MENTAL HEALTH LITERACY: HOW TO OBTAIN AND MAINTAIN POSITIVE MENTAL HEALTH

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Editorial: Mental health literacy: How to obtain and maintain positive mental health

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Editorial on the Research Topic
Mental health literacy: How to obtain and maintain positive mental health

There is a growing consensus within the scientific community about the importance of mental health promotion. Around one billion people worldwide have a mental disorder, and anyone, anywhere, can be affected (World Health Organization, 2022). It is estimated that one in four people has some mental health disorder. It is widely known that the incidence and prevalence of mental disorders are increasing, on the one hand, due to the social pressure exerted by current lifestyles and, on the other hand, because people do not always have emotional regulation mechanisms and resilience that allow them to adaptively deal with adverse life events.

The COVID-19 pandemic has exposed and included many of these problems on the agenda, although they are not new. The persistent low funding for mental health services hinders access to mental health promotion, prevention, and treatment of mental disorders. In low- and middle-income countries, more than 75% of people with mental health problems do not receive any treatment at all, and the economic investment of countries in the mental health of their populations remains scarce (World Health Organization, 2022).

Mental health promotion must be based on the identification of existing personal, social, environmental and cultural determinants to enable the implementation of measures to mitigate these factors and develop protective factors in mental health, such as resilience and the existence of environments (schools, workplaces, among others) to support mental health. These interventions can be developed in different

contexts, in groups or individually. Mental health promotion and prevention programs must transcend the health sector and involve sectors such as education, work, the environment, and housing, among others (World Health Organization, 2022). Currently, the main priorities in mental health promotion are children and young people, suicide prevention, and mental health promotion in the workplace.

When referring to mental health promotion, one of its intrinsic variables is mental health literacy. Mental health literacy is the knowledge and beliefs about mental disorders which aid their recognition, management, or prevention (Jorm, 2000). Mental health literacy encompasses essentially four components: understanding how to achieve and maintain good mental health, understanding mental disorders and their treatments, decreasing the stigma related to mental disorders, and increasing the effectiveness of help-seeking (Nobre et al., 2021). However, some authors include optimism and hope as some of the predictors of mental health, as well as creativity.

Positive mental health literacy is considered a component of mental health literacy, which needs clarification and attention throughout the lifespan in different contexts and intervention levels. Positive mental health has some important effects and can be adopted in psychiatric contexts, improving patients' quality of life and preventing psychotic outbreaks.

Mental health literacy is the first step toward mental health promotion and an essential component for the good mental health of populations. The WHO, in its "Mental Health Action Plan 2013–2020," stated that mental health literacy is one of the strategies to be used to promote and prevent mental health problems (World Health Organization, 2013). However, although evidence shows that the level of mental health literacy in the general population has been progressively increasing, it is still low/moderate (Nobre et al., 2021).

Thus, developing mental health literacy in the general population, particularly in some settings and of some priority groups, such as adolescents, in the workplace, and family caregivers, is fundamental to developing concerted strategies to promote mental health.

The mental health challenges throughout the life cycle are well known. In the infancy stage, educators have an essential role in providing psychosocial support and several measures need to be developed to face the challenges. However, adolescents may be at risk of mental health problems due to their environments, including discrimination, poverty, abuse or violence, and lack of access to adequate support. According to the World Health Organization (2018), it has been estimated that about 10–20% of adolescents have already experienced mental health problems. In addition, some problems were aggravated by the COVID-19 pandemic (e.g., anxiety or addictions), especially in university settings. Regarding this topic, some evidence suggests that proper intervention in physical activity and some mental health strategies are beneficial to reducing anxiety in academic students. Resilience also plays an essential role in the mental health of college students. Furthermore, some variables (e.g., grit) were revealed to be predictors of greater career adaptability through greater career exploration and decision-making self-efficacy, positive affect, and commitment to goals. The results of this study, carried out in China with 839 Chinese college students, open the way for other studies, especially in academic contexts.

The existence of validated assessment tools that measure mental health literacy and help-seeking behavior can also support professionals in measuring this phenomenon (firstly) and to intervening properly. These concerns should be addressed when there are mental health problems in adolescence to avoid more severe mental health problems in adulthood.

In addition, it is crucial that parents, teachers, and the whole school community develop sufficient knowledge and skills about mental health for the early identification of mental health problems in young people. Recognizing changes in physical and mental health can support those closest to them in making referrals for specialist help. In recent years, educational programs aimed at parents have been developed, although more evidence is needed to determine the effectiveness of these programs in enabling further dissemination and prevention of mental disorders in young people. There is a clear idea that more programs which promote mental health literacy are crucial for parents of adolescents. Similarly, mental health literacy programs involving the school community (teachers, operational assistants, students) should be further investigated. Teachers' social support is associated with their mental health literacy, coping tendency, and life satisfaction; coping tendency is associated with mental health literacy and life satisfaction; and life satisfaction is associated with mental health literacy.

Only in an integrated and articulated way will it be possible to improve mental health literacy and substantially decrease the risk of mental disorders in adulthood. Some studies revealed that young people expressed concerns about the lack of mental health education in their schools and indicated that this must change for the wellbeing of all youth.

The importance and relationship between work (values) and mental health and its negative consequences have been the subject of intense debate. Some studies show that positive work values can promote life satisfaction and seem to be a protective factor for mental health. Promoting mental health literacy in work contexts means empowering work partners to promote mental health-promoting environments and recognizing the importance of identifying risk situations that lead to loss of health and consequent mental disorders, with serious implications for the individual, companies and society as a whole. Workplace mental health literacy is also vital in self-stigma promotion.

Nevertheless, other studies suggested that teachers generally suffer from job burnout, and their personality characteristics have a significant impact on it. School managers should

pay particular attention to this problem and implement necessary interventions.

Currently, the increasingly technological challenges are prompting their use and adaptation to new interventions in clinical practice. E-learning can provide broad access in various settings allowing for new learning paths and adapted training paces.

Regarding family caregivers, some important issues must be considered. The experience of taking care is physically and emotionally demanding due to the previous relationships and the type and duration of the provided care. Evidence has been particularly compelling about the importance of the caregivers' mental health when caring for a relative; however, there is still little research on the post-caregiver experience. This means that caring for someone presupposes a transition that often leads to the reconstruction of a new identity that starts before the relative's death and continues beyond the grieving process. Because caregivers have ongoing emotional needs, post-care indicates that this stage should be considered part of the caregiver's life. Future studies should focus on developing structured interventions to promote the caregivers' mental health and support other caregivers going through the same life experience (linked to positive mental health factors).

The articles which are part of this Research Topic highlighted the need to consider mental health literacy as a priority, aiming not only for the near future but also for the present. Thus, they contributed to a better understanding of the state of the art on this topic.

Now, it is crucial to move on from opinion papers and observational studies to experimental research. The needs, mainly the ones of children, a, and young adults, are clearly identified, and they tend to be consensual: there is a lack of mental health literacy, even though the COVID-19 pandemic raised the discussion on mental health issues. Thus, it is mandatory to develop some mental health literacy promotion interventions and evaluate their efficacy, effectiveness, and cost-effectiveness. This would reinforce the research community's commitment to the goal of developing innovative solutions to improve the mental health literacy of the population.

Nonetheless, not only the research community should be committed to this topic, but the governments and decision-makers also play a key role in this strategic mission. It is widely known that some political decisions have a significant (indirect) impact on people's mental health. Therefore, political decisions that can protect people's mental health are currently an unquestionable requirement. One of those potential decisions is to include content about mental health issues (not only about mental disorders) in the school curricula. Also, it is important to assign a mental health nurse and/or a psychologist to every school, as they can help children and/or adolescents to cope with negative life events, early recognize potential mental health problems, and improve their help-seeking behavior.

A serious investment in mental health literacy promotion has significant costs; however, it will surely help reduce, for example, psychiatric hospitalizations in the future. That is not only a social benefit but also an economic one. Scientific evidence on this topic has been published in several journals, including this Research Topic; now, it is time to put knowledge into practice.

Author contributions

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

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Conflict of interest

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

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Palestinian and Norwegian Kindergarten Teachers' Perspectives on Psychosocial Support: A Qualitative Study

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The current qualitative case study aims to explore and map the concepts and the conditions for providing psychosocial support in kindergarten across two vastly different countries, Palestine and Norway. The global challenge of providing psychosocial support toward children is increasingly acknowledged. Although education is described as crucial for psychosocial support from the health sector, studies dealing with the educational perspective on this topic are rare. Data from 26 participants (10 from Gaza, 10 from Hebron and 6 from Norway) were collected in qualitative semi-structured interviews. Despite vastly different contexts, the analysis showed some important common features. Kindergarten teachers in both countries link psychosocial support conceptually to psychological and emotional knowledge. The teachers in both countries are concerned about the psychosocial support being performed repeatedly in everyday situations, such as establishing routines, paying extra attention, and calming children and creating everyday safe spaces. They give detailed descriptions of the quality of their long-term, yet professional relations with the child. Time and space are crucial challenges in both countries, and they call for more knowledge on mental health. A main difference between the two countries was the role of the community and relation to parents. The Palestinian teachers defined psychosocial support as a "set of community services," the teachers were frustrated with the lack of parental collaboration. The Norwegian teachers downscaled or overlooked the importance of community or parents and community. The findings give overall presentations of the concepts and the conditions for providing psychosocial support in education Palestine and Norway. We argue that education not only represents sites for conducting health-directed interventions but represents important resources for developing the field of psychosocial support in collaboration with community services. Education – and especially kindergarten provides other values, knowledge, and structural resources for the development programs and knowledge on psychosocial support.

Keywords: psychosocial support, ECE, qualitative, mental health, education, comparative studies, kindergarten teachers

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INTRODUCTION

Teachers' ability to provide psychosocial care for all children in kindergarten is critical. Mental health and well-being seem to be a common challenge across several countries around the globe, as about 20% of the world's children and adolescents have a mental health condition (WHO, 2021). The challenge for providing psychosocial support is widely acknowledged globally; for high- as well as low-income countries.

In recent years, there has been an increasing acknowledgment of education as a key factor for the promotion of development and health and the prevention of psychosocial and mental health problems (Adelman and Taylor, 2006; Soliman et al., 2020). The roles of the context and the relations in early childhood education make up the foundation for the developmental processes of young people and their mental health (UNESCO, 2016). The sense of connectedness, good communication, and perceptions of the care of an adult in schools are related to a wide range of mental health outcomes for young people (Soliman et al., 2020). These findings mirror global and universal challenges, where the school environment, education, and psychosocial support are essential contextual factors for the developmental processes of children and their mental health.

