun et al., 2002). Hence, the interaction between learning goal orientation and expectancies or value motivational variables happen into a broader learning context, where specific discrete emotion as enjoyment, boredom or hope modulate the intensity and the nature of relationships and their impact on academic achievement.

However, despite a great number of studies exploring the single and combined effect of learning goals orientation, motivational components as expectation for success and subjective task value, and achievement emotion on academic outputs, the specific mechanisms of interactions between these variables are far from being clearly understood. It is a gap in understanding the specific roles that achievement emotions play in interactions between goal orientation and others motivational variables, further influencing academic achievement; as achievement emotions represents background elements of the broader learning context, it is reasonable to consider these emotions modulate relationships between goal orientations and motivational components, rather than directly influence academic achievement. Also, the specific moderating effect of different achievement emotions in these relationships worth to be known.

In sum, this study proposes to further shed light on the relationships between learning goal orientation, motivational components and achievement emotions and how they related with academic achievement in university students. More specifically, our study first aims to evaluate the mediating role of motivational components between goal orientation and academic achievement. Second, we wanted to explore the ways in which achievement emotions felt when studying moderate the direct and indirect associations between specific goals orientations and academic achievement through motivational components. This approach may contribute to a better understanding of the underlying mechanisms and dynamics of motivational and affective factors contributing to the academic achievement of university students.

The present study adds to the existing literature with a comprehensive analysis of the role played by achievement emotions (Pekrun, 2011) as moderators of the relationships between goal orientation (Elliot and McGregor, 2001), expectancy, value and affective motivational components (Pintrich et al., 1991), and academic achievement. Pekrun et al. (2002) emphasize that the results of the studies on the motivational components, goal orientation and achievement emotions should be more useful to counseling and educational intervention aiming to improve students' learning process. Clarifying this role may further substantiate interventions for improving learning and teaching in university settings (Pekrun et al., 2006; Daniels et al., 2009; Fritea and Fritea, 2013).

1.1 Goal orientation and academic achievement

Achievement motivation literature developed from two meanings of competence: as absolute, intrapersonal (mastery), and normative, interpersonal (performance), further involving two

types of achievement goals (Elliot, 1997): mastery goal orientation and performance goal orientation respectively (Dweck, 1986). A mastery goal-oriented subject is motivated to develop his or her own competence, through mastering the learning task, whereas a performance goal-oriented learner is focused on demonstrating competence to others (Elliot and McGregor, 2001).

Elliot and Church (1997) proposed that mastery-performance dichotomy of achievement goals should be revised to include the distinction between approach and avoidance motivation, by addition of valence dimension to the performance goal orientation. The trichotomous goal framework keep unchanged the mastery goal orientation, but split the performance goal orientation in two subcategories: performance approach and performance avoidance goal orientation, according with valence (positive or negative) dimension. The performance approach goal orientation reflects the positive, desirable possibility of success, whereas performance avoidance goal orientation reflects the undesirable possibility of failure.

Further extension of the trichotomous framework of achievement goal orientation (Elliot and McGregor, 2001) additionally bifurcated mastery approach goal orientation taking into account the same valence dimension. This conceptual framework is known as the 2 × 2 model of goal orientation: mastery-approach, mastery-avoidance, performance-approach and performance-avoidance goals. A mastery avoidance goal-oriented subjects' focus is on striving on avoid misunderstanding, not losing skills or nor performing worse than before (Elliot and McGregor, 2001). In our study, we used this 2 × 2 model, which received support as being the most effective in explaining learning outcomes (Huang, 2012).

The relationship between goal orientation and academic achievement was tested in various studies. Directing the goals toward a good mastery of the content (mastery-approach goal) positively influences the academic achievement of students (Darnon et al., 2018; Suprayogi et al., 2019; Alhadabi and Karpinski, 2020), due to their focus on the development of knowledge, competences, skills and abilities (Diaconu-Gherasim and Măirean, 2016). At the same time, performance-approach goals, manifested by demonstrating competences and overcoming others in order to receive appreciation for their results (Pintrich, 2000b; Diaconu-Gherasim and Măirean, 2016), also have positive effects on academic achievement (Goraya and Hasan, 2012; Darnon et al., 2018; Suprayogi et al., 2019). However, mastery avoidance and performance avoidance goal orientations negatively influence the academic achievement of students (Baranik et al., 2010; Luo et al., 2013). The lack of confidence in one's own abilities and the concern to avoid situations that could prevent the full understanding of the content is reflected by the mastery-avoidance goal orientation (Elliot and Church, 1997; Baranik et al., 2010; Hulleman et al., 2010; Alhadabi and Karpinski, 2020), whereas the prevention of negative judgments by avoiding tasks that could reveal the lack of skills or competences (Pintrich, 2000b; McCollum, 2004) is reflected by performance-avoidance goal orientation. In order to achieve academic success, students can adopt and pursue a combination of learning goal orientations (Cho et al., 2011; Dull et al., 2015).

Nevertheless, the results of previous studies suggest that the link between goal orientations and academic achievement is not straightforward, some studies indicating that these relationships could be mediated by different factors (Bipp and van Dam, 2014; King and McInerney, 2014; Zhou and Wang, 2019). For instance, the relationship between mastery goals and academic achievement may be mediated by deep-processing strategies (Greene and Miller's 1996) or effort expenditure (Dupeyrat and Mariné, 2005). For this study, we tested motivational components (Pintrich et al., 1991) as mediators between goal orientation and academic achievement.

1.2 The mediating role of motivational components

Regulation of learning involves, on the one hand, managing one's own motivational beliefs, such as self-efficacy and task-value belief (Wolters, 1998, 2003; Pintrich, 2000a), and on the other hand, controlling one's learning strategies, thoughts and actions that influence choices, effort and persistence in academic tasks, in order to achieve good academic results (Wolters, 2003; Zimmerman and Schunk, 2011). Among learning motivation theories, one of the most influential is expectancy-value theory of Eccles (1983), Eccles and Wigfield (2002). This theory states students' choice and engagement in learning task is determined by two subjective, task-specific motivational orientations and beliefs (Gaspard et al., 2018): the expectancy that they can succeed in that task ("Can I do it?") and (b) the value of task ("Do I want to do it?"). The expectancy dimension about success depicts individual' s beliefs about how well will accomplish tasks and is conceptually related with academic self-concept (Marsh, 2006). The learners' orientations and beliefs about value dimension involve four subjective task value dimensions: attainment value or the personal importance to doing well a task; intrinsic value as interest or enjoyment of subject doing the task; utility value related with current or future subject's learning goals, and cost value, representing negative aspects as anxiety of failure, effort required or lost opportunities when one choose a specific learning task (Eccles and Wigfield, 2002; Tang et al., 2022). Recent theoretical synthesis reveals the Situated Expectancy-Value Theory (SEVT, Wigfield and Eccles, 2020), which represents the original expectancy-value theory completed with the socio-cultural dimension, has been utilized more than any of the other theories in motivation studies with longitudinal design (Anderman, 2020).

As Pintrich and De Groot (1990) states, the theoretical framework that conceptualize students' motivation is the general, original expectancy-value model of motivation (Eccles, 1983). The six motivational components detailed by Pintrich and De Groot (1990) encompass three subcategories, each with specific dimensions as follow: (1) three value components: intrinsic goal orientation (engagement in a task constitutes itself a goal and appears due to interest, curiosity and desire for knowledge); extrinsic goal orientation (the motivation for engaging in academic tasks is external in nature, based on, among others, grades, rewards, positive evaluation or competition); task value (assumes the importance, usefulness and interest given to the learning material); (2) two expectancy components, representing motivational beliefs: control of learning beliefs (refers to the belief that good results are consequences of one's own effort in learning), and self-efficacy (involves self-assessment of one's own capabilities and confidence in one's own skills); (3) one affective component, namely test anxiety, with its cognitive (negative thoughts or concerns that could

affect performance), and affective (increased anxiety and worry) aspects (Pintrich et al., 1991).

Motivational components presented above were linked to both academic achievement and goal orientation. Previous studies identified positive correlations between self-efficacy, intrinsic goals orientation and academic achievement (Kosnin, 2007; Kitsantas et al., 2008; Al Khatib, 2010; Trautner and Schwinger, 2020). The link between goal orientation and different motivational components also received strong support. Mastery-approach goals were related to intrinsic motivation, due to the students' positive attitude and higher level of engagement in academic tasks (Elliot, 2005; Kaplan and Maehr, 2007), while performance-avoidance goals were associated to lower intrinsic motivational orientation (Shi, 2021). Other studies indicate that mastery and performance-approach goals are positively related to the task value (Church et al., 2001; Harackiewicz et al., 2002) and both mastery and performance-avoidance goals were positively related to test anxiety (Palos et al., 2019). In a meta-analysis, Payne et al. (2007) found that mastery-approach goals were associated with high self-efficacy, compared to performance-avoidance goals and that mastery-approach goals were related to lower test anxiety compared to performance-approach and avoidance goals. Shi (2021) also found that self-efficacy was positively correlated with mastery-approach goal orientation and negatively with performance-avoidance goals, but no significant relationship was found between self-efficacy and performance-approach goal orientation.

Since motivational components are associated with both learning goals and academic achievement, they may also function as mediators of the relationship between them. In the study by Honicke et al. (2019), academic self-efficacy mediated the relationships between both mastery and performance-approach goal orientation and academic achievement. Magni et al. (2021) found stronger evidence for the mediating role of self-efficacy in the relationship between an approach goal orientation and students' performance, compared to the one between an avoidance goal orientation and performance. Bandalos et al. (2003) argue that both mastery and performance goal orientations were associated indirectly with achievement through two motivational components: self-efficacy and test anxiety. Other studies also support the mediating role of self-efficacy in the relationship between mastery goal orientation and academic achievement (Coutinho and Neuman, 2008; Olaogun et al., 2022).

However, the studies specifically investigating the mediation effect of Pintrich and De Groot's (1990) motivational components on the relationship between learning goals and academic achievement are still scarce (Honicke et al., 2019). As previously discussed, self-efficacy and test anxiety received significantly more attention. Thus, several gaps remain in the understanding how the other motivational components mediate the relationship between goal orientation and academic achievement.

1.3 The moderating role of achievement emotions

Emotions in academic settings have an important influence on students' academic achievement, motivation and learning process (Pekrun et al., 2009; Muis et al., 2015). Achievement emotions are defined as emotions experienced by students in learning settings, their intensity may vary according to gender, age, and culture (Camacho-Morles et al., 2021). These emotions were grouped based on different attributes. The first and most evident attribute of achievement emotions is their valence: positive vs. negative, pleasant vs. unpleasant. Enjoyment, pride and hope are felt as pleasant emotions, whereas anger, anxiety, hopelessness, shame and boredom are unpleasant, negative emotions (Pekrun et al., 2002). Secondly, achievement emotions can be classified as being activity-related, focused on the processes of learning in school-related settings, or output-related, focused on the result of these learning activities (Pekrun, 2006; Pekrun et al., 2009). For example, the anger felt when struggling with a difficult task is an activity-related emotion, whereas the hope for success is an output-related emotion. Thirdly, output-related emotions differ based on their temporal dimension: hope for success is an output-related, prospective emotion, whereas pride experienced after an academic success is an output-related, retrospective emotion (Pekrun, 2006). Fourthly, both the activity-related and outcome-related emotions can be further grouped as activating emotions (enjoyment, hope, pride, anxiety, shame and anger) or deactivating emotions (hopelessness and boredom; Pekrun, 2011). These taxonomies can be further combined (e.g., an emotion's valence combines with its activating-deactivating dimension) resulting in positive activating emotions (hope, enjoyment and pride), positive deactivating emotion (relief), negative activating emotions (anger, anxiety, shame) and negative deactivating emotions (boredom and hopelessness; Pekrun, 2006, 2011).

The control-value theory of achievement emotions (Pekrun et al., 2006) claims that students' emotions affect the cognitive, motivational, and regulatory processes influencing learning and achievement. However, the link between achievement emotions and academic achievement is not always intuitive. It should be noted that positive (e.g., pleasant) achievement emotions do not always have positive effects on learning outputs, and the negative links to academic achievement do not always appear in the presence of unpleasant achievement emotions. Thus, pleasant emotions are not by default adaptive, and symmetrically, unpleasant emotions are not always maladaptive for learning purposes (Pekrun, 2011). Although the positive valence of achievement emotions usually counts for positive effects on learning activities and outputs, the interaction of others characteristics such as the activating-deactivating dimension or the appraisal of subjective control and subjective value of learning activities may be more relevant for the link between achievement emotions and learning (Pekrun, 2006).

It is also likely that achievement emotions facilitate the use of different learning strategies and promote different styles of regulation of learning, such as the students' intrinsic motivation to learn (Mega et al., 2014). Moreover, hope and enjoyment are positively, whereas anger, anxiety and boredom are negatively related with study interest, self-regulation and effort as components of self-regulated learning motivational strategies (Pekrun et al., 2002). Considering the valence and activation dimensions of emotions, positive activating emotions such as enjoyment can promote intrinsic and extrinsic motivation and self-regulation, while positively affecting academic achievement. On the contrary, negative deactivating emotions,

such as hopelessness and boredom, can reduce motivation and have negative effects on academic results (Pekrun et al., 2011; Tze et al., 2016).

Achievement emotions are related with students' performance through motivational mechanisms. Students' achievement emotions influence their self-regulated learning and their motivation, and these, in turn, affect academic achievement (Mega et al., 2014). Positive activating emotions can positively influence performance, by increasing motivation and stimulating flexible learning, while negative deactivating emotions can affect performance by diminishing motivation, distracting attention and superficial solving of tasks (Pekrun et al., 2002; Pekrun et al., 2009; Muis et al., 2015). A recent systematic review suggest positive achievement emotions in online learning contexts may be much more effective than negative ones in improving learners' motivation, performance and achievement, but in the same time negative activating emotions, such as anxiety and frustration, also positively influence performance of subjects (Wu and Yu, 2022).

Previous results show that there is sufficient evidence for the role of achievement emotion in shaping motivational components and academic achievement. Moreover, as variables involved in broader learning contexts, emotions felt when studying may modulate the associations of different types of learning goals with specific motivational components. Previous studies, although using different outcomes, show that achievement emotions can interact with learning goals, significantly moderating their relationship with teachers' identity construct (Çetin and Eren, 2022). In this study, we want to go further exploring the moderating role of achievement emotions in the relationships between goal orientation, motivational components and academic achievement.

1.4 The present study

Previous studies showed that the academic achievement is determined by learning goal orientation (Darnon et al., 2018), motivational components (Kosnin, 2007; Kitsantas et al., 2008; Trautner and Schwinger, 2020) and achievement emotions (Pekrun et al., 2009; Muis et al., 2015). Several researchers have examined the combined role of these factors on academic achievement, such as learning goal orientation and motivational components (Church et al., 2001; Palos et al., 2019) and learning goal orientation and achievement emotions (Pekrun et al., 2006, 2009).

However, there are still important gaps in the literature. The studies that analyzed the mediating role of motivational variables in the relationship between learning goal orientation and academic achievement focused on academic self-efficacy in particular (Coutinho and Neuman, 2008; Magni et al., 2021). However, the other motivational components received little or no interest at all. In addition, to our knowledge, no study has verified the moderating role of achievement emotions on the relationships between goal orientation, motivation of learning and academic achievement.

Thus, the main objective of our study is to explore whether achievement emotions while study moderate the direct and indirect associations between specific goals orientations and academic achievement through motivational components in learning.

To conclude, we hypothesized the followings:

1. There is a positive association between both mastery-approach and performance-approach goal orientation and academic achievement.
2. There is a negative association between both mastery-avoidance and performance-avoidance goal orientation and academic achievement.
3. Motivational components mediate the relationship between goal orientation and academic achievement.
4. Achievement emotions moderate the relationship between goal orientation, motivational components and academic achievement.

   Specifically, we expected that:

   4.1. Positive emotions increase the positive associations between goal orientation, motivational components and academic achievement.
   4.2. Positive emotions decrease the negative associations between goal orientation, motivational components and academic achievement.
   4.3. Negative emotions decrease the positive associations between goal orientation, motivational components and academic achievement.
   4.4. Negative emotions increase the negative associations between goal orientation, motivational components and academic achievement.

2 Materials and methods

2.1 Participants and procedure

The participants in the study were 372 students enrolled in two bachelor programs at a large north-eastern Romanian Institution. However, due to missing data, only 274 participants were retained for the current study. From these, 139 (50.7%) were enrolled in a Psychology program and 135 (49.3%) were enrolled in a Social Sciences program. The students had a mean age of 20.23 years, with a SD of 3.62. 42 participants (15.3%) identified themselves as men and 232 (84.7%) as women. 141 participants (51.5%) lived in urban areas, while 133 participants (48.5%) lived in rural areas. All the students were recruited in a Pedagogy course. Their involvement in the study was voluntary and rewarded with course credit. The participation was anonymous.

The study was approved by The Ethics Committee of the Faculty of Psychology and Education Sciences, at the "Alexandru Ioan Cuza" University of Iasi. The participants who agreed to the take part in the study completed the questionnaires in a pen-and-paper format, in the classroom.

2.2 Measures

2.2.1 Goal orientation

The Achievement Goal Questionnaire (AGQ; Elliot and McGregor, 2001) was used to measure the four types of learning

TABLE 1 Means, standard deviation, minimum, maximum and Cronbach's alpha for the variables included in the study.

	M	SD	Min	Max	Cronbach's alpha
Academic achievement	8.64	0.73	5.00	10.00	–
MAP	16.55	3.77	3.00	21.00	0.86
MAV	14.92	4.02	3.00	21.00	0.72
PAP	14.05	5.23	3.00	21.00	0.94
PAV	13.93	5.28	3.00	21.00	0.92
IGO	19.90	5.24	4.00	28.00	0.78
EGO	18.76	6.32	4.00	28.00	0.86
Task value	32.85	6.65	6.00	42.00	0.89
CLB	23.43	3.89	10.00	28.00	0.75
Self-efficacy	38.99	9.54	8.00	56.00	0.92
Test anxiety	20.11	7.86	5.00	35.00	0.85
Enjoyment during course studying	15.47	3.18	4.00	20.00	0.85
Hope during course studying	15.47	3.23	4.00	20.00	0.88
Pride during course studying	16.49	3.15	5.00	20.00	0.85
Anger during course studying	7.33	3.23	4.00	20.00	0.85
Anxiety during course studying	10.37	3.77	4.00	20.00	0.76
Shame during course studying	7.58	3.86	4.00	19.00	0.85
Hopelessness during course studying	6.87	3.74	4.00	20.00	0.89
Boredom during course studying	7.91	3.82	4.00	20.00	0.90

MAP, Mastery-Approach goals orientation; MAV, Mastery-Avoidance goals orientation; PAP, Performance-Approach goals orientation; PAV, Performance-Avoidance goals orientation; IGO, Intrinsic Goals Orientation; EGO, Extrinsic Goals Orientation; CLB, Control of Learning Beliefs.

goal orientation: mastery-approach goals (3 items; e.g., "My goal is to learn as much as possible"), mastery-avoidance goals (3 items; e.g., "My aim is to avoid learning less than I possibly could"), performance-approach goals (3 items; e.g., "My aim is to perform well relative to other students") and performance-avoidance goals (3 items; e.g., "My aim is to avoid doing worse than other students"). Participants responded to the items on a seven-point scale (1 = not at all true of me – 7 = very true of me). Reliability coefficients for each scale were good and are included in **Table 1**.

2.2.2 Motivational components

The Motivated Strategies for Learning Questionnaire (MSLQ – Pintrich et al., 1991) has been widely used to investigate students' motivational components, its validity being shown by numerous studies (Kosnin, 2007; Roth et al., 2016; Tabatabaei et al., 2017). MSLQ was used in the present study to measure the six motivational components: intrinsic goal orientation (4 items; e.g., "The most satisfying thing for me is trying to understand the content as thoroughly as possible"); extrinsic goal orientation (4 items; e.g., "Getting a good grade is the most satisfying thing for me right now"); task value (6 items; e.g., "I am very interested in the content area of the courses"), control of learning belief (4 items; e.g., "If I try hard enough, then I will understand the course material"), self-efficacy (8 items; e.g., "I'm certain I can understand the most difficult material presented at courses") and test anxiety (5 items; e.g., "When I take a test I think about how poorly I am doing compared with other students"). The items were measured on a 7-point Likert scale (1 = not at all true; 7 = very true). Reliability coefficients, means and standard deviations are included in **Table 1**.

2.2.3 Achievement emotions

The Achievement Emotions Questionnaire (AEQ, Pekrun et al., 2011) is a well-established instrument for measuring achievement emotions in educational research (Bieleke et al., 2021). The original AEQ scale was large and unsuitable for use in conditions of brief administration time, thus a shorten version AEQ-S was developed and validated, showing satisfactory reliability and good correlation with the original AEQ scale (Bieleke et al., 2021). AEQ-S comprises items for the four components of each emotion considered in the AEQ (i.e., affective, cognitive, motivational, and physiological – see **Table 2**), in three learning settings (class, learning and test-related settings), resulting 96 items in eight scales.

In our study, we used AEQ-S in learning-related setting, for eight emotions: enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom. Therefore, we used 32 items grouped in eight scales, measured on 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Reliability coefficients, means and standard deviations are included in **Table 1**.

2.2.4 Academic achievement

Student's academic achievement was measured based on their self-reported grade point average attained in the previous academic year.

TABLE 2 Item examples for achievement emotions measured with AEQ-S in learning-related settings.

	Components	Items
Pride	Affective	I'm proud of myself.
	Cognitive	I think I can be proud of my accomplishments at studying.
	Motivational	Because I want to be proud of my accomplishments, I am very motivated.
	Physiological	When I excel at my work, I swell with pride.
Anxiety	Affective	I get tense and nervous while studying.
	Cognitive	I worry whether I'm able to cope with all my work.
	Motivational	While studying I feel like distracting myself in order to reduce my anxiety.
	Physiological	Worry about not completing the material makes me sweat.

2.3 Statistical analyses

The preliminary and the correlation analyses were conducted using the IBM SPSS 20 statistical software. To test the normality of the distributions we computed the Skewness and Kurtosis measures. Normal distributions were presented for all variables. To test the proposed moderated mediation models, we used Model 8 from Process, an SPSS macro (Hayes, 2013). For the mediation, bootstrapping with 5,000 re-samples was used to obtain parameter estimates of the specific indirect effects. The 95% confidence intervals (CIs) were used to determine whether these effects were statistically significant: if the 95% CI did not contain zero, then the indirect effect was considered statistically significant and mediation was demonstrated. For the moderation, we computed simple slope analyses to test the conditional effects of the predictor at low (16th percentile), medium (50th percentile), and high (84th percentile) levels of the moderator. All the variables included in the interactions were centered before the analyses. Because the Process macro does not compute standardized coefficients for the models that include moderation, unstandardized coefficients were reported for the analyses.

3 Results

3.1 Preliminary analyses

The means, standard deviations, minimum and maximum and the Cronbach's Alpha coefficient for all the variables considered in the study are included in Table 1.

3.2 Correlation analyses

Given than the data were normally distributed, we used Pearson-product correlations. The analyses showed that academic achievement was significantly and positively associated with all the four types of academic goals (see Table 3). Also, it was significantly and positively associated with extrinsic goal orientation and self-efficacy. However, the effect sizes for the all the significant correlations were small. Academic achievement was also positively and significantly related to feeling enjoyment, hope and pride during course studying, and negatively related to feeling anger, anxiety, shame and hopelessness. Again, the effect sizes were small.

We found significant and positive associations between mastery approach and mastery avoidance goals and all motivational components, except for test anxiety. On the contrary, performance approach and avoidance goals correlated significantly and positively with all motivational components, with the exception of intrinsic goal orientation.

3.3 Moderated mediation analyses

3.3.1 Mastery approach goals as the predictor

For the first set of mediated moderation analyses, academic achievement was the outcome, MAP was the predictor and the motivational components were introduced as mediators. Each emotion felt during course studying was used as a moderator of the relationships between the predictor and the mediators and between the predictor and the outcome.

We found that MAP was significantly and positively related to IGO. Boredom during course studying significantly moderated this association ($b = -0.06$, $p = 0.001$). The relationship was weaker, but still significant at medium ($b = 0.60$, $p < 0.001$) and high levels of boredom ($b = 0.30$, $p = 0.002$), compared with the one at low levels of boredom ($b = 0.78$, $p < 0.001$) (see Figure 1A).

Mastery-Approach goals orientation was also significantly related to EGO, but the relationship was not moderated by any of the emotions.

The positive and significant link between MAP and task value was significantly moderated by the anxiety ($b = -0.04$, $p = 0.01$, see Figure 1B) and hopelessness ($b = -0.05$, $p = 0.02$, see Figure 1C) felt when studying. The relationship is strong at low levels of anxiety ($b = 1.41$, $p < 0.001$) and hopelessness ($b = 1.35$, $p < 0.001$, but gets weaker at medium (for anxiety, $b = 1.22$, $p < 0.001$; for hopelessness $b = 1.30$, $p < 0.001$) and low levels of the emotions (for anxiety, $b = 1.01$, $p < 0.001$; for hopelessness $b = 1$, $p < 0.001$).

The relationship between MAP and the CLB was positive and significant. However, it was moderated by the enjoyment ($b = 0.05$, $p < 0.001$, see Figure 2A), hope ($b = 0.04$, $p = 0.006$, see Figure 2B), pride ($b = 0.03$, $p = 0.04$, see Figure 2C), hopelessness ($b = -0.02$, $p = 0.04$, see Figure 2D) and boredom ($b = -0.04$, $p < 0.001$, see Figure 2E) felt while studying. Thus, when the positive emotions were involved, the link was positive, significant and stronger at medium (for enjoyment $b = 0.52$, $p < 0.001$; for hope $b = 0.50$, $p < 0.001$; for pride $b = 0.44$, $p < 0.001$) and high (for enjoyment $b = 0.67$, $p < 0.001$; for hope $b = 0.64$, $p < 0.001$; for pride $b = 0.54$, $p < 0.001$) levels of the emotions, compared to their low levels (for enjoyment $b = 0.31$, $p < 0.001$; for hope $b = 0.31$, $p < 0.001$; for pride $b = 0.31$, $p < 0.001$). When the negative emotions were involved, the link was still positive and significant, but became weaker at medium (for hopelessness $b = 45$, $p < 0.001$; for boredom $b = 0.47$, $p < 0.001$) and high levels (for hopelessness $b = 0.28$, $p < 0.001$; for boredom $b = 0.26$, $p < 0.001$) of the emotions, compared to their low levels

TABLE 3 Correlational analysis for the variables included in the study.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Academic achievement	–																	
2. MAP	0.21**	–																
3. MAV	0.22**	0.54**	–															
4. PAP	0.23**	0.44**	0.37**	–														
5. PAV	0.18**	0.41**	0.42**	0.89**	–													
6. IGO	0.01	0.36**	0.18**	0.02	0.02	–												
7. EGO	0.18**	0.41**	0.32**	0.80**	0.76**	0.02	–											
8. Task value	0.09	0.62**	0.35**	0.25**	0.24**	0.40**	0.27**	–										
9. CLB	0.04	0.37**	0.18**	0.11*	0.12*	0.17**	0.12*	0.32**	–									
10. Self-efficacy	0.28**	0.55**	0.36**	0.32**	0.25**	0.28**	0.29**	0.52**	0.23**	–								
11. Test anxiety	0.01	0.10	0.09	0.24**	0.31**	−0.04	0.30**	−0.08	−0.04	−0.23**	–							
12. Enjoyment	0.18**	0.39**	0.25**	0.24**	0.20**	0.26**	0.15*	0.33**	0.06	0.39**	−0.15*	–						
13. Hope	0.19**	0.37**	0.26**	0.29**	0.28**	0.20**	0.20**	0.40**	0.07	0.44**	−0.20**	0.67**	–					
14. Pride	0.18**	0.34**	0.19**	0.29**	0.29**	0.12*	0.28**	0.26**	0.07	0.38**	−0.10	0.55**	0.68**	–				
15. Anger	−0.16**	−0.20**	−0.11	−0.05	−0.03	−0.14*	−0.03	−0.17**	−0.09	−0.22**	0.24**	−0.42**	−0.42**	−0.35**	–			
16. Anxiety	−0.12*	−0.09	−0.02	−0.01	0.03	−0.10	0.02	−0.17**	−0.10	−0.23**	0.46**	−0.31**	−0.40**	−0.39**	0.60**	–		
17. Shame	−0.20**	−0.11	−0.03	−0.03	−0.04	−0.05	0.01	−0.14*	−0.01	−0.23**	0.33**	−0.35**	−0.41**	−0.47**	0.45**	0.56**	–	
18. Hopelessness	−0.22**	−0.19**	−0.14*	−0.13*	−0.11	−0.09	−0.06	−0.19**	−0.07	−0.30**	0.31**	−0.42**	−0.55**	−0.58**	0.57**	0.62**	0.72**	–
19. Boredom	−0.11	−0.23**	−0.13*	−0.11	−0.07	−0.13*	−0.04	−0.17**	−0.06	−0.20**	0.16**	−0.56**	−0.43**	−0.39**	0.66**	0.51**	0.42**	0.55**

*$p < 0.05$; **$p < 0.01$; MAP, Mastery-Approach goals orientation; MAV, Mastery-Avoidance goals orientation; PAP, Performance-Approach goals orientation; PAV, Performance-Avoidance goals orientation; IGO, Intrinsic Goals Orientation; EGO, Extrinsic Goals Orientation; CLB, Control of Learning Beliefs.