The current study takes a starting point in the field of psychosocial studies, a large and disparate domain of different approaches and disciplines. On a global level, the field of psychosocial support in early childhood is vast. Psychosocial support appears as part of psychosocial studies, developing interdisciplinary educational concepts across psychology, sociology, philosophy, and didactics. Mental Health and Psychosocial Support is a part of the general field of psychosocial studies, and is a composite term describing any type of local or outside support that aims to protect or promote psychosocial well-being and/or prevent or treat mental disorders (Inter-Agency Standing Committee, 2007).

Benefits of Psychosocial Support in Child Development

The benefits of psychosocial support from early childhood and in education are widely agreed upon (UNESCO, 2016). Schools play significant roles in both developing the health or non-health of children (e.g., see the review of Ragnarsson et al., 2020). Schools are considered practical sites for professionals to reach each child with low-key and simple training programs (UNICEF, 2020).

However, the discursive use of the concepts of psychosocial support, its meanings, and practices are disparate. First of all, the combination of psychosocial support and education is conflicted, suggesting a separation of the enterprises of health and education. Many may associate psychosocial support with being a specialized psychiatric domain and providing treatment of trauma, anxiety, depression, etc. as diagnostic categories. According to this view, educators should not engage with the psychological issues of children, due to the risk of mistreatment and a lack of competence (Papadatou et al., 2002; Alisic, 2012).

Other approaches appraise the role of education in the interventions of healthcare and social care, often implemented by health agencies for educators to implement and follow. Despite acknowledging the significance of education for the health of children, the health sector is overrepresented in providing psychosocial support interventions. Educational approaches and interventions are requested (Haroz et al., 2020). There is a need for developing knowledge about the conditions and the concepts of psychosocial support from an *educational* perspective point.

Third, the global challenge of providing psychosocial support toward children is increasingly acknowledged, yet not as a contextual phenomenon. Thus, it can be fruitful to review the common features across different contexts, as well as highlighting some contextual factors for providing psychosocial support in kindergarten. Therefore, this study seeks to make an initial analysis to explore psychosocial support in kindergarten across two contrasting contexts, which are Palestine and Norway.

The Contexts of Palestine and Norway

Palestine and Norway have very different conditions for providing psychosocial support in kindergarten. As a result of the long-lasting occupation of the West Bank and Gaza, Palestinians are exposed to violent conflict—especially those in Gaza, who have also endured a decade of blockade and closure—resulting in the fragile health and well-being of the population.

Previous study showed that individual and collective exposure to political violence has a negative effect on mental health (Giacaman et al., 2007). Up to 20% of the population of Gaza may have developed mental health conditions (UNICEF, 2015), and more than 300,000 children in Gaza may require some form of psychosocial care. A previous study showed that every child or adolescent has experienced at least one war-traumatic event (El-Khodary et al., 2020). Moreover, several studies have been conducted in the Gaza Strip showed that exposure to war-traumatic events leads to PTSD (e.g., Llosa et al., 2012; Kira et al., 2013) psychological maladjustment such as emotional disorders, lower self-esteem (e.g., Qouta et al., 2001), anxiety, and depression (e.g., Palosaari et al., 2013).

Norway is considered as a politically stable and peaceful country, having secure welfare and health system. Yet, both countries may deal with complex global issues of conflicts resulting in an increasing number of young people seeking help for mental health difficulties (Nordic Council of Ministers, 2017). The question about how kindergarten teachers describe psychosocial support toward traumatized children might be a key concern in both countries, as both manage the challenges of mental health, early intervention, and the particular role of kindergarten.

In Palestine, there is a high awareness of the psychosocial challenges of a country in conflict and the long-lasting exposure to traumatic events; thus, many strategies have been developed for health promotion programs, both through national instances and by non-governmental organizations (Al Ghalayini and Thabit, 2017; Joma et al., 2021). In Norway as well, there is an increased awareness of children's mental health (Holen and Waagene, 2014). Promoting children's mental health was first added to the framework plan for kindergarten in 2017, and for the last couple of years, the term "trauma-sensitive kindergarten" is under development. However, most of this knowledge exist as information to kindergarten and is more

a result of political implementation rather than research-based knowledge (UNICEF, 2020). Despite the many differences, the two countries share the common challenge of developing psychosocial support as a concept and effective measures in kindergarten. This study, therefore, explores the kindergarten teachers' perspectives on the concept and the conditions for developing psychosocial support for kindergarten children in Palestine and Norway.

The Term "Psychosocial Support" and Research on Psychosocial Support in Kindergarten

The term "psychosocial support" is widely used, although with several meanings. Psychosocial studies highlight psychosocial support as dynamic transactions between the environment and the inner psychological dimensions of a child (Woodward, 2015). Psychosocial support is then emphasized as being embedded in multilevel system interactions. Individuals, families, kindergartens, environment, municipality administration, society structures, and political situation influence and interact for the development of a child (Bronfenbrenner and Morris, 1998; Sabol and Pianta, 2012). The interaction between different societal actors affects a child's physical and mental well-being and their ability to function in society (Woodward, 2015). Another feature of psychosocial studies is a focus on the interactional quality and particular social patterns and transactions between the child and his/her caregivers.

Education is widely acknowledged as strategically important to reach out to children being exposed to traumatic experiences (Heltne et al., 2020). Taking an overall view of empirical studies of psychosocial support in kindergarten (and equivalent searches), Most empirical studies of psychosocial support take on the approaches and concepts from the health sector and its implementation into educational settings (Newland and Silver, 2020). Intervention programs seem to be an important role, such as training programs for trauma-exposed children in refugee camps, testing and promoting particular methods and techniques as "psychological first aid" program for teachers providing psychosocial support for children (e.g., Schultz et al., 2016). These intervention programs caught the attention of researchers in the field and were studied broadly in the Western and Arab world (Arafat and Boothby, 2003).

Many studies in education measure "psychosocial" as a dimension in a comprehensive and inclusive learning concept. The social and psychological dimensions have an impact on academic learning, reading, mathematical skills, and healthy development (Burchinal et al., 2016; Palmer et al., 2018; Froiland, 2020). Psychosocial support is also connected to the school setting in terms of improving behavior and preventing behavioral problems and dysfunctions of the child (Bierman et al., 2013; Mahon et al., 2020). Psychosocial support toward children with particular difficulties such as trauma, divorce, or child abuse is emphasized (Kolltveit et al., 2012; Bretherton et al., 2013; Bullock et al., 2019).

Some studies focus on the learning environment and the role of social and psychological support. Several studies focus on psychosocial support and consider psychosocial support as parental involvement in a child's life, either assessing the parental care or involvement of parents in providing psychosocial support (Zinsser et al., 2014; Shewark et al., 2018). However, the focus on psychosocial support and child development as a local and collaborative effort, is increasing. Heltne et al. (2020) provides an explorative study on how different local actors perceive of psychosocial support for children with adverse experiences.

However, although many studies elaborate on different aspects of psychosocial support, or describe and evaluate the use of programs for psychosocial support, few studies examines how the kindergarten teachers understand the concept of psychosocial support and the conditions for providing psychosocial support, in Palestine or elsewhere (Olsen, 2014).

Research Problem and Questions

Studies taking a starting point in the educator's conceptions of psychosocial support may be rare to the best of our knowledge. The current study does not describe psychological dysfunction, diagnosis, or trauma treatment, but rather, aims to map the factors and dimensions that make up the conditions for providing psychosocial support according to kindergarten teachers. Kindergarten settings are not only sites for the healthcare interventions of psychosocial support; instead, this study shows how educators may bear their conceptual groundings and logic, promoting aspects of psychosocial support from an educational point of view. Thus, we attempted to develop the concept of psychosocial support as a practice through a grounded theory approach (Glaser and Strauss, 1967), exploring and mapping individual approaches to how psychosocial support is enacted in kindergarten and also producing a narrative of how issues of psychosocial support should be addressed (Woodward, 2015). We see psychosocial support as a broad term to be explored and mapped across two different contexts in Palestine and Norway.

The current study explores and maps the conditions for providing psychosocial support in education according to kindergarten teachers, in Palestine and Norway. It takes a grounded theory approach and is a case study in two regions of Palestine: The West Bank and the Gaza Strip. These findings are compared and contrasted with a sample study from South-Eastern part of Norway. In doing so, we aim to explore psychosocial support in kindergarten as a contextualized phenomenon.

The current study answers the following questions:

1. How do kindergarten teachers describe psychosocial support for children in Palestine and Norway?
2. How do kindergarten teachers describe their knowledge and skills in providing psychosocial support for children in kindergarten?
3. What are the kindergarten teachers' experienced challenges in providing psychosocial support?

4. What are the kindergarten teachers' professional needs in providing psychosocial support?

Context Description of Kindergarten in Palestine and Norway

Palestine can be identified as a country that for a long time has been a "conflicted state" (Brandt et al., 2008), where children frequently have traumatic experiences, as opposed to Norway, a so-called "stable" and peaceful country (Olsen, 2014).

Kindergarten education in Palestine is defined as the stage where a child is between 3 and 5 years. Although kindergarten is not compulsory, the Law of Education (2017) in Palestine recommends at least 1 year of kindergarten,[1] for all children at the age of 3–5 years. The policy of the Palestinian Ministry of Education (MoE) is directed toward integrating preschools into the formal education system. Additionally, a basic target of its current strategy (2017–2022) is to mainstream a preschool curriculum and increase the number of licensed kindergarten that meet health, safety, and professional standards. The Palestinian authorities emphasize the need for a child-friendly learning environment, where a child's personality can physically, mentally, and socially grow and get ready for basic schooling through games and other activities[2].

The MoE's Statistics Manual (2019/2020) showed that there are 712 kindergartens in Gaza and 1,452 in West Bank, with 2,862 kindergarten teachers in Gaza and 4,548 in the West Bank (Ministry of Education, 2020). The number of children who benefit from educational and service opportunities in Gaza and the West Bank kindergartens is estimated to be 66,253 and 93,909, respectively.

Kindergartens in Norway are pedagogical institutions, providing early childhood education and care for children aged 0–5 years. Children start compulsory school the year they turn 6. The purpose and content are regulated by the Kindergarten Act (Ministry of Education Research, 2011), and all the kindergartens follow a national curriculum called The Framework Plan for the Content and Tasks of Kindergartens (Norwegian Directorate for Education Training, 2017). The latest figures for 2020 show that between 3 and 5 years, 97.3% of children are in kindergarten[3], Kindergarten is subsidized by the government; it regulates the maximum a kindergarten place can cost every year.

Over 40% of the staff in the Norwegian kindergartens have a 3-year bachelor's degree in early childhood education and care, and other staff members usually have shorter vocational courses or experience. The ratio of staff to children is regulated by the government, although the level is seen as unsatisfactory to both parents and teachers' organizations, as the staff has to cover a long day—usually, kindergarten is open from 07:00–17:00—while working in shifts.