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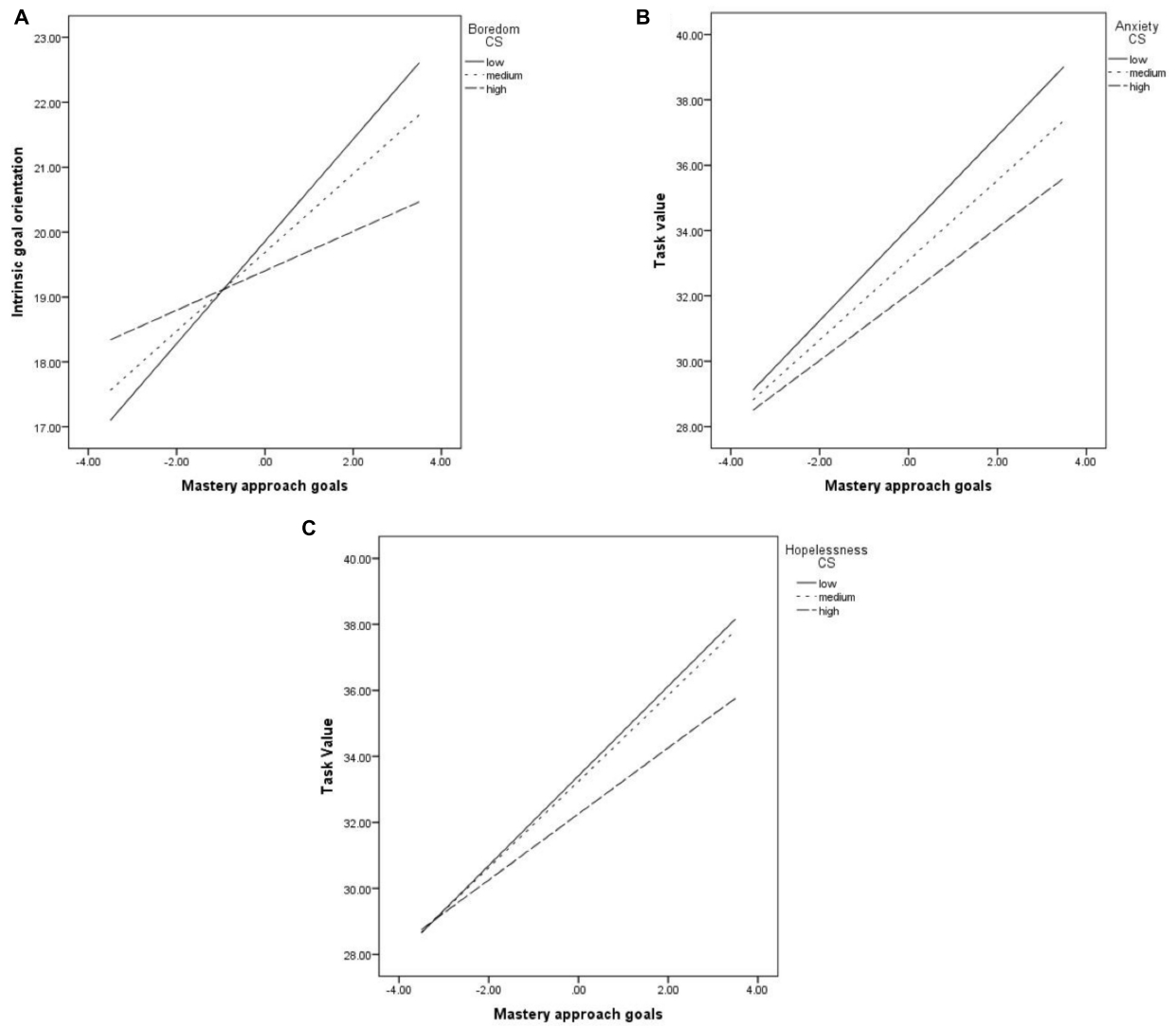

FIGURE 1
The relationship between MAV and: IGO, moderated boredom **(A)**; task value, moderated by anxiety **(B)**; task value, moderated by hopelessness **(C)**.

(for hopelessness, $b = 0.48$, $p < 0.001$; for boredom $b = 0.60$, $p < 0.001$).

The relationship between MAP and self-efficacy goals was significant and positive. It was not moderated by any of the emotions felt when studying.

Enjoyment felt when studying significantly moderated the relationship between MAP and test anxiety ($b = -0.10$, $p = 0.001$). The link was significant and positive at low levels of enjoyment ($b = 0.62$, $p < 0.001$), but became non-significant at medium ($b = 0.21$, $p = 0.14$) and high levels of enjoyment ($b = -0.09$, $p = 0.63$) (see Figure 2F). Otherwise, the association was significant and positive regardless of the levels of the other variables used as moderators.

Only task value ($b = -0.01$, $p = 0.01$) and self-efficacy ($b = 0.01$, $p = 0.001$) were significantly related to academic achievement.

The direct effect of MAP on academic achievement was not significant ($b = 0.02$, $p = 0.09$). It also remained non-significant when testing it at any of the three levels of each moderator. However, the indirect effect through self-efficacy was significant and positive ($b = 0.02$, CI [01;04]). It was not moderated by any of the emotions.[1]

3.3.2 Mastery avoidance goals as the predictor

For the second set of mediated moderation analyses, academic achievement was the outcome, mastery avoidance goals were the predictor and the motivational components were introduced as mediators. Each emotion felt while studying was used as a moderator of the relationships between the predictor and the mediators and between the predictor and the outcome.

The positive relationship between MAV and IGO was significantly moderated by pride ($b = -0.05$, $p = 0.006$). The relationship was significant at low ($b = 0.44$, $p < 0.001$) and medium

1 The direct and indirect effects were extracted from an additional model in which we computed only the mediation analysis. A similar method was deployed for the direct effect of performance approach goals on academic achievement as well as for the direct effect of performance avoidance goals on academic achievement.

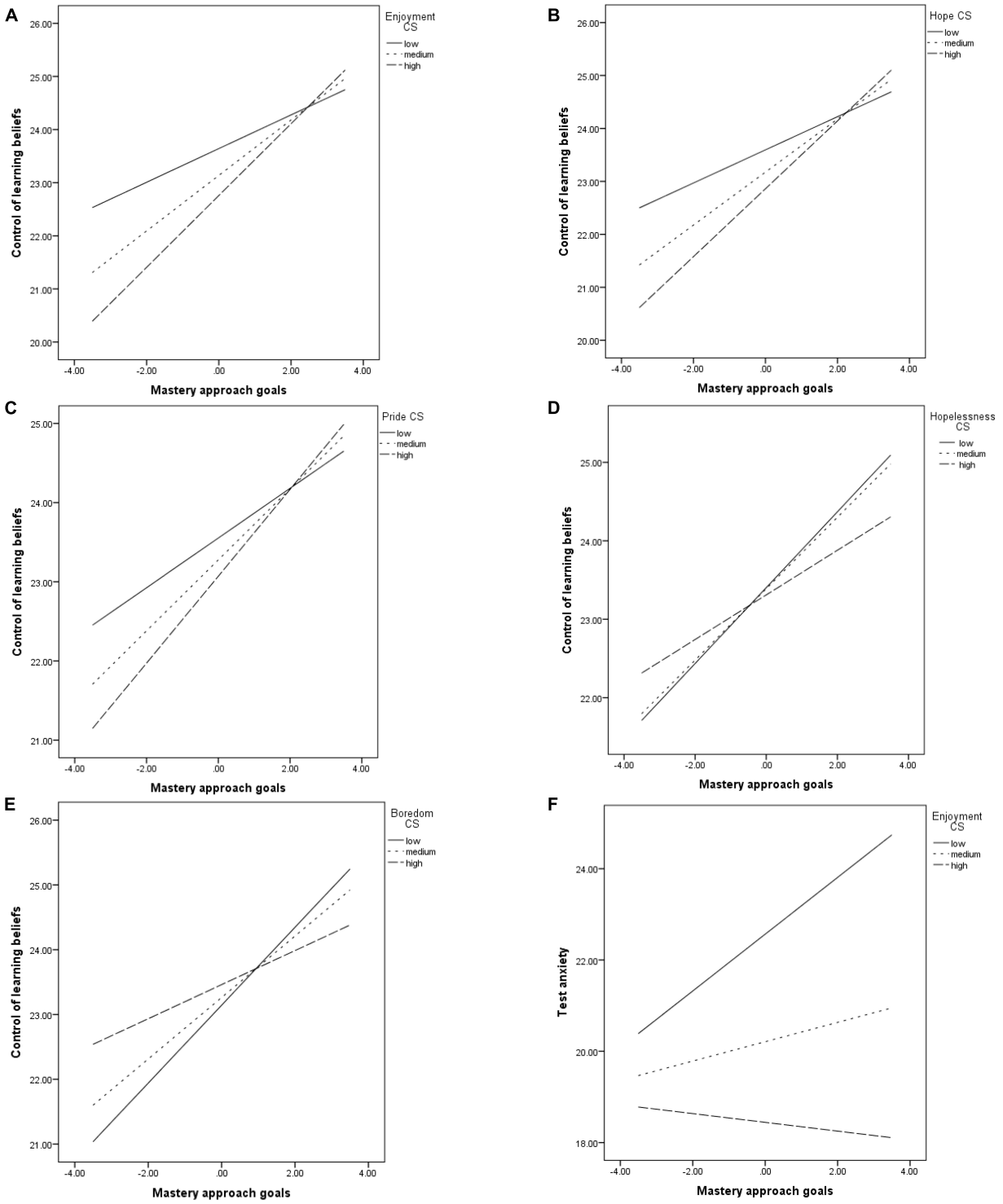

FIGURE 2
The relationship between MAP and: CLB, moderated by enjoyment **(A)**; CLB, moderated by hope **(B)**: CLB, moderated by pride **(C)**; CLB, moderated by hopelessness **(D)**: CLB, moderated by boredom **(E)**; test anxiety, moderated by enjoyment **(F)**.

(b = 0.18, p = 0.02) levels of pride, but became non-significant at high levels of the emotion (b = −0.01, p = 0.88) (see Figure 3A). Anger also moderated the association (b = 0.06, p = 0.02), which was not significant at low levels of the emotion (b = 0.04, p = 0.64), but became significant and positive at its medium (b = 0.17, p = 0.03) and high levels (b = 0.41, $p < 0.001$) (see Figure 3B).

Enjoyment (b = −0.07, p = 0.01, see Figure 4A), hope (b = −0.07, p = 0.02, see Figure 4B) and boredom (b = 0.07, p = 0.004, see Figure 4C) felt when studying moderated the positive link between mastery avoidance goals and task value. This association was significant at low (for enjoyment b = 0.76, $p < 0.001$; for hope b = 0.69, $p < 0.001$) and medium (for enjoyment

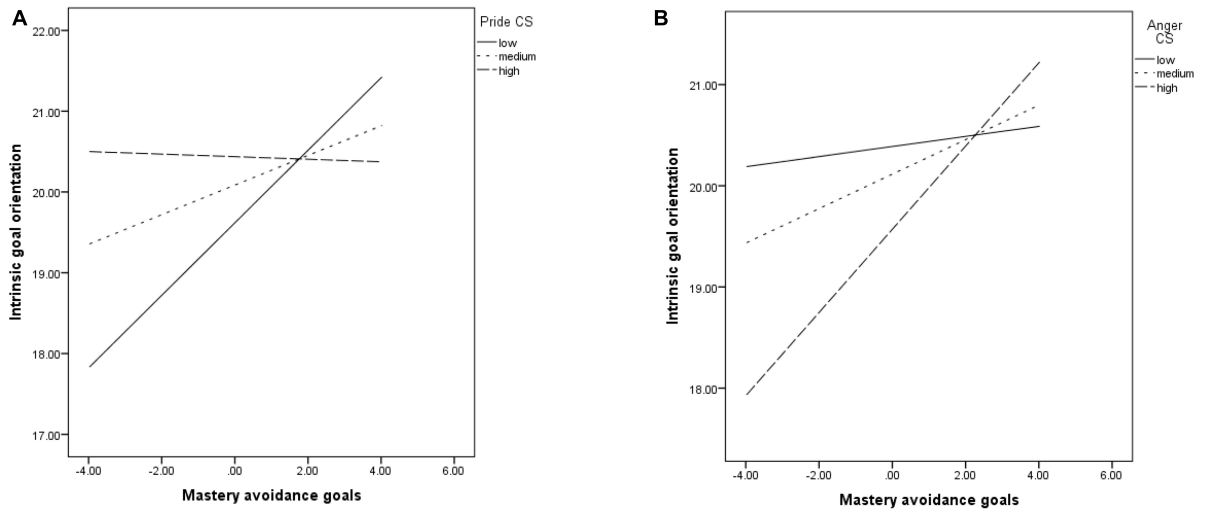

FIGURE 3
The relationship between MAV and IGO, moderated by pride **(A)**; IGO, moderated by anger **(B)**. The relationship between mastery avoidance goals and EGO was significant and positive, but it was not moderated by any of the emotions.

b = 0.47, p < 0.001; for hope b = 0.42, p < 0.001) levels of positive emotions, but became non-significant at their high levels (for enjoyment b = 0.26, p = 0.07; for hope b = 0.25, p = 0.14). As for boredom, the relationship between mastery avoidance goals and task value was significant at low (b = 0.31, p = 0.02), medium (b = 0.55, p < 0.001) and high (b = 0.92, p < 0.001) levels of the emotion. However, it became stronger the more highly the boredom was felt.

The relationship between MAV and CLB and between MAV and self-efficacy was positive and significant throughout the models, and it was not moderated by any of the emotions.

The positive link between mastery avoidance goals and test anxiety was moderated by enjoyment (b = −0.06, p = 0.05). There was a significant relationship between the variables at low (b = 0.52, p < 0.001) and medium (b = 0.26, p = 0.03) levels of enjoyment, but it became non-significant at high levels of the emotion (b = 0.06, p = 0.69) (see Figure 4D).

The direct effect of mastery avoidance goals on academic achievement varied based on the moderator that was used. Thus, for enjoyment, the relationship was significant at low (b = 0.04, p = 0.01) and medium (b = 0.02, p = 0.02) levels of the emotion, but not at its high levels (b = 0.01, p = 0.33). Similar results were found for hope (at low levels b = 0.04, p = 0.004; at medium levels b = 0.02, p = 0.04; at high levels b = 0.01, p = 0.58) and pride (at low levels b = 0.03, p = 0.02; at medium levels b = 0.028, p = 0.01; at high levels b = 0.021, p = 0.17). On the contrary, when the negative emotions were involved, the relationship was non-significant at their low levels and became significant at their medium and high levels. Such results were found for anger (at low levels b = 0.01, p = 0.38; at medium levels b = 0.02, p = 0.03; at high levels b = 0.04, p = 0.004), anxiety (at low levels b = 0.02, p = 0.06; at medium levels b = 0.03, p = 0.01; at high levels b = 0.03, p = 0.04), for shame (at low levels b = 0.01, p = 0.18; at medium levels b = 0.02, p = 0.02; at high levels b = 0.05, p = 0.006) and for boredom (at low levels b = 0.01, p = 0.33; at medium levels b = 0.02, p = 0.02; at high levels b = 0.04, p = 0.005).

The only significant indirect effect was the one through self-efficacy. However, it was moderated by hope. It was significant at low (b = 0.01, CI [0.004;0.02]) and medium (b = 0.01, CI [0.002;0.02]) levels of hope, but became non-significant at high levels of the emotion (b = 0.007, CI [−0.006;0.005]). The effect remained significant when the other moderators were introduced in the models.

3.3.3 Performance approach goals as the predictor

For the third set of mediated moderation analyses, academic achievement was the outcome, PAP were the predictor and the motivational components were introduced as mediators. Each emotion felt when studying was used as a moderator of the relationships between the predictor and the mediators and between the predictor and the outcome.

Throughout most models, the link between PAP and IGO was not significant. It was, however, moderated by shame (b = −0.03, p = 0.01, see Figure 5A). The relationship became significant at low levels of shame (b = 0.16, p = 0.04), but not at medium (b = 0.08, p = 0.18) or high levels of the emotion (b = −0.13, p = 0.15).

PAP had significant and positive associations with EGO, task value, self-efficacy and test anxiety.

The relationship between PAP and the CLB was not significant throughout most models. It was, however, moderated by the enjoyment felt when studying (b = 0.02, p = 0.05, see Figure 5B). The link was non-significant at low levels of enjoyment (b = −0.01, p = 0.86), but became significant at medium (b = 0.09, p = 0.04) and high levels of enjoyment (b = 0.17, p = 0.01). It was also moderated by hopelessness (b = −0.02, p = 0.05, see Figure 5C). The association was significant at low (b = 0.14, p = 0.01) and medium (b = 0.12, p = 0.01) levels of hopelessness, but not at its high levels (b = −0.02, p = 0.74).

The direct effect on academic achievement was not significant (b = 0.02, p = 0.07). The significant indirect effect through self-efficacy was moderated only by pride. It became non-significant

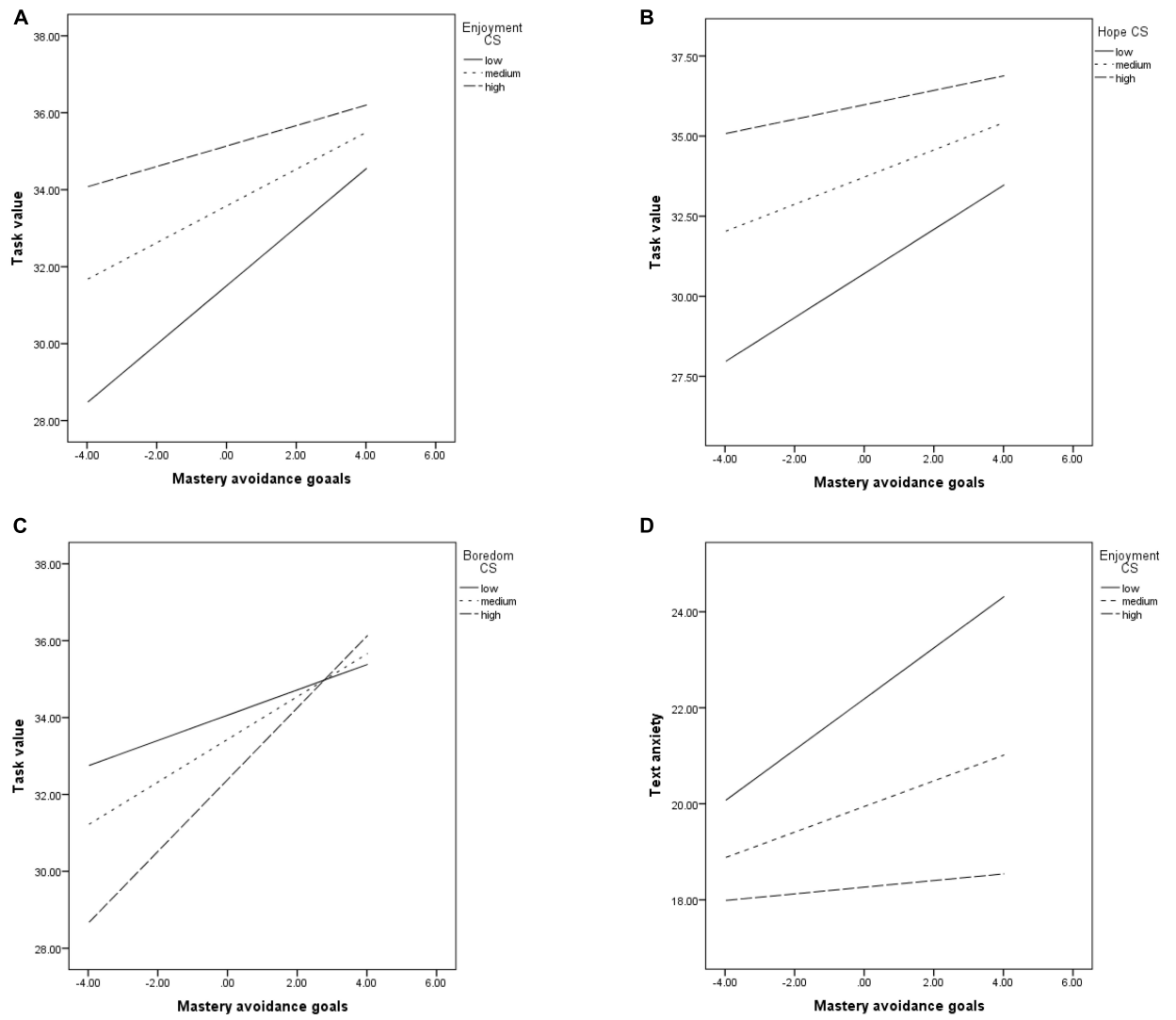

FIGURE 4
The relationship between mastery avoidance goals and: task value, moderated by enjoyment **(A)**; task value, moderated by hope **(B)**; task value, moderated by boredom **(C)**; test anxiety, moderated by enjoyment **(D)**.

at low levels of pride (b = 0.006, CI [−0.006;0.01]), but remained significant at medium (b = 0.01, CI [0.003;0.01]) and high levels of the emotion (b = 0.01, CI [0.003;0.02]).

3.3.4 Performance avoidance goals as the predictor

For the fourth set of mediated moderation analyses, academic achievement was the outcome, PAV were the predictor and the motivational components were introduced as mediators. Each emotion felt while studying was used as a moderator of the relationships between the predictor and the mediators and between the predictor and the outcome.

In all models, the relationships between PAV and IGO, was not significant. However, the links between PAV and EGO, self-efficacy and test anxiety were positive and significant.

Enjoyment significantly moderated the positive link between PAV and task value (b = −0.04, p = 0.05). The relationship was significant at low (b = 0.39, p < 0.001) and medium (b = 0.21, p = 0.008) levels of enjoyment, but lost its significance at high levels of the emotion (b = 0.08, p = 0.48) (See Figure 6A).

Pride moderated the link between PAV and the control of learning beliefs (b = 0.02, p = 0.04). The variables were significantly related at medium (b = 0.09, p = 0.03) and higher levels (b = 0.18, p = 0.006) of pride, but not at its low levels (b = −0.01, p = 0.82). The same relationship was not significant in the other models (see Figure 6B).

The direct effect on academic achievement was not significant (b = 0.01, p = 0.36). Hope, pride and hopelessness moderated the indirect effect through self-efficacy, which was significant only at medium levels of hope (b = 0.006, CI [0.001;0.01]), at medium (b = 0.006, CI [0.001;0.01]) and high levels of pride (b = 0.008, CI [0.001;0.01]), and at low (b = 0.01, CI [0.002;0.02]) and medium levels of hopelessness (b = 0.01, CI [0.002;0.01]). No other emotion moderated the effect, which remained significant regardless of their levels.

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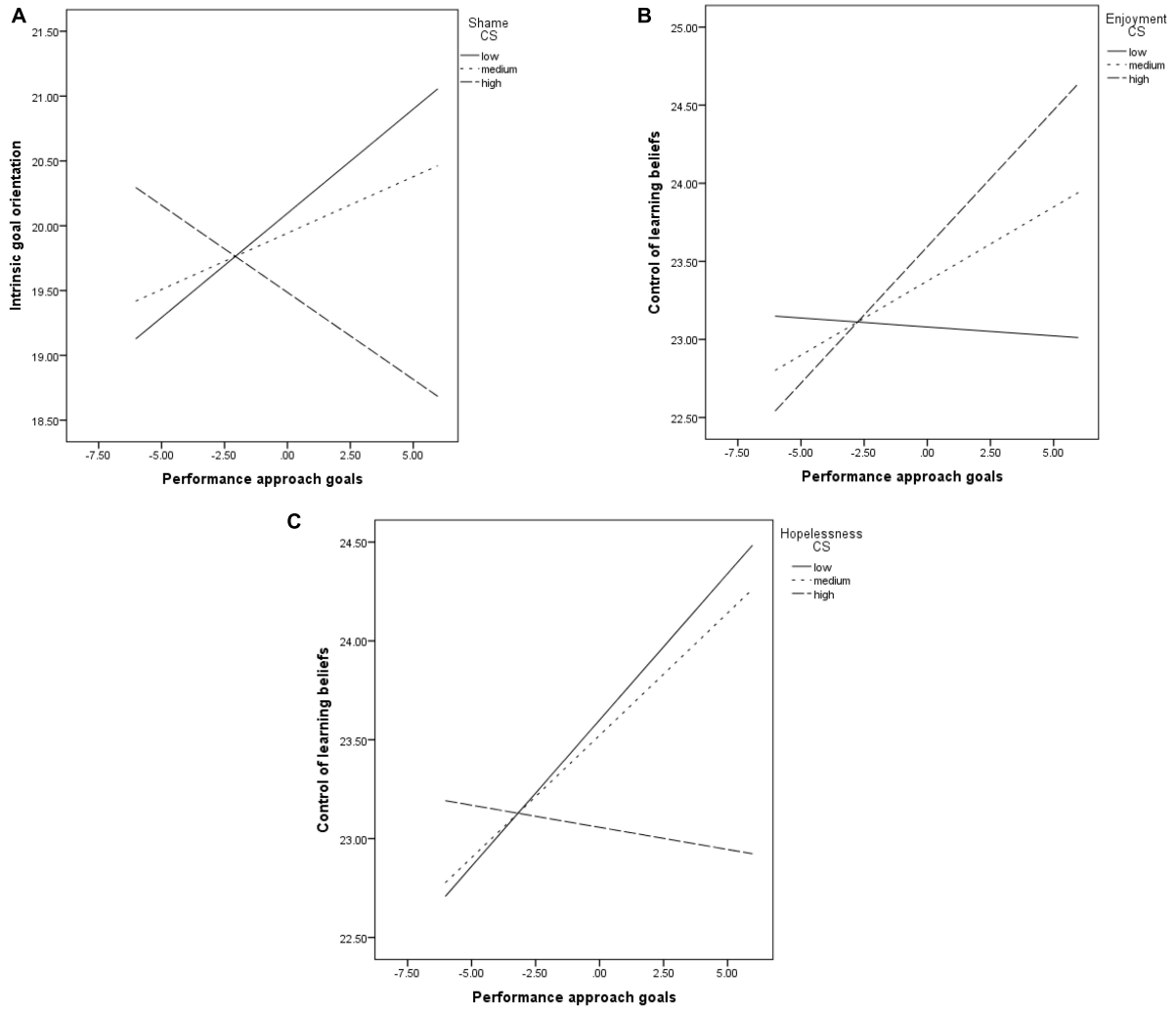

FIGURE 5
The relationship between PAP and: IGO, moderated by shame **(A)**; CLB, moderated by enjoyment **(B)**; CLB, moderated by hopelessness **(C)**.

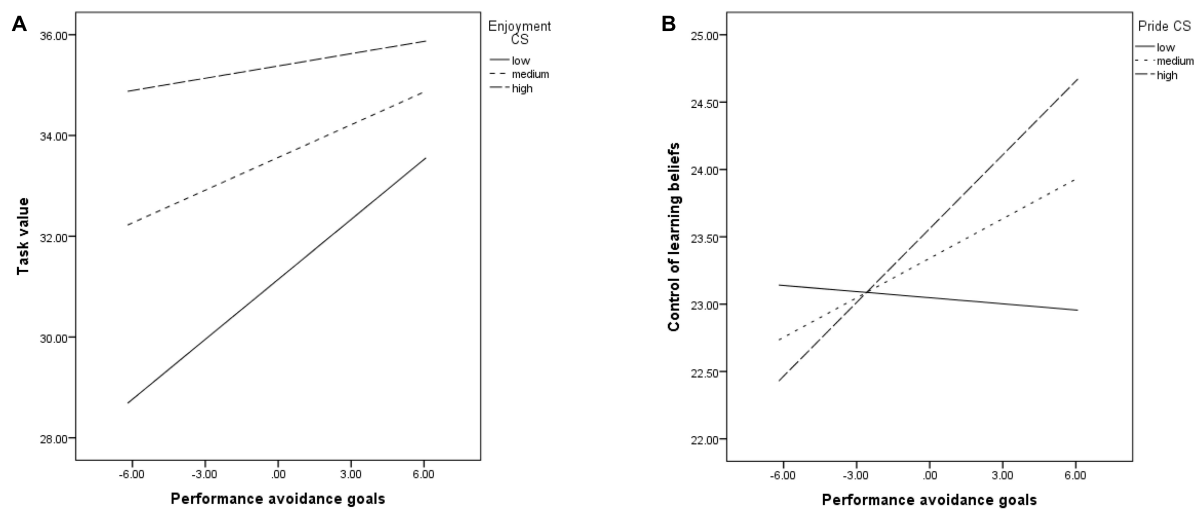

FIGURE 6
The relationship between PAV and: task value, moderated by enjoyment **(A)**; control of learning beliefs, moderated by pride **(B)**.

4 Discussion

This study evaluated how achievement emotions felt while studying moderate the direct and indirect associations between specific goal orientations and academic achievement through motivational components of students. Our approach aimed to contribute to a better understanding of the underlying mechanisms and interplay of goal orientations, motivational components and emotions in academic settings that affect the performance of university students.

According to our first hypothesis, the correlational analyses indicate that both mastery-approach and performance-approach goals positively and significantly correlated with academic achievement, although the effect size was small. This result is in line with previous studies showing that students' focus on skills, competences and knowledge development influences their academic achievement (Darnon et al., 2018; Suprayogi et al., 2019). The performance-approach goals imply overcoming others' academic results and are associated with positive outcomes such as the use of cognitive strategies of learning (Pintrich, 2000a) and academic achievement in some studies (Goraya and Hasan, 2012; Darnon et al., 2018). However, a somewhat unexpected result is the absence of any corelation between academic achievement and intrinsic goal orientation (IGO), despite Cerasoli et al. (2014) findings that indicate in their metanalysis that exists a moderate to strong associations between intrinsic motivation and performance. As IGO represents a value component of MSLQ (Pintrich et al., 1991), it seems the subjects of our study evaluate risky, challenging and curiosity arousing learning tasks as unappropriated for obtaining good grades. The collectivistic culture (Hofstede Insights, 2020) and conformity with teachers' expectations are both possible explanation for the irrelevance of intrinsic motivation for academic achievement, as academic results (grades).

With regard to the second hypothesis, contrary to our expectations, both mastery-avoidance and performance-avoidance goals were positively and significantly related to academic achievement. These findings contradict numerous studies that have found a negative association between both mastery-avoidance (Elliot and McGregor, 2001; Luo et al., 2013) and performance-avoidance goal orientations (Elliot and Church, 1997; Dinger and Dickhäuser, 2013; Luo et al., 2013) and academic achievement. Moreover, in our study, the positive association between performance-approach and performance-avoidance was very high (0.89), suggesting that students with performance approach goals also tend to adopt performance avoidance goals. A possible explanation of this results could be that students want to keep a good image for others and demonstrate that they can achieve good performance, avoiding to appear more incompetent than their peers. Also, mastery-approach and mastery-avoidance goals were moderately correlated, suggesting that students focus on development skills, while simultaneously avoiding misunderstanding of the content relevant for these skills. These unexpected results could be explained by Hofstede' theory on individualistic and collectivistic cultures. As Romania has a low score on individualism (Hofstede Insights, 2020), this could explain why performance-avoidance orientation goals may be adaptative for Romanian university students. Actually, King (2016) found that cultural factors such as collectivism may explain the coexistence of both approach and avoidance learning goals orientations in those particular countries. In a previous study conducted on Chinese and Filipino students, King et al. (2014), show that individuals accommodate both achievement (mastery and performance) and social (extrinsic) goals such as affiliation, approval, concern, and status – all attributes of collectivistic cultures.

The results of the mediation analysis showed that the effect of all four goal orientation on academic achievement were mediated by academic self-efficacy (ASE). Since ASE involves one's judgments about the capacity to project and manage desired learning goals (Bandura, 1997), it is likely that positive judgments about one's own academic competence will enhance the goal orientation previously adopted by the individual and, in turn, their academic achievement. The mediator role played by ASE between goal orientation and academic achievement was confirmed in several similar studies (Bandalos et al., 2003; Honicke et al., 2019; Magni et al., 2021). Magni et al. (2021) found that the ASE mediated the relationships between the goal orientations and academic achievement, except for the mastery-avoidance goal orientation; however, in their longitudinal study, the role of self-efficacy as mediator was stronger for the approach orientations than for the avoidance orientations, which is in line with the original theory of Bandura (1977). Coutinho and Neuman (2008) found similar effects of ASE as mediator, except for the performance avoidance goal orientation. Honicke et al. (2019) argues that individuals with mastery-approach goals are more likely to persist in the face of adversity and to see intrinsic value in learning, compared with those with performance-approach goals. Nevertheless, in our study, the association of mastery-avoidance goals with performance was also mediated by ASE. Arguably, a possible explanation for this result is that avoiding negative learning outputs can be self-enhancing and may function as motivation for action in collectivistic cultures.

The importance of self-efficacy in learning is supported by our results. Having a higher self-efficacy also means having better self-regulation skills, which leads to learning more efficiently, with less effort, and reporting a high level of academic satisfaction (Boekaerts, 1999; Pintrich, 2000a). However, as students attempt to regulate their own learning, obstacles may arise, and thus they will have to revise their initial goals, reassess their motivation, and identify new ways to progress (Butler and Winne, 1995). In these cases, motivational regulation strategies will help students with higher self-efficacy to modify their thoughts, behaviors and emotions caused by a task, in order to stimulate the desire to complete it and overcome learning obstacles, by increasing the level of effort and engagement in academic activities and finally, their grades (Wolters, 2003; Schunk and Zimmerman, 2008; Wolters and Mueller, 2010; Trautner and Schwinger, 2020).

The moderated mediation analysis conducted using achievement emotions for testing the fourth hypothesis showed a more nuanced picture of the mediation relationships. Whereas mastery-approach indirect effect on academic achievement was not moderated by any emotion, the three mediation relationships were moderated by one or more achievement emotions.

Thus, The MAV indirect effect on academic achievement was moderated by hope. A positive and activating emotion, hope may diminish the worrying and unpleasant feelings and compensate for the avoidance dimension of MAV, and further increase beliefs in one's own personal academic abilities. The indirect relationship of MAV with academic achievement ceased to be significant at

high levels of hope, perhaps because experiencing intense, over-optimistic hope signifies that the individuals expect that positive outcomes will occur, regardless of their own actions and self-efficacy (Feldman and Kubota, 2015).

Pride is the only achievement emotion that enhances the indirect effect of PAP goal orientation on academic achievement. As a positive, retrospective, self-enhancing and output-oriented emotion, pride intensifies the association between one's goal to outperform others and their self-worth judgments. In academic settings, pride is a positive predictor of grades and moderate the relationship between self-regulation and grades (Villavicencio and Bernardo, 2013).

PAV's indirect effect on academic achievement was more complex. First, it was moderated by two positive emotions – hope and pride, the effect being significant only at their medium or high levels. The moderating effect of hope is consistent with the results of Feldman and Kubota (2015), where academic hope and ASE predict the students' grade point average. A positive and activating emotion, hope can act as a buffer for the avoidance dimension from the PAV goal orientation. Hope is also an output and anticipative emotion, and can strengthen one's self-efficacy, even when the individual is motivated by PAV goals. As for pride, being proud of past performances can help students to overcome the concerns implied by a performance avoidance goal orientation. Second, hopelessness also moderated the indirect relationship between PAV and academic achievement. Hopelessness implies negative expectations toward the future and the feeling that things are not under control. Low and medium levels of hopelessness seem to be benign for the PAV-academic achievement relationship, but when the hopelessness is too intense, the individual may withdraw from any activity, thus making the effect of PAV on achievement a non-significant one (Pekrun and Stephens, 2009).

The direct relationship between goal orientation and academic achievement was also moderated by achievement emotions. However, this was true only for mastery-avoidance goals.

First, the pattern of moderation was similar for three positive activating emotions (enjoyment, hope and pride). The relationship between the MAV goal orientation and academic achievement was stronger for the participants with low and medium levels of these emotions. In these cases, students' have good academic performance because they want to avoid the negative consequences of not mastering the information. However, when the positive emotions felt when studying are strong, students achieve higher performance because they find enjoyment, hope and pride in learning, not because they fear the negative effects of not knowing enough.

Second, negative emotions (boredom, anxiety and anger) strengthened the relationship between the MAV goal orientation and academic achievement. Although these are emotions that are usually avoided (Rödel, 2021), they seem to reinforce learning for those with strong MAV goal orientations (Pekrun, 2018). More intense negative emotions boost the concerns already embedded in a MAV orientation, thus leading to better academic performances for students with such orientations.

One final aspect that is worth pointing out is how the achievement emotions moderated the relationships between the goal orientations and the motivational components. Relatively similar patterns were found for both mastery approach and performance approach orientations. The association of MAP with CLB was moderated by enjoyment, hope and pride. Similarly, the relationship between PAP and CLB was moderated by enjoyment. Therefore, the orientation toward complete, meaningful learning and adequate academic performance, combined with beliefs in one's own responsibility and control over learning, are proportionally enforced by ongoing tasks increasing excitement - enjoyment, boast about past success – pride, and the expectance of positive leaning outputs – hope, respectively. These results confirm previous studies (Pekrun et al., 2006; Daniels et al., 2009), and also support Pekrun's (2006) model, according to which students focused on competences and knowledge development are likely to feel in control of their learning and give personal value to the task; these experiences are likely to be improved by a background of positive and activating emotions.

Negative emotions such as boredom, anxiety, hopelessness and shame also moderated the relationships, which became weaker or non-significant at higher levels of the emotions. Boredom acted as a significant buffer for the link between MAP and CLB, and MAP and IGO, showing that intense boredom can overcome the students' desire to master the information and knowledge and thus weaken the use of motivational beliefs about learning control and intrinsic motivational orientation. Anxiety moderated the association between MAP and TV, the relationship becoming weaker as anxiety increased. Both negative valence and focus of anxiety on learning outputs may explain why intense concerns and worry about learning results undermine the relationship. Hopelessness acts in similar manner: the intensity of the relationships MAP-CLB and PAP-CLB gradually decreases as hopelessness increases. This effect may be produced by the deactivating properties of hopelessness, so that individuals become gradually less confident in their control over the learning process. This negative deactivating emotion act also as a suppressor of the relationship between MAP and TV. When students experience increased hopelessness, they tend to be less engaged, considering that is difficult to maintain too ambitious MAP goals and thus become less interested in their task. Finally, shame, a negative, output emotion, associated with a sense of worthlessness and powerlessness, moderates the link between PAP and IGO. High levels of shame are likely to motivate the performance-oriented students to hide or escape the shame-inducing situation, thus decreasing the intrinsic desire to achieve the goal (Cavalera and Pepe, 2014).

The relationship between the MAP goal orientation and motivational components was moderated by three achievement emotions: enjoyment, pride and hope. The link with various motivational components (such as TV and IGO) became weaker or even non-significant at high levels of the positive emotions. Similarly, enjoyment mediated the link between PAP and TV. These results can be explained by the emotional incongruity between the anxiety of falling behind in knowledge or performance and the intense, positive emotions felt when study. Thus, high levels of positive emotions lead to good academic achievement, rather than having MAP or PAP goals. Not surprisingly, enjoyment had an inverse effect on the association between MAP and test anxiety, which became non-significant at high levels of the emotion. However, we had one rather surprising finding. Our results showed that pride, an output-oriented emotion, amplified the association of PAP goal orientation with CLB. Perhaps the concern about underperforming characteristic of PAV is

slightly surpassed by remembering past successes, boosting self-confidence and strengthening the beliefs in the control of the learning process.

Negative achievement emotions also moderated the associations of the MAV goal orientation with motivational components. Interestingly, boredom gradually increased the intensity of the relationship between MAV and task value. Therefore, boredom is not always a negative emotion and could have positive benefits, such as an increase in creativity (Vodanovich, 2003). Mugon et al. (2019) point out that because boredom is unpleasant, students may be motivated to engage in an activity or material in order to reduce it. Thus, our somewhat unexpected result could be at least partially explained if we look closer to boredom as an achievement emotion. A bored student feels she is lethargic, but also restless; her mind wanders, asking herself "what if? I don't learn as much as I can?" (an item from the MAV goal orientation scale). The student may also recall reasons to engage in the task at hand, highlighting its importance and relevance. In brief, bored students are more susceptible of reflecting on their own learning goals and to re-assess their learning priorities and values. Anger is a negative, but activating emotion and moderated the link between MAV goal orientation and IGO. This result can be explained by the fact that anger is typically associated with fight tendencies, whereas anxiety is associated with flight tendencies (Carver and Harmon-Jones, 2009; Frenzel et al., 2016). Therefore, at medium and high levels of intensity, anger replaces the worry felt by a person with MAV goals and directs him/her toward an intrinsic desire to achieve the goals.

From a theoretical standpoint, this study shows the complex role that achievement emotions play in the interplay between goal orientations, motivational components and academic achievement. However, it is still to determine the effects of negative achievement emotions (Wu and Yu, 2022). We found that self-efficacy is the only mediator that explained the relationship between goal orientation and achievement. Also, because the direct relationship between the mastery-avoidance goal orientation and academic achievement was moderated by six of the eight achievement emotions, our results suggest that this link is the most sensitive one to the influence of different achievement emotions. Moreover, this shows that the 2 × 2 goal orientation model (Elliot and McGregor, 2001) seems to be more comprehensive, at least regarding the emotional permeability of mastery-avoidance dimension in relationship to various motivational components and achievement.

Although surprisingly, both approach goals and avoidance goals had a positive relationship with academic achievement. Still, an important distinction was found, since achievement emotions moderated in different ways this association, as well as that between goal orientation and motivational components. In general, feeling positive, activating emotions when studying strengthened the relationships between the approach orientations, motivational components and academic achievement. On the contrary, feeling negative or deactivating emotions weakened the same relationships. As far as the avoidance orientations are concerned, positive and activating emotions weakened, while negative and deactivating emotions strengthened their links with motivational components and academic achievement. Some exceptions were found, such as those regarding the role of pride, which were discussed above. Alternative explanation for some inconsistent results may consists in epistemic learning-related emotions and affects as feeling of certainty or rightness, doubt, wonder or curiosity, as subject are involved in learning activities (de Sousa, 2009). These emotions, although was not directly investigated in our study, could offer valuable insights on complex relationships between avoidance orientation and motivational components.

Finally, this study shows that the cultural values can play an important part in shaping academic achievement. Unlike most previous findings, our results point toward a positive relationship between both approach and avoidance goals and achievement. Higher levels of collectivistic values might explain these results. Still, the context of these relationships is different, as shown by the moderating effects of achievement emotions.

From a practical standpoint, a global view of the moderation analyses highlights the importance of the awareness for the emotional setting of the learning process. We found more empirical support for the moderating role of achievement emotions in the relationships between mastery-goal orientations and motivational components compared to the similar role in the relationship between performance-goal orientations and motivational components. Since mastery goal orientations are more strongly associated with positive emotions (Seifert, 1995), a higher level of self-perceptions, and intrinsic motivation (Shi, 2021) and facilitate self-regulated learning (Pintrich et al., 2001), it becomes essential to create learning contexts that support positive emotions. Nevertheless, since our results show that negative emotions can strengthen the relationships between avoidance goals, motivational components and performance, practitioners should pay attention to their dynamics. While negative emotions seem to have their role in the educational process, eliciting positive emotions and directing students toward approach goals would be more appropriate. In this regard, Fritea and Fritea (2013) claim the importance of developing motivational regulation skills, since they can ameliorate or even eliminate the effects that negative emotions (e.g., boredom) have on students' academic achievement. Finally, further exploring these relationships may suggest specific interventions in order to improve the teaching-learning process.

4.1 Limits

This study has several limits. The most important resides in its cross-sectional design which does not allow us to infer stronger (e.g., causal) relationships between the variables. Future studies could use a longitudinal design, thus verifying the consistency of the findings over time. Second, the convenience sample composed of social sciences university students from a single institution may be improved in future studies by randomly selecting students from various higher education institutions and faculties. Also, using a national or international sample of students would be useful and allow for inter-cultural comparison. A more expanded sample could further confirm the hypothesis that a collectivistic cultural orientation impacts the link between an avoidance goal

orientation and academic achievement. Thirdly, the use of self-report instruments, despite their good psychometric proprieties, leads to other problems, such as acquiescent (tendency to strongly agree with most sentences) or reactant (e.g., disagreeing with most items of the scale) responses. Fourthly, academic achievement was measured by a single item, the self-reported, recalled value of the point average. This may be improved by considering multiple and more objective indicators of academic achievement such as class rank in class, combined with the performance in core subjects from previous years gathered from faculty records or from evaluations conducted by teachers.

5 Conclusion

Our results complete the existing research literature with a comprehensive analysis of the role played by each specific achievement emotion (Pekrun, 2011) as a moderator of the relationships between goal orientation, motivational components and academic achievement. In our sample of university students, we surprisingly found that both approach and avoidance goal orientations had positive relationships with academic achievement. This might be explained by the higher levels of collectivism specific to Romania. Also, self-efficacy had a significant mediation role in all the relationships. The moderation analyses showed a more complex picture. Positive and negative achievement emotions led to different patterns of associations between the other variables. This shows that higher education teachers should pay attention to the goals, emotions and learning strategies used by students, as well as to the relationship between these variables when trying to improve academic achievement.

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 Research Ethics Committee of the Faculty of Psychology and Education Sciences, Alexandru Ioan Cuza University, Iasi, Romania. 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

F-VF: Supervision, Conceptualization, Methodology, Writing – original draft, Writing – review and editing. RL: Conceptualization, Methodology, Writing – original draft, Writing – review and editing. OC: Conceptualization, Methodology, Formal analysis, Writing – review and editing. LC-C: Conceptualization, Writing – review and editing. RG: Conceptualization, Writing – original draft, Data curation. CO: Conceptualization, Writing – original draft, Data curation.

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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.

Publisher's note

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Online learning during the COVID-19 pandemic: the wellbeing of Chinese migrant children—a case study in Shanghai

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Introduction: This study uses Bronfenbrenner's bioecological model as its theoretical framework to consider the findings of an investigation of the emotional, social, and physical wellbeing of Chinese migrant children and lessons learned from the COVID-19 pandemic in urban areas. This study expands our perspective by combining the views of students, parents, and teachers to explore the emotional, social and physical wellbeing of migrant children in Shanghai who were participating in online learning during the COVID-19.

Methods: Observation and semi-structured interviews were carried out to collect data for this case study. Thirty-one migrant children, nine parents, 10 teachers and a school principal from a Shanghai junior high school participated in this research. Qualitative data were analyzed using thematic analysis.

Results and Discussion: The findings indicated that although video-recorded lessons were high quality, it put pressure on migrant children due to the lessons containing only new material with no reviews and reduced opportunities for them to interact with their own teachers. In addition, the differences in study progress between the migrant children and the local children that showed up during the online learning, and neglect from teachers and policymakers, made the migrant children anxious, angry and confused about their future. Besides, parents install monitors at home to support their children's online learning, but it had the opposite effect and simply provoked increased conflicts between children and their parents. Finally, although the online lessons have affected the optical health of students, the subsequent additional cooking lessons have mitigated the optical health problem and strengthened the connections between home and school.

Conclusion: The inequalities of education encountered by migrant children during the COVID-19 period have made them realize the disparities they have suffered in Shanghai. The exposure of this problem raises the prospect of a reform of educational policies for migrant children in the future.

KEYWORDS

migrant children, COVID-19, online learning, emotional wellbeing, social wellbeing, physical wellbeing

1 Introduction

The COVID-19 pandemic has been an international public emergency since 2020, and the public health response to the lockdowns, social distancing, school closures and economic shutdowns have serious impacts on all aspects of children and adolescents' development in the world, including physical, psychosocial, and mental health (Tso et al., 2020). Previous studies have found an increased probability of psychological problems in children and adolescents after the COVID-19 pandemic. Children and adolescents experience changes in lifestyle and learning styles, such as school absence due to pandemic preparedness measures, home quarantine, and online learning; these can affect their wellbeing (Fore, 2020; Miao et al., 2023). Concerns were also raised about the availability of sufficient support for vulnerable groups, such as children with learning difficulties and mental health needs. Social distancing regulations across the world have resulted in millions of children being suddenly disconnected from face-to-face education (United Nations Educational, Scientific and Cultural Organization, 2020). Schools and universities have moved their teaching activities online in response to the situation. The United Nations estimated that approximately 463 million children were cut off from their education because they could not access online learning (United Nations Children's Fund, 2020). It has been discovered that homeschooling was difficult for children from low-income families. A study in the UK revealed that parents experience increased stress as they have to balance childcare, homeschooling and working during the COVID-19 period. The economic impact of the COVID-19 pandemic has also added financial burdens to many families and increased stress on parents. School closures can have an even greater impact on children and young people with mental health needs because they lack the resources that schools would normally provide (Tso et al., 2020).

In 2020, school shutdowns in 188 countries, affecting more than 1.5 billion students in 2020 (Organization for Economic Co-operation and Development, 2021). Traditional face-to-face schools were forced to transform into virtual schools for students with continuing education. Therefore, students were forced to adapt to online learning. At the same time, video conferences and social media become the main venues for knowledge delivery and communication. However, K-12 students lack online learning experience. Even in countries where online learning is developing significantly, such as the United States and Canada, less than 10 per cent of K-12 students have had experience in online learning. Current studies discovered several major concerns about children's online learning during the COVID-19 pandemic, including internet connection issues, IT facilities issues, reduced learning motivation, students' adaptability to online learning, eyestrain caused by long staring at screens, insufficient communication with teachers (Bączek et al., 2021; Yan et al., 2021). In addition, online learning increased the socioeconomic inequalities in accessing technological resources. It has been found that children from low-income families have less access to learning materials (computers and textbooks) and effective learning environments (overcrowded households and no access to electricity and the internet) than high-income families. These situations are much more common among children in rural and remote areas. Moreover, several impacts of online learning on children's wellbeing have also been identified, including overuse of electronic devices, less interaction with classmates and teachers, attention deficits, stress, and depression (Xie et al., 2020).

The Chinese central government also implemented strict quarantine regulations: "School is suspended, but learning continues." The Ministry of Education of the People's Republic of China passed a regulation that all schools should stop face-to-face teaching, but all teaching activities should be moved online (Ministry of Education of the People's Republic of China, 2020a). In China, more than 220 million children and adolescents, including 180 million primary and secondary school students, were confined to their homes (Wang et al., 2020). During this challenging time, the family became a learning space in which parents and caregivers acted as guides to support their children's study at home. A growing amount of literature has argued that migration has immediate consequences for a child's wellbeing (Liang, 2016; Li and Jiang, 2018; Xu et al., 2018). For example, studies have shown that migrant children are facing educational inequality in urban China (Ma and Wu, 2019). In China, the term "migrant workers" refers to rural household (hukou) residents who have lived in cities for at least 6 months without holding a local household registration. Children of migrants such as those who move to cities with their migrant parents receive compulsory education (Grade 1 to Grade 9) in the city while maintaining their rural household registration (Ministry of Education of the People's Republic of China, 2016). In 2021, the migrant population exceeded 375 million (National Bureau of Statistics, 2021). As of the year 2020, around 14.26 million migrant children were eligible for compulsory education when they reached school age (Ministry of Education of the People's Republic of China, 2020b). Although they live and study in urban cities with their parents, their rural hukou cannot ensure they can get equal access to senior high school education, as local children do. As migrant children grow up, their education needs become increasing intense after they finish compulsory education (Grade 1–Grade 9). In China, students who finished compulsory education should take the Senior High School Entrance Examination. This examination is a national highly competitive examination held in different provinces to grade students who have finished their compulsory education and see if they are qualified to receive senior high school education. In the current Chinese education system, secondary vocational schools and senior high schools are mainly oriented toward the job market and higher education, respectively. Having a university degree is favorable for an individuals' upward mobility. Migrant children and parents must satisfy the conditions required by the cities they moved to in order for the children to attend the senior high school entrance examination and study in senior high schools, otherwise they have to study in vocational schools. However, vocational education in cities serves to train and produce workers (Shi, 2017). A policy for migrant children's senior high school entrance examinations was determined by 27 provincial governments in 2014 (Guangming Daily, 2014). Nevertheless, there are huge regional differences in the requirements for allowing migrant children's participation in the senior high school entrance examination. Those policies only clarify the entrance threshold and screening mechanism rather than increasing the migrant children's opportunities to get access to educational resources. The entry threshold for senior high schools in some metropolises, such as Shanghai is still high for migrant children.

Although there are many studies on the impact of the COVID-19 pandemic on children's wellbeing, the wellbeing of migrant children, a vulnerable group in China, was even more neglected in the context

of COVID-19-influenced online classes (Fore, 2020; Tso et al., 2020; Abdo Ahmad et al., 2023; Dvorsky et al., 2023; Miao et al., 2023; Pampati et al., 2023). Furthermore, under the COVID-19 context, the successful transition from the traditional education environment to an online teaching-learning one was not an overnight event, as it faced various obstacles and challenges during this period (Crawford et al., 2020). Migrant children in China live in a different social and cultural context compared to general children. In particular, the educational and social systems for migrant populations are different from those in other countries (Shi, 2017; Xu et al., 2018; Han et al., 2020). Chinese migrant children are involved in household registration and the allocation of educational resources, which are closely related to local policies. Findings from previous studies in other countries may not be simply transferred to Chinese migrant children (Exenberger et al., 2019; Abdo Ahmad et al., 2023). In particular, problems migrant children faced in online learning were influenced by local policies, online schooling environments, parents, peers, and teachers compared to the general students. Therefore, this study utilizes Bronfenbrenner's bioecological model to provide a holistic perspective where all levels from microsystem to macrosystem can be considered. The aim of this paper is to explore how the online learning experience influenced migrant children's wellbeing in Shanghai, which offers significant insights applicable to post-pandemic education.

2 Literature review

To provide a solid foundation for the study, the following literature review was undertaken from several aspects covering the strengths and weaknesses in online learning, roles of parents and schools in online learning and children's wellbeing during the COVID-19 pandemic.

2.1 Strengths and weakness in online learning during the COVID-19

A substantial amount of literature has been written about the benefits and challenges of online learning. The rise of online learning can be attributed to its convenience in terms of location and time. Additionally, online learning offers a cost-effective means of accessing a wider range of information (Yılmaz, 2019; Kim, 2020). As an alternative to traditional learning, it provides students and teachers with both asynchronous and synchronous tools, such as email, chat platforms, and video conferences (Dhawan, 2020). This mode of learning eliminates the need for in-person meetings. Particularly during the COVID-19 pandemic, online learning became a crucial method for maintaining teaching and learning activities in educational institutions.

However, online learning also has some disadvantages that must be considered. Firstly, children typically have low levels of self-control and are prone to being easily distracted or losing concentration, which can negatively impact their ability to learn (Coman et al., 2020). Therefore, adult participation and supervision is necessary for successful online learning (Youn et al., 2012). Second, online learning may not provide enough time and opportunities for children who need more interaction and activities to help them concentrate on learning (Crawford et al., 2020). Thirdly, the quality of online learning platforms is a crucial factor in the development of online learning, as inadequate tools can hinder children's learning progress. For instance, certain platforms may lack essential features, such as online chat, material sharing, and screen sharing, which can negatively impact learning outcomes. Additionally, online communication is often limited to classmates, offering no opportunity for real-time knowledge and information sharing with teachers. Lastly, online learning may also have negative effects on physical health, as prolonged screen time without any outdoor activity can lead to increased levels of stress and vision problems for both teachers and students (Coman et al., 2020).

Apart from these general impacts of online learning, a systematic review discovered online learning during the COVID-19 period had a negative impact on children's academic performance in mathematics, reading, language and spelling, and biology. Several factors contribute to this negative impact, such as socio-economic status (family type and family income), access to technology, the learning environment, the quality of online class resources, and feedback from teachers (Cortés-Albornoz et al., 2023). Dvorsky et al. (2023) summarized challenges faced by children and adolescents with special educational needs and dis/abilities during the COVID-19 period. Regarding school supports and services, individualized interventions for academics and behavioral supports, school-based health and mental health services have been discontinued. Regarding school and community environment, it is difficult for those youth to access to digital course materials when using different platforms. They also have limited access to health and mental health services out of school. These pandemic-driven disparities reinforce existing inequalities among students with special educational needs. Guo and Wan (2022) argued this could be described as the digital divide which means the distribution of information and communication technology resources replicates the inequalities inherent in the social structure. Although online learning ensured learning continuity, it added inequality to education inequality to children from different social backgrounds. Disadvantaged groups may not have access to online learning tools and materials. In addition, without face-to-face instruction and parental guidance, they may be unprepared for online learning (Sahlberg, 2020; Guo and Wan, 2022).

2.2 The role of parents and schools in online learning

Many studies have found that in online learning environments, the parents of the children take on the following roles: regulators of their child's online activities, learning coaches or co-educators, and providers of caring relationships (Rice and Dawley, 2009; Waters and Leong, 2014; Nouwen and Zaman, 2018; Borup et al., 2020). These roles reflect research on parental roles prior to the occurrence of the pandemic. Preliminary research also indicates that during COVID-19, parents have taken on these same types of roles during this crisis: regulators, co-educators and emotional supporters.

As regulators, parents play a mediating role to prevent harm and regulate the children's online activities, doing such things as setting technology use rules for their children and monitoring the use of the equipment (Nouwen and Zaman, 2018). For co-educators, learning activities have moved from school to home during the lockdown period. Physical distancing denied access to sufficient schooling and community support. Children naturally sought help from their

parents during such a stressful and turbulent period. Therefore, parents needed to engage in some activities that are normally supposed to be the responsibility of the teachers. They managed to promote the students' learning by applying instruction, questioning, and listening to feedback (Bhamani et al., 2020). However, parents and caregivers cannot replace the role and function of the teacher in school. Some parents have to spend a lot of time managing their children's behavior at home. This is especially difficult for parents with a low educational level. COVID-19 forced family education to be incorporated in school education, which has had a huge impact on family and children's wellbeing. It also discovered that providing time and space to promote teacher-student and parent–child relationships can strengthen the connections between schools, families, and students during the at home online learning period in China (Zhou et al., 2020). In this situation, parents act as a co-educator to cooperate with schools to understand their children's difficulties. With regard to providing emotional support, parent–child cooperation was stimulated by learning activities during the COVID-19 period. It has been argued that the more time parents spend with their child/children, the better their relationship becomes (Bhamani et al., 2020). In this circumstance, parents should interact with their child/children in order to reduce anxiety and worries.

Besides, when schoolteachers act as educators and provide mental health support, they not only fulfill the role of helping students' acquire knowledge, but also promote students' wellbeing (Catalano et al., 2003; Zins et al., 2007). In terms of education, teaching activities did not stop during COVID-19, and many countries were continuing teaching activities based on their own circumstances. It has been found that academic staff, technicians and students in China worked together to continue teaching and learning activities at universities during the lockdown period (Zhang et al., 2020). Australian schools used text messages, phone calls or skype to contact students and parents to identify the needs of the students and to keep track of their learning (Brown et al., 2020). Regarding mental health support, the UNESCO Chair on Health Education and Sustainable Development emphasized that education is a crucial component of health. Schools also play an active role in promoting health-conscious behavior among students. Within the school environment, the promotion of wellbeing through meaningful and transformative learning can serve as a catalyst for the development of a knowledge-based health culture, having far-reaching effects not only on the behaviors of students, but also on those of their families and communities (Colao et al., 2020).

2.3 Children's wellbeing during the COVID-19 pandemic

Children are physiologically undeveloped and may experience negative psychological symptoms when exposed to the unexpected COVID-19 pandemic. Less interaction with peers in school, extended screen time, straining relationships due to extended parental supervision, adversely affecting their wellbeing such as depressive symptoms and anxiety (Miao et al., 2023). A recent study from Canada also revealed that parents with university degrees and who work from home have lower levels of concern about their children's wellbeing. Parents who have children with disabilities, children of ethnic minorities, children of immigrants can make parents worried about their children's wellbeing (Abdo Ahmad et al., 2023). It has also been argued that the wellbeing of caregivers directly affects children's wellbeing (Newland, 2015; Pampati et al., 2023). High levels of parental stress were associated with increased mental health symptoms in children, emphasizing the impact on family dynamics, caregiver burden and parent–child relationships. Existing studies discovered that parents worried about their child/children's daily social, physical and emotional health (Dong et al., 2020; Doll et al., 2022). Therefore, it has been suggested that it is important to investigate the social, physical and emotional wellbeing of children during the COVID-19 pandemic period (Goldschmidt, 2020).