The core values of Norwegian kindergartens emphasize play as an intrinsic value of childhood. Kindergartens undertake a holistic approach toward children's development and work in partnership and agreement with their homes, to meet their needs for care and play; they promote learning and formative development as a basis for development. Preparation for academic work in school is a factor but is not majorly focused on in Norwegian kindergartens.

[1]http://www.moehe.gov.ps/moehe/ministerialsystemsandregulations
[2]https://andp.unescwa.org/sites/default/files/2021-07/palestine_education_sector_strategic_plan_2017-2022.pdf
[3]https://www.ssb.no/en/utdanning/barnehager/statistikk/barnehager (accessed July 4, 2021).

METHODS

Study Design

This study is a comparative case study (Blömeke and Paine, 2008; Flyvbjerg, 2011), and takes on a qualitative grounded theory approach (Glaser and Strauss, 1967; Charmaz and Thornberg, 2020), to the psychosocial support of kindergarten teachers in Palestine and Norway.

The various cultural and contextual resources for developing practices, education, or programs on psychosocial support have different starting points. The study shares many of the challenges of conceptual validity of international comparative studies (Harkness et al., 2003; Ponterotto, 2006). However, the differences between the countries were seen as "extreme" cases for different approaches. Conducting a contrasting case study might show the variations and dimensions of the concept of the landscape of psychosocial support.

The data collection builds upon the qualitative answers to questions, resulting in definitions as well as narrative descriptions (Ponterotto, 2006). The analysis focuses on the kindergarten teachers' own descriptions and evaluations as a starting point for developing the concept of psychosocial support. The study has not, therefore, used pre-defined specified clinical indicators; instead, it poses open-ended questions regarding the teachers' concepts and conditions for providing psychosocial support.

Sampling and Data Collection

In this study we aim at doing an introductory and explorative study. A randomized sampling of kindergartens has resulted in a total of 26 female respondents from the two countries, with 20 from Palestine (10 from Hebron and 10 from Gaza) and 6 from Norway. Some of the kindergarten teachers in Palestine hold a degree in early childhood education (ECE). However, all the Norwegian kindergarten teachers have a degree in ECE. The aim of this study has been to explore the conditions and conceptual basis for psychosocial support. Therefore, we first had a basis of Palestinian kindergarten teachers, and contrasting it with a smaller sample from Norway, for later elaboration.

Data were collected in September to October 2020 and selected through an open call by emails and direct contact with kindergartens. In Palestine, online interviews were conducted with the participants, in Norway, interviews were conducted either face-to-face or on Zoom (2 face-to-face and 4 on Zoom); the respondents replied through anonymized online forms.

Data were collected by native-language-speaking researchers through a qualitative semi-structured interview guide being developed collaboratively across Palestine and Norway, having both open-ended questions about how the teachers will define

psychosocial support and describing the factors for providing psychosocial support along with its challenges.

Interviews and Procedures

The interviews provide a thorough basis for exploring the particularity of individual experience and in-depth interviews of kindergarten teachers in Palestine and Norway. This approach is of interest in psychosocial studies. All the interviews were transcribed and then translated into English, being controlled by a second native speaker. The respondents have fictional names in addition to country abbreviations and numbers (H1, H2, H3, N1, N2, N3, G1, G2, G3, etc.).

Analytical Strategies, Reliability, and Validity

The analytical strategy for the data incorporated a grounded theory approach (Glaser and Strauss, 1967), seeking to "bottom-up" the analytical categories, and from the teachers themselves. The study aims at seeing the concept *across* contexts and common themes for Palestine and Norway, and *in* context, showing some different trends between Palestine and Norway.

The grounded theory approach was applied in two steps: In the first step, we explored common themes across the contexts of Palestine and Norway. The results were presented as overall categories, following the strategy of so-called open-coding (Strauss and Corbin, 1990, p. 61). These categories were not predefined but stemmed from the data material. This first analysis led to what is labeled "Results part 1" with comparable categories in **Table 1**.

We did not conduct this categorization with any aim of establishing concept validity in a narrow sense (Elo et al., 2014); rather to give a brief overview over the different and some possible common features across the two countries. For the sake of conducting an international comparison, we chose to keep the coding lists as short as possible and aimed at revealing the main of each country. When we had agreed upon the main codes, we conducted a color code process. The color-coding process helped in establishing evidence for the reliability of data analysis throughout the whole material, which was repeated, discussed, and developed between the authors. Then the different codes were counted and put in a table to present an overview of the emphasis and tendencies between the two countries. The counting did not have any statistical means, as the number of informants was different between the data sets and the volume of the transcripts was also varying (e.g., shorter interviews in Hebron, longer in Norway). However, the numeric values of the coding indicate the number of meaningful units (phrases) making up thematic categories. The purpose of the thematic coding is to show the main themes as described by the kindergarten teachers and to provide an overview of perspective in the two countries (see **Table 1**).

The second step of grounded theory was "axial coding," with results presented as short thematic narrations in the part called "Results, part 2." This analysis links the concept of psychosocial support to contexts, to consequences, to patterns of interaction, and causes (Strauss and Corbin, 1990, p. 96). The analysis, therefore, has a second part accentuating the quotes and summarized the qualitative differences and some similarities when relevant between the Palestinian and the Norwegian kindergarten teachers. This second analysis shows the different perspective and approaches to the concept and the conditions of psychosocial support in kindergartens.

To meet reliability issues and agreement about the codes and the findings across the data sets, the analysis was conducted by three researchers (one from each sampling: Hebron, Gaza, and Norway). Then the categories and analyses were checked by the others and discussed, ensuring agreement about the analyses. According to Harkness et al. (2003), construct bias and method bias are the critical factors for achieving validity in a cross-national comparison. Cross-national comparisons remain complex because of the many triggers for bias (Ponterotto, 2006). The author team had close collaboration throughout the analysis in reading, suggesting, and discussing possible thematic codes that appeared in the material. This process also included the determination of thematic categories that were to be used for the comparison between the data sets.

RESULTS

In Palestine, ***in the Gaza Strip***, there were 10 kindergarten teachers, aged 28–45 years old, 7 have Bachelor degree and three have diploma, 4 have a degree in social studies while 6 have different specialties, their experiences in education at kindergartens range from 6 to 20 years. ***In Hebron***, there were 10 kindergarten teachers, aged 32–52 years old, 7 have Bachelor degree and one have diploma, 3 have finished high school education, their experiences in education at kindergartens range from 4 to 28 years. Kindergartens were both public and private.

In Norway, there were 6 teachers; one without any formal qualifications as kindergarten teacher, 3 with Bachelor in Early childhood, a kindergarten teacher, one Bachelor in child welfare and one Master in inclusive education.

In the following, we will present the results in two main sections labeled "Results part 1" and "Results part 2."

Results, Part 1: Dimensions and Emphases of Psychosocial Support in Palestine and Norway

Table 1 presents an overview of the different dimensions of kindergarten teachers' descriptions of psychosocial support in Palestine and Norway. It shows the main dimensions of psychosocial support as defined by the kindergarten teachers. It also shows a comparison of the emphases of psychosocial support in symbols. The symbol values of "major emphasis," "middle ranged emphasis," and "less emphasis" are adjusted according to the amount of data material in Palestine and Norway.

Summary of the Research Questions in Part 1

Research question 1 (RQ1), which asks about descriptions of the concept of psychosocial support, shows that all the kindergarten teachers in Palestine and Norway linked psychosocial support to psychological and emotional knowledge. The Norwegian

TABLE 1 | Dimensions and emphases of psychosocial support in Palestine and Norway—Overall results of the study.

Themes and Subthemes	Palestine		Norway
	West bank	Gaza	
Q1: Description of psychosocial support			
Psychological/emotional support	30	8	10
Social and relational support	6	3	9
Cognitive and mental support	3	4	1
Behavioral support	3	1	1
Involvement of community apparatus	11	10	0
Q2: Present knowledge and skills			
Psychological skills and knowledge	7	10	10
Social and relational support	1	2	4
Particular method/skills/techniques	8	13	2
Experience/practice vs. formal	3	4	3
Moral/professional ethical skills and virtues	8	6	3
Involvement of community apparatus	8	9	3
Formal competence	3	2	9
Q3 Challenges			
Psychological and emotional challenges	4	7	4
Social and relational support challenges	1	4	4
Pedagogical challenges	2	7	6
Physical learning environment/time/space/resources	21	18	9
Community challenges (collaboration with instances and parents)	12	25	2
Formal competence challenges	14	0	0
Moral professional ethical challenges	0	4	3
Q4 Professional development needs			
Psychological and emotional knowledge	5	13	6
Social and relational support/skills	2	2	1
Pedagogical Methods and techniques	7	4	2
Practice and experience	7	7	0
Moral/professional ethical skills and virtues of learning and being	7	7	2
Involvement of community apparatus (parents, instances)	8	3	2
Formal competence	15	6	9

Emphasized dimensions of psychosocial support in Palestine and Norway. The colours show the main emphasis of what the kindergarten teachers find important about psychosocial support. Red colour is large emphasis, orange is middle ranged emphasis and blank fields show little emphasis. The categories stem from the kindergarten teachers themselves.
Palestine: *Red colour and numbers 13–30 show major emphasis. Orange colour and number 7–12, show middle ranged emphasis. No collar and numbers 0–6 show little or no emphasis.*
Norway: *Red colour and numbers 9–10 show major emphasis. Orange colour and number 6-8, show middle ranged emphasis. No colour and numbers 0–5 show little or no emphasis.*

teachers described psychosocial support in terms of the relational quality between themselves and the children. Palestinian kindergarten teachers expressed a particular understanding of psychosocial support, stating it as connected more to the learning environment—like a community program or collaboration with the parents or other professionals. The community dimension was quite absent in the data from the Norwegian kindergarten teachers, who rather described the relational quality of teacher and child.

Research question 2 (RQ2) asks about the kindergarten teachers' description of their knowledge and skills in providing psychosocial support. The findings show that all the kindergarten teachers highly value their psychological knowledge and skills. The kindergarten teachers in Palestine underline that they employ psychological techniques, which only a few of the Norwegian teachers did. However, the Norwegian teachers underlined the importance of their formal competence.

When it comes to the main challenges that teachers face in providing psychosocial support research question 3 (RQ3), all the kindergarten teachers mentioned physical and material resources in the learning environment, such as money, enough space, and—at the heart of all the teachers—enough time for each child. Parental collaboration was a major concern for the Palestinian kindergarten teachers; they pinpointed it as the reason for psychosocial problems, along with a lack of common understanding of the kindergarten's role and some parents' lack of understanding of the role of care. Some Norwegian teachers were instead describing the challenges of methods.

Although cooperation with parents was seen as integral, it was not mentioned as problematic.