Social wellbeing refers to individuals being able to build and maintain healthy relationships and interactions with other individuals in their immediate environment. Play is an essential part of children's social and physical development. During the COVID-19 lockdown, people were confined to their homes and children had fewer opportunities to play outside or see their friends (Goldschmidt, 2020). Peer interaction decreased and parents expressed the concern that their child/children's social development would be affected. Unfortunately, some parents have noticed changes in their children's behavior, such as symptoms of sadness, depression and loneliness (Lee et al., 2021). Although students working online have limited contact with peers and no opportunity to have face to face contact with them, the positive interactions that do occur between caregivers and children are healthy. It is good when families can spend more time together. When time is available, caregivers are encouraged to socialize with children by playing games, doing arts and crafts, and listening to music, etc. Caregivers can also spend time with children by watching TV programs together or using educational apps.

Physical wellbeing encompasses the capacity to engage in physical activities and fulfill social roles without being impeded by physical limitations or experiences of bodily pain, as well as the presence of positive biological health indicators (Capio et al., 2014). A systematic review of intervention studies has shown that exercise and physical activity have a positive impact on physical wellbeing (Penedo and Dahn, 2005). In children, physical wellbeing is defined as the ability to participate fully in developmentally appropriate activities in a normal manner. Factors that are crucial to children's physical wellbeing include nutrition, a clean and safe environment, health care, mental stimulation and access to nurturing relationships (Curtis et al., 2004). During the COVID-19, some parents mentioned that their child/children spent 3 to 4 h per day using a computer in online learning and spend less time doing outdoor activities, thus raising worries among parents about this having a negative impact on child/children's eyesight (Christensen and Alexander, 2020; Zhao et al., 2020).

Emotional wellbeing is an important dimension in mental health. It comprises happiness and overall life satisfaction. Accordingly, supporting emotional wellbeing is an important responsibility in different areas such as schools and among different groups such as children, adolescents and women (Ross et al., 2020). The strengths coming from emotional wellbeing serve as a buffer against misfortune and mental health issues, and they may be the key to building resilience. During the COVID-19 lockdown period, regarding child/children's emotions, parents reported that their child/children had increased levels of worry, irritability and anxiety due to social isolation, lack of interaction, and delays in receiving substantive feedback from teachers about their schoolwork. Parents also felt that without formal learning structures and routines being present in

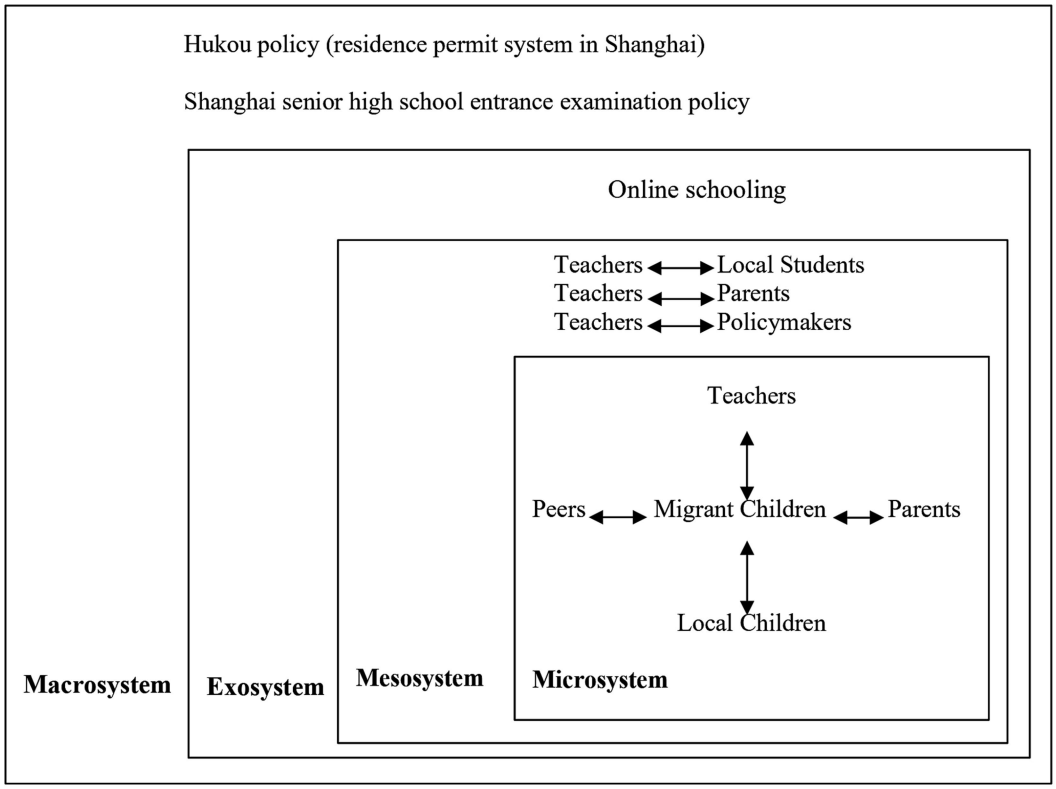

FIGURE 1
Analytical framework.

online learning environments, their child/children would not develop appropriate self-regulation skills and study habits (Bhamani et al., 2020; Dong et al., 2020).

2.4 The ecological systems theory

The present study uses Bronfenbrenner's bioecological model as the theoretical framework for considering the findings regarding the wellbeing of migrant children, and lessons learned from the COVID-19 pandemic pertaining to secondary school education, especially in the case of migrant children in the cities. Fernandes et al. (2012) emphasized that children's wellbeing needs to incorporate the multiple dimensions that affect children's lives. Bronfenbrenner's ecosystem theory suggests that child development is a complex system of relationships influenced by multiple dimensions of the immediate environment, from the immediate home and school environment to a wide range of cultural values, laws and customs (Bronfenbrenner and Ceci, 1994; Bronfenbrenner and Morris, 1998). This theory argued that a child is influenced by five ecological forces: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. The microsystem is the most important level in ecological systems theory and contains the most immediate environment for developing children, such as peers, family, and school, who they live with or interact with, and the relationships they have with those people. The mesosystem is the interactions occurring in the child's microsystem, such as the relationship between teachers and parents. The exosystem is a link between two settings that do not directly involve the child. The first one is the one in which individuals have an immediate role. The other is one where the person does not play an active role. Examples would be a father with his boss, peers with their parents, teachers with their principal, and the mass media. These are environments that the child is not involved in but nonetheless affect the child. For instance, parents may return home and be short tempered with their children because they are angry about things that happened in the workplace, which may have a negative impact on their children's development. The macrosystem concentrates on how the cultural and social context influences all the others. The macrosystem is different from the previous three systems as it refers to the established society and culture in which the child is developing. The chronosystem consists of all environmental changes that occur in an individual's life and their sociohistorical context. We suggest that the ecological systems theory provides a theoretical framework for exploring how reciprocal interactions between migrant children's experiences and their environment during the COVID-19 have influenced their wellbeing. Among these the family and school setting is the most important. Figure 1 shows the analysis framework.

2.5 Present study: migrant children contextualization in Shanghai

In recent years, as the rural population continues to decline, more and more migrant workers and migrant children are moving to the cities. According to the seventh national population census in 2021, Shanghai had migrant population of 10.47 million, accounting for

42.1% of the total population. In the same year, there were around 1.17 million migrant children in Shanghai. As a city characterized by an aging population, 23.38% of which was composed of residents aged over 60 and 16.28% of residents aged over 65, and facing a decline in the birth rate, Shanghai is confronted by an urgent need to introduce migrant workers from other provinces in response to the negative effects of the aging population on its economic development (Shanghai Statistics Bureau, 2021).

In terms of migrant children's education, migrant parents are required to obtain a Shanghai Residence Permit with at least 6 months social insurance in order for children to receive compulsory education. The residence permit system aims to manage and control people who do not have local hukou in urban areas. People can work and live legally in cities by applying for residence permits. Holders of residence permits enjoy the same rights as local residents such as education, health services and other social welfares. As migrant children grow up, they will reach a critical juncture of decision-making about their continuous studies in urban cities after compulsory education. Shanghai senior high school entrance examination policy is a selective examination aims in each city to sort out the students who have finished compulsory education and are qualified to receive senior secondary school education. Migrant children without a Shanghai household registration (hukou) or with less than 120 residence permit points cannot enroll in senior high school but to study in vocational schools after they finish junior high school (Shanghai Education Commission, 2019a,b, 2020). Those who have 120 points can study in general senior high school (Grade 10–Grade 12). Residence permit points are mainly composed of the applicant's age, educational background, years of employment and social insurance contributions as well as professional and technical level, which makes it extremely difficult for most migrant workers. It is obvious that this system is talent-biased and wealth-biased. Some scholars have evaluated the extent of the friendliness of 16 cities in China and found that the senior high school entrance examination policy in Shanghai is the strictest one in the point-based admission system (Han et al., 2020). It reflected the unfriendliness of education toward migrant children in Shanghai, which can further impair the attractiveness of the city to migrant workers.

This study used Shanghai as a case study for the following reasons. Firstly, as an educated and economically developed city, Shanghai attracts a large number of migrant workers and their children to work and live compared to other cities. Secondly, compared to other cities, the combination of strict household registration policies (points for residence permits) and senior high school entrance examination policy in Shanghai create immense difficulties for migrant children's future learning. These policies would give us a unique context that would help us gain insight into the wellbeing of migrant children during online classes under such policies.

Exenberger et al. (2019) found that children's wellbeing deeply rooted in their culture of origin. Therefore, when discussing wellbeing and its indicators, the different cultural traditions of the East and the West should be considered. Numerous studies have been conducted on the experiences and wellbeing of students in different age groups in online leaning during the COVID-19 pandemic. However, migrant children in China are living in a different social and cultural environment compared to the general children. They suffered the most from the restrictions of household registration system (hukou), educational polices for migrant children and forced online schooling. Their struggles with structural inequalities were reinforced by online schooling during the pandemic. The forced online classes in China were a unique sample of online learning. This research expands upon the limited literature regarding the wellbeing of migrant children involved in online learning during the COVID-19 pandemic. Besides, what kind of impacts did the online learning have on the wellbeing of migrant children deserves to be analyzed by using Bronfenbrenner's bioecological model. The bioecological model categorizes the environment into different levels and emphasizes the interrelationship between individuals and their surrounding environment. This may improve future online and blended education for students, families, and schools. It also provides unique insights into the means that schools can use to support students, parents and teachers as they deliver and engage with online schooling. Through this framework, we can also provide specific recommendations to improve their wellbeing. Previous research has only explored how online learning during COVID-19 influenced children's wellbeing from a single respondent's perspective. This study expands the perspective by including and combining the views of students, parents and teachers to explore the wellbeing of migrant children in online learning during COVID-19.

Accordingly, we have generated two research questions:

1. How has the online learning experience affected the wellbeing of migrant children in secondary school during the COVID-19 pandemic?
2. What can the experiences of migrant children help us learn about the role of adults in supporting migrant children's wellbeing?

3 Materials and methods

3.1 Study design and setting

An intrinsic case study was adopted in this research to gather qualitative data, thereby helping the authors devote all their time and resources to a single case and develop an in-depth understanding of the research questions, focusing on the complexity and specificity of elements of that case, such as a community, school, family or organization, and telling a story about a bounded system, allowing the exploration of some complicated issues in that system (Denzin and Lincoln, 2005; Bryman, 2012; Johnson and Christensen, 2017). As almost all systems cover several components or parts, the exploration of how those parts or components work together is crucial to the understanding of the whole system.

The migrant population tends to be concentrated in the suburbs of Shanghai with low-cost housing and industrial areas where massive employment opportunities are provided (Bach, 2010; Han et al., 2020). Y district is an outer suburb of Shanghai and has attracted many migrant workers as it focuses on manufacturing, having a large number of factories. According to the 2020 national census, the population migrating to Y district increased to 108,453, an increase of 53.9% compared to the number in the 2010 national census. In Y district, the number of residents aged from 0 to 14 accounted for 9.2% of the district's total population, a decrease of 0.3% compared with the number in the 2010 national census. The fieldwork was conducted from February to

October 2020 in Shanghai S Public Junior High School (simply referred to as S School in the following section). The S school used to be a key public junior high school in its local district 12 years ago. Back then, it had few migrant children and no migrant children's classes. However, many local students have transferred to urban schools since 2012, when a considerable number of migrant children began to enter S Public Junior High School, coupled with the demolition of local houses. Thus, the number of migrant children quickly exceeded the number of local students in this school. Despite the small number of local students remaining at S school, migrant children are still taught in separate classes from local children. Compared with the migrant children's classes, the local students' classes have a more intensive class schedule, especially for Grade 9 students who are going to take the senior high school entrance examination. Moreover, the teachers who have a wealth of teaching experience are arranged to teach the local children's classes.

In early 2020, China adopted a series of nationwide prevention and control measures to address the spread of COVID-19. These measures include the implementation of community isolation, reinforced wearing of masks, the promotion of remote working and learning, and public gathering limits. In early February, Shanghai officially announced that schools would not open after the winter holidays. In order to ensure the safety of teachers and students, universities and schools in Shanghai started online education. Shanghai educators built a "classroom in the air" that made "suspension of classes without ceasing to teach, without ceasing to learn" a reality so that primary and secondary school students benefited a lot. The "classroom in the air" refers to the use of the internet and modern communication technology, broadcasting the teacher's lectures in real time with video and audio etc., or recording the content of the teachers' lectures and broadcasting it later, to transform the teaching process into a virtual one on the internet. There were no special requirements for the students, and as long as they had access to TV or internet. Students of each grade in Shanghai all follow the same timetable in their academic studies. The recorded video lessons could be played on television and various online platforms in accordance with the class schedule. There were 8 lessons each day, and each lesson lasted 40 min. The students could watch the recorded lessons together for the first 20 min, then the teachers and students in S school logged in the Tencent Meeting App, which allowed teachers to explain the content and answer questions raised by the students for the remaining 20 min. Online learning was suspended in April 2020 due to the temporary stability of the pandemic.

Since the COVID-19 restrictions had posed difficulties in speaking with the children, the fieldwork was conducted in two phases. The first phase consisted of online observations conducted from February to March 2020. The second phase consisted of semi-structured interviews held from April to October 2020 at S Junior High School. In the first phase, we looked at online learning from Grade 6 to Grade 9 to observe the activities of the teachers and students in the classes and how the students performed. The second phase provided an insight into how online education affected their wellbeing through interviews with the students, parents and teachers.

3.2 Participants and data collection

According to the qualitative data collected through observation and semi-structured interviews, migrant children at S school in Shanghai accounted for 80% of the total number of that school's students. The participants included 31 migrant children (from Grade 6 to Grade 9), nine parents, 10 teachers and one school principal, all of whom were selected according to purposive sampling and maximum variation sampling. The participating students were between the ages of 12 and 15. As the first author worked in the Moral Education Department of S School and had the same educational experience as the migrant children, a good interpersonal relationship was established between the author and the students. The first author also relied on teachers as the intermediaries to connect her with the parents. When recruiting parents for the study, the author did not consider their occupations. The majority of them were factory workers, employed in the service sector, or small business or small factory owners, and a few of them worked as middle-level managers. Furthermore, some mothers of the migrant children were housewives. The highest education level of these parents was junior secondary school, and most of them had been living in Shanghai for over a decade. Most parents did not have 120 points for their residence permits.

Some of the interview questions used in the second phase were based on the observations of the online classes in the first phase. During the first phase of observations, it was seen that due to the limited time and tight schedules of the secondary school courses, the online class time was the same length as the class time would have been at school, requiring long hours on a computer or cell phone. The authors were not able to interact with everyone during the first phase of the online classes though, because they could not disturb the normal classroom order. However, through the online classes, some students and teachers came to have a certain understanding of the first author through the introduction provided by the school principal, which laid the foundation for entering the school in April 2020 during the second phase.

The first author gave participants information sheets and informed consents before they involved in this research. The informed consent forms were given to parents to decide whether their children attend this study. Migrant children themselves also agree to participate in the study after they have been informed all things that could their willingness to participate in research. The first author asked migrant children some questions during the interviews to construct and evaluate wellbeing. The interview questions include their learning difficulties, peer connections, how the pandemic affects their lives, interactions with teachers and peers, technical problems with equipment, and whether the home setting helped them to stay focused and engaged in online learning, and so forth. The two data collection techniques, observation and semi-structured interviews captured factors at each level of the ecological model. Observation can help us to observe the policy environment as a macrosystem, the online schooling as an exosystem, and some of the interactions between migrant children and other people in the microsystem. Through talking with children, parents, and teachers, the semi-structured interviews can help us gain insights into the connections among individuals within mesosystems and microsystems. In this research, we achieved reliability through discussion and consensus in order to understand the coded themes. Pseudonyms are used to protect the anonymity and confidentiality of participants. All ethical considerations, such as confidentiality, anonymity and informed consent were adhered to.

3.3 Data analysis

The interviews were conducted in Mandarin, audio-recorded and transcribed verbatim, each lasting from 1.5 to 2 h. Upon the completion of the two phases, Braun and Clarke (2006)'s six phases of thematic analysis were used to process the collected data. First, the first author read the transcripts in order to familiarize themselves with the data. NVivo 12 Plus was used to assist with coding. Second, all related codes were categorized into initial themes. After that, the first author grouped like codes together and thought about the features of these codes to find themes. Once themes were identified, the first author reviewed them and merged some themes when they had similar meanings. Next, themes were given names, and each theme was identified based on their meaning in the context of the data. All themes were refined and reviewed to ensure consistency by the second and third authors. As this research obtained data from different groups, data triangulation was employed to ensure the credibility of research results. Table 1 summarized main themes and sub-themes. Although the online observations presented a limitation to the study, the two phases did allow us to gather rich data regarding the views of the children, parents, and teachers. We report on our findings in the following section.

4 Results

Below we outline the main themes developed from our analysis, illustrated through brief extracts taken from the data.

4.1 Distress and helplessness of migrant children about online classes

The migrant children and teacher participants highlighted the benefits and drawbacks they perceived during the lockdown period schooling. Recorded video lessons in Shanghai for each subject were designed by outstanding teachers who had won national and municipal teaching competitions. Teachers believed that high quality video-recorded lessons could greatly help migrant children because the recorded lessons provide a valuable opportunity for them to learn from outstanding teachers. However, these high-quality video-recorded lessons had a limited impact and affect migrant children's emotion because of time constraints.

> Teachers in the downtown area record these courses, and they did a really good job—After all, they are experts at polishing their lessons in Shanghai, right? If they go and listen carefully, I think it will help the students a lot. However, the classroom in the air does not stop or wait for students to ask questions arising from the learning differences between students. The children in our suburbs still have a bit of a learning gap between them and those in the downtown area, so some of the migrant children were having difficulties listening to the class. Although the video can be played back, they may not be able to understand the lesson even if they watch it twice. Moreover, students have to do their homework at night and then upload it that day, so they do not have time to watch it again (Xin, Female, Grade 9 Math teacher and Head teacher from Migrant children's class).

The high-quality video-recorded classes made migrant children feel distressed and helpless instead. The comments of two migrant children were typical:

> I think it does not matter if he's a special or an ordinary teacher, as long as he's suitable for us, that's the best, right? (Chai, Female, Grade 8 from Migrant children's class).

> We have been used to our own teacher's teaching style. However, the teacher of the recorded class taught the English class in English the whole time. We did not understand it at all. I think the teachers on the television give me the personal feeling that they are condescending (Wen, Female, Grade 8 from Migrant children's class).

One English teacher echoed students' opinions:

> The online lessons were helpful for our teachers. I am still using grammar lessons from video-recorded lessons for my students. However, we received feedback from our migrant children that they were unable to understand the full English online lesson. I felt sad that I had to spend 3 lessons to make the online lesson clear to my students (Mei, Female, Grade 8 English teacher from Migrant children's class).

Before formal classes resumed, some parents believed that their children were not studying when watching computers or phones for long periods of time, which led to quarrels and eventually led to tragic

TABLE 1 Main themes from interviews.

Main themes	Sub-themes
Distress and helplessness of migrant children about online learning	Unable to adapt teaching method from high quality video-recorded lessons
	Poor academic performance after online class
Changes in emotion due to policies and online Learning	Different study progress when taking class with local students
	Lack of attention from school and policymakers
Less interaction between individuals and surroundings	Less interaction between migrant children and teachers
	Conflicts between parents and migrant children because of monitors
	Less interaction with peers
Cooperation between home and school to mitigate the negative effects on physical wellbeing	Eyestrain among migrant children
	Cooking lessons to alleviate the eyestrain

suicides. Therefore, all schools in Shanghai postponed the school exams for 2 weeks to help students adjust to regular classes again in an attempt to ease the parents' anxiety over the declining academic performance of students participating in online learning. In this case, after they came back to normal schooling, both migrant children and teachers found that most of the migrant students' academic performance had dramatically declined during the period of online learning.

> We were so miserable, with the sudden COVID-19 in our final year. The quality of online learning was bad, which caused a lot of students' results to go down, which was quite annoying (Yu, Male, Grade 9 from Migrant children's class).
>
> There were some students in the local class whose grades went up by leaps and bounds. After listening to the solutions given by the teacher through the online classroom and combining them with their own teacher's methods, they feel like they understood and had a good grasp of math, but some students in our migrant children's class are like "bystanders," their grades have dropped after more than 2 months, and they no longer know the basics (Xin, Female, Grade 9 Math teacher and Head teacher from Migrant children's class).

4.2 Changes in emotion due to policies and online learning

It can be seen that the emotions of migrant children depend on factors within their specific context. It was found that the migrant children's studies have been severely affected by the online learning context. The Grade-9 students who are going to take the high school entrance exam are the most affected ones.

Migrant children had been separated from local children in different classes at S School before online learning began. Since the beginning of the online learning, classes for migrant children and classes for local children have been combined. However, the progress and content of the lessons had varied greatly between the migrant children's classes and the local students' classes before the combined online classes began. Although the scores for the Physics, Chemistry, and PE exams are not counted in the senior high school entrance examinations in the case of migrant children, but they are required to take Physics and Chemistry final exams organized by S School. Although the above subjects are not counted in the total score for the examination, they are very important for future studies, and if migrant children have not been able to acquire enough knowledge related to the above subjects, further study will be difficult for them. Unlike the migrant children, the Grade-9 local students had learned all the new lessons about Physics and Chemistry before the outbreak of COVID-19, so they had more class time for other subjects. Tang and Suo are overachieving migrant children who were interested in Physics and Chemistry, but when their class was taught together with local students during the online learning period, they felt anxious and disturbed.

> I've heard a lot of complaints from parents regarding chemistry classes, complaints that teachers do not pay enough attention to it, and the progress may not be the same. The main reason is that local students have too many class hours. They finished new classes before the winter holidays started. For the local class, the whole of the online learning period was spent on revision. For us, the entire period of the online classes was spent on new lessons, which means that we, the migrant children, have almost 4 months less time to revise for the Senior High School Entrance Examination. I went into an online meeting class for Chemistry one time. I found local students had all finished their second-round revision, but we have only just finished the new lessons (Tang, Male, Grade 9 from migrant children's class).
>
> … especially chemistry lessons, I cannot catch up and understand the recorded video lesson…my classmates are constantly absent from these courses. I think my Chemistry score has dropped drastically after attending the online course. I gave up completely. Teachers added extra lessons for local children in the evenings and weekends… the local students have more class hours than us (Suo, Male, Grade 9 from migrant children's class).

Teachers of important subjects, such as Chinese, Mathematics and English, are also aware of this issue. With their time being limited, they cannot arrange more lessons for migrant children. Priority can only be given to local children, as they will take the senior high school entrance examination and then receive a high school education in order to be eligible for university entrance exams. Physics teachers and Chemistry teachers were also helpless in this situation.

> We still have to favor the local students, who have to take the senior high school entrance exams. If the lesson is too easy, the local class will complain. But if I make it harder, the migrant children's class will not be able to keep up, and it's impossible to take care of all of that (Xin, Female, Grade 9 Math teacher and Head teacher from Migrant children's class).
>
> Their study progress is different from local students… "The people at the top (policymaker)" do not pay attention to it, so we certainly do not hold these two courses in high regard (Lu, Female, Grade 9 Chemistry Teacher).

4.3 Less interaction between individuals and surroundings

Online learning had caused a disruption in social interactions and developmental opportunities for migrant children. As mentioned before, the classes of local students and the classes of migrant children were merged, and classroom interactions between teachers and students were significantly reduced during online learning.

> The teacher would often select students from the local class to answer questions and we would be at the back of the queue, and sometimes we would not get our turn (Yu, Female, Grade 9 from Migrant children's class).
>
> One teacher teaches two classes at the same time. It's impossible to ask everyone to answer. It's possible that not even one migrant

> child has been questioned during the whole week because there is only 20 min left for us after the video-recorded lesson (Xin, Female, Grade 9 Math teacher and Head teacher from Migrant children's class).
>
> Teachers did not grade our homework. Because they only graded local classes that they led. I did not know if I was right or wrong after I did my homework. I will not correct my homework if I do not hear it during the online class (Shu, Female, Grade 9 from Migrant children's class).

In this circumstance, the migrant children have poor self-control ability and find it difficult to concentrate on a computer screen for a long time. In addition, children who use computers and mobile phones can easily be distracted by games or online social networking applications. Two migrant children and a teacher recall:

> The efficiency of the online classes was very low. It felt refreshing to take an online course for the first time, but as time went by, my mind had already "flown away" (Yu, Female, Grade 9 from Migrant children's class).
>
> Many of us used our accounts to log onto a Tencent Meeting and pretended that we were in class. I split my screen so that I could play the game King of Glory, or chat with my friends on QQ (a Chinese instant messaging platform). When the teacher asked me to answer a question, I would pretend that the internet connection was having a problem, and I did not answer (Chai, Female, Grade 7 from Migrant children's class).
>
> Either students need parents who have to keep an eye on students the whole day, or you need students who are really self-motivated. But parents have to work and there are also few self-motivated students. The only student who made great progress during online schooling was because his mother, father and grandmother took turns sitting next to him to supervise his online schooling (Lu, Female, Grade 9 Chemistry Teacher).

The teachers and parents gradually became aware of this problem of low efficiency. In order to guide students and help them concentrate on learning, the teacher mentioned this matter to the parents in a WeChat group, asking parents to cooperate with the teacher to supervise the children's study at home. Hence, some parents of migrant children have installed cameras in their children's study rooms to monitor their behavior. This made many children feel uncomfortable and they resisted the action of their parents. One parent shared her story:

> I saw other parents sharing pictures of their children's learning taken by a camera (monitor) in WeChat Moments. I discussed this with my child: "We are not at home during the day, and no one will watch you. How about I install a monitor?" My daughter strongly disagreed with my idea. I said the camera just monitors her desk. She still disagreed. In spite of her disagreement, I installed the camera in her room. When I was not busy at work, I watched her through the camera. Sometimes when I saw her playing games on her mobile phone, I called her name. She was startled and immediately put the phone aside. A few days later, she moved the camera to another place and said: "You are so annoying" (Lin's mother, Female, Grade 9 from Migrant children's class).

Migrant children felt very nervous and uncomfortable with the surveillance. One migrant child recall:

> Someone is monitoring me…it's a camera. Our home has 4 cameras. Previously, my room was not monitored, and I motived myself to study, but they still set up one during the online learning period. I felt nervous and uncomfortable (Liang, Male, Grade 7 from Migrant children's class).

Many parents of migrant children also believe that peer interaction stimulated by schools is also important for social development and well-being:

> The online learning forced students to spend prolonged time at home, which restricted my daughter's opportunities to develop her confidence when she is not with her family. In normal schooling, she can build connections with her peers. I'm worried about her happiness (Lin's mother, Female, Grade 9 from Migrant children's class).
>
> I missed my classmates, but we were not allowed to meet up with each other because of the COVID-19. My friends were busy when I wanted to discuss math questions with them online. But if I'm in school, then I can discuss the problem directly with my peers in person (Jia, Female, Grade 9 from Migrant children's class).

4.4 Cooperation between home and school to mitigate the negative effects on physical wellbeing

Children are often tired, especially after having stared at a screen all day long. Some migrant children were struggling to stare at the tiny screen of a phone from 8 a.m. to 6 p.m. Almost all migrant children and teachers mentioned their eyes were sore.

> The online lessons are too long, my eyes are tired, and I want to close my eyes, and then I cannot listen anymore (Jing, Female, Grade 9 from Migrant children's class).
>
> Both teachers and student's eyes are overwhelmed, especially those of some migrant children using mobile phones for the whole online learning period (Hong, Female, Grade 8 Head teacher from Migrant children's class).

In order to alleviate the stress and improve the physical wellbeing of students, online learning introduced cooking classes at a later stage. That way, students could not only move their eyes move from the screen but could also learn new skills and achieve family-school interaction. The children of migrant families felt that this activity brought them closer to the teacher. One teacher shares his experience:

> The teacher taught children how to cook in a video-recorded lesson. Our students showed their new skills to their parents at

> weekends. Some parents took photos and shared it in our class's WeChat Group. Children were happy to share the cooking experience and their dishes with their parents and teachers. You know…children are always busy with study, and parents usually do not let them participate in housework. Some parents told me that they are happy to see their children learning to cook (Zhou, Female, Director of Teaching and Learning).
>
> We were able to learn how to make cakes and tarts during the online learning period. I think baking has really helped alleviate some eyesight stress in my online class life. Although I did not bake well, I'm interested in it. Moreover, one of my friends lives next to my home. She went to vocational school after junior high school and studied baking. I was inspired by her and considered to study baking too (Su, Female, Grade 6 from Migrant children's class).

5 Discussion

The COVID-19 pandemic-related interruption to education has had a profound effect on the educational system. Despite the fact that the findings of this research only apply to a small sample of migrant children, the data's shared patterns point to important considerations regarding both how the online learning experience has affected the wellbeing of migrant children and what can be learned about rethinking secondary education in the wake of it. Bronfenbrenner's bioecological perspective highlights how the migrant children's wellbeing was affected by multiple external and internal factors, especially those stemming from the children's school and family situation.

Firstly, during the COVID-19 lockdown period, all normal classes were suspended throughout Shanghai. The high quality of the video-recorded classes and online learning, which could be considered as exosystem according to Bronfenbrenner's bioecological model, had a significant impact on the everyday learning of migrant children. While the video-recorded classes were of good quality, they put a heavier burden on migrant children than on the local children. The tight schedule of the daily online learning, teachers have no time to pay attention to students, students are not adapted to the way the teacher taught in the video recorded class, cannot get timely feedback from teachers, which ultimately led to the migrant children's regressive performance after they returned to normal schooling. The classroom in the air takes away from the time students would normally spend with their own schoolteachers so that the teacher-student relationship between migrant children and their teachers is diminished, resulting in lower self-confidence, increased distress, helplessness and a lower sense of emotional wellbeing. This finding echoes the results of the studies by Bhamani et al. (2020) and Dong et al. (2020) who have found that children felt worried, irritable and anxious due to the lack of interaction, and delays in receiving substantive feedback from teachers about their schoolwork during the lockdown period. The emotional wellbeing of both Chinese migrant children and children from other countries was influenced by the exosystem, the mesosystem and the microsystem. Chinese migrant children, as a vulnerable group, deserve to be given even more attention regarding such experiences. Additionally, under the influence of the general environment surrounding COVID-19, using the high-quality video-recorded lessons instead of the traditional in-classroom lessons has changed the traditional teaching method. The emotional wellbeing of the Chinese migrant children is more seriously affected by decreased access to immediate help from schoolteachers, increased stress from studies, and the lower academic performance becoming apparent after they went back to normal schooling. This also provides valuable lessons for the future of online learning.

Secondly, before the local class and the classes of migrant children were merged, the migrant children did not feel angry because of the great inequality in their school treatment and the handling of their studies, but the online learning made the Grade 9 students realized that they were being treated differently. In addition, the forced neglect from teachers, and the lack of attention given to the education of migrant children by policymakers have led the migrant children to become aware of the difficulties they are encountering, and they have become anxious, angry and confused about their future, especially as they would have to take the senior high school entrance examination soon. The link between policymakers and schoolteachers is regarded as a mesosystem. Schoolteachers regarded the migrant children's future education as being less important than that of local students. Therefore, they paid more attention to local students' during online learning. During this process, the relationships between teachers and local students also formed a mesosystem, local students and migrant children formed a microsystem, and the situation made the migrant children directly and indirectly aware of an enormous inequality. These inequalities cause direct emotional problems (such as anxiety, helplessness and anger) for migrant children in online learning period and continued in normal schooling. Migrant children have no way to make any changes to the current situation, and they can only be forced to accept it. This finding is different from results from previous studies. Previous studies stressed that a teacher acts as an educator and mental health provider, not only needing to teach students knowledge, but also needing to promote the students' wellbeing (Zins et al., 2007). The current research has found that policy makers and teachers have focused overwhelmingly on the local students' academic achievements, thereby neglecting the mental health of the migrant students.

Regarding less interaction between individuals and surroundings, the data showed that teachers could not balance their teaching and interaction between local classes and migrant children's classes. From the perspective of the microsystem, teachers paid less attention to migrant children, and migrant children also were affected by games or other mobile apps. In order to solve this problem, some parents installed monitors, which led to conflicts between the students and their parents. The continuity of the relationship with the teacher was seen as the key to their child's engagement with school and overall wellbeing, highlighting the importance of the teacher–child relationship. In this study, it was found that migrant children have strong attachments to their class teacher. However, they have fewer interaction opportunities with their teacher compared to local students because most of the migrant children cannot take the senior high school entrance examination, which has resulted in an increased lack of attention being given to migrant children in online learning context. It is therefore difficult for these migrant students to get enough support from their schools and the community. A study found parents can support their children in learning (Zhang et al., 2020). Nevertheless, in this research, it was found that parents of migrant children as co-educators and regulators at home have to handle the

pressures of work while home-schooling. Parents of migrant children are poorly educated, so they used monitoring cameras to replace their presence at home and take on the function of monitoring their children's studies. Parents cannot teach their children to study, but the only thing they can do is to check the completion of homework and learning progress with the hope that children can achieve good results by themselves. Monitoring cameras were forcibly placed in the students' rooms, so that the students had no privacy and felt uncomfortable. This result partially echoes the result of Brown et al. (2020) who have found it is difficult for parents with a low education level to replace the function of schoolteachers. But the difference is that although parents of migrant children are unable to contribute to mentoring, their high expectations of their children's performance have led them to explore new ways (i.e., installing monitors to watch their children in real time) to make them believe that this assistance is beneficial to their children. Nevertheless, instead of keeping children in a healthy emotional condition during the pandemic, this action intensified the conflict between students and their parents. In addition, the long periods of online learning have diminished the opportunities for students to interact with each other. The extent of peer interactions was also regarded as an important factor in children's wellbeing. Despite the existence of some negative impacts, for some children, established friendships and keeping in touch with friends online mitigated these negative impacts to a certain extent.

Regarding their physical wellbeing, 8 h of online classes a day made the migrant children tired, especially as some migrant children can only use their mobile phones to attend classes. Having to constantly look at things and read things on the small size mobile phone screen also made the students' eyes tired. Previous studies also discovered that parents worried about their children's eyesight because of 3–4 h of online learning (Christensen and Alexander, 2020; Zhao et al., 2020). Previous studies have only expressed parents' concerns about their children's eyesight wellbeing, but the present study provided a solution to this issue. For example, online cooking classes were introduced to the online learning schedule after several weeks of online learning in order to teaches students how to collaborate with their parents to cook together and display the results in the class WeChat group. This prompted the migrant children to take their eyes off their screens, relieving them to some extent of visual strain. Parents and teachers worked together as co-educators and educators to solve the children's difficulties. Things like the cooking not only allowed students to relax from a stressful online class, but also provided time and space for parent–child relationships and strengthened the bond between school, home and student (Zhou et al., 2020).

6 Limitations and future research

This study has several limitations in this study that can be considered in future research. Firstly, it is worth noting that the one school investigated in this study cannot represent the whole of migrant children in China. Braun and Clarke (2012) argued that an important aspect of the qualitative paradigm is understanding the multiple meanings of small samples in the existing world, thereby generating contextual knowledge shaped by mainstream structures and processes. Thus, the experience gained from a small group of migrant children enables us to generate findings that may be able to be transferred to other contexts. Secondly, this study lack data from local parents. Comparing other factors between local and migrant parents that could give greater significance to this research, including parental involvement and supervision. Thirdly, this research discovered that migrant students perceived this discrimination or unequal treatment by teachers compared to local students during the online learning period and they felt this affect their social, emotional and physical wellbeing. Branscombe et al. (1999) and Zabala et al. (2020) found that the positive social identification of discriminated minorities can be a protective factor of wellbeing when facing discrimination. The rejection-identification model suggests that perceived racial prejudice has negative impact on individuals. However, a strong social identification with the own stigmatized group itself also alleviate negative impacts and promote wellbeing. As a vulnerable group, Chinese migrant children clearly understand that they cannot receive the same educational resources as locals. In future studies, it would be advisable to implement rejection-identification model and explore whether the social identification of Chinese migrant children can mitigate the negative effects of discrimination and promote their wellbeing.

Regarding its theoretical implications, this study advances the Bronfenbrenner bioecological model by testing its validity with a disadvantaged group in a non-western socio-cultural context. Regarding its long-term implications, firstly, the inequalities of education encountered by migrant children during the COVID-19 period have made them realize the disparities they have suffered in Shanghai. Findings of this study provide an empirical evidence base for future educational policy improvements, especially in supporting migrant children's learning in urban areas. It is also important for future education reforms, including support for online learning, equal distribution of educational resources, and targeted teacher training. This reform can fundamentally improve the educational experience of underprivileged children. Regarding the broader impact, on the one hand, the results of the study may provide valuable insights and lessons for educators and policymakers facing similar challenges in other countries and regions. The case in Shanghai provides useful insights into how they might be better equipped to deal with similar situations. On the other hand, by exploring the roles of parents and schools during the online learning period, our research emphasized the importance of collaboration between families and schools. This may have positive impact in developing a more comprehensive family-school model. For example, the parents of migrant children often have problems with educating their children in the online learning period, i.e., long-term monitoring. Consequently, schools can establish a parents' school to train the parents and establish incentive mechanisms to encourage parents to treat mental health issues seriously and correctly. Migrant children should not be forcibly monitored by their parents through the use of cameras during the online learning period, as such action tends to escalate the tension between parents and children and foster a rebellious psychology.

7 Conclusion

This study implemented Bronfenbrenner's bioecological model to investigate emotional wellbeing, social wellbeing and the physical wellbeing of migrant children subject to the online learning experience during the COVID-19 period (Bronfenbrenner and Ceci, 1994; Bronfenbrenner and Morris, 1998). At the same

time, this paper enables us to understand the roles that adults have played in the pandemic to support the wellbeing of migrant children. Our findings also provide lessons for parents, teachers and policymakers because of the discovery that the inequitable treatment of migrant children was exacerbated in the face of a public health emergency.

Firstly, the high-quality recorded video lessons put pressure on the migrant children due to the lessons containing only new material with no reviews. This makes it difficult for them to adapt to new learning methods, and test scores after they return to school showed that migrant children performed poorly in online learning. These problems caused distress and helplessness thereby affecting the emotional wellbeing of migrant children. Secondly, the differences in study progress between the migrant children and the local children that showed up during the online learning, and neglect from teachers and policymakers, made the migrant children anxious, angry and confused about their future. Similarly, this affected the emotional wellbeing of migrant children. Thirdly, the unequal treatment between local students and migrant children resulted in less interaction between migrant children and their surroundings, thereby affecting their social wellbeing. For example, the online learning reduced opportunities for migrant children to interact with their own teachers. Parents of migrant children are less educated and cannot assist their children with their homework. They want to use surveillance methods to support their children's learning, but it had the opposite effect and simply provoked increased conflicts between children and their parents. In addition, the long period of online schooling decreases opportunities for migrant children to interact with their peers. When teachers focused on tutoring local students, migrant children had a greater need to interact with their peers in their studies. Finally, although the long hours of online lessons have affected the optical health of students, the subsequent additional cooking lessons have mitigated the optical health problem and strengthened the connections between home and school.

In this context, parents of migrant children as regulators and co-educators were not able to guide their children's learning in the same way as other groups of parents did, but instead affected their children's emotional wellbeing through the overwhelming use of monitors. In the initial phase of online schooling, teachers as educators and mental health supporters are not only unable to fulfill the students' need to acquire knowledge, but also cannot promote the migrant children's emotional wellbeing. However, in the later phase of the online learning, teachers acted as mental health providers, utilizing cooking classes to enhance the relationship between students and parents and provide opportunities for families to relax after a long period of intense academic pressure.

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 Hong Kong Polytechnic University, Departmental Research Committee (on behalf of Human Subjects Ethics Sub-Committee), Reference Number: HSEARS20200203003. 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

QD: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Writing – original draft, Writing – review & editing. QW: Project administration, Supervision, Validation, Writing – review & editing. QZ: Conceptualization, Validation, Writing – review & editing.

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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 role of emotional similarity and emotional accuracy in belonging and stress among first-generation and continuing-generation students

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Extensive research has documented the psychological, social, and academic predicament of first-generation college students. However, basic psychological mechanisms underlying the challenges experienced by these students have been understudied. Taking a cultural psychology perspective, the present research considers the role of emotional (mis)match as a key mechanism for explaining first-generation students' lowered well-being. A sample of 344 American undergraduate students completed a survey designed to measure two aspects of emotional processing: (1) *Emotional Accuracy* – how accurately students perceive emotional reactions of majority-culture students (continuing-generation junior and senior students who have been socialized into college culture), and (2) *Emotional Similarity* –how similar students' emotions are to the emotions experienced by majority-culture students. Emotional Accuracy predicted positive outcomes, in general, but was lower among first-generation students. Unexpectedly, Emotional Similarity predicted negative student outcomes. As one of the first studies addressing basic psychological mechanisms in college adjustment, these findings underscore the importance of understanding the roles that specific emotional processes play in social adjustment.

KEYWORDS

emotion, culture, education, belonging, stress, well-being, first-generation students

Introduction

For generations, America prided itself on being the land of opportunity, a place where anyone could live out the *American dream* and rise from rags to riches (Duncan and Murnane, 2011). Today, however, the United States is middle of the pack among other high-income countries in terms of both social inequality and mobility (The World Bank, 2023), which has negative implications for everyone, at both the bottom and top of the social hierarchy. In higher education, a main gateway for upward social mobility, there is a marked gap in academic, social, and psychological well-being and adjustment among college students from minority-culture socioeconomic backgrounds (Wilbur and Roscigno, 2016; Rubin et al., 2019). This study focuses on first-generation students, the first in their families to attend college, who currently make up one-third of the student

population at 4-year institutions, and are the quickest growing student demographic (Duncan and Murnane, 2011; Reardon, 2011). Though growing in numbers, first-generation students tend to struggle in college, and the gap in academic outcomes between first- and continuing-generation students (who have at least one parent with a degree from a 4-year institution) is notable. First-generation students typically take fewer credits; receive lower grades; form fewer relationships on campus; suffer from more psychological and physical health problems; and overall, are more likely to drop out and forego their college ambitions entirely (Choy, 2001; Pascarella et al., 2004; Sirin, 2005; Pryor et al., 2007; Kim and Sax, 2009; Rubin, 2012).

Despite extensive research documenting the psychological, social, and academic predicament of first-generation students, basic psychological mechanisms underlying the challenges experienced by these students have been relatively understudied. Filling this gap in the literature, the current research takes a cultural psychology perspective to gain a deeper understanding of psychological reasons for such outcomes. Building on the cultural mismatch theory (CMT; Stephens et al., 2012a), the present research considers the role of emotional (mis-)match as a key mechanism for a sense of belonging and students' stress levels.

First-generation students and well-being in college

There are many explanations for the poor outcomes of first-generation students. For instance, many of these students need to balance work and school obligations, live off campus and deal with commutes, come from underperforming high schools, and deal with family guilt from family members who feel left behind (Pascarella et al., 2004; Engle et al., 2006; Covarrubias and Fryberg, 2015; Vasquez-Salgado et al., 2015). Even when these diverse characteristics are taken into account, however, first-generation status remains a negative predictor for college success, suggesting that additional psychological processes may also be at play (Horn and Nuñez, 2000; Choy, 2001, 2002).

CMT proposes that first-generation students experience additional difficulty as they transition to college because they have been socialized in a socioeconomic culture that is different and sometimes at odds with university culture (Stephens et al., 2012a). Typically, having grown up in a more working-class environment, first-generation students bring a more interdependent self to a university environment that heavily emphasizes and values independence. This mismatch causes them to feel out of place in their new environment, somewhat akin to an immigrant in a new country. Chronic concerns about belonging, in turn, have been shown to create increased psychological strain for students, including increased levels of stress (Stephens et al., 2012a,b).

The current research builds on this theory to advance understanding of psychological mechanisms that explain how first-generation students experience this mismatch with their college environment. We propose that part of the answer lies in psychological differences between how first-generation vs. continuing-generation students understand and respond to different emotionally-laden experiences.

Emotions and social belonging

Individuals may have different emotional responses to seemingly similar situations or stimuli, and this can have important implications for their sense of social belonging. Emotions reflect an individual's opinions, view of the world, and intentions to act (Frijda et al., 1989; Solomon, 2004). If people experience emotions that are different from those experienced by others around them, they can feel out of place and begin to question their belonging (De Leersnyder et al., 2014).

Research in cultural psychology has found that culture has profound implications on emotional experiences (Mesquita and Janxin, 2007; Tsai and Clobert, 2019). Research has found, for example, that people from different national cultures vary in the intensity and transparency with which they express their emotions (Ekman, 1972; Matsumoto et al., 2008), in the number of emotions that they experience (Mesquita and Karasawa, 2002; Wang, 2004; Kitayama et al., 2006), in the type of emotions that are typically experienced on a daily basis (Mesquita, 2001; Savani et al., 2013), and in the type of emotions that feel particularly good (or bad) (Kitayama et al., 2006; Uchida and Kitayama, 2009).

At the same time, a recent surge of research on social class and college generational status (i.e., first- vs. continuing-generation) suggests that social class cultures have profound implications on psychological functioning in much the same way that national cultures do. Growing up in different social-class contexts fosters and requires different types of behavior; for instance, limited incomes in lower-working-class communities necessitate that people rely on each other more than they would in wealthier communities. Over time, repeated behavioral patterns shape different aspects of the self and patterns of relating to others leading to a more interdependent way of being among lower SES groups and a more independent way of being among higher SES groups (Kraus and Stephens, 2012). Building on and uniting these two distinct lines of research, we reasoned that socialization in different social class environments would also have implications on individuals' emotional lives. To our knowledge, the link between social class and emotional experiences has not been previously investigated.

Emotional similarity and emotional accuracy

Research on emotions in social and interpersonal contexts points to several different aspects of emotional processing that could shape psychological outcomes. In the present research, we focus on two aspects of emotional processing: *Emotional Similarity* and *Emotional Accuracy*. These are related but conceptually distinct and could lead to different behavioral and psychological outcomes (Verhofstadt et al., 2008).

Emotional Similarity refers to experiencing the same emotions as others in one's vicinity when in the same situation. Similarity in emotional responses is associated with more rewarding interactions (Locke and Horowitz, 1990), greater empathy (Preston and de Waal, 2002), greater interpersonal coordination (Hatfield et al., 1994; Preston and de Waal, 2002), greater cooperation (Barsade, 2002), increased relationship satisfaction (Anderson et al., 2003; Gonzaga et al., 2007), and decreased stress responses (Townsend et al., 2014).

Extending these findings to intercultural contexts, emotional similarity is indicative of how individuals from one culture feel toward and identify with another culture. Among Korean immigrants, for example, those who have more positive attitudes toward the host culture (i.e., the United States) show greater emotional concordance (i.e., emotional similarity) compared to those who have less positive attitudes (De Leersnyder et al., 2011). Moreover, emotional similarity between an immigrant's emotional patterns and the emotional patterns typical of the host country's majority population has been shown to have positive implications for other acculturative processes. Indeed, immigrants who experience more emotional similarity show heightened psychological well-being (De Leersnyder et al., 2015).

The second aspect of emotional processing that we considered in the present research is *Emotional Accuracy*,[1] which refers to accurate reading and understanding of others' emotions. A large database of research on emotional intelligence has shown the benefits of being able to read and understand other people's emotions (Mayer and Salovey, 1997; Mayer et al., 2002). In the school domain, for example, students who score higher in emotional intelligence have numerous positive downstream academic and emotional outcomes (Abdullah et al., 2004). Likewise, research on empathic inferences has found that although there are exceptions, people who are better at mind-reading others' emotions and thoughts tend to have more positive relationship outcomes (Ickes and Hodges, 2013). Regarding close relationships, research found that individuals who score higher on empathic accuracy are better able to predict and provide the type of support relational partners require (Verhofstadt et al., 2008), and prevent small conflicts from turning into blowouts (Simpson et al., 2001) as well as better align their goals with those of their partner (Berscheid, 1985). Even in short-lived acquaintanceships, individuals higher in emotional accuracy are generally better liked by others (Ahnert et al., 2001).

Aiming to explore the independent roles of emotional accuracy and emotional similarity in explaining the culture clash experienced by first-generation students on a college campus, we conducted a study which measured the two concepts to see how they predict college adjustment.

The present study

The current research was designed to serve several goals. First, we sought to establish that college generational status influences and shapes emotional responses in similar situations. We hypothesized that first-generation and continuing-generation students would show different patterns of emotions in similar situations and that continuing-generation lower-division students (first- and second-year students) would have emotion profiles more similar to those of continuing-generation upper-division students (juniors and seniors whom we take to represent the "majority" or "host" college culture) compared to first-generation lower-division students.

Secondly, we sought to establish that college generational status influences how well students understand and "read" the emotions of fellow classmates. We hypothesized that compared to first-generation lower-division students, continuing-generation lower-division students would be better at predicting the emotional responses of majority continuing-generation upper-division students.

Lastly, we sought to examine how emotional similarity and emotional accuracy would predict college adjustment outcomes: belonging and stress. We predicted that both a lack of emotional similarity and a lack of emotional accuracy would independently have negative implications for a sense of belonging and stress levels, an important college variable that is related to both psychological well-being and academic outcomes such as GPA (Murff, 2005).

Methods

Participants

Participants were 344 undergraduate students at a large and diverse public university in the United States. They were recruited through the Psychology Department's participant pool and received course credit. The study was evaluated and approved by an IRB committee at the sponsoring university.

Two hundred and fifty-two lower-division students completed the study. Of these, 60.7% were first-year students ($N = 153$), and 39.3% were second-year students ($N = 99$) (Age $M = 18.47$, $SD = 0.66$; 71% female). Parental education was used to distinguish between first- and continuing-generation students. Students who had at least one parent with a bachelor's degree or more were coded as "continuing-generation." All other students were considered "first-generation" following criteria used in the past (Stephens et al., 2014). Our sample consisted of $n = 111$ first-generation (48.6% Latino/a-Americans, 28.8% Asian Americans, 9% European Americans, 2.7% African Americans & 10.8% other; 73.9% females) and $n = 141$ continuing-generation lower-division students (10.6% Latino/a-Americans, 39% Asian Americans, 39% European Americans, 2.8% African Americans & 8.6% other; 68.8% females).

An additional 92 continuing-generation upper-division (i.e., juniors and seniors) respondents completed the study to be used in emotional similarity and emotional accuracy calculations for computing "host" or "majority" culture averages because they have had sufficient time to acculturate to college culture. Of these, 79.3% were juniors ($N = 73$), and 20.7% were seniors ($N = 19$) (Age $M = 21.16$, $SD = 2.24$; 59.8% European Americans, 16.3% Asian Americans, 6.5% Latino/a-Americans, 4.3% African Americans, and 13.1% other; 65.2% females).

Procedure

Participants came to a lab and individually completed an anonymous online survey in Qualtrics. This study was part of a larger study looking at college adjustment among first- vs. continuing generation students. After completing the survey, participants were fully debriefed. Materials are posted online at: https://osf.io/jvqpw/?view_only=fc759f8e2e274416ae70afefef61220d.

1 The term empathic accuracy is typically used, but we used "emotional accuracy" to highlight the present focus on accuracy in anticipating specifically others' emotions.

Measures

Social belonging

Social belonging was measured with an eight-item subset of the Sense of Social and Academic Fit Scale (Walton and Cohen, 2007). Previous research (Lawrie et al., 2023) has found that academic and social belonging are two distinct constructs with distinct implications for student outcomes. In line with the CMT, we wanted to focus on social belonging, so we used only items related to social belonging. Participants were asked to indicate on a 7-point Likert scale whether they agree with certain statements (1 = *Strongly disagree* to 7 = *Strongly agree*, e.g., *"People at [university name] accept me;" "I feel like an outsider at [university name]."* Reliability was good ($\omega = 0.93$, $\alpha = 0.92$). Two items were reverse coded.

Stress

Stress was measured using the ten-item Perceived Stress Scale (Cohen et al., 1994). Participants were asked how often they felt or thought a certain way in the past month on a seven-point Likert Scale (1 = *Never* to 7 = *Very often*, e.g., "*In the last month, how often have you felt that you were unable to control the important things in your life*," *"In the last month, how often have you been upset because of something that happened unexpectedly?"*). Reliability was good ($\omega = 0.86$, $\alpha = 0.86$). Four items were reverse coded.

Emotional similarity and emotional accuracy

Emotional similarity and emotional accuracy between first- and second-year students and the majority culture students was measured using the Emotional Patterns Questionnaire (EPQ) (De Leersnyder et al., 2011). Although the EPQ was initially developed as a measure of immigrants' emotional similarity to their host group (e.g., Korean immigrants in the USA), the questions are general and applicable to any populations. Thus, instructions and emotion words used in the current study were identical to previous research. However, given our sample consisted solely of university students, we focused exclusively on the school context and did not include prompts related to work or family life. Also, for brevity, only two negative prompts were used as past research has found greater emotional variability when participants were promoted to think about negative compared to positive situations (De Leersnyder et al., 2011, 2020). In the Negative Engaged prompt, students were asked to write about *"an occasion at school in which they felt bad about their relationship with others*," and in the Negative Disengaged prompt, students were asked to write about "*an occasion at school in which they felt bad about things that happened to them personally.*" After writing about each prompt, participants rated themselves on 30 emotions elicited by the prompt (e.g., proud, angry, guilty, friendly) using a 7-point Likert-type scale (1 = *not at all* to 7 = *extremely*). Items were chosen to represent emotions that vary in valence, arousal, and social engagement dimensions (i.e., engaged emotions which have to do with a relationship or disengaged emotions that have to do with the independent self) (Barrett and Russell, 1998; Kitayama et al., 2006).

To calculate emotional similarity, we computed the average scores of continuing-generation upper-level students for each of the 30 emotions measured in each of 2 prompts and correlated these scores to lower-division students' individual responses on these same items. Thus, each lower-division participant's individual emotional pattern (based on their ratings of emotions) was correlated to the average majority culture's emotional pattern, yielding two scores–one for the Negative Disengaged prompt and the other for the Negative Engaged prompt. These correlations represent participants' emotional similarity score - that is, the similarity between a participants' unique emotional pattern and the mean pattern of the larger college culture (continuing-generation culture). All scores were converted to Fisher's Z-scores to ensure a normal distribution, ranging between −3 and + 3 (see De Leersnyder et al., 2011 for additional information on score calculations).

After rating their own emotions in each scenario, students were subsequently asked to rate how they thought the "*typical [university name] student*" would respond in the same situation. In other words, they were asked to infer the emotional responses of majority-culture students. These responses were then correlated to the actual averages of the continuing-generation upper-level students in the same way that Emotional Similarity scores were computed. Scores were, again, converted to Fisher's Z-scores.

Analytic approach

As a first step, we ran *T*-tests to establish differences between first- and continuing- generation students on all study variables. Zero-order correlations were then analyzed to get a better understanding of the relationships between study variables. To test the role of emotional accuracy/similarity in predicting college adjustment outcomes, a multi-group Structural Equation Modeling (SEM) was used. Finally, we tested whether our model was invariant across generational status.

Results

To first determine any differences between first- and continuing-generation students on key study variables, *T*-tests were employed (see Table 1). Contrary to our first hypothesis, there were no significant differences in Negative Engaged Emotional Similarity (NES) ($t(209.77) = -1.43$, $p = 0.15$) or Negative Disengaged Emotional Similarity (NDS) ($t(250) = 0.36$, $p = 0.72$) between first-generation and continuing-generation students.

Contrary to our second hypothesis, there was no significant difference in Negative Disengaged Emotional Accuracy (NDA) ($t(250) = 0.16$, $p = 0.88$) between first-generation and continuing-generation students. However, there was a significant difference in Negative Engaged Emotional Accuracy (NEA) ($t(250) = -2.60$, $p = 0.01$); continuing-generations students showed higher Accuracy.

In terms of outcome variables, there were no observable differences on Stress ($t(250) = 0.42$, $p = 0.68$), but Belonging was significantly lower ($t(250) = -3.61$, $p < 0.01$) for first-generation students. See Table 2 for descriptive statistics for emotion ratings.

Next, zero-order correlations were analyzed to get a better understanding of relationships between study variables before moving onto the Structural Equation Modeling (SEM) framework. Emotional Similarity and Emotional Accuracy scores were significantly correlated, but correlations were not high enough to suggest multicollinearity. See Table 3.

Finally, we used a SEM framework to test whether Social Belonging mediates the relationship between Emotional Similarity and Emotional Accuracy and Stress. IBM's SPSS (Version 24) and

TABLE 1 Descriptive statistics of key variables, split by college generational status.

	First-generation students			Continuing-generation students			*t*-value	*df*	*p*
	M	*SD*	Range (Min; Max)	*M*	*SD*	Range (Min; Max)			
NES	0.45	0.49	−0.79; 1.46	0.53	0.40	−0.85; 1.29	−1.43	209.77	0.15
NDS	0.72	0.42	−0.61; 1.47	0.70	0.45	−0.87; 1.54	0.36	250	0.72
NEA	0.45	0.45	−0.83; 1.32	0.60	0.42	−0.76; 1.31	−2.60	250	. 01
NDA	0.74	0.47	−1.07; 1.62	0.74	0.39	−0.63; 1.54	0.16	250	0.88
Belonging	5.07	1.09	2.75; 7.00	5.57	1.08	1.25; 7.00	−3.61	250	0.000
Stress	4.12	0.98	1.20; 7.00	4.06	1.03	1.70; 7.00	0.42	250	0.68

NES, Negative Engaged Emotional Similarity; NDS, Negative Disengaged Emotional Similarity; NEA, Negative Engaged Emotional Accuracy; NDA, Negative Disengaged Emotional Accuracy. Possible scores range from −3 to +3 for first four items and 1 to 7 for last two items.

Amos (Version 20), with maximum likelihood estimation (Arbuckle, 2011), were used. A constellation of model fit indices were analyzed to ascertain model fit. These included the chi-square test, the room mean square of approximation (RMSEA), the comparative fit index (CFI), the standardized root-mean square residual (SRMR), and the Bentler and Bonett (1980) Normed Fit Index (NFI). For NFI, a value of over 0.9 indicates good model fit, while RMSEA (Steiger, 1990) should show values of under 0.08 to indicate good model fit (Cangur and Ercan, 2015). SRMR indicates an acceptable fit when it produces a value smaller than 0.10 (Cangur and Ercan, 2015), while CFI shows acceptable fit when its value is over 0.90 (Kline, 2005).

We also tested for the moderating effect of student generational status - that is whether the same pattern of relationships is present among first- and continuing- generation students. The overall model structure for the amended model is almost identical for first- and continuing-generation students (See Supplementary materials).