Research question 4 (RQ4) shows that formal competence is requested in the West Bank and Norway, while psychological and emotional skills seem a prioritized need in Gaza. Despite the vastly different contexts, many kindergarten teachers in Palestine and Norway may have some major pedagogical challenges for developing the field of psychosocial support. The analysis resulted in several thematic overlaps, providing an overview of the conditions for providing psychosocial support in kindergarten. In the next section, we will present in-depth examples of the emphases of psychosocial support with the differences and similarities between Palestine and Norway.

Results, Part 2: Qualitative and Narrative Comparisons of Psychosocial Support in Palestine and Norway

Research Question 1: How Do Kindergarten Teachers Describe Psychosocial Support for Children in Palestine and Norway?

In Palestine, kindergarten teachers define the concept of psychosocial support in different ways; some of them understand it as providing children who have faced stressful and traumatic events that affected their personalities with sufficient support and suitable environments, to help them to understand themselves and their abilities, be able to solve problems, achieve a considerable degree of psychological and social coping, and increase productivity. G1 (Afnan) says, "*My understanding of psychosocial support is a set of services that must be provided to the child when needed to get rid of the difficulties and pressures that s/he faces."* Similarly, many kindergarten teachers explain psychosocial support as services that are provided to the children and their families to achieve psychosocial coping. The teachers accentuate that psychosocial support should include the child and his/her family, especially those children who experienced stressful life events such as domestic violence. G4 (Faten) explains psychosocial support as, *"…services which are provided to children and their families which include prevention and treatment programs that make children and their families compatible psychologically and socially and increase their productivity, awareness, and motivation in all areas."* H5 (Amani) says that psychosocial support is to, "…*provide psychological support to the child and the family in issues that the child is struggling with including domestic abuse, aggression, etc."*

A third group defines "psychological support" as providing children with the social skills that enable them to fulfill their social duties by the prevailing values and standards in society. G10 (Wafaa) says, *"The psychosocial support from my viewpoint refers to improving children's and their families' psychological and social health, by increasing social interaction among them and improving the relationships among the children themselves."* Another group of teachers gives more attention to engaging kids in healthy relationships and providing chances to express opinions and thoughts; they try to understand the behaviors from the child's perspective and avoid using punishment. H7 (Roba) refers to psychosocial support as, *"…encouraging the child to talk and listen, avoid using threats and punishments, and sharing everything about the child with his family."*

In Norway, psychosocial support as a term seems to be less known. Some kindergarten teachers seemed a bit surprised by it. N2 (Kari) says, "*It's not a word we use in kindergarten, "psychosocial support?"* N5 (Ida) says, *"Well, I am not used to using that concept but I can describe it as being there and helping a child to find ways to behave towards other children."* In the Norwegian dataset, however, many of the teachers describe the importance of psychological and emotional support; psychosocial support is connected to the personal space between the teacher and the child. The terms "feelings" and "emotions" are repeated. For instance, N1 (Anna) says, *"It is about meeting children's emotional needs. That's what I think of first"* while N6 (Brit) says, *"To be available for the children and their feelings, and even to mirror the feelings."* The kind of feelings is not described in detail. N1 (Anna) expresses psychosocial support as, *"…a need for regulation of feelings, support in dealing with difficult and strong feelings."* Some of the teachers describe feelings in terms of a "space" and "meeting the children where they are" (Brit, N6). This leaves an impression that psychosocial support is a kind of here-and-now space and personal relation with the child.

Research Question 2: How Do Kindergarten Teachers Describe Their Knowledge and Skills in Providing Psychosocial Support for the Children in the Kindergarten?

When the kindergarten teachers describe their knowledge and skills in providing psychosocial support, one factor is important: Experience. Kindergarten teachers in Palestine clearly state that they have professional experience, but they still need more knowledge and more training in psychosocial support and kindergarten teaching in general. H10 (Abla) says, *"I have knowledge and experience in kindergarten psychosocial support approach but still need more experience and more training."*

Furthermore, Palestinian kindergarten teachers believe that college provides them with the academic knowledge but not the practical psychological skills that they need to be a teacher who can offer psychosocial support. Teachers rely more on their own experience, which was built during working years, than on professional experience. G5 (Fatimah) says, *"Honestly, from my experience in dealing with children, I may have some knowledge and skills but not like specialists in this field. I have been trying to find solutions. I don't deny that experience plays a main role. We learn by trial and error."* H9 (Nila) says, *"My experiences and skills are limited and simple. I usually deal with my kids as a mother and not as a psychosocial supporter. I very much rely on my skills as a mother than a psychosocial supporter."*

Kindergarten teachers believe that they have inadequacies in terms of ECE knowledge and skills, and they always need supervision, consultation, and follow-ups from a specialist, such as a school counselor or a mental health specialist. H8 (Hania) says, *"I have the knowledge and skills when I am within my capacity and once the issue is above my capacity, I refer the child to a professional counselor."*

All the Norwegian teachers emphasize also experience as a source of professional learning. Many teachers claim high formal

competence due to their bachelor's and masters' degrees, in addition to formal courses in psychosocial support; however, they seem to pose questions about the value of formal competence in meeting the difficulties of a child. Some of the Norwegian teachers also refer to the "Circle of Security" as a particular theory and methodological approach for attachment and psychosocial support (Woodhouse et al., 2018).

One of the Norwegian teachers divides between "regular problems" (N4, Kari) that she feels she can deal with, as opposed to "difficult cases and mental issues," stating that "…when a child really is showing that they are struggling, it is quite painful to feel you are not up to the challenge." They need external support from specialists to cope with some situations.

All the kindergarten teachers express an urgent need for both formal competence and training in ECE to provide psychosocial support. They describe the need for expertise and supervision. In both countries, there is confusion regarding the status of psychosocial support. On the one hand, it is considered as a "specialist" domain, to be provided outside the kindergarten. Another finding from the interviews is that the kindergarten teachers seem to distance themselves from being what they call "specialists," implying: There is a gap between the "regular" they deal with in the kindergartens and the issues that belong to other sectors in their everyday lives. For some teachers this appears as a clear inferior position. On the other hand, the teachers also define themselves as important providers of psychosocial care. The Palestinian teachers tend to be more confident with their competence than their Norwegian counterparts.

Research Question 3: What Are the Challenges Experienced by the Kindergarten Teachers in Providing Psychosocial Support?

Kindergarten teachers reported several challenges that they face when providing psychosocial support to children. First, teachers in Palestine and teachers in Norway are on the same page regarding the staff-to-child ratio, stating it as one of the most difficult challenges they face when providing support to the children; these can be seen as *materialistic challenges*. In Palestine, the staff-to-child ratio was often mentioned together with the small sizes of the rooms, like H1 (Hiam) states: *"Firstly, in the kindergarten where I work, there is a huge number of children. Huge numbers hinder us from providing children with sufficient psychological support."* H1 (Hiam) says, "*The number of kids in one classroom is too much and does not give me enough time to follow up on the needs of every child."* There is also a lack of toys and other resources. G6 (Kafa) says, *"The lack of resources is a challenge. I have 25 children in the classroom. Children can't all play at the same time due to the lack of sufficient toys. Therefore, I ask some children to play and the others to wait."* G9 (Hiam) says, *"A challenge I face is the small size of the classroom. I can't practice most of the activities and not all children can play with me, especially when I want to use educational methods."*

Similarly, in Norway, kindergarten teachers reported the staff-to-child ratio as one of the major challenges that they face when providing psychosocial support. N3 (Peter) says, *"The first I think of are the numbers, the number of children and the number of staff."* N2 (Kari) stated, *"…that our special education provision is just not enough."* Elaborating on this, the teacher says, *"One frustration is that all the children mentioned have been assessed by the PPT, but they have not been given enough hours of extra help."* PPT is the local pedagogical-psychological service overlooking kindergartens and schools in the municipality, but only sometimes their assessments of the children lead to the employment of more staff.

Teachers in both countries mentioned that the overall demands of leading a kindergarten group are a sort of an administrational challenge connected to curriculum achievement. G1 (Afnan) says, *"The first challenge is the great responsibility we should as pre-school educators, which includes the tasks we carry out inside the kindergarten, such as report writing, activities, and events."* It is mentioned that time is a common factor, especially the time for planning, evaluating, and documenting one's teaching. G10 (Wafaa) says, *"I don't have enough time to support children. There's a curriculum that I should finish teaching in a limited time. I should stick to the curriculum plan I have. I don't have time to assign outdoor activities to the children or support them psychologically."* H3 (Manal) says, "*I don't have a teaching assistant in the classroom, so I don't even have a day off, and I cannot leave the kids with anyone in case of my absence."* Similarly, the pressure of time seems to be a challenge for kindergarten teachers in Norway as well. N6 (Vera) says, *"There are so many things we have to do—we have to plan, and write reports, do this, do that."*

One significant difference between Palestine and Norway is the kindergarten teachers' relationship with the local community, especially with the parents *(social challenges)*. The teachers in Palestine report a lack of family cooperation and cases of family denial when informed of their child's problems. G8 (Heba) says, "*One challenge is that parents may be unresponsive to their children's problems. Some parents don't believe that their child does anything.",* meaning that they underscore any mistakes by their child. G5 (Fatema) states, *"Parents' carelessness and devaluation of any problem are a big challenge for us in providing psychosocial support."* Likewise, the kindergartens in Hebron encounter the same challenge. H1 (Hyam) says that there is a "*lack of cooperation from the family side...*[and that the family] *does not share the information with the teacher."* They also seem to describe the relationship and the expectations from the parents as a key tension. H3 (Manal) says, *"The lack of cooperation and the lack of understanding from the families make my job harder.* Financial status is also one of the challenges that are faced by kindergarten teachers. Some families are poor and that negatively affects cooperation with the kindergarten children. G8 (Heba) says, *"Another challenge is the financial status of some children. Some families are poor. In this case, I should get in touch with well-off families to find a solution for this problem and ask them to donate an amount of money."*

The findings from Norway also mention the parent collaboration, the need to cooperate, exchange information, and provide support to parents. However, none of these issues are mentioned when asked for the prevailing challenges.

Interestingly, lack of knowledge was also seen as one of the challenges in providing adequate psychosocial support. H10 (Abla) says, *"I have knowledge and experience in kindergarten*

psychosocial support approach but still need more experiences and more training."