After removing the direct paths that were non-significant, the modified overall model showed great fit ($\chi^2 = 3.93$, df = 3, $p = 0.27$; CFI = 0.99; NFI = 0.99 SRMR = 0.01; RMSEA = 0.03 CI 10% [0.00, 0.11]) (see Figure 1). Belonging mediates the relationship between Negative Engaged Emotional Similarity and Stress, as well as between Negative Engaged Emotional Accuracy and Stress. However, Belonging does not mediate the relationship between Negative Disengaged Emotional Similarity and Stress or Negative Disengaged Emotional Accuracy and Stress. This is not entirely surprising given that the engaged prompt had students write about a situation involving others and belonging is a relational measure, whereas the disengaged prompt had students write about a situation that did not involve others.

What stands out is that, overall, Accuracy is associated with better outcomes than Similarity. Negative Engaged Emotional Accuracy positively predicted Belonging ($B = 0.51$ (0.22), 95% CI [0.02, 0.96], $p < 0.01$, $\beta = 0.20$ (0.09), 95% CI [−0.01, 0.35], $p < 0.05$) whereas unexpectedly, Negative Engaged Emotional Similarity negatively predicted Belonging ($B = -0.53$ (0.23), 95% CI [−0.97, 0.00], $p < 0.01$, $\beta = -0.21$ (0.09), 95% CI [−0.37, 0.01], $p < 0.05$). Likewise, Negative Disengaged Emotional Similarity significantly positively predicted Stress ($B = 0.95$ (0.17), 95% CI [0.55, 1.26], $p < 0.001$, $\beta = 0.42$ (0.08), 95% CI [0.26, 0.56], $p < 0.05$), whereas Negative Disengaged Emotional Accuracy negatively predicted Stress ($B = -0.45$ (0.17), 95% CI [−0.78, −0.10], $p < 0.05$, $\beta = -0.19$ (0.07), 95% CI [−0.33, −0.04], $p < 0.05$). Negative Engaged Emotional Similarity also positively predicted Stress ($B = 0.41$ (0.15), 95% CI [0.11, 0.73], $p < 0.05$, $\beta = 0.42$ (0.08), 95% CI [−0.01, 0.33], $p < 0.05$).

We also tested the direct-only (non-mediation) effects of Emotional Similarity and Emotional Accuracy on Stress followed by the indirect-only mediation effects of Emotional Similarity and Emotional Accuracy through Belonging in the SEM context. Mirroring results above, there was a significant positive direct effect of Negative Engaged Emotional Similarity on Stress ($B = 0.41$ (0.15), 95% CI [0.11, 0.73], $p < 0.05$, $\beta = 0.18$ (0.07), 95% CI [0.04, 0.38], $p < 0.05$). This was also true for the direct effect of Negative Disengaged Emotional Similarity on Stress ($B = 0.95$ (0.17), 95% CI [0.55, 1.26], $p < 0.05$, $\beta = 0.42$ (0.07), 95% CI [0.26, 0.56], $p < 0.05$). However, there was a significant negative direct effect of Negative Disengaged Emotional Accuracy on Stress ($B = -0.45$ (0.18), 95% CI [−0.78, −0.10], $p < 0.05$, $\beta = -0.19$ (0.07), 95% CI [−0.33, −0.04], $p < 0.05$).

Significant indirect effects of Negative Engaged Emotional Similarity on Stress through Belonging were observed ($B = 0.11$ (0.05), 95% CI [0.02, 0.24], $p < 0.05$, $\beta = 0.05$ (0.02), 95% CI [0.01, 0.11], $p < 0.05$). Belonging fully mediates the relationship between Negative Engaged Emotional Similarity and Stress, such that higher Emotional Similarity predicts less Belonging which in turn predicts higher Stress. Significant indirect effects of Negative Engaged Emotional Accuracy on Stress through Belonging were also found ($B = -0.11$ (0.05), 95% CI [−0.22, −0.01], $p < 0.05$, $\beta = -0.05$ (0.02), 95% CI [−0.11, −0.01], $p < 0.05$) such that higher Accuracy predicts higher Belonging which in turn predicts lower Stress.

To summarize, Emotional Similarity had negative implications on Stress both directly and through the mediating role of Belonging. Conversely, Emotional Accuracy had positive implications on Stress directly and through the mediating role of Belonging. With the exception of Belonging (where Belonging predicted Stress only for continuing generation students), no differences were observed across generational status.

Discussion

The current research was designed to test three main hypotheses. First, we hypothesized that first-generation students would show less similar patterns of emotions to the "majority culture" students (continuing-generation upper-division students) compared to continuing-generation students. Secondly, we hypothesized that compared to

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TABLE 2 Mean emotions across different types of emotional situations.

	Emotion scale																			
	Positive engaged						Positive disengaged						Negative engaged						Negative disengaged			
	First gen		Cont gen		Upper-level students		First gen		Cont gen		Upper-level students		First gen		Cont gen		Upper-level students		First gen		Cont gen		Upper-level students	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
NE	2.70**	1.51	2.22	1.04	2.29	1.25	2.25	1.11	2.05	0.96	2.09	1.01	**3.29**	**1.30**	**3.22**	**1.08**	**3.38**	**1.26**	3.35	1.28	3.36	1.20	3.68	1.33
NE-P	2.62**	1.40	2.06	1.13	–	–	2.22*	1.10	1.94	0.91	–	–	**3.18**	**1.23**	**3.21**	**1.17**	–	–	3.27	1.26	3.41	1.31	–	–
ND	2.11*	1.29	1.77	0.91	2.06	1.10	1.83	0.94	1.76	0.83	1.86	0.95	3.28	1.38	3.13	1.19	3.70	1.34	**4.10***	**1.37**	**3.74**	**1.30**	**3.99**	**1.35**
ND-P	2.01*	1.29	1.65	0.87	–	–	1.83	1.00	1.64	0.74	–	–	3.29	1.42	3.05	1.15	–	–	**4.02***	**1.41**	**3.66**	**1.30**	–	–

Means of emotional experiences on a scale from 1 (not at all) to 7 (a great deal). Bold emotion scales match the prompt. Superscripts signal significant differences between first- and continuing-generation. NE, Negative Engaged Self-Reported; NE-P, Negative Engaged Majority Perceived; ND, Negative Disengaged Self-Reported; ND-P, Negative Disengaged Majority Perceived. *$p < 0.05$; **$p < 0.01$.

first-generation students, continuing-generation students would be better at predicting the emotional responses of majority continuing-generation upper-division students. Lastly, we hypothesized that a lack of emotional similarity and a lack of emotional accuracy would independently have negative implications for a sense of belonging and stress.

Our hypotheses were partially supported. Contrary to the first hypothesis, we found no significant differences between first-generation and continuing-generation students in emotional similarity. That is, although there were some mean-level differences in specific emotional experiences between the two groups (e.g., first-generation students' overall experience and perceive more positive engaged emotions than continuing-generation students), their emotional profiles did not differ. Our second hypothesis was partially supported; we found a significant difference between the two groups in emotional accuracy in the negative engaged prompt. As expected, continuing-generation lower-division students scored higher in emotional accuracy compared to first-generation students. At least for the engaged prompt, continuing-generation lower-division students were better able to infer the emotional responses of majority-culture students whereas first-generation students seemed to have a more difficult time inferring the emotions of majority-culture students. This finding makes sense given that the two groups of students were most likely socialized in quite different socioeconomic (SES) cultures.

The surprising finding was that emotional similarity, independent of accuracy, predicted negative student outcomes. This result counters existing findings in the literature on the psychological benefits of emotional similarity, especially when we looked at its role independent from that of emotional accuracy. This unexpected result may be explained by the fact that the prompts focused solely on negative situations, whereas past studies using the EPQ included both positive and negative prompts. Given that the typical emotional profiles are characterized by relatively high negative emotions and low positive emotions, those who are emotionally *dis*similar should show emotional profiles with relatively high positive emotions and/or relatively low negative emotions. Thus, it is possible that students who experience not only negative emotions, but also some positive emotions that offset negative consequences of experiencing predominantly negative emotions. Given that emotional similarity, predicting worse outcomes, including more stress, makes sense.

In contrast, emotional accuracy predicted positive outcomes, supporting the hypothesis. Broadly speaking, increased emotional accuracy was both directly and indirectly associated with decreased stress for first- and continuing-generation students. Emotional accuracy is essentially cognitive empathy/perspective taking, resulting in accuracy without necessarily experiencing the emotions of others (Verhofstadt et al., 2008). This distinction may help explain the divergent patterns of results in the current study. Most previous research in cultural psychology has focused exclusively on emotional similarity, but the current study suggests that an important future direction for the field is to further investigate the role of emotional accuracy, including with samples from different national cultures.

When both factors are considered simultaneously, emotional accuracy provides stronger psychological benefits for students than emotional similarity; however, similarity and accuracy are related factors, and similarity would increase accuracy, as experiencing the same emotions as another individual negates the need for perspective taking. Alternatively, accuracy could increase similarity, as emotional accuracy reflects a form of perspective taking. It is therefore not

TABLE 3 Correlations, split by college generational status.

	NES	NEA	NDS	NDA	Social belonging	Stress
NES	1	0.70**	0.35**	0.26**	−0.14	0.35**
NEA	0.45**	1	0.30**	0.40**	0.04	0.20*
NDS	0.22*	0.15	1	0.75**	−0.16	0.40**
NDA	0.01	0.21*	0.73**	1	−0.05	0.26**
Social belonging	−0.10	0.06	−0.06	0.03	1	−0.38**
Stress	0.25**	−0.02	0.28**	0.01	−0.18	1

NES, Negative Engaged Emotional Similarity; NDS, Negative Disengaged Emotional Similarity, NEA – Negative Engaged Emotional Accuracy, NDA – Negative Disengaged Emotional Accuracy.
Numbers below diagonal are first-gen. students, above diagonal are continuing-gen. students. *$p < 0.05$; **$p < 0.01$.

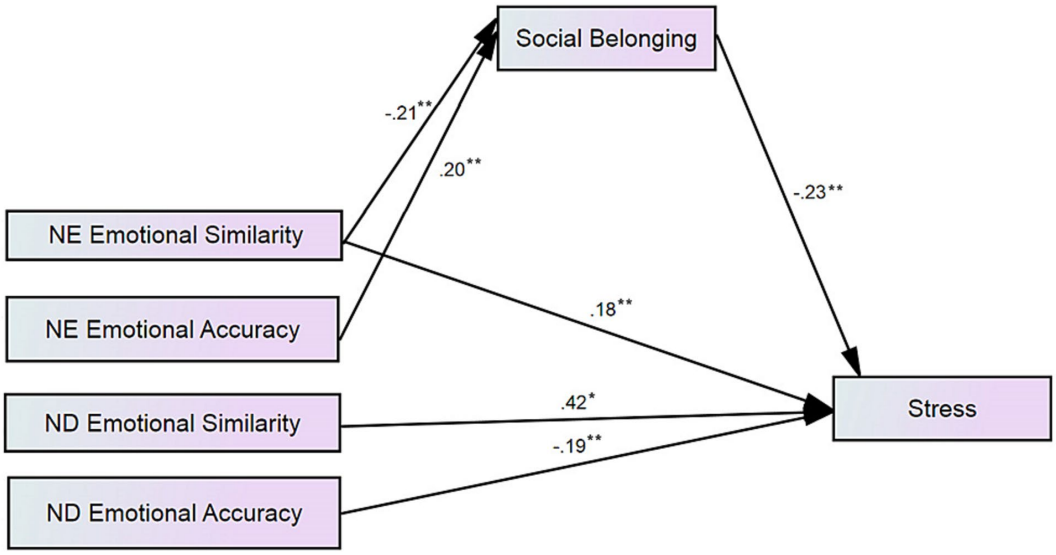

FIGURE 1
Results of the structural equation model (SEM) used to test the mediation of belonging on stress for both types of students. *$p < 0.01$, **$p < 0.001$.

surprising that those two factors are fairly strongly correlated with each other, although there are meaningful differences between them, one being that experiencing similar emotions as others may or may not involve perspective taking, whereas accurately assessing others' emotions requires accurately inferring others' feelings (Ickes, 1993). Given this distinction, it is possible that emotional similarity, in our analysis, may be capturing emotional similarity without perspective taking, and this may be yet another reason for the lack of positive outcomes related to similarity.

Like all research, the current study is not without limitations. First, the study is cross-sectional, so a causal link between emotional similarity/accuracy and college adjustment outcomes cannot be established. As the present study provided the initial evidence of the relationships, future research should use different methodology, such as a longitudinal study or an experiment (e.g., increasing emotional accuracy by providing factual information on emotions of others) to understand causality of the association. Second, reflecting the gender imbalance present in the psychology major, our sample is made up of a larger proportion of females compared to males. While this issue points to the need to test the generalizability of the findings, at least, the gender breakdown was comparable across first- and continuing-generation groups, and thus, unlikely to be a confound. More importantly, the ethnic breakdown of each group differed a great deal, reflecting the societal reality in which underrepresented ethnic minorities have lower SES status. It is possible that some of the generation differences found are due to ethnic cultural difference, in addition to SES difference. At the same time, it is important to note that the role of emotional similarity/accuracy in predicting college adjustment outcomes did not differ between first- and continuing generation students.

Conclusion

There are several possible conclusions that can be drawn from this research. A possible significant conclusion is that accuracy is lower for first-generation students, and this may have implications for outcomes in college. The upside is that students can be taught a better understanding of majority-culture emotions, thereby increasing their accuracy (Ashkanasy and Dasborough, 2003; Pool and Qualter, 2012), thus providing space for the development of a potentially useful intervention that could supplement other interventions designed to help first-generation students and other minority student groups to

succeed in college. This research makes an important contribution to the field, because, as far as we know, it is one of the first studies to show that socioeconomic cultures, like national cultures, shape individuals' emotional lives, thereby contributing to the newer frontiers of cultural psychology which tackles other forms of culture in addition to national cultures. More generally, the findings underscore the value in considering emotion processes in advancing the understanding of why and how individuals form social relationships and identities.

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: https://osf.io/jvqpw/?view_only=fc759f8e2e274416ae70afefef61220d.

Ethics statement

The studies involving humans were approved by UCSB Institutional Review Board. 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

SL: Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Data curation, Formal analysis, Project administration. HK: Conceptualization, Methodology, Writing – review & editing, Funding acquisition, Supervision.

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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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Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1355526/full#supplementary-material

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Impact of a culturally adapted digital literacy intervention on older people and its relationship with health literacy, quality of life, and well-being

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Introduction: Older people are the group with the greatest digital gap, so their digital literacy is important to improve the conditions in which they age.

Methods: A study was conducted with pre- and post-evaluation of a digital literacy (DL) intervention in people aged 60 years and over. A total of 56 participants (experimental group $N = 32$ and control group $N = 24$) were recruited for convenience in community centers. The intervention was adapted to the needs of the participants, there were five face-to-face sessions and remote reinforcement for three months, carried out by trained university students for five months. Sociodemographic variables such as self-perception of socioeconomic level and education, among others, were evaluated. The impact was assessed using the digital literacy scale (MDPQ16), indicators of frequency and types of internet and mobile phone use, health literacy (SAHLSA and NSV), quality of life (SF-12), hedonic well-being (Diener's SWLS and Cummins' PWI) and perceived social support using the Zimet scale.

Results: The intervention had a significant impact with an effect size of $r = 0.27$ on digital literacy, separate t-test comparisons revealed a markedly significant change for digital literacy in the experimental group, before and after the pre-post t-test$_{(31)} = 3.56$, $p = 0.001$, but not in the control group, $t_{(23)} = 0.082$, $p = 0.93$. No direct impact on health literacy, health-related quality of life, and hedonic well-being was identified. We examined the indirect impact of change in digital literacy and found that it correlated with improvements in well-being and social support, as well as quality of life. Individuals with significant changes were detected and compared with those who did not change.

Discussion: Evaluation that contributes by identifying elements for improvement in future interventions and discusses the importance of culturally adapting continuing education in older people.

KEYWORDS

digital literacy, health literacy, quality of life, older people, well-being, culturally tailored intervention

Introduction

Population aging is an accelerated global reality (United Nations Organization, 2023, p. IV). This trend is pronounced in Latin America and the Caribbean, including Chile (National Institute of Statistics of Chile, 2023; Pan American Health Organization and Economic Commission for Latin America and the Caribbean, 2023, pp. 7, 81). At the same time, the digitalization of aging societies has generated a digital divide between older people (OP) and other age groups, a phenomenon that has been studied in various studies (Roque and Boot, 2016; Cardozo et al., 2017; Pontificia Universidad Católica de Chile y Caja de Compensación Los Andes, 2019; Sunkel and Ullmann, 2019; Ngiam et al., 2022).

Specifically in Chile, this gap is manifested in the fact that only 32% of OP use and have access to technologies, leaving two-thirds of this group in a situation of digital exclusion (Subsecretaría de Previsión Social del Gobierno de Chile, 2018). This problem is aggravated by economic and cultural factors, mainly affecting those in lower socioeconomic levels (Friemel, 2016; Mizrachi et al., 2020; World Bank, 2021). Consequently, a social fracture is created that increases inequality and the risk of social exclusion (Hasan and Linger, 2016; Cardozo et al., 2017).

In Chile, OP access to and use of technology, including the internet, computers, and mobile phones, is positively associated with educational level and inversely with age, with the mobile phone being the device most used by this group (Subsecretaría de Previsión Social del Gobierno de Chile, 2018). Against this backdrop, the development of Information and Communication Technologies (ICTs) is presented as an opportunity to increase access to information and social interaction, promoting new forms of social relations, such as social networks, which facilitate the social integration of the elderly (Cardozo et al., 2017; Castilla et al., 2018). However, these advances also bring with them challenges, such as the high speed of technological innovation and smartphone applications that are not always accessible (ChePa et al., 2023) and understandable to OP (Castilla et al., 2018).

Faced with these challenges, Chile has developed interest in digital transformation strategies, such as "Chile Digital 2035," which emphasizes the digital literacy (DL) of OP. This strategy focuses on identifying OP as one of the priority groups and seeks to facilitate their adaptation to new technologies, especially in the field of health, thus contributing to their health and psychosocial empowerment (Paramio et al., 2015; Economic Commission for Latin America and the Caribbean, Republic of Chile-Senado, 2023).

Digital literacy interventions in the elderly

The development of digital literacy programs for OP is based on a concept that has evolved since the United Nations Educational Scientific and Cultural Organization (UNESCO) is initial definition of "literacy" in 1958 (Organización de las Naciones Unidas para la Educación, Ciencia y Cultura, 1958), now integrating aspects of health (Galán and Zamora, 2015) and digital skills (Organización de las Naciones Unidas para la Educación, Ciencia y Cultura, 2019). Digital literacy is defined as the set of skills for operating digital devices and essential skills in Information and Communication Technologies (Friemel, 2016), and the skills and knowledge necessary to function in the information society (Martí et al., 2008).

Most studies on DL in OP come from developed countries, showing a preponderance of female participants, ranging in age from 55 to over 70 years, and the number of participants ranging from 39 to more than 100 (Ferreira et al., 2014; Chiu et al., 2016; Hasan and Linger, 2016; Castilla et al., 2018; Jimena, 2020; Lee et al., 2022; Ngiam et al., 2022; Sriwisathiyakun and Dhamanitayakul, 2022). Key components for program effectiveness are identified, such as theoretical underpinning, clear and measurable objectives, and preference for multifaceted interventions (Mirmohammadkhani et al., 2020; Pourrazavi et al., 2020; Stormacq et al., 2020). In addition, the importance of prior assessment of digital competencies and the adaptation of programs to the educational and cultural needs of PMs is emphasized (Paramio et al., 2015; Roque and Boot, 2016; Ghorbanian and Nikou, 2021; Haase et al., 2021; Shi et al., 2021; Kanakaris and Pavlis, 2022).

DL sessions range from 6 to 8, with durations of 1 to 2 h, and are held in collective and individual formats. Personalized, volunteer-developed interventions that combine synchronous and asynchronous formats show better results, allowing PMs to progress at their own pace (Ferreira et al., 2014; Jimena, 2020; Ghorbanian and Nikou, 2021; Arellano-Rojas et al., 2022; Ghorbanian et al., 2022; Kanakaris and Pavlis, 2022; Ngiam et al., 2022). Contents include use of social networks, personal development, self-sufficiency, and skills for searching for information and collaborative work online (Hasan and Linger, 2016; Castilla et al., 2018; Jimena, 2020). This data makes it possible to identify what is most used, however, there is not enough evidence to determine which is the most effective formula.

Effects of digital literacy interventions on older persons

Increasing digital literacy levels

These DL programs focused on OP make it possible to reduce the digital divide (Valenzuela et al., 2022) as they increase their technological knowledge (Ma et al., 2020), significantly improve digital literacy scores in the intervention group compared to controls (Ngiam et al., 2022), contributing to the digital divide (Valenzuela et al., 2022). with the development of skills and use of devices such as mobile phones (Lee et al., 2022), digital tools for the detection of fake news, and quality information (Moore and Hancock, 2022).

Increases in health literacy levels

According to the World Health Organization, health literacy (HL) refers to the cognitive and social skills that motivate and enable people to seek, understand, and use health information to maintain good well-being (World Health Organization, 1998), a construct that includes not only the ability to read health information, but also, understanding concepts, interpreting medical instructions, and the ability to make informed health care decisions. Studies in this area indicate that OP have a low level of SA (Mirmohammadkhani et al., 2020; Stormacq et al., 2020), particularly in socioeconomically disadvantaged groups (Stormacq et al., 2020).

In addition, in the current context of technologization of social and health services, OP have lower levels of literacy, health literacy and digital literacy (Xie, 2011; Handtke et al., 2019; Ghorbanian and

Nikou, 2021) requiring these skills to understand the information available on digital platforms, adequately solve a health problem (Norman and Skinner, 2006; Stormacq et al., 2020), and access quality services (Ghorbanian and Nikou, 2021; Shi et al., 2021; Sobral and Sobral, 2021; Ghorbanian et al., 2022; Lee and Tak, 2022; Sriwisathiyakun and Dhamanitayakul, 2022).

This deficit is associated with sociodemographic variables, cultural barriers such as lack of familiarity and fear of using ICTs (Xie, 2011; Handtke et al., 2019; Ghorbanian and Nikou, 2021), frequency of internet use and the possibility of learning how to use it to find health resources (Shi et al., 2021; Kanakaris and Pavlis, 2022). Thus, these evidence-reported factors would be classified as individual, interpersonal, and community, however, these results remain inconsistent (Shi et al., 2021), demonstrating a gap in the body of scientific knowledge in this area.

In this regard, experience of interventions reports mixed results, those that promoted the continuous use of digital devices demonstrated a decrease in fear of their use, an improvement in interest in and ability to handle ICTs (Castilla et al., 2018) and an increase in the use of digital health tools and services (Ghorbanian et al., 2022). Most showed effectiveness with respect to the impact on the ability to use health information, although on the competence to understand health information, they were shown to be ineffective (Stormacq et al., 2020). The results also suggest that health empowerment of older people by making them digitally literate is possible (Ghorbanian and Nikou, 2021; Ghorbanian et al., 2022) through different intervention methods (Ghorbanian and Nikou, 2021).

Effects of DA programs on OP quality of life

The construct quality of life is increasingly being used in assessments within the health sector as a marker of well-being (Urzúa, 2010; Martínez and Gallardo, 2020). In addition, there is a growing interest in quantifying health-associated quality of life, which is defined as "the subjective assessment of the domains of your life that are perceived as important during a particular time" (Burke, 2001).

These programs can improve the quality of life of participating seniors by enabling them to access online services, such as shopping, virtual healthcare, government paperwork, and banking services (Mirmohammadkhani et al., 2020; Aggar et al., 2023), which can be significantly important depending on the mobility and self-esteem difficulties they suffer. Otherwise, it also improves physical health (Ghorbanian and Nikou, 2021; Shi et al., 2021; Sobral and Sobral, 2021; Sriwisathiyakun and Dhamanitayakul, 2022), favors active aging, finding that highly digital seniors have a better healthy life (Mizrachi et al., 2020), along with decreasing the negative effects of aging on health such as memory decline (Chan et al., 2016; ChePa et al., 2023) for example. In addition, greater use of the internet is associated with a better quality of life (Boz and Karatas, 2015). However, experiences of DL have also been reported in which there is no evidence of effects on the perception of health and quality of life (Lee et al., 2022), so there is no consensus on this.

Effects of DA programs on perceived well-being

Considering the definition of subjective well-being as people's evaluations of their own life, which can be judgments, such as life satisfaction (cognitive), feeling-based evaluations, including moods and emotions (emotional) (Pavot and Diener, 1993; Diener and Suh, 1997); regarding these components of psychosocial health of older people, digital skills deficits and poor understanding of health messages are related to adverse effects on well-being (Stormacq et al., 2020). Generally, OP who master new technologies have a good level of psychological well-being due to the feeling generated by being able to achieve it, which helps to improve their position in the eyes of their family and even in society (Hasan and Linger, 2016; Cardozo et al., 2017; Shi et al., 2021; Sobral and Sobral, 2021; Sriwisathiyakun and Dhamanitayakul, 2022; Aggar et al., 2023), in contrast, the secondary outcomes of Ngiam et al. (2022) included improvements, however, they were not statistically significant in the personal well-being score (Ngiam et al., 2022). In turn, Hasan and Linger (2016) report that the increase in digital skills increases social well-being in the dimensions of social participation and involvement, occupation, control over daily life and dignity. Likewise, greater use of the internet would be a predictor of higher levels of well-being and satisfaction with life (Heo et al., 2015).

Effects of DA programs on perceived social support

Under the conceptual framework that defines social support as "the set of expressive or instrumental provisions – perceived or received – provided by the community, social networks and trusted individuals, provisions that can occur in both every day and crisis situations (Lin, 1986), it has been stated in the evidence that the development of technological skills and competences in this age group favors their social interaction (Shi et al., 2021; Sobral and Sobral, 2021; Sriwisathiyakun and Dhamanitayakul, 2022), helping to address social isolation and loneliness in PMs by applying various technologies such as ICTs, video games, robotics, personal reminder information and social management system, asynchronous pairs, chat support and telecare among others (Khosravi et al., 2016).

The development of digital interventions has been shown to have a positive impact on the perception of social support, according to a study carried out in Chile (2004), which attributed the positive results to the ability of older adults to become visible and receive recognition in their social environment thanks to the digital skills acquired (Cerda and Llaña, 2005). Likewise, other research currently confirms that the use of technology enhances social connection (Ma et al., 2020), since the rapid digitalization and technological revolution allows the integration of OP into society, since technology facilitates interaction (Pan American Health Organization, 2023) and the maintenance of relationships significant social and emotional factors, and social support (Van Volkom et al., 2013). Likewise, greater use of the internet would be a predictor of higher levels of social support (Heo et al., 2015) and is also associated with an unhealthy lifestyle (La Duplaga, 2021).

Notwithstanding what has been analyzed, the evidence described allows us to state that some of the studies of DL interventions were

found to show enormous effect sizes of $d = 2$ or $r = 0.60$ (De Main et al., 2022), which could be defined as overestimates.

The present study describes an intergenerational digital literacy intervention that was developed and culturally adapted for OP in a territorial sector of the commune of Concepción-Chile and evaluates its effectiveness in health literacy (HL), quality of life (QoL) and well-being. As it is quasi-experimental research with pre- and post-intervention evaluations, it is a contribution because it allows us to identify improvements and increase the effects in subsequent experiences. In this way, it contributes with applied and updated evidence that guides the design of integrative systems capable of responding socially and technologically to demographic changes and the needs of OP.

The hypotheses put forward were:

> *H1*: The intervention will improve the level of digital literacy, mobile phone and internet use in the group of participating OP compared to control.
>
> *H2*: The intervention will improve the level of health literacy in the group of participating PMs compared to control.
>
> *H3*: The intervention will improve QoL in the participating OP group compared to control.
>
> *H4*: The intervention will improve well-being and social support in the participating OP group compared to control.

Methods

Design

A quasi-experimental non-equivalent control group study was conducted, with pre and post evaluation of a Digital Literacy intervention in the elderly. A culturally adapted multicomponent program was implemented, carried out in a non-formal education context in the community during the year 2022. After establishing the baseline, three months after the intervention, its effects on the increase in the use of technologies, the level of digital literacy and in health, health related QoL, social support and subjective well-being were evaluated.

Participants

Elderly people from the city of. Concepción (Chile) participated in the study. The inclusion criteria were to be 60 years of age or older and to be members of 12 organizations in the urban sector that participated in community workshops. The exclusion criteria were to be inactive members of the community organizations or to have sensory difficulties that prevented them from answering the survey and participating in the intervention.

The final sample consisted of 56 older adults. Eighty-four percent were women, with an average age of 73 years. The greater participation of women responded to the fact that in this type of organization female participation is in the majority. On the other hand, 43.6% reported a basic or lower level of schooling and 67.6% rated their socioeconomic situation as fair or poor (see Table 1).

Formation of the groups

Two groups were formed with non-random assignment of subjects (experimental group $n = 32$ and control *group* $n = 24$). Participants were recruited from their own neighborhood center's. Older people waiting to participate in the program made up the control group. They continued to develop community activities such as handicraft and dance workshops.

Statistical power of the sample

With respect to sampling and statistical power, a review of the evidence identified that the effect sizes of some similar interventions are very high; more than one standard deviation or $r = 0.50$ or more (Xie, 2011; Kim and Xie, 2017). However, other estimates of the effect of digital literacy give effect sizes of $r = 0.18$ (Ghorbanian et al., 2022).

For this study, it was estimated that with an effect size similar to that of the training interventions ($r = 0.20$ or 0.21), with a statistical power of $\alpha = 0.05$ and $\beta = 0.80$, 138 subjects were needed. However, in the present study only an $n = 56$ was achieved, which for an effect size of $r = 0.21$ indicates a statistical power of 0.41, below 0.80 which is

TABLE 1 Sociodemographic characteristics of the participants.

		M	*SD*
Age		73.0	6.3
		N	*%*
Sex			
	Woman	47	83.9
	Man	9	16.1
Education			
	Illiterate	1	1.8
	Basic	23	41.8
	Media	17	30.9
	Technique	6	10.9
	Superior	8	14.5
Socio-economic situation			
	Bad	7	12.5
	Regular	32	57.1
	Good	15	26.8
	Very good	2	3.6
Group			
	Experimental	32	57.0
	Control	24	43.0

desirable. To address this problem, which is common in research of this type, analyses were supplemented by the application of a constructed non-causal baseline design, i.e., comparing post-test treatment data with mass sample scales; and the use of reliable change scores (Páez et al., 1993).

Variables and measuring instruments

In this study, predicted effects of participation in digital literacy formation were assessed: (a) digital literacy; (b) health literacy; (c) quality of life related to health and health behavior; (d) well-being; and (e) social support.

Digital Literacy measured with the Mobile Device Proficiency Questionnaire (MDPQ-16) (Roque and Boot, 2016). It is made up of 16 items that measure 8 dimensions: mobile device basics, communication, data and file storage, internet, calendar, entertainment, privacy, problem solving, and software management. The answer is on a 5-point Likert scale (1 = I've never done it to 5 = very easy). The Cronbach's alpha of the original version is 0.99. In this study, the reliability of the scale in the pre-test was 0.91 and in the post-test it was 0.90. It also has good test–retest reliability, obtained by correlating the responses of the pre-test with the post-test, $r_{(55)} = 0.697$, $p \leq 0.001$.

Availability and use of technological devices and the internet access with a series of self-perception and self-assessment questions along with a dichotomous 10-item scale on mobile phone use (pre-test: Cronbach's alpha (α) = 0.75; post-test: $\alpha = 0.76$; *test–retest* = 0.78, $p \leq 0.001$); and another *15-item* questionnaire on internet use (pre-test: $\alpha = 0.86$; post-test: $\alpha = 0.88$; test–retest = 0.82, $p \leq 0.001$). These scales were created by the team of researchers based on the 2018 National Quality of Life Survey of Older Adults in Chile (Subsecretaría de Previsión Social del Gobierno de Chile, 2018).

Health literacy was measured with the 6-item Newest vital sign or NSV-6 (Weiss et al., 2005) and the Short Assessment of Health Literacy for Spanish-speaking Adults or SAHLSA-50 (Monsalves et al., 2016). The NVS-6 measures the level of comprehension of instructions and the ability to perform numerical calculations on information on a nutrition label. It is used as an indicator of functional health literacy. In the validation for Chile, the reliability coefficient KR-20 was 0,7,478 (González et al., 2023). Cronbach's alphas in this study were 0.57 in the pre-test and post-test. The test–retest index was 0.28, $p = 0.048$.

The SAHLSA-50 consists of 50 items and assesses the ability to read and understand the common medical terms of a Spanish-speaking adult, in the validation for Chile, a Cronbach's alpha of 0.92 was obtained (Lee et al., 2006). For this study, Cronbach's alphas were 0.89 in the pre-test and 0.90 in the post-test. The test–retest index was $r = 0.824$, $p = 0.0001$.

Health-related quality of life measured with SF-12 with good reliability reported by previous studies with $\alpha = 0.90$ (Martínez and Gallardo, 2020) and $\alpha = 0.74$ (Vera et al., 2014). Cronbach's alphas in this study were 0.61 in the pre-test and 0.85 in the post-test. The test–retest index was 0.24, $p = 0.096$.

Subjective well-being measured with the SWLS-5 scale, which evaluates the dimension of general life satisfaction with 5 items. The Cronbach's alpha reported by its authors is 0.87 (Diener et al., 1985) and another subsequent study 0.856 (Ramírez and Lee, 2012) and 0.82 (Vera et al., 2012). In this study, the internal consistency indices were satisfactory (pre-test: $\alpha = 0.79$; post-test: $\alpha = 0.78$), although test–retest reliability was $r_{(55)} = 0.222$, $p = 0.10$.

Personal well-being index or PWI-8 was also used, an 8-item satisfaction scale with life domains (Cummins et al., 2003), which obtained satisfactory reliability in this study (pre-test: $\alpha = 0.90$; post-test: $\alpha = 0.84$), as well as a good retest test of $r_{(55)} = 0.392$, $p = 0.003$.

Social support measured with the 12-item Multidimensional Social Support Scale (Zimet et al., 1988) with a Cronbach's alpha of 0.88 and subsequent study of 0.86 (Arechabala and Miranda, 2002). Reliability in this study was also satisfactory (pre-test: α = 0.87; post-test: α = 0.85), as was a good retest of $r_{(55)} = 0.53$, $p = 0.0001$.

Sociocultural measures a measure of self-perceived socioeconomic status (Bad, Fair, Good, Very Good), and a measure of schooling (Illiterate, Basic, Medium, Technical, Higher) were used as indicators. Information on sex (male, female) and age was also obtained.

Procedure

To access the intervention subjects, through the municipal delegation of the city of Concepción, the leaders of different community organizations of the elderly were contacted, who facilitated the contact with the potential participants.

Before carrying out the intervention, once informed consent was obtained, each subject was interviewed to assess their needs and expectations regarding Digital Literacy (DL), the objective of which was to incorporate them into the design and implementation of each of the sessions contemplated in the protocol. In addition, questionnaires were applied to establish the baseline for the different variables of interest. Then, three months after the end of the intervention, a second interview was carried out to apply the questionnaires and thus obtain the post-measurement of the variables.

The implementation of the intervention was carried out by university students, digital natives, who were duly trained as literacy teachers. Throughout the intervention process, two nurses who are experts in community work and aging were supervised.

The implementation of the intervention followed a protocolized structure in planned activities based on the achievement of the objectives set according to the needs and expectations expressed by the participating, most of them focused on communication and leisure activities. To safeguard cultural sensitivity, awareness and respect for the aging process were encouraged, as well as for the values and beliefs of OP.

The sessions were held at the community headquarters of each organization.

At the end of the year, a ceremony was held to award the certification that accredited participation in the program.

Intervention

The intervention consisted of a digital literacy program in a non-formal community educational setting. This was tailored to be culturally competent (Handtke et al., 2019). Furthermore, it was customized based on individual needs, preferences, and experiences, combining face-to-face training, and online follow-up. Furthermore,

the design was based on Henderson's 14 needs theory (Henderson, 1966), the solidarity and intergenerational transfer model (Sánchez et al., 2014; Jimena, 2020) and the older adult education or gerontology approach (Fernández, 1999).

The program consisted of a maximum of 5 practical sessions of 1 h each. In these sessions, the transfer of skills in the use of cell phones, tablets and personal computers was encouraged, according to the needs and interest expressed by the users. Two components were considered, one related to information (learning about technological communication devices), and the other focused on skills (safety, adaptability, use of applications and search for relevant information). The contents covered in each session are presented in Table 2.

Statistical analysis

A descriptive analysis of the sociodemographic and digital literacy variables of the sample was carried out, calculating means with standard deviations (SD), frequencies and percentages. The analysis of the internal consistency of the items of the scales used was performed with Cronbach's alpha (Cronbach, 1951) and to evaluate their stability the Pearson's correlation re-test was performed.

The study of the normality of the distributions of the variables was carried out with the Shapiro Wilk test and the homoscedasticity of the groups with the Levene test.

On the other hand, to evaluate the hypotheses, repeated measures analysis of variance was calculated before and after the test, comparing the experimental and control groups, to evaluate the effect of the treatment in interaction with time. Mean differences (*t*-test for paired samples) were analyzed to measure changes in group measures at baseline assessment and at 3 months post-intervention.

Using the calculation of the reliable rate of change (Jacobson and Truax, 1991), significant changes in the DL variable were examined individually, which allowed the identification of cases that worsened, remained the same, and improved significantly. Pearson's correlation was performed between the DL change scores (MDPQ-16) with changes in SA, health-related QoL, social support, life satisfaction, and personal well-being.

TABLE 2 Contents of the sessions.

Session	Contents
0	It consisted of a telephone call made by each monitor to the PMs with the purpose of introducing themselves and knowing their needs and expectations, along with the characteristics of their mobile device and internet connectivity, with the aim of designing the work protocol.
1	Basic handling and safety of the device. Planning reinforcement activities to be carried out at home with remote supervision.
2	Internet access, sites of interest, search for information of interest on the sites. Planning reinforcement activities to be carried out at home with remote supervision.
3	Management of digital applications of your interest, basic tools of the application. Planning reinforcement activities to be carried out at home with remote supervision.
4	Management of digital applications of your interest, advanced application tools. Planning reinforcement activities to be carried out at home with remote supervision.
5	Closing the process by answering questions about the contents worked on in the previous sessions or other new emerging needs. Planning reinforcement activities to be carried out at home with remote supervision.

Ethical considerations

The research project was approved by the Scientific Ethics Committee of the Catholic University of the Most Holy Conception - Chile with the registration ORD 11/2022 which is governed by the Helsinki Convention (World Medical Association, 2017). Informed consent was applied before each evaluation, and personal data was safeguarded to maintain confidentiality and anonymity. At the end of the study, the results were presented to the participants and the interested parties were given sessions to reinforce the learning.

Results

Relationship of sociodemographic variables with the mastery and use of technologies

First, the sociodemographic profile of the people who had a greater mastery and use of technologies in the pre-test was analyzed. A significant and negative correlation was found between DL ($r = -0.394$, $p = 0.003$), mobile phone use ($r = -0.472$, $p \leq 0.001$) and internet ($r = -0.623$, $p \leq 0.001$) and age. The differences according to the level of schooling are also significant (DL: $F_{(2.52)} = 8.784$, $p \leq 0.001$; mobile phone use: $F_{(2.52)} = 16.066$, $p \leq 0.001$; internet use: $F_{(2.52)} = 9.234$, $p \leq 0.001$). People with a low level of schooling (DL: $M = 25.50$, $SD = 13.36$; mobile phone use: $M = 3.46$, $SD = 2.38$; internet use: $M = 3.08$, $SD = 3.65$) have a lower DL handle and a lower use of technologies than people with medium education (DL: $M = 31.29$, $SD = 11.12$; mobile phone use: $M = 6.18$, $SD = 1.70$; internet use: $M = 6.29$, $SD = 3.55$) and above (AD: $M = 43.57$, $SD = 13.83$; mobile phone use: $M = 6.86$, $SD = 1.51$; internet use: $M = 7.86$, $SD = 3.16$). Likewise, people with high education have a higher mastery of DL than those with medium education. Self-perception of socio-economic level was not associated with the variables of AD and use of technologies.

Comparison of the experimental group and control in the pretest in the impact variables

To ensure the internal validity of the study, the similarity at baseline in the experimental and control group was analyzed. The ANOVA of the pretest showed that there were no significant

differences between the two groups in the mean scores of the pretest of all the variables analyzed (for the pretest means see Table 3).

Evaluation of the impact of the program by comparing the experimental group with the control group

To examine the hypothesis, a repeated measures ANOVA comparing experimental and control group for dependent variable (e.g., digital literacy and so on) was carried out.

The analysis of repeated measures shows a significant time effect on the DL variable ($F_{(1.54)}=4.701$, $p=0.035$, $\eta_p^2=0.080$ and observed power = 0.57). The effect of the interaction of comparisons of pretest scores with posttest DL scores is also significant ($F_{(1.55)}=4.119$, $p=0.047$, $\eta_p^2=0.071$ and unilateral observed power = 0.64). There has been a significant increase in knowledge and skills of digital technologies in the experimental group compared to the control group. In the rest of the variables, the effect of interaction is not significant (see Table 3).

Separate t-test comparisons revealed markedly significant change for DL dependent variable in the experimental group, *t*-test pre-post $t_{(31)}=3.56$, $p=0.001$, but not in the control group, $t_{(23)}=0.082$, $p=0.93$.

Regarding the first hypothesis, this was supported by the direct effect of the intervention increasing the level of DL in the participants, with an effect $r=0.27$ translating the eta square value into a correlation. On the other hand, making a biserial point correlation with pre and post changes (post score minus pre, the higher the score, the greater the improvement) with intervention (if = 1 and no = 0) the same similar effect of $r=0.27$ was found. However, hypotheses 2, 3 and 4 were disconfirmed by the results, as the experimental group showed no improvement in HL, QoL linked to health, well-being, and social support.

Evaluation of the program comparing post-test experimental group with a constructed non-causal baseline

To confirm the results obtained with a sample that meets the statistical power requirements of $N=138$, the procedure called "Constructed non-causal baseline" was applied, where the means and standard deviations obtained by the experimental group of this study in MDPQ-16 (DL) in the post-test ($N=32$; $M=36.3$; $SD=15.2$) with those of a large sample of older people in the United States (Roque and Boot, 2016) ($N=105$; $M=20$; $SD=11$). The experimental group t-test versus the U.S. study showed significant differences, $t_{(136)}=5.47$, $p=0.0001$, $d=1.47$ and $r=0.55$. Likewise, the differences between the experimental group and the Chilean study are marginally significant: $t_{(183)}=1.09$, $p=0.10$, $d=0.21$. In both cases, the experimental group shows more knowledge and skills in DL than the two baseline groups, although the effect sizes are large in the case of the comparison with the USA and small in the case of Chile.

Reliable change assessment

The reliable change score of Jacobson and Truax (1991) or CR index (Iraurgi, 2010) was applied. The RCI standardized change score is the absolute difference required for a change score to be considered reliable or greater than the change due to measurement error.

TABLE 3 Comparison between experimental group and pre-test and post-test control in digital literacy, health literacy, health-related quality of life, well-being, and social support.

	Experimental group				Control group						
	Pre-test		Post-test		Pre-test		Post-test		Interaction effect		
Variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	η_p^2
Digital literacy (DL)	29.9	13.8	36.3	15.2	34.5	1.2	34.8	14.9	4.119	0.047	0.071
Mobile phone use	4.8	2.7	5.1	2.5	5.6	2.1	5.8	2.4	0.009	0.925	0.000
Use of the internet	4.9	4.2	5.0	4.2	5.8	3.6	5.7	4.0	0.193	0.662	0.004
Health literacy (NSV)	1.6	1.3	2.1	1.5	1.8	1.4	2.3	1.3	0.001	0.980	0.000
Health literacy (SAHLSA)	42.3	6.3	43.3	6.5	44.3	5.3	44.6	5.3	0.375	0.543	0.008
Social support	35.5	8.9	37.1	9.6	33.6	9.6	35.5	7.1	0.010	0.920	0.000
Life satisfaction SWL 5	28.7	4.4	26.0	6.3	27.0	6.2	27.3	5.2	2.692	0.107	0.047
PWI8 personal wellness	60.0	12.2	61.0	11.2	62.1	13.0	63.5	10.1	0.011	0.915	0.000
SF-12 quality of life	30.0	4.5	31.7	8.4	27.6	5.2	30.5	6.4	0.230	0.634	0.005

The steps to calculate RCI are as follows:

1 Calculate standard measurement error SEM = s$\sqrt{1}$-rxx. s is DT from a reference group or large sample or global pretest DT
rxx fiabilidad Chronbach's alpha o test retest
2 Calculate SDIFF
SDIFF = $\sqrt{}$ 2*(SEM* SEM or SEM2)
3 Calculate individual change score Diff = xt2 –xt1.
The higher the score, the higher the positive variable.
4 Calculate RC = xt2 –xt1 /SDIFF
RC is equal z-score example MDPQ
5 If CR ≥1.96 (standard value) or greater than 5% distribution - no error should be measured only.
For PMDQ in this studio
1 variability s = 14.44 Chronbach's α = 0.91
SEM = 14.44 $\sqrt{1}$–0.91 = 0.3
14.44 × 0.3 = 4.33, i.e., SEM = 4.33
2 SDIFF = $\sqrt{}$ 2(4.33*4.33) = $\sqrt{}$ 2(18, 76)
SDIFF = $\sqrt{}$ 2(18.76) = $\sqrt{}$ 37.51 = 6.12
3 In a case you present: xt1 = 25 xt2 = 55 Diff = 30
4 30/6.12 = 4.9
5 4.9 > 1.96 = Reliable Gearbox.

Table 4 presents results of the reliable change indicate that 7 out of 32 people improved significantly in the treatment group, i.e., 21.9%. The rest improve, but do not exceed the cut-off point of 1.96. In the control group, 4 out of 24, or 16.7%, improved due to autonomous learning, 15 (62.5%) did not change, and 5 (20.8%) worsened significantly. These results make it possible to detect failed intervention groups to reinforce them, such as cases 28, 30, 33 and 38 that improve less than 0.50, as well as to interview those that improve to understand good practices, such as subjects 40, 46 and 48 (Table 4).

TABLE 4 Reliable change results for each case.

Group	Cases that improve	Cases that remain	Cases that get worse
Experimental ($n = 32$)	22, 29, 37, 40, 46, 47, 48.	23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 38, 39, 41, 42, 43, 44, 45, 49, 50, 51, 52, 53.	
Control ($n = 24$)	6, 7, 8, 14	1, 2, 3, 4, 5, 10, 11, 12, 13, 15, 16, 19, 21, 54, 55.	9, 17, 18, 20, 56
Total ($n = 56$)	11	40	5

Correlation between reliable change in digital literacy and change in the other variables in the experimental group

Reliable change scores in DL were correlated with change scores (post-test minus pre-test, the higher the score, the greater the improvement) in SA, QoL links to health.

The reliable change in CDMD trendily correlated with the improvement in health-related QoL assessed by SF-12, $r_{(29)} = 0.25$, $p = 0.09$, significantly with the improvement in well-being, assessed by SWL $r_{(30)} = 0.33$ $p = 0.039$, in the same sense but not significantly with the well-being assessed by the PWI $r_{(30)} = .21$, $p = 0.14$, and with a tendency to improve social support $r_{(25)} = 0.27$ $p = 0.10$.

Discussion

The relevance and development of digital literacy in the elderly make it a propitious scenario to analyze the impact of the intervention programs and methods used. Considering that technology education is largely seen as a crucial element for the effective use of technologies (Van Volkom et al., 2013; Heo et al., 2015; Cardozo et al., 2017; Castilla et al., 2018; Economic Commission for Latin America and the Caribbean, Republic of Chile-Senado, 2023). However, there is little research in developing countries that has focused on identifying the procedures implemented and their effects on the adoption of technology by older people. Therefore, this study investigated the effects of an intergenerational and culturally adapted literacy intervention on health and psychosocial variables, providing evidence that will facilitate future experiences.

The results of this study showed that the participants with the highest level of DL and greater use of technologies such as mobile phones and the internet are the youngest participants with a higher level of education, unlike what was found by Ferreira et al. where educational level was not a related factor (Ferreira et al., 2014).

The results showed a direct effect of the intervention on the improvement of the DL level with a significant effect size of $r = 0.27$, confirming hypothesis 1. Despite the fact that the power of the sample was low and the results of the effect size were smaller than those described in some studies (Roque and Boot, 2016), the efficacy of the intervention was confirmed – although the evaluation using paired samples from the sociocultural context showed a smaller effect, results similar to those presented by Valenzuela et al. (2022).

The results of reliable change showed that the percentage of people who improve is higher in the experimental group than in the control. Similarly, while among the OP who have received the intervention, none worsens, one-fifth of the control group worsens. Results that are consistent with the results of Ngiam et al. (2022), and Ma et al. (2020) which reflected the significant improvement in digital literacy in those who are intervened in contrast to controls, also coincides with the systematic review of Ghorbanian et al. (2022) and the Chilean study of Ferreira et al. (2014).

In relation to the results of mobile phone and internet use, no significant improvements are seen when comparing both groups, contrary to the conclusion of Lee et al. who show that this type of intervention improves the use of devices such as the mobile phone (Lee et al., 2022) and the internet (Heo et al., 2015). In addition, increasing internet use is a significant predictor of higher levels of social support and greater life satisfaction and psychological well-being among older adults (Heo et al., 2015), which could help explain the results presented below.

The direct effect is not observed in SA, well-being, and social support, suggesting that mere DL does not expand to improvements in these variables. This could have been affected by several exogenous variables, so it is important to remember that the control group was not passive, but active: the people who made it up did not participate in the DL but continued to attend a weekly workshop at the community center, so this social integration activity probably helped to maintain well-being and to perceive social support.

On the other hand, the association between the change scores in DL and the impact variables in the experimental group shows that there are indirect effects on personal well-being and social support. However, this

indirect effect did not occur in HL. Cases with substantial improvement in DL (high change score) were characterized by improvements in well-being and, to a lesser extent, in social support, coinciding with Ma et al. (2020) and in QoL. However, there was no direct effect of the intervention on QoL, with no significant difference between the two groups, which coincides with the results of Lee et al. (2022) and contrasts with the results of Boz and Karatas (2015).

Carrying out this type of constructive evaluation of interventions carried out in the field of AD in PM allows for improved treatment, as it facilitates the detection of reliable improvements and worsenings. By interviewing these cases, it is possible to consider the improvements to be made in future DL interventions in OP, inferring good and bad practices. Allowing us to conclude how to strengthen and improve the intervention and its effects on DL and HL.

Important limitations of the study are self-selection, the application of a quasi-experimental design, and the fact that some subjects did not perform all sessions. The selection bias occurred when the OP of the indicated organizations was invited to participate, and the interested parties formed the intervention group and the non-interested ones formed the control group, so in future studies it will be advisable to select with a control group that does not participate in any community organization. At the same time, the assignment of OP in both groups should be randomized to ensure greater internal validity. Also, the inclement weather associated with the winter limited the participation of some of the people in the intervention group, which prevented them from carrying out all the sessions and influenced the loss of cases. Evaluating the quantity and quality of sessions held is important.

It should be considered that the intervention did not contemplate specific content of physical HL, and this should be incorporated, since it was found that the intervention had no effect of any kind on HL. Positive mental health reinforcement and social integration activities should be integrated. OPs are more receptive to improving well-being than focusing on chronic disease management. Sutipan et al. (2017) reviewed eight articles in five different countries, including Spain ($n=2$), the United Kingdom ($n=1$), Hong Kong ($n=1$), Taiwan ($n=1$), and the Netherlands ($n=1$) on the impact of positive psychological interventions on the well-being of healthy OP, finding that most were effective. Two studies with an OP well-being intervention program, in China and Spain, evaluated the intervention and control group before and after, finding that interventions such as the thank-you visit, doing three good things, doing three fun things, and using distinctive strengths in a new way, increased well-being (Proyer et al., 2013; Sarrionandia et al., 2022). Therefore, interventions of this type of improvement of well-being would have an impact on HL or positive mental health.

Another fundamental element that should be considered to improve the sensitivity and effectiveness of the intervention is related to the variables included in the evaluation. These variables should integrate areas that are of interest and meaning to OP, and that allow them to reflect their experience in meeting needs and expectations when participating in this type of program (Kanakaris and Pavlis, 2022), such as self-efficacy in health and digital (Ghorbanian et al., 2022). Finally, implementing a program to reinforce the learning and skills achieved with the intervention will contribute to maintaining the effects on the participating OPs.

Conclusion

The effects of multicomponent, culturally adapted DL intervention in OP showed that it is possible to achieve changes with medium direct impact on DL, and indirect impact on mental health or well-being. No direct or indirect effects on HL were identified. These types of studies contribute to the reduction of the digital divide and are a contribution that supports future interventions that should integrate content related to the improvement of health and well-being, evaluate self-efficacy, and add learning maintenance sessions, as well as generate spaces for intergenerational solidarity exchange that promotes the social integration of the various age groups.

Finally, digital literacy programs for older people in countries such as Chile are essential to promote social inclusion, improve the conditions in which they age and empower them in an increasingly technologized context, and in this way, they contribute to reducing the digital divide and facilitating the way for older people to fully enjoy the opportunities offered by technological development.

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 Comité Científico de la Universidad Católica de la Santísima Concepción. 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

CC-D: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Visualization, Writing – original draft, Writing – review & editing. AV-C: Conceptualization, Data curation, Formal analysis, Investigation, Writing – review & editing. SU-L: Data curation, Formal analysis, Software, Writing – review & editing. JO: Conceptualization, Supervision, Writing – review & editing. VD-G: Conceptualization, Methodology, 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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Validation of the questionnaire to measure Chilean teachers' perception of school violence and coexistence management (VI+GEC)

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In this article, we present the development and validation of a psychometric scale that measures the teacher's perception in the Chilean school system with respect to elements of school violence and coexistence management. The novelty lies in the incorporation of factors that address violence from teachers to students, from students to teachers and coexistence management. A total of 1072 teachers from the Northern, Central, Southern and Metropolitan macro-zones of Chile participated, with ages between 22 and 76 years (M=44.56; SD=10.52) and from 1 to 54 years of work (M=17.14; SD=10.38). 76.3% identify with the female gender and 23.7% with the male gender. Of the teachers, 78.4% worked mainly in the classroom and the rest performed managerial or administrative functions outside the classroom in the school. The school violence and coexistence management questionnaire for teachers (VI+GEC) was used. The validity of the scale was demonstrated by means of Confirmatory Factor Analysis, convergent validity analysis and discriminant validity. Reliability was demonstrated by means of McDonald's omega coefficient in all the factors of the scale. An analysis with Structural Equation Modeling (SEM) found a mean, and statistically significant influence of the perception of coexistence management on the perception of school violence. The findings are discussed in terms of previous research on school violence and coexistence management.

KEYWORDS

school violence, management of school coexistence, teacher's, teacher's perception, confirmatory factor analysis, structural equation modeling

1 Introduction

During the COVID-19 pandemic confinement, studies in several countries reported an increase in domestic violence (Kim and Son, 2023), particularly that perpetrated against children (Cappa and Jijon, 2021), which enabled predicting an increase in violence among students when classes returned (CEPAL, 2020). In Chile, after the reopening of schools, the Ministry of Education (MINEDUC) reported an increase in complaints about problems of school coexistence, most of which were due to violence among students (MINEDUC, 2022). In the same context, students also reported statistically significant differences in school violence, with more violence in face-to-face classes than in the online modality during confinement (Muñoz-Troncoso et al., 2023b). School violence continues to be a problem that affects children and young people, however, research on the subject comes mainly from high-income countries (Kelmendi et al., 2023), which highlights the need to study the phenomenon in developing countries and countries with income disparities. Chile, which has experienced significant economic growth in recent decades but also high income inequality, is a good example, in that its economic growth has not translated into greater well-being for the population (Rojas and Charles-Leija, 2022).

School violence is a serious and complex phenomenon, in which students involved in school violence are affected in many different ways (Meldrum et al., 2022). Victims of school violence may suffer from anxiety, depression, and stress disorders (Gómez-Mármol et al., 2018). Affected students may also decrease in academic performance which is also linked to the risk of dropping out of school (Yang et al., 2021), given the fear and anxiety fostered by the perception of an unsafe school space (Berger, 2019). Both victims and aggressors may present difficulties in socialization, manifested in impulsive and aggressive behaviors (Espelage and Hong, 2019). This set of conditions may be related to the impact on students' self-esteem and self-confidence, as an impediment to sustaining healthy interpersonal bonds and good academic performance (Lee and Wong, 2022). While it is important to consider the consequences of school violence on the victims, it is also relevant to know the characteristics of the perpetrators. In this regard, one study found that aggressors and aggressor-victims presented relatively low levels of moral judgment and high levels of selfish cognitive distortions (Brugman et al., 2023).

To prevent, reduce, and mitigate the effects of school violence, great value is attributed to the management of coexistence, and there is evidence that intervention programs, as part of that management, can reduce the prevalence of violent events among students (Pina et al., 2021). Several elements are identified as central to the adequate management of coexistence. First and foremost, is the participation of the educational community, which is understood as a collaborative work that includes all the actors of a school, i.e., students, parents, teachers, non-teaching staff and management team (Redon et al., 2023). While recognizing the importance of learning from all actors in the school setting, we focus first on the teachers' perception of violence for several reasons. In addition to students, teachers are the most prevalent actors in almost all school settings. Although they are not as present as students in every aspect of the school grounds and they cannot be witness to every social interaction, they are trained to scan spaces in which students gather and to recognize multiple forms of violence. They also have a broader historical perspective and interact with many students each day. Perhaps most importantly they are often the first to face conflicts among students and they have the power in the classroom to promote prosocial behaviors (Carbone and Assante Del Leccese, 2023). Altering the interpersonal domain includes the need to promote socioemotional skills that would be helpful in the peaceful resolution of conflicts, thus increasing positive coexistence among students (Nygaard et al., 2023). Teachers have that capacity on a day to day basis, even if administration does not create such curricula standards.

In institutional terms, coexistence management is strengthened when there is clarity regarding the interaction between school members, including positions of total rejection of violence in general. Therefore, strategies for the prevention of violence and well-defined action protocols regarding roles and actions in conflict situations are essential (Aravena et al., 2020). In this sense, it is relevant to work in coordination with other support networks which are mainly in the health and social areas (Medina and Olave, 2022). In this regard, Chilean schools must comply with a series of requirements to ensure adequate management of school coexistence, following guidelines for the development of Internal Regulations, Coexistence Manuals and Protocols for action (MINEDUC, 2018). This is part of the Indicative Performance Standards emanating from the educational policy that governs the school institution (MINEDUC, 2021). From the legal point of view, the above policy is in compliance with Law 20536 on School Violence and Law 20128 Safe Classroom, and in regulatory bodies legislated on school violence and coexistence management in Chile (Muñoz-Troncoso et al., 2023b).

Regarding teachers' views on school violence at the international level, reports by Han (2021) provided an overview of perceived school violence in Australia, South Korea, the United States of America, and Mexico. The study concludes that in South Korea the overall perception of school violence is higher than in the other participating countries. Teachers in Mexico see violence as a phenomenon more typical of rural schools than urban schools. The case of Australia highlights the increase in violent behavior in recent years. Teachers in the United States see violence as a serious problem that affects mostly urban schools. The study used Likert-type scales as an instrument, which is a particularly efficient method for comparison between countries (Han, 2021). Other international studies have coincided in the high prevalence of school violence, with teachers reporting mostly physical, verbal, and psychological violence (Bourou and Papageorgiou, 2023).