N5 (Ida) says, *"It is important to have staff who understand the importance of this* [supporting the children's feelings], *who can understand and know how to get involved with the children."*

The first challenge in providing psychosocial support for the Norwegian teachers is giving the child enough space to develop on its terms. Anna (N2) says, *"There is a need to work on this. . . on how the children can come more to the fore in kindergarten, where all from their wishes, needs and ways of being are given more space."* The Norwegian teachers' language about the child's needs, to pay attention to the child's "space" and to respect the "voice" of the children may mirror the United Nations Convention of the Rights of the Child, §12.[4] Respect for children's views has been a central feature of the Kindergarten Act for a couple of decades (Ministry of Education Research, 2011). Psychosocial support may be seen as a relational quality, in that the staff follows the child rather than the child following the teacher. A change of the pedagogical mandate with the "adult world" can diminish the agency of the child. As N1 (Peter) states, "*So, the challenge is to include the child in good interactions, good play without hurrying the child.*"

A second challenge can be described as a change of the pedagogical mandate of the kindergarten from free play into a school-like productivity rationale. Anna (N2) describes a kind of pressure from adults as well: "*Children are pressured—'pressured' into a form dictated by adults and where children have less opportunity to contribute, where children's participation is marginal and where the adults' needs are more visible. They can take up too much space.*" The "pressure" and the "hurrying" by the staff might come from the increased focus on acquiring school knowledge, such as mathematics, science, and the Norwegian language.

Third, there is also an administrational challenge of increased documentation and productivity demands in the kindergarten. The informants mention "many routine situations" and the time used in documenting and writing reports, giving staff less time to follow up interests and issues initiated by the children.

Research Question 4: What Are the Kindergarten Teachers' Professional Needs for Providing Psychosocial Support?

In Palestine, kindergarten teachers expressed their need for more training and more educational updates for their information and skills in the ECE field, to be confident in handling the kids' issues and successful in providing actual psychosocial support services. G6 (Kafa) says, *"I seek to improve my abilities. Children are an encyclopedia; one feels worthless before them...I would like to improve my abilities in dealing with children. I would like to do an MA in dealing with children to know how to deal with them. We are ready to learn and do anything."*

In Norway, kindergarten teachers expressed more concerns about the child's feelings and having the proper education and proper skills to be up to the challenges of being a psychosocial support teacher. N2 (Kari) says, "*. . . when a child really is showing that they are struggling, it is quite painful to feel you are not up to the challenge."* N3 (Peter) announces the need for, *"knowledge on how a trauma can affect a child's psychological development and how I can support [the child]."*

Kindergarten teachers stated that they need more education and knowledge, training, and skills to be able to provide good psychosocial support to children. When describing the first time she welcomed newly arrived refugee children with war trauma to kindergarten, N1 (Anna) says, *"It wasn't easy to make a plan and I didn't feel I had a lot in my pedagogical bag of knowledge, in a way."* N2 (Kari) mentions that the kindergarten teachers have conferred with the childcare services. She accentuates the need for all staff working directly with the children to have some level of basic pedagogical knowledge: *"In a way, they have competencies—practical experience after many years working in kindergarten—but no basic education course or pedagogical knowledge as a foundation. So, without that, working with children can be unfortunate, especially for children that need a little more help."*

The Norwegian teachers emphasized child growth and brain development as areas that all teachers need to be aware of and trained for. N3 (Peter) says, *"In this kindergarten, we have, in these last few years, spent a lot of time learning about brain development."* Teachers mentioned the possible access to available resources and lack of cooperation with outside-school resources. N4 (Vera) says, *"No, no, we don't get much input from outside. We have to have confidence in each other and discuss together."*

About half of the teachers showed interest in each of the following training topics: brain and psychological development, children, and trauma and how to handle trauma and crises, cooperation with parents, conversation skills and how to ask questions, how to communicate with families/parents, and learning English to communicate with English-speaking parents.

SUMMARY

Summary of the Results in the Study

In this study, we have mapped and explored the kindergarten teachers' perspectives on the concept and the conditions for developing psychosocial support for kindergarten children in Palestine and Norway. The present study represents an initial exploration of an educational approach to the field of psychosocial support. Followingly, this study has taken on a grounded theory approach that both seeks common features and differences in kindergarten teachers' descriptions of psychosocial support in Palestine and Norway. In the study, we asked how the kindergarten teachers in Palestine and Norway conceptualize psychosocial support (RQ1), about their knowledge and skills (RQ2), about the major challenges for providing psychosocial support (RQ3) as well as their further needs (RQ4). The study has resulted in an overview of the kindergarten teachers' concepts and gives insights into their emphases and conditions for providing psychosocial support in Palestine and Norway.

The analysis brings forth a varied concept of psychosocial support, yet with many similarities between the two countries.

[4]https://www.ohchr.org/en/professionalinterest/pages/crc.aspx (accessed July 7, 2021).

Psychosocial support can be summarized as five key dimensions, such as (a) psychological/emotional support, (b) social/relational support, (c) cognitive/mental support, (d) behavioral support, and (e) Involvement of community apparatus.

The analysis of the first research question (RQ1) showed that the concept of psychosocial support is more well-known in Palestine than in Norway. The kindergarten teachers all emphasize the work with getting to know children well and define psychosocial support as primarily an emotional, individual domain, caring, observing, and engaging with the child. The Palestinian teachers request and depend more on the community services and parents while the Norwegian teachers gave in-depth descriptions on the personal relations and promoting the agency of the individual child.

Research question 2 (RQ2) asked about the skills for providing psychosocial support. The kindergarten teachers in both countries emphasize and take pride in their experience, spending time, and "mothering" as the main qualifiers of providing psychosocial support. They acknowledge and call for the support of the health sector and more specialized knowledge, seeing themselves as inferior.

The results from research question 3 (RQ3) about the main challenges for psychosocial support showed that the Palestinian teachers were the collaboration with the parents, as well as an urge for specialists to supervise teachers. The Norwegian teachers were less engaged about the parents but reflected critically about their pedagogical role and their personal relation with the child, describing the issues of establishing safety and trust with the child, as well as promoting the child's own voice and agency.

The result from research question 4 (RQ4) about the kindergarten teachers' professional needs, shows that all the kindergarten teachers express an urgent need for both formal ECE competence and training for providing psychosocial support. They both describe the need for expertise and supervision.

DISCUSSION

To our knowledge, this is the first study to highlight psychosocial support from kindergarten teachers' perspectives in two different countries. In conducting a contrasting and comparative case analysis between kindergarten teachers in the two countries Palestine and Norway, we acknowledge and expect widely different situational, historical, and personal contexts for being able to conceptualize psychosocial support. The current events mirror Palestine as a country in constant conflict and war, while Norway represents a country of long-lasting peace. Yet, conducting this comparison is of high importance, both as a global common challenge on the one hand, and a contextual phenomenon on the other. The findings are of importance for the further development of education and training in kindergartens, as well as in community development programs for psychosocial support to children and families, being at the heart of worldwide attention and strategies (WHO, 2019).

A Methodological Note: Similarities Across Widely Different Contexts

In this study, we expected large variations in the conceptualizations and the practices of psychosocial support between the two countries. One possible critique could be raised to the procedures of conceptual validity, which undoubtedly has been a challenge in comparing findings from different countries such as Palestine and Norway. In this study, this gap is made as an introductory and explorative study to map variations in the concept and conditions for providing psychosocial support in kindergarten, with a small number of cases. The findings suggest a conceptual variation to be explored further. However, we were also surprised by how many *similar themes* and emphases of kindergarten teachers identified in the data material from Palestine and Norway. One explanation of the similar findings could be the global focus on the need for psychosocial support in education from international agencies (e.g., WHO, 2019; UNICEF, 2020).

Dealing with the development in early childhood and the acknowledgment of the vulnerability of children in conflict and instability is a global concern in both high- and low-income countries (WHO, 2019), such as Norway and Palestine. Furthermore, international agencies, such as WHO, UNESCO, UNICEF, and other global agencies have developed numerous programs of psychosocial support, and for low-income countries and countries in emergencies, establishing psychosocial support as a field the two last decades (Beaglehole et al., 2018). Thus, a unified discourse on psychosocial health and psychosocial support might have become mainstreamed, also resulting in the similarities found in the study.

The Need for and the Possibility of an Educational "Footprint" in Providing Psychosocial Support

This article might envision some possibilities and resources that kindergarten and education could provide. Among many relevant discussions, we will raise an important and foundational question: Why do we need a particular pedagogical "footprint" in the conceptualization and the practice development of psychosocial support in kindergartens?

The development of the field of psychosocial support is urgent, and during the next years, the interventions and services across community-based, general health will be one important focus (WHO, 2019, p. 2). However, this present study shows that community sectors, such as health, are described as important, yet distant by the kindergarten teachers. As research shows that the health sector is over-represented in interventions of psychosocial support, there is a need to integrate psychosocial support in other sectors, such as education (Haroz et al., 2020). Psychosocial support has, to a large degree, been developed by the domains of psychology and psychiatry. Education is envisioned as a profitable and effective space for providing psychosocial support (Haroz et al., 2020).

What is the potential of education providing psychosocial support? We will argue that education and kindergartens are not only convenient *sites* for conducting health-initiated programs in

terms of being time- or cost-effective compared to e.g., clinical treatment or limited interventions. Despite the indisputable need for mental first aid in conflict areas, education might do more than for instance conducting a program calming children with post-traumatic reactions, or use different methods for treatment involving conversation techniques, role play, drawing, etc. (as described by e.g., UNICEF, 2020). Instead, we can identify three insights from the study that education may provide to the concept of psychosocial support:

First, the study gives important insights about psychosocial support as a particular educational *value-oriented domain*. At the heart of psychosocial studies is the focus on the interactional quality and particular social patterns and transactions between the child and its caregivers (Woodward, 2015). Where a therapist can be dependent on a momentary "alliance" (Stubbe, 2018), many of the kindergarten teachers in this study are engaged in *being available* to a child. The teachers describe the challenge of having time to recognize the actual and exact need (Rq3); whether it is to adjust the morning routines or giving the child a hug, using the child's natural play situations, and being open to bodily expression. This implies more to a professional relationship than a therapeutic one; the challenge for the teacher is to develop care and love as professional domains (Arendt, 1998/1958, p. 181). However, a foundational problem raised by the kindergarten teachers, it the constant challenges of not having time and not having space to act properly on their professional values.

This present study reveals how kindergarten teachers represent a professional resource for *professional and holistic knowledge of* children. The teachers all describe how they see psychosocial support as measures for the child's emotional, physical, and cognitive development, highlighting a resilience perspective, seeing good mental health and developmental outcomes, despite exposure to significant adversity (Tol et al., 2013). Having a broad focus on local conceptualizations of psychosocial support is an overall and critical factor for the success of interventions.