In the Chilean context, several investigations examine the view of teachers regarding the phenomenon of violence in schools, however, few studies incorporate measurement scales. In particular Varela et al. (2021) found that teachers who perceived themselves to be affected by school violence also reported job dissatisfaction. Furthermore, in that study, teachers' relationship with their schools was affected by various factors related to the school environment, including student victimization, teachers' perception of the school climate and the level of violence in the environment. Likewise, the research by López et al. (2020) showed a correlation between victimization between teachers and students, evidencing a higher prevalence of verbal violence than physical and sexual violence. Thus, it is highlighted that both physical and verbal victimization between students and teachers represented determining factors in explaining the levels of mutual victimization between them.

Chilean teachers face a critical situation that involves the devaluation of their role, forcing the implementation of various strategies with multiple approaches and possible consequences, a scenario that highlights the work of teachers and their ability to have a significant impact on school coexistence (Carrasco-Aguilar and Luzón, 2019). In addition to the above, in the present research, no psychometric instrument applied in Chile was found that measures teachers' perception of school violence, among students, between students and teachers, and the management of school coexistence.

There are multiple instruments currently available to explore the views of different actors. From the student perspective, some studies (Guerra et al., 2011) adapt and validate in Chile the Spanish instrument Cuestionario de Violencia Escolar (CUVE) designed by Álvarez et al. (2006), which evaluates violent behaviors in educational establishments from the students' perspective. There is validation in the Chilean population of the questionnaire that measures students' perception of peer mistreatment (MIAP) (Lecannelier et al., 2011). The study by Gaete et al. (2021) validated in the Chilean context the Olweus Bully/Victim Questionnaire-Revised Version (OBVQ-R), which measures students' perception of the forms of bullying. There is also the "Cuestionario de violencia escolar para la No Violencia (CENVI)", which collects the perception of students on types of violence and the management of school coexistence (Muñoz, 2014; Muñoz et al., 2017; Muñoz-Troncoso et al., 2023a).

In the field of school coexistence, another measurement model is the one that was contributed by Valdés et al. (2018), which consisted of the adaptation and validation in Chile of the School Coexistence Questionnaire designed by Chaparro et al. (2015) to evaluate school coexistence management practices from the perception of students. There is also the instrument developed and validated by Leal-Soto et al. (2022) who suggest the possibility of exploring the management of school coexistence from the students' perspective through a subscale; however, this would require further study of the psychometric properties of the instrument.

Considering other actors in the school system, Ascorra et al. (2020) designed and validated an instrument that evaluates the management of school coexistence from the perspective of school administrators. The study by López and Valdés (2018) consisted of designing and validating two instruments that evaluate concrete practices of school coexistence management in professionals working in the educational context and in parents and/or mothers. The purpose was to unveil the organizational practices that support the management of school coexistence, in order to contribute to decision-making.

In accordance with Torrego et al. (2022), the present study makes it possible to specify that, although there are instruments that evaluate school coexistence management in Chile, no psychometric instruments were found that jointly evaluate school violence and school coexistence management from the teachers' perspective.

In view of the above, the general objective is to measure teachers' perception of school violence and coexistence management by means of the validation of a psychometric scale developed for this purpose. The specific objective is to estimate the impact—from the teachers' perception—that coexistence management has on school violence and to explore the differences in the perception of violence according to the defined categories. The hypotheses are the following:

H1: The proposed four-factor instrument shows adequate goodness-of-fit and reliability indices.

H2: There is a statistically significant effect of the coexistence management factor on school violence.

H3: There are statistically significant differences between men and women in the perception of violence and school coexistence management.

2 Materials and methods

Research with research methodology in psychology and education of the quantitative type, with a descriptive comparative, cross-sectional design (León and Montero, 2015).

2.1 Participants

A total of 1072 teachers from the Chilean school system from the North (6.3%), Center (40%), South (23.5%) and Metropolitan (30.2) macro-zones of the country participated. Teachers were between the ages of 22 and 76 years (M=44.56; SD=10.52). and their years of work ranged from 1 to 54 (M=17.14; SD=10.38). Of the participants 76.3% identified with the female gender and 23.7% with the male gender, with 78.4% of them working primarily in the classroom and 21.6% performing other functions in the school. Ten percent reported teaching pre-school (children of 4 and 5 years of age), 55.7% elementary school (children of 6 to 13 years of age) and 34.3% middle school (young people from 14 to 17 years old). Of the teachers, 51% belonged to municipal schools, 34.8% to private subsidized schools and 14.2% to private schools; 76.3% identified as female and 23.7% as male.

All of them participated voluntarily through a letter of informed consent, and a non-probabilistic sampling was carried out by accessibility in the indicated macro-areas.

2.2 Instrument

The 21-item school violence and coexistence management questionnaire for teachers (VI+GEC) was applied. It is a Likert-type scale with four scales. Three of the four scales were adapted from the CENVI questionnaire for students (Muñoz-Troncoso et al., 2023a), in order to create a measure that allowed for comparability across students and teachers. Factor 1, called Violence among students (VEE), is composed of five items. Factor 2, called Violence from teacher to student (VPE), is composed of six items. The new Factor 3, called Student-to-teacher violence (STV), is composed of four items. Factor 4, called Management of School Coexistence (GCE), is composed of six items. The indicators of factors 1, 2 and 4 were adapted from the CENVI questionnaire (for students) of Muñoz-Troncoso et al. (2023a), the indicators of factor 3 were elaborated for the present study. For each item, teachers were asked to respond on a scale in which 1=Never and 6=Always. Thus, for the three violence subscales, the higher the score the greater the violence, and for

coexistence management, the higher the score the higher the evaluation of management.

2.3 Procedure

The study is nested in the FONDECYT Regular 1191956 project "Family and school education: Emotional socialization in contexts of social and cultural diversity," and reviewed and approved by the Research Ethics Committee of the Universidad Católica de Temuco (Chile). The instrument is hosted on a web platform, which begins with a description of the questions, an informed consent and confidentiality notice with details about the characteristics of the research, the instrument, and the time required to respond. The voluntary nature of participation was made explicit, guaranteeing anonymity and data protection. The study was conducted according to the international deontological guidelines referred to in the Declaration of Helsinki and the Singapore Declaration, as well as those referred to in Chile by Law 20120.

2.4 Plan for analysis

The adaptation and creation of items, in addition to the proposed structure, considered content validity by means of inter-judgment of experts. The normality of the indicators was evaluated using the Kolmogorov–Smirnov test to choose the subsequent analyses. Based from previous reports from students and teachers, we hoped that the data would reveal a skewed distribution reflective of lower rates of violence. Thus, we anticipated that our next step, specifically, a Confirmatory Factor Analysis (CFA) would be carried out, as appropriate for non-normative data, using the Maximum Likelihood adjusted by Mean and Variance (MLMV). The Chi-square statistic would be optimal if the ratio with its degrees of freedom is less than 3:1. The goodness-of-fit indices considered are the root mean squared error of approximation (RMSEA), expecting values less than 0.5 as excellent or less than 0.7 as acceptable. The comparative fit index (CFI) and the Tucker-Lewis index (TLI) would be excellent with values greater than 0.95 and acceptable with values greater than 0.9.

Convergent validity was assessed where each factor must present: (1) standardized loadings with values greater than 0.5 and statistical significance level p-value less than 0.05; (2) average variance extracted (AVE) with values greater than 0.5; and (3) composite reliability with values greater than 0.7. The discriminant validity assessment consisted of comparing the AVE with the shared variance, where the AVE of a factor should be greater than the square of the correction between it and the other factors. The reliability of the measurement model was evaluated through McDonald's omega coefficient, considering values greater than 0.65 as admissible, greater than 0.7 as acceptable, between 0.8 and 0.9 as good, and above 0.9 as excellent.

An analysis was carried out through structural equation modeling (SEM) to measure the effect of coexistence management on school violence, proposing that factors 1 to 3 can be measured by a second-order factor (G1) and thus assess the effect that factor 4 (coexistence management) has on it.

Subsequently, we calculated scales using k-means cluster analysis, determining three clusters to differentiate high, medium, and low levels in each factor. Finally, teachers were grouped according to their level of perception of each factor.

The last stage consisted of reviewing the measurement invariance of the questionnaire for all the defined categories. The configural invariance is achieved by fulfilling the criteria of a CFA, and the metric invariance is achieved if the variations of CFI and RMSEA between it and the configural invariance are not significant. Similarly, scalar invariance is evidenced if the CFI and RMSEA variations between it and the metric invariance are not significant. In this regard, it is expected: ΔCFI <0.01, ΔRMSEA<0.015. Given the above finding, the differences between pairs of groups of the defined categories were checked through the Mann–Whitney U-test.

Data were analyzed with Microsoft Excel v.16.74 (Microsoft, 2023), SPSS v.23 (IBM Corp, 2020), JASP v.0.17.21 (JASP Team, 2023), RStudio v. 2023.06.0 + 421 (RStudio Team, 2022), and G*Power v. 3.1.9.6 (Buchner et al., 2020).

3 Results

Content validity made it possible to retain the proposed four-factor model shown in Table 1.

The saturations and correlations are shown in Figure 1.

The Kolmogorov–Smirnov test showed that the data did not resemble a normal distribution (p-value<0.001). The AFC presented $X^2 = 643.904$; DF = 183 and $p < 0.001$. The model is a good fit for the data (RMSEA = 0.048; CFI = 0.967; and TLI = 0.962).

The convergent validity of the model is supported in that there are saturations greater than 0.5, AVE greater than 0.5, and composite reliability greater than 0.7 (Table 2). Discriminant validity is evidenced in that the AVE of each factor is greater than the squared correlation between factors (Table 3). The scale has good reliability given that all factors reach $\omega = 0.9$ (Table 2).

The model proposed to measure the direct effect of coexistence management on school violence (Figure 2) presents a good fit to the data (RMSEA = 0.058; CFI = 0.951; TLI = 0.945). The effect of Coexistence Management on School Violence is of medium magnitude, statistically significant ($\gamma = -0.462$; $p < 0.001$), and shows a good confidence interval (range = −0.462; L = −0.537; U = −0.387).

TABLE 1 Structure of the measurement model.

Factor	Name	Abbreviation	Items	Variables
F1	Student-to-student violence	SSV	5	x1–x5
F2	Teacher-to-student violence	TSV	6	x6–x11
F3	Violence from student to teacher	VST	4	x12–x15
F4	School coexistence management	MSC	6	x16–x21

Source: Prepared by the authors.

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The cutoff points for the factors are presented in Table 3. For factors 1 to 3, the higher the score, the higher the perception of violence; for factor 4, the higher the score, the better the evaluation of coexistence management.

A good fit of the model to the data was found in all groups of the categories analyzed. Except for the macrozone grouping, scalar invariance was achieved in the categories reviewed (ΔCF1 < 0.01; ΔRMSEA<0.015). The differences between groups are presented in Table 4.

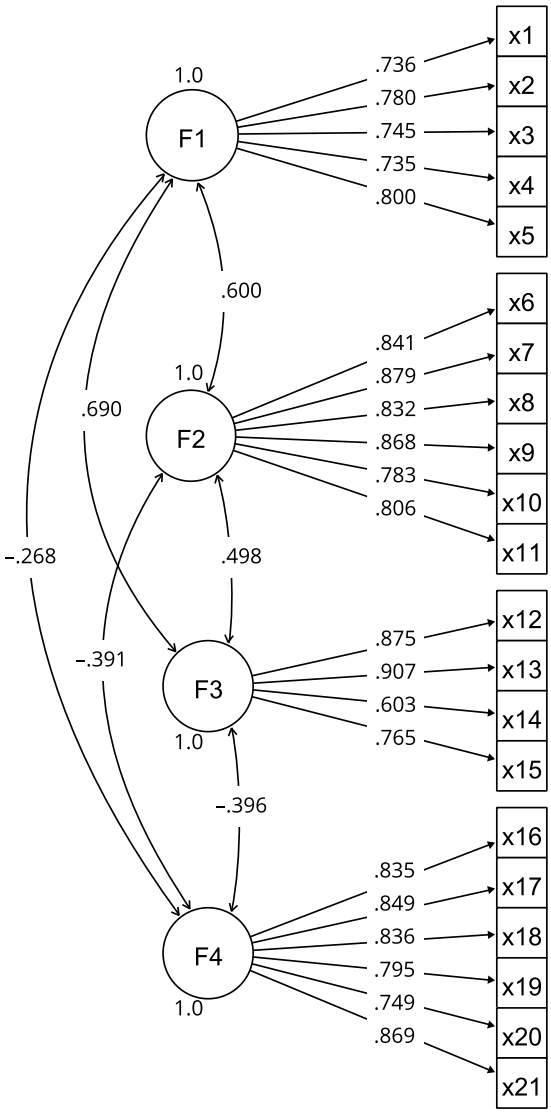

FIGURE 1
Measurement model diagram. Source: Prepared by the authors.

4 Discussion and conclusion

Based on the obtained results, it is possible to argue that the VI+GEC questionnaire is a valid and reliable instrument that measures teachers' perceptions of school violence and coexistence management. Having a psychometrically developed questionnaire such as the one presented is relevant for understanding the phenomenon of violence in schools and for the analysis of coexistence management. A comprehensive perspective in this regard can favor decision-making (Torrego et al., 2022) to prevent and mitigate the effects of violence (Muñoz-Troncoso et al., 2023b). Thus, the novelty of the study is the development of a psychometric scale—for teachers—that incorporates factors of mutual violence between students and teachers, in addition to the factor of school coexistence. This scale also made it possible to measure the effect of coexistence management on school violence.

Regarding the psychometric properties of the designed instrument, the content validity allowed maintaining the proposed model of four factors that refer to (1) violence between students; (2) teacher-to-student violence; (3) student-to-teacher violence; and (4) school coexistence management. This structure is consistent with the National Policy on School Coexistence (MINEDUC, 2019). Convergent validity was demonstrated, indicating that each factor of the questionnaire is significantly related to its respective construct and in the ways we predicted. Likewise, discriminant validity was evidenced, given that there is no high correlation between the factors that comprise it. The confirmatory factor analysis identified a good fit of the proposed model to the data, showing that the indicators measure the latent variables to which they conform. Similarly, all the factors of the instrument showed good reliability indicators. In addition, scalar invariance was achieved in the defined categories (except Macrozone), which allowed for an unbiased review of the differences between groups.

A relevant finding is that, from the obtained results, it was evident that there is a direct effect of the perception of coexistence management on the perception of school violence since a medium and statistically significant effect was found. This finding is in agreement with what was stated by Pina et al. (2021) regarding the importance of coexistence management with respect to school violence and the need to generate efficient strategies in the face of conflict situations (Aravena et al., 2020). It also corroborates the importance of training tools that facilitate the management of coexistence and the approach

TABLE 2 Convergent, discriminant, and reliability validity indicators.

Factors		Saturations				Factors			
						F1	F2	F3	F4
	Abbreviation	Minimum	Maximum	Reliability	AVE	SSV	TSV	VST	MSC
F1	SSV	0.736	0.801	0.9	0.577		0.360	0.476	0.072
F2	TSV	0.841	0.806	0.9	0.698	0.600		0.239	0.153
F3	VST	0.876	0.765	0.9	0.635	0.690	0.489		0.157
F4	MSC	0.836	0.869	0.9	0.678	−0.268	−0.391	−0.396	

SSV= Student-Student Violence. TSV= Teacher-Student Violence. VST= Violence from student to teacher. MSC= Management of school coexistence. Correlations between factors are shown below the diagonal. The squares of the correlations between factors are shown above the diagonal. Source: Prepared by the authors.

TABLE 3 Levels according to cutoff points for each factor.

Factor	Abbreviation	Low	Medium	High
F1	SSV	5–11	12–17	18–30
F2	TSV	6–12	13–20	21–36
F3	VST	4–8	9–14	15–24
F4	MSC	6–18	19–27	28–36

Source: Prepared by the authors.

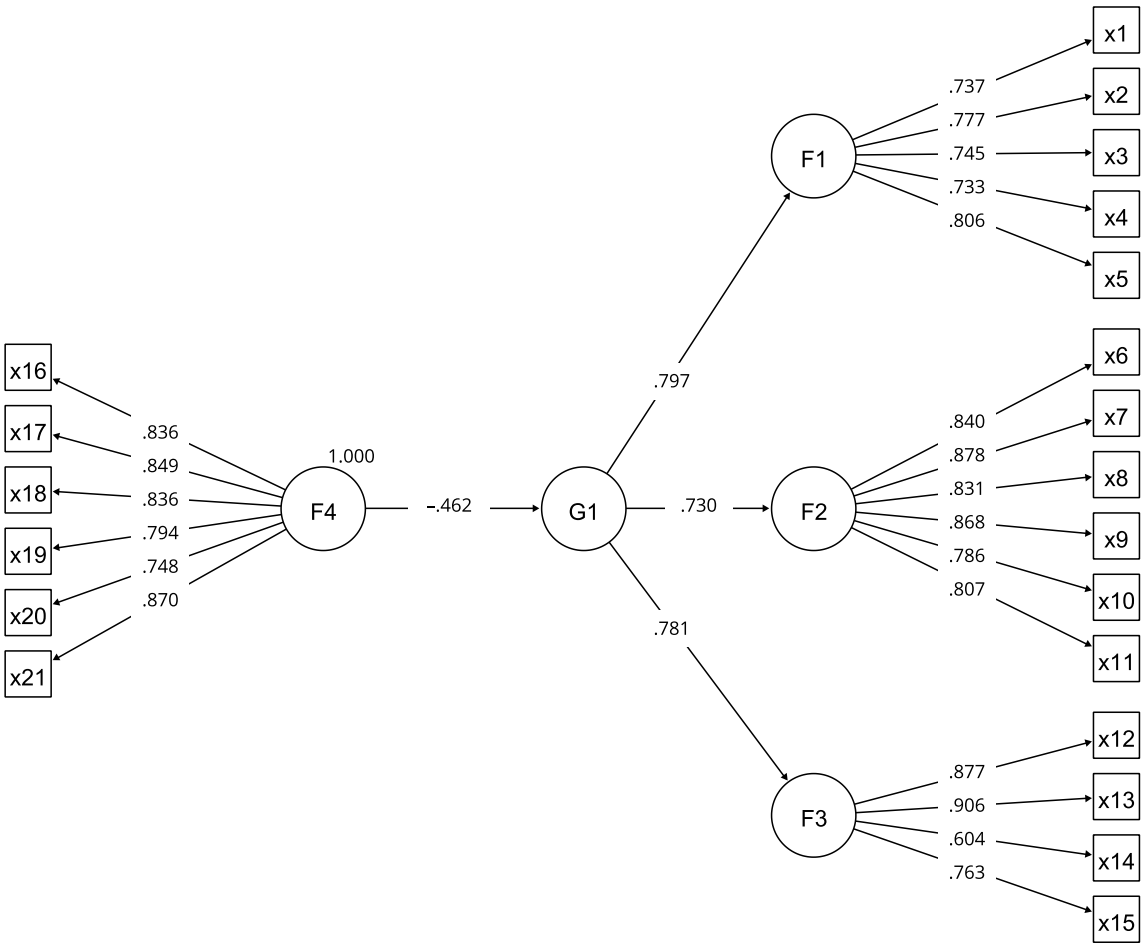

FIGURE 2
SEM path diagram. Source: Prepared by the authors.

to situations of violence (Morales et al., 2014). It is important to note that this result is opposite to that reported by Muñoz-Troncoso et al. (2023b), where a null effect of management on violence was found. However, this effect can be explained by the fact that the questionnaire used in that study measures the perception of students, actors who, according to López et al. (2023), have little or no impact on coexistence management.

The final analysis showed groups with statistically significant differences. *Gender*: In the VST factor, women perceived more violence than men, and in the MSC factor, women gave better ratings than men. This difference could be due to the fact that women present better moral judgment and less egoistic cognitive distortions than men (Brugman et al., 2023), so they make a better assessment of situations, identifying facts of violence that might not be evidenced by men. *Function*: In the VST dimension, classroom teachers see more violence, and in the MSC dimension, 'administrative' teachers value the factor better than teachers who work in the classroom. This finding can be explained by the fact that teachers exposed to situations of violence may see the coherence with which they perceive their school community deteriorate (Morales et al., 2014). *School level*: In the SSV and TSV factors, elementary school teachers see more violence than pre-school teachers, and secondary school teachers see more violence than pre-school and elementary school teachers. In the MSC dimension, elementary school teachers give a better evaluation than pre-school teachers. A better evaluation could occur because supervision decreases as the age of students increases, and many acts of violence occur in situations where supervision is less strict (Bourou and Papageorgiou, 2023).

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TABLE 4 Comparisons between pairs of groups using the Mann–Whitney U-test.

Factor	Group 1	Mdn.	Rng.	Group 2	Mdn.	Rng.	*p*	*U*	*1-β*	*d*
SSV	Female	13	25	Male	13	21	0.042	95965.5	0.39	0.01
	Classroom	13	24	Administrative	13	25	0.619	95373.0	0.63	0.02
	Pre-school	9	19	Primary	13	24	<0.001	15506.5	1.00	0.90
	Pre-school	9	19	Secondary	14	25	<0.001	7613.5	1.00	0.90
	Primary	13	24	Secondary	14	25	0.002	96947.0	0.28	0.17
	Municipal	13	25	Subsidized	12	20	<0.001	88281.5	0.87	0.24
	Municipal	13	25	Private	13	22	0.187	38675.0	0.51	0.12
	Subsidized	12	20	Private	13	22	0.199	26330.0	0.87	0.12
	Urban	13	25	Rural	11	20	<0.001	47694.5	0.97	0.45
TSV	Female	11	30	Male	11	21	0.127	98140.5	0.38	0.09
	Classroom	11	30	Administrative	11	26	0.107	90730.0	0.84	0.11
	Pre-school	8	26	Primary	11	30	<0.001	23271.5	0.50	0.34
	Pre-school	8	26	Secondary	12	26	<0.001	12037.5	1.00	0.79
	Primary	11	30	Secondary	12	26	0.003	97349.0	0.20	0.15
	Municipal	11	30	Subsidized	10	26	0.001	89332.5	0.59	0.19
	Municipal	11	30	Private	12	21	0.189	38687.0	0.38	0.10
	Subsidized	10	26	Private	12	21	<0.001	22979.0	0.39	0.30
	Urban	11	30	Rural	9	23	0.002	55859.5	0.25	0.22
VST	Female	7	20	Male	7	14	0.845	103890.0	0.89	0.07
	Classroom	7	20	Administrative	6	14	<0.001	80586.0	0,85	0.33
	Pre-school	7	17	Primary	7	20	0.426	30409.5	0.56	0.09
	Pre-school	7	20	Secondary	7	14	0.191	18064.0	0.32	0.09
	Primary	7	20	Secondary	7	14	0.331	105790.0	0.33	0.01
	Municipal	8	20	Subsidized	7	15	<0.001	87950.0	0.92	0.26
	Municipal	8	20	Private	6	15	<0.001	31165.0	0.84	0.41
	Subsidized	7	15	Private	6	15	0.025	24857.5	0.29	0.17
	Urban	7	20	Rural	6	11	<0.001	48260.5	0.95	0.45
MSC	Female	26	30	Male	27	29	0.012	93926.0	0.59	0.01
	Classroom	25	30	Administrative	30	30	<0.001	66589.0	1.00	0.59
	Pre-school	24	25	Primary	26	30	0.019	27415.0	0.47	0.24
	Pre-school	24	25	Secondary	26	30	0.142	17,854	0.55	0.16
	Primary	26	30	Secondary	26	30	0.123	103365.0	0.43	0.09
	Municipal	25	30	Subsidized	26	30	0.048	94189.5	0.63	0.13
	Municipal	25	30	Private	27	30	0.712	40758.5	0.73	0.04
	Subsidized	26	30	Private	27	30	0.290	26682.0	0.47	0.09
	Urban	26	30	Rural	28	30	0.166	61652.5	0.49	0.11

Source: Prepared by the authors.

Type of school: In the SSV dimension, teachers in municipal schools see more violence than those in private subsidized schools; in TSV, teachers in municipal schools see more violence than those in private subsidized schools, and teachers in private schools see more violence than those in private subsidized schools. For the VST dimension, teachers in private subsidized schools perceived more violence than those in private schools, and teachers in municipal schools perceived more violence than those in private subsidized schools and those in private schools. In MSC, teachers in private subsidized schools perceived better management than those in municipal schools. This finding could be related to the concentration of students at low socioeconomic levels in Chilean municipal schools. Children from this group are more exposed to community violence, which impacts their relationship with the teacher and the school and can negatively affect the school environment, which in turn influences the wellbeing of students and teachers (Varela et al., 2021). Similarly, in municipal

schools, economic, infrastructure, and management resources are lower than in private subsidized schools, with private schools having more resources (Guerra et al., 2011). *Location*: In the three types of violence measured, teachers in urban schools saw more violence than those in rural schools. This finding is related to the existing perception of rural education as a space with a lower risk of violence dynamics, which, in the perspective of Núñez et al. (2023), has been reinforced by the School Inclusion Law and has even led to an increase in enrollment in these schools from students living in urban centers.

Being able to assess the perception of teachers is of great relevance, because it influences the quality of teaching and learning processes (Torrego et al., 2022), job dissatisfaction, and the relationship that teachers have with their schools (Varela et al., 2021). This fact confirms the primordial role of teachers' work in the promotion and implementation of actions in school coexistence (Carrasco-Aguilar and Luzón, 2019). In addition, the teacher's perception is particularly relevant, given that it differs from what students perceive (Ascorra and López, 2019).

It is possible to argue that, to obtain a comprehensive measurement of school violence and coexistence management, the joint application of the VI + GEC (developed in the present study) and CENVI questionnaires (Muñoz-Troncoso et al., 2023a) is necessary. The former allows us to know the perception of the teaching staff, and the latter allows us to approach the students' perspectives and experiences. This finding could contribute to a general appreciation of the different actors in the educational communities (D'auria-Tardeli et al., 2023), considering the importance of developing evaluation and monitoring systems that contribute to the implementation of management models by school directors and managers (Ascorra et al., 2021).

The present study fulfills the proposed objective since the perception of Chilean teachers regarding school violence and coexistence management was measured, which implied the validation of a psychometric scale elaborated—ipso facto—for this purpose. Regarding the hypotheses raised, it can be pointed out:

> "H1: The proposed instrument evidence adequate goodness-of-fit and reliability indexes." It is confirmed that, since the confirmatory factor analysis showed a good fit of the proposed model to the data, convergent and discriminant validity was evidenced, along with demonstrating good reliability indicators for all the factors of the scale.
>
> "H2: There is a statistically significant effect of the coexistence management factor on school violence". It is confirmed due to the evidence of a direct, medium, and statistically significant effect of the perception of coexistence management on the perception of school violence.
>
> "H3: There are statistically significant differences between men and women regarding the perception of violence and management of school coexistence". It is confirmed by evidence that women perceive more violence among students than men. Similarly, women perceive a better management of school coexistence than men.

Limitations. Despite the large sample size, we note that the sample is non-probabilistic due to accessibility, and turned out not to be proportional among the defined macro-zones nor representative of the teaching staff of the Chilean population, which prevents the generalization of the results. Although the proposed cutoff points arise from the sample accessed, it is feasible that the instrument becomes an applicable tool in Chilean educational establishments to evaluate school violence and the management of coexistence from the teachers' perspective. Certainly, the measure can be used to assess chronological shifts within schools or regions to assess success of programs designed to reduce violence in schools. Its implementation could contribute to understanding the specific panorama of the factors measured by the VI + GEC, allowing informed and preventive decision-making in the face of school violence, with pertinent actions from the management of coexistence in school spaces.

Data availability statement

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

Ethics statement

The studies involving humans were approved by Research Ethics Committee of the Universidad Católica de Temuco. 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

FM-T: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. AH: Writing – review & editing, Supervision, Resources, Conceptualization. IC-G: Writing – review & editing, Supervision, Resources, Investigation, Conceptualization. ER-M: Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Funding acquisition, Conceptualization. EM-Z: Writing – review & editing, Validation, Supervision, Software, Resources, Methodology. EL-V: Conceptualization, Writing – review & editing, Writing – original draft, Resources. VS-B: Conceptualization, Writing – review & editing, Writing – original draft, Resources, Investigation. CS-A: Conceptualization, Writing – review & editing, Writing – original draft, Investigation. GM-T: Writing – review & editing, Writing – original draft, Supervision, Resources, Conceptualization.

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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.

The handling editor EM declared a shared parent affiliation with the author FM-T at the time of the review.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1352399/full#supplementary-material

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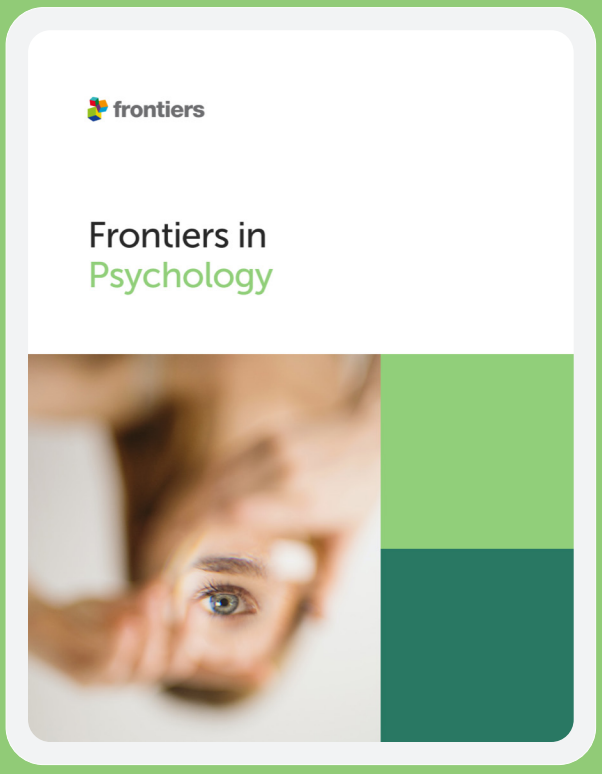

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