Finally, we will accentuate the potential role that kindergartens can play as professional coordinators and collaborators in community interventions. In this study, and from RQ2 and 4, we see that the teachers feel skilled, ready, and motivated to engage and provide psychosocial support. In Palestine, the teachers are even more concerned with contributing as local actors and collaborate with parents and community services. Although the Norwegian teachers emphasized the community as less important, the cross-sectoral approach is vital for the effect of school-based programs for mental health (Gjerustad et al., 2019). Reviews of psychosocial support interventions need to be realized through coordinated and complementary actions within the multiple sectors and clusters of the humanitarian response (Ran, 2019, p. 18). Again, the Bronfenbrenner and Morris (1998) ecological model challenges communities to collaborate across sectors close to the child, as is also accentuated by Heltne et al. (2020) As the infrastructure of a public kindergarten seem to develop in Palestine as it has done in Norway, kindergartens might represent a key actor for connecting the child, parents, and community services.

This present study has explored the concept of psychosocial support, with a bottom-up approach to what may be important in kindergarten in two different countries. This might serve as an initial investigation to be taken further by new studies, for instance systematizing a holistic perspective on psychosocial support, and from different actors in a community. As one size does far from fitting all, there might be a need to develop psychosocial support as contextually encompassed and educational domains (Wessels, 2017). In that respect, it is of great importance to developing studies that critically examine more deeply the contextual basis for psychosocial support, revealing the conceptual and practical groundings for the field of psychosocial support.

LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

The current study provided qualitative evidence of the construct of providing psychosocial support on a phenomenological level. However, the current findings should be interpreted with caution due to some limitations. *Firstly*, the findings were obtained by conducting qualitative semi-structured interviews and allocating teachers' responses to categories derived by the authors from the psychosocial support interview guide developed collaboratively across Palestine and Norway. Even though the authors took caution to be objective and transparent, categorization of textual material remains a subjective procedure due to the interpretative paradigm of qualitative research. *Secondly*, the results obtained by the personal interviews which may have subjective bias when answering the questions. *Finally,* the number of the sample was small (26 participants) and only 6 from Norway. Therefore, the obtained results may be generalized across a larger kindergarten teachers' population.

Although of these limitations, the findings of the current study may be interesting for parents, kindergarten teachers and ECE educators regarding how to raise awareness of the importance of providing psychosocial support for children and the necessity of collaboration of parents with kindergarten teachers. Furthermore, the findings may be interesting for governmental bodies and policy makers in terms of the polices which should be followed regarding number of children in each class, enough places for play, allocating teacher assistance as well as providing the kindergarten with sufficient materials resources such as games.

For future research, this study may be seen as a provider of qualitative foundations of relevant key issues for approaching the field of psychosocial support in kindergartens, and for future development of indicators.

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 Norwegian Centre for Research Data. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

BE-K coordinated the manuscript. BE-K and IC drafted the overall manuscript. SL, SR, and SA-D collected data and conducted analyses. All authors conceived the study and its design.

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The Effect of Grit on Career Adaptability of Chinese College Students Based on the Self-Regulatory Processes

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Intelligence is innate, but grit is something everyone can develop. Grit not only enables students to stick to their goals, but also to persevere even when they fail. Career adaptability is an important concept in vocational education of college students, which is a person engaged in some work, must have a certain physical and psychological quality. Base on the self-regulation theory, this study investigated the relationship between grit and career adaptability of Chinese college student based on the self-regulatory processes. We surveyed 839 Chinese college students and tested a self-regulation model. As expected, grit was related to greater career adaptability *via* greater career exploration and decision self-efficacy, positive affect, and goal commitment. These findings not only broaden the theoretical framework for the effect of grit on career adaptability, but also open up a new horizon for improving college students' career adaptability in practice.

Keywords: grit, career adaptability, self-regulatory process, positive affect, goal commitment

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INTRODUCTION

The study of character strengths, such as grit and resilience, takes center stage in human resource management and occupational psychology, not only to improve productivity, but also to promote wellbeing and engagement in the workplace (Niemiec, 2017; Ting and Datu, 2020). Since grit is a relatively fresh concept, it has been defined and studied in the last recent years, and so far there has been growing interest and enthusiasm in cultivating personal grit (Tough, 2012; Kim and Kong, 2021), it is essential to continue studying grit in different contexts. Grit is defined as a quality of persisting in working hard and never giving up in the face of goals (Duckworth et al., 2007). Studies have examined that grit is able to have positive impact on several fields related to achievement: college grades, high school graduation, and so on (Eskreis-Winkler et al., 2014). What is more, some studies introduce grit into the field of career development (Suh, 2020; Olckers and Koekemoer, 2021). It is important to study the mediating mechanism between grit and career adaptability, because career development is becoming more irregular and boundaryless due to corporate change, economic and social insecurity, and changes in employment patterns (Guan et al., 2013; Kundi et al., 2021; Lee and Moon, 2021).

College students are more likely to experience job insecurity during the transition from student to workplace, which can affect personal and mental health (Wibowo et al., 2021). For people in marginal social status, such as college students, they often feel that their future career is fraught with risk (Seiffge-Krenke et al., 2012). What is more, compared with the knowledge content of the student stage, in an increasingly unstable work environment, students' career adaptability is indispensable (Guan et al., 2013). Therefore, many scholars believe that students need to cultivate positive psychological ability to respond to the changing career tasks and environment (Nilforooshan and Salimi, 2016; Jeong, 2019).

Previous studies have studied the relationship between grit and career adaptability based on career construction theory, most of which are based on the samples of college students from western countries (Datu et al., 2018a; Gregor et al., 2021). They both believed grit is very important to the career development among college students. Because grit requires demonstrating passionate perseverance and adaptability with long-term goals, it can serve as a means to achieve important career development milestones and positively predict career adaptability (Park and Yang, 2020; Gregor et al., 2021). So far, there is not much research has explored the mediating mechanism of the relationship between grit and career adaptability, previous studies have shown that grit influences career adaptability through resilience and creativity (Han, 2018; Jeong, 2019). In order to broaden the theoretical framework of the influence of grit on career adaptability, and the applicability of the relationship between college students' grit and career adaptability in China, we investigated the mediating mechanism between grit and career adaptability from the perspective of self-regulatory process (SRP).

Career adaptation is a dynamic and SRP (Savickas, 1997). Young people will do their best to regulate their cognition, affect, and motivation during the transition from school to the workplace (Wibowo et al., 2021). Specifically, when faced with unsatisfactory progress or career problems, young people may re-evaluate their abilities to achieve future career goals (i.e., career exploration and decision self-efficacy), manage the emotions associated (i.e., emotions), and lose momentum in pursuing present goals (i.e., goal commitment). For example, during a job search, a college graduate failed to join the company he wanted, if he has a strong self-regulatory ability, he will re-evaluate their abilities, rational thinking and maintain the positive emotions, find the problem from the failure, will also strengthen their present goals, and keep on trying until he finds another satisfactory job. In fact, this phenomenon is also concerned and studied by scholars. Most scholars emphasize that the SRP focuses on self-observation, self-judgment, and the management of related emotions (Diefendorff and Lord, 2008; Zacher, 2014). Studies have shown that grit is an important factor that governs and regulates human behavior (Hu et al., 2017; Min, 2018). In addition, many studies have demonstrated that the SRP can positively predict career adaptability (Schraub et al., 2011; Jundt et al., 2014). This suggests that SRPs involving cognition, affect, and motivation may play a role together between grit and career adaptability. Therefore, we hypothesize that college students with high grit will allocate cognitive, emotional, and motivational resources to deal with all kinds of situations in their future career environment. However, students with low grit may lose confidence and no longer stick to their goals when they encounter difficulties and setbacks. To test the hypothesis, we introduce career exploration and decision self-efficacy(cognition), positive affect(emotional), and goal commitment(motivational) as three parallel mediators to study the relationship between grit and career adaptability.

This study contributes to the existing literature in the following two aspects. First, by analyzing the mechanism of Chinese college students' grit on career adaptability, this study expands the application of self-regulation process in this field and opens the mediating the mechanism of college students' grit on career adaptability, which is beneficial to college students to adopt self-regulation behaviors when facing career changes or unpredictable career problems to better cope with the challenges in the future workplace. On the other hand, we examine the relationship between grit and career adaptability of Chinese college students, which broadens the application prospect of the theoretical model. In conclusion, we inspire colleges to particularly emphasis the cultivation of grit in career guidance education through the study grit and career adaptability. It also guides students to give full consideration to their own abilities and social environment when making career planning, show passion and persistence to long-term goals, face life and work with a positive attitude, and help students to better transition to work in the future.

LITERATURE REVIEW AND HYPOTHESIS

Grit and Career Adaptability

Grit means the passion and perseverance shown to achieve a long-term goal, it is characterized by long-term efforts to achieve goals, trying to conquer challenges and deal with difficulties, working hard, and finally being able to achieve one's desired goals. On the other hand, consistency of interest is characterized by having a clear goal, not being easily shift and changing goals, and having a lasting desire (Duckworth et al., 2007). Previous research has shown that grit has positive effects to meaning in life (Datu et al., 2018b), career motivation (Park and Lee, 2020), and career adaptability (Meriac et al., 2015). However, it remains to be studied whether grit can positively predict career adaptability in the Chinese context. Therefore, we introduce the theoretical model of grit and career adaptability into China to predict whether Chinese college students with grit can better cope with adverse and stressful situations and adapt to changing environments more easily. Here, career adaptability is defined as the core competencies that an individual to respond various challenges brought about by job or role changes when unforeseen events change their career plans (Savickas, 1997).

College students who have more grit are shown to have clear ideas, always participating in activities that support their goals (Lee and Sohn, 2017). They will have a unique set of strategies for coping with career challenges, allowing them to

face difficult situations in a less stress way and not give up easily goals (Yoon et al., 2017; Jang and Huh, 2019). Students with high grit will start to plan their goals from young age, beginning of choosing majors that suit their own wants and interests, and they will try to get high marks and achieve their goals (Jiang et al., 2019). Therefore. cultivating grit can be used as a way for the Chinese college students to better adapt to the transition from school to career (Koen et al., 2012; Datu et al., 2016). According to the career construction theory and the career adaptability model developed on the basis of it, the process of college students' career adaptation is to acquire the characteristics of adaptation, take corresponding behaviors, and improve the adaptability to achieve the result of adaptation (Savickas, 2002). Consequently, we propose the hypotheses 1:

Hypothesis 1: Grit will have a significant positive effect on Chinese college students' career adaptability.

The Effect of Grit on Career Adaptability Based on the Self-Regulatory Processes

The process of college students adapting to different activities and behaviors in their career is a process of self-regulation (Bandura, 1991). The self-regulation theory (Bandura, 1991) points out that the SRP is to set and gradually achieve individual goals and generate thoughts, emotions, and behaviors. A college student's ability to regulate himself or herself is determined by his or her sustained enthusiasm for his or her goals and by the amount of effort he or she puts into coping with changing environment (Wolters and Hussain, 2015). This is in line with the personality traits of the gritty (Duckworth et al., 2007). In other words, we think that college students with grit are willing to put in the effort and passion to pursue their careers by regulating their emotions, cognition, and motivation. Previous studies have shown that individuals who lack of grit is related to inadequate self-regulation (Gupta and Sudhesh, 2019). In order to further study, the mediating mechanism of grit on career adaptability, we conducted research specifically from the cognition (career exploration and decision self-efficacy), emotion (positive affect), and motivation (goal commitment) of Chinese college students.

In the career development theory, it is clearly pointed out that individual factors (such as individual personality characteristics) affect the development of career exploration and decision self-efficacy, but it does not specify the details of these factors (Jordaan, 2008). Kundu (2017) believed that students with high grit will have higher personal agency to challenge expected failures and have the confidence to explore various tasks in their future careers, and overcome obstacles to academic and career success (Kundu, 2017). In addition, a study points out that personality traits are a significant individual factor affecting career exploration (Fan et al., 2012; Ireland and Lent, 2018). Since grit is a positive personality traits that individuals exhibit in the process of growth and development (Duckworth et al., 2007), studies have shown that grit have positive impact on self-efficacy (Lim et al., 2016; Joy et al., 2020; Shin and Joo Ram, 2020). In order to improve the model structure, we will take self-efficacy into career field to study the effect of grit on career exploration and decision self-efficacy. Therefore, we assume that as:

Hypothesis 2: Grit will be positively associated with career exploration and decision self-efficacy.

College students are at a critical stage of life. Positive affect can make people think that the future is full of opportunities and hopes, so they tend to take the initiative (Maddi et al., 2013). Positive affect is unique responses to things that are personally meaningful (Fredrickson, 1998). Positive affect can expand the thinking and action range of individuals, and then construct durable personal resources (intellectual resources, physical resources, psychological resources, and social resources), thus bringing long-term adaptive advantage (Fredrickson, 2001). According to the broaden-and-build theory of positive emotions, the direction of emotional response is influenced by personal traits (Luthans et al., 2007). As an excellent trait of college students, grit may induce their emotional experience of positive affect. Studies have proved that people with high grit are better able to cope with stress and maintain mental health (Salles et al., 2013; Meriac et al., 2015), and grit is positively correlated with wellbeing (Lucas et al., 2015). We think that the more grit college students are, the more positive affect they experience. First of all, college students with high grit have strong self-determination consciousness and high psychological quality, which promote positive changes in their emotional level, produce more pleasure perception, and bring more positive emotional experience (Lavy and Littman-Ovadia, 2016). What is more, grit can promote the establishment and accumulation of psychological resources of college students. The more psychological resources an individual has, the less stress he or she faces in people's life, work and study and can use these resources to prevent pressure from turning into negative affect, such as anxiety, so as to show more positive affect (Meyers and van Woerkom, 2017). Therefore, we suppose as:

Hypothesis 3: Grit has a significant positive effect on positive affect.

Hollenbeck and Klein (1987) defined goal commitment as an individual's strong willingness to take actions within a certain period of time and move closer to the goal so as to achieve the goal (Hollenbeck and Klein, 1987). The gritty has sustained passion for goals and lasting endurance (Alhadabi and Karpinski, 2019). The research of Duckworth et al. (2007) found that the outstanding people in finance, art, academic, and other industries all have the personality trait of grit. It is because of this trait that individuals can face difficulties and setbacks and bottlenecks head-on, still maintain lasting enthusiasm for the goal, and make unremitting efforts to finally reach their goals (Eskreis-Winkler et al., 2014; Cho, 2020).

In the process of achieving career goals, college students will meet with all kinds of difficulties, the individual may inadvertently will reduce the standard of the goal. If college

students have lasting passion and perseverance for their career goals, they may have a high commitment to the set career goals when performing their duties, and will take the initiative to overcome the obstacles to reach the original goals by extending their working hours and enhancing their working skills. Previous studies have found that compared with individuals with low grit, individuals with high grit can achieve better academic achievement (Cross, 2014; Hodge et al., 2018; Tang et al., 2021) and persisted longer on tasks that were at risk of failure (Guerrero et al., 2016). Therefore, we believe that the more gritty college students are, the more willing they are to stick to a certain career goal and will not change them easily. We propose the following hypothesis:

Hypothesis 4: Grit has a significant positive effect on goal commitment.

Firstly, college is a period of career exploration for young people and the starting point of their future life (Osipow and Fitzgerald, 1996). In this stage, college students explore suitable career activities through the recognition and understanding of their role and environment (Schraub et al., 2011). Previous studies have shown that negative emotions, such as decision anxiety, have a negative impact on career adaptability and career decision self-efficacy can significantly predict the development of career adaptability of college students (Anderson and Mounts, 2012). The more confident individuals are in their decision ability, the more likely they are to seek employment information, the more likely they are to maintain a high level of persistence to resist external pressure, and the more involved they are in career planning and exploration, which corresponds to the definition of career adaptability (Hu et al., 2016). In other words, career exploration and decision self-efficacy can positively affect career adaptability.

Secondly, as an individual's ability to maintain balance in changes, career adaptability can help college students actively adapt to changing environment and role requirements in different stages of career development (Savickas, 2002). In this process, college students need to have a clear understanding of themselves and career goals in a new environment, and have a positive mood for their future career development. The first reason is that having positive affect can make individuals more creative and better at solving problems. In addition, positive affect can help individuals construct lasting psychological resources and have more ways to carry out career exploration and development (Coetzee and Harry, 2014). The research proved that both emotional stability and emotional intelligence can positively influence career adaptability (Huang et al., 2014). Therefore, in this study, we also believe that positive affect can significantly influence career adaptability.

Thirdly, there will be a series of career goals in the process of career development, and achieving career success usually requires the continuous realization of these goals. Furthermore, Lent et al. (1994) believed that goals are important parts of a career, with career planning, ambition, and choices embedded in basic goal mechanisms. In the career construction theory, Savickas (2002) further recognized the significance of career different goals in the behavioral self-regulatory of individuals in coping with various work tasks and role changes. They argue that by setting and committing various career goals, individuals can better regulate and guide their behavior motivating themselves, and increasing their ability to cope in the face of career changes or unpredictable career problems (Kim and Kim, 2018). As an important attitude in goal management, goal commitment has an important influence on career development (Burkley et al., 2013). So goal commitment positively affects career adaptability.

How does the grit influence career adaptability of Chinese college students? These problems have not been fully studied at present. Self-regulation theory explains how people direct their motivations, thoughts, and actions in pursuit of happiness, comfort, and adaptation to their environment (Sandars and Cleary, 2011). It has been pointed out that the SRP is considered to be an important part of studying the relationship between different personality traits and professional behavior (Liveris and Cavanagh, 2012; Nilforooshan and Salimi, 2016). Many studies suggest that SRPs play mediating roles (Gellert et al., 2012; Praskova et al., 2014; Hu et al., 2018). For example, Hu et al. (2018) believed that SRPs mediate the effect of negative career feedback on career goal shifting and career exploration (Hu et al., 2018). Therefore, in order to further understand the mediating mechanism between grit and career adaptability, we combined the self-regulation theory with the above discussion to explore whether the SRPs (career exploration and decision self-efficacy, positive affect, and goal commitment) can mediate the relationship between grit and career adaptability through the study of Chinese college students as sample. Therefore, we assume that as:

Hypothesis 5: Career exploration and decision self-efficacy act as a mediator variable between grit and career adaptability.

Hypothesis 6: Positive affect mediates the relationship between grit and career adaptability.

Hypothesis 7: Goal commitment plays a mediating effect on the relationship between grit and career adaptability.

MATERIALS AND METHODS

Participants and Procedures

A cluster random sampling method was used to select 1,000 students from a college in Chongqing, China. In order to prevent the deviation of homologous methods, we conducted a longitudinal study design. Besides, this research has set up one item separately: the last four digits of the mobile phone number, so that the data corresponding to the above variables can be effectively matched.

SPSS 21.0 and AMOS 17.0 are used to analyze and process the data. The hierarchical regression method was used to analyze

the main effect and the moderating effect, Hayes' Process macro plug-in was used to test the mediating effect (Hayes, 2015). At the same time, structural equation model was used to test the scale structure validity and path coefficient.

A total of 1,000 complete questionnaires were obtained by matching the last four digits of the mobile phone number, after incomplete questionnaires had been excluded, there were 893 (89.30%) valid responses. The characteristics of the sample data are shown in **Table 1**.

TABLE 1 | Demographic information of participants.

		N	Proportion (%)
Gender	Male	206	23.1
	Female	683	76.9
Age	Under 18	95	10.6
	Between 19 and 20	506	56.7
	21 and above	292	32.7
Nationality	Han nationality	803	89.9
	Other ethnic minorities	90	10.1
Grade	Freshmen	400	44.8
	Sophomores	203	22.7
	Juniors	266	29.8
	Seniors	24	2.7
Parents' education	Junior high school or below	541	60.6
	Senior high school, technical secondary school or technical school	222	24.9
	Junior college	67	7.5
	Undergraduate	59	6.6
	Postgraduate	4	0.4
GPA of last academic year	less than or equal to 2.0	65	7.3
	Greater than 2.0 and less than or equal to 2.5	117	13.1
	Greater than 2.5 and less than or equal to 3.0	180	20.2
	Greater than 3.0 and less than or equal to 3.5	273	30.6
	Greater than 3.5 and less than or equal to 4.0	189	21.2
	Greater than 4.0 and less than or equal to 4.5	55	6.2
	Greater than 4.5 and less than or equal to 5.0	14	1.6
Subjective social status	1	11	1.2
	2	33	3.7
	3	106	11.9
	4	159	17.8
	5	281	31.5
	6	170	19.0
	7	72	8.1
	8	43	4.8
	9	7	0.8
	10	11	1.2

In measuring subjective social status, 1 is the lowest, 10 is the highest, and the higher the score, the higher the status.

Measures

In this study, we adopted the mature western scales to measure the variables. For ensuring the consistency and applicability of the English scale in the Chinese context, the author conducted a translation-back translation procedure (Brislin, 1986). Before the formal investigation, a preliminary test was conducted on 15 college students, and the items were modified according to their feedback.

Grit

Grit was measured with a 8-items scale developed by Duckworth and Quinn (2009). Responses were on a five-point Likert scale ranging from 1 (not like me at all) to 5 (very much like me), which includes two dimensions: consistency of interest (e.g., "I often set a goal but later choose to pursue a different one") and perseverance of effort (e.g., "I finish whatever I begin"). Drawing on previous studies (e.g., Wibowo et al., 2021), we did not distinguish the two dimensions of grit in our study, and took them as a whole indicator. Cronbach's alpha was 0.60.

Career Exploration and Decision Self-Efficacy

Career exploration and decision self-efficacy were measured with a 12-items scale developed by Lent et al. (2015). Responses were asked to answer "How much confidence do you have in your ability to …" on a 10-point Likert scale ranging from 1 (no confidence at all) to 10 (full confidence), which includes two dimensions: decisional self-efficacy (e.g., "identify careers that best use your skills") and coping efficacy (e.g., "cope with the disappointment if your first choice does not work out"). Drawing on previous studies (e.g., Wolf et al., 2021), we did not distinguish the two dimensions of career exploration and decision self-efficacy in our study, and took them as a whole indicator. Cronbach's alpha was 0.96.

Positive Affect

Positive affect was measured with the 6-items tense-calm scale dimension in affective wellbeing scale developed by Warr (1990). Responses were asked to answer "Thinking of the past few weeks, how much of the time has your job made you feel each of the following?" Responses were as: never, occasionally, some of the time, much of the time, most of the time, and all of the time; and answers were scored from 1 to 6, respectively. The item was as: Tense, Uneasy, Worried, Calm, Contented, and Relaxed. Cronbach's alpha was 0.67.

Goal Commitment

Goal commitment was measured with the 9-items scale developed by Hollenbeck et al. (1989). Responses were on a five-point Likert scale ranging from 1 (not like me at all) to 5 (very much like me). The sample item was "I am strongly committed to pursuing this GPA goal." Cronbach's alpha was 0.74.

Career Adaptability

Career adaptability was measured with the 24-items scale developed by Hou et al. (2012). Responses were on a five-point Likert scale ranging from 1 (not strong) to 5 (strongest), which includes four dimensions: Concern (e.g., "Thinking about what my future will be like"), Control (e.g., "Keeping upbeat"), Curiosity (e.g., "Exploring my surroundings"), and Confidence

(e.g., "Performing tasks efficiently"). Drawing on previous studies (Guan et al., 2013), we did not distinguish the four dimensions of career adaptability in our study, and took them as a whole indicator. Cronbach's alpha was 0.97.

Control Variables

The control variables were selected based on previous studies related to career adaptability. These include gender, age, grade, nationality, GPA of last academic year, subjective social status, and parents' education.

Based on previous studies, firstly, we collected the general demographic information about the participants, including gender, age, grade, nationality, GPA of last academic year (Goodale and Hall, 1976; Duckworth et al., 2009; Zacher, 2014; Denault et al., 2018) to control for their effects on students' grit, and career adaptability. Second, as students' subjective social status can also influence their career adaptability behavior (Autin et al., 2016). we included students' subjective social status as a control variable when predicting grit and youths career adaptability. Lastly, according to the research of Guan et al. (2018), we also take the parents' education level as the control variables (Guan et al., 2018).

RESULT

Descriptive Statistics

Table 2 presents the descriptive statistics and correlations for the study variables. Grit correlated moderately with career exploration and decision self-efficacy ($r = 0.211$, $p < 0.01$), and slightly with positive affect ($r = 0.092$, $p < 0.01$) and goal commitment ($r = 0.087$, $p < 0.01$), and moderately with career adaptability ($r = 0.296$, $p < 0.01$). Career exploration and decision self-efficacy, positive affect, and goal commitment correlated with career adaptability ($r = 0.430$, $p < 0.01$; $r = 0.112$, $p < 0.01$; $r = 0.286$, $p < 0.01$).

The Predictive Effect of Grit on Career Adaptability

After controlling gender, age, grade, nationality, GPA of last academic year, subjective social status, and parents' education, a hierarchical regression model was established with career adaptability as the dependent variable and grit as the independent variable. The results showed that grit significantly affected career adaptability ($\beta = 0.417$, $p < 0.001$), Hypothesis 1 is verified.

According to the hypothesis of this study, after controlling control variables, independent variables and dependent variables are gradually added, and the results are shown in **Table 3**. Among them, grit significantly affected career exploration and decision self-efficacy ($\beta = 0.596$, $p < 0.001$), Hypothesis 2 is verified. Grit significantly affected positive affect ($\beta = 0.049$, $p < 0.01$), Hypothesis 3 is not verified. Grit significantly affected goal commitment ($\beta = 0.099$, $p < 0.05$), Hypothesis 4 is verified. Career exploration and decision self-efficacy significantly affected career adaptability ($\beta = 0.200$, $p < 0.001$). Positive affect significantly affected career adaptability ($\beta = 0.297$, $p < 0.001$). Goal commitment significantly affected career adaptability ($\beta = 0.337$, $p < 0.001$). After the addition of career exploration and decision self-efficacy, the influence of grit on career adaptability decreased significantly ($\beta = 0.311$, $p < 0.001$), and the influence of career exploration and decision self-efficacy on career adaptability still had a significant positive effect ($\beta = 0.178$, $p < 0.001$), Hypothesis 5 is verified. After the addition of positive affect, the influence of grit on career adaptability decreased significantly ($\beta = 0.406$, $p < 0.001$), and the influence of positive affect on career adaptability still had a significant positive effect ($\beta = 0.228$, $p < 0.001$), Hypothesis 6 is verified. After the addition of goal commitment, the effect of grit on career adaptability decreased significantly ($\beta = 0.386$, $p < 0.001$), and goal commitment still had a significant positive effect on career adaptability ($\beta = 0.309$, $p < 0.001$), Hypothesis 7 is verified.

According to the suggestion of Hayes (2015), the 95% confidence interval of the mediating effect was further calculated using the percentile Bootstrap method with bias correction, and 5,000 Bootstrap samples were selected from the samples ($n = 839$) to test the mediating effect. The results of total effect, direct effect, and indirect effect under the mediating effect are shown in **Table 4**. The total indirect effect value was 0.130, and the 95% confidence interval of the mediating effect path of career exploration and decision self-efficacy was 0.052 and 0.141, excluding 0, indicating that career exploration and decision self-efficacy have the significant mediating effect on the relationship between grit and career adaptability. Similarly, positive affect and goal commitment have significant mediating effects on the relationship between grit and career adaptability, with 95% confidence intervals of (0.002, 0.022) and (0.005, 0.044), respectively. The results of this model prove that there are differences in the mechanism of self-regulation in the influence of grit on career adaptability.

DISCUSSION

Previous studies have pointed out the direct impact of grit on career adaptability (Han, 2018). We will discuss the mediating mechanism and visualize it. Based on the SRP, we examine the relationship between grit and career adaptability for Chinese college students as sample and examine potential mediating mechanisms, career exploration and self-efficacy decision, positive affect, and goal commitment.

Theoretical Implication

First of all, we find that grit can positively predict the career adaptability of Chinese college students. Previous studies have been based on samples from other countries (Gregor et al., 2021; Kim and Kong, 2021). We are based in China, and grit is a quality that has become the most concerned education topic in Chinese society and has been emphasized in Chinese culture, such as volition (Zhao et al., 2018). Therefore, it is necessary to study Chinese students' grit to career adaptability. This suggests that in the Chinese context we can also improve the career adaptability of college students by cultivating their grit. Moreover, it is likely that college students with enthusiasm, perseverance, and long-term goals are better able to cope with

TABLE 2 | Descriptive statistics and correlations of study variables.

S. No	Variables	*M*	*SD*	1	2	3	4
1.	Grit	3.294	0.409				
2.	Career exploration and decision self-efficacy	6.442	1.223	0.211**			
3.	Positive affect	3.515	0.220	0.092**	0.017		
4.	Goal commitment	3.395	0.486	0.087**	0.216**	0.041	
5.	Career adaptability	3.850	0.589	0.296**	0.430**	0.112**	0.286**
6.	Gender	0.770	0.422	−0.042	−0.023	−0.019	0.098**
7.	Age	2.230	0.645	−0.022	−0.010	0.053	0.001
8.	Grade	1.900	0.919	−0.004	0.057	0.048	0.025
9.	Nationality	1.110	0.369	0.003	−0.045	−0.030	0.005
10.	GPA of last academic year	3.700	1.375	0.030	0.037	0.045	0.122**
11.	Subjective social status	5.010	1.602	0.041	0.215**	0.000	0.114**
12.	Parents' education	1.610	0.915	0.033	0.054	0.010	−0.002

N = 893, **$p < 0.01$.

predictable tasks and roles, and are better able to self-regulate to unpredictable results brought about by job changes, thus bringing positive results. This study verifies that grit also has a positive impact on Chinese college students' career adaptability and expands the theoretical framework and scope of application of the relationship between grit and career adaptability.

In addition, career exploration and decision self-efficacy, positive affect, and goal commitment have been proved to mediate the effect of grit on Chinese college students' career adaptability. That is to say, Chinese college students with high grit can actively conduct career exploration, have stronger belief in their success in making career decisions, maintain positive affect and a high goal commitment to self-regulate, and thus improve their career adaptability. This study attempts to extend the application of SRP to the field of personal career development and has achieved some results, which be propitious to support the self-regulation theory and provide a reference for subsequent researches.

Practical Implications

For college students, learning in college is crucial. Whether they can find a job they like and can be qualified for lies in their self-planning in college, as well as the cultivation of counselors, teachers, and parents. This study found grit to be significantly linked to career adaptability, and SRPs act as the important mediating mechanism between grit and adaptability. Therefore, the application of this research results involves the importance of developing persistence and consistency in students. In addition, in order to improve college students' career adaptability, we should start from two aspects of cultivating grit and improving students' SRPs.

When college students are looking for jobs, they may face difficulties in employment, do not want to find a job, and do not know their career goals and other problems. We should be targeted at individuals with high or low grit. Specifically, when confronted with career difficulties, students with high grit should improve their SRPs and understand their career preferences through practice. First, students should improve their sense of self-efficacy, set up quantifiable, time-bound and challenging career goals, and maintain a high level of effort and self-belief. Secondly, after setting appropriate career goals, you can timely adjust and improve your goals by analyzing problems. Do not give up easily and believe that you can achieve your goals. Finally, we should also manage our emotions and learn to control them. When the negative emotions accumulate to a certain extent, students should find some ways to vent the bad emotions, such as running or mountain climbing, and do something meaningful in their spare time to improve their SRP and activate the positive emotions effectively.

On the contrary, students with low grit need guidance from counselors and teachers, so as to help them improve grit and career adaptability. Teachers and counselors can implement educational and counseling interventions to cultivate college students' grit. When students encounter setbacks in the process of career exploration and development, it is more necessary for counselors and teachers to encourage them to have the courage to continue on the road ahead. At the same time, counselors and teachers also need to teach students how to face all kinds of troubles and pressures in the career exploration and development. In particular, counselors and teachers can help students improve their SRPs. When students encounter difficulties. Frist, counselors and teachers need to help students recover their self-efficacy and participate in exploring their abilities and other career possibilities, so as to help them better adapt to career development and make better career choice. Secondly, counselors and teachers can help students set goals correctly. If the goal is considered achievable, then it is necessary to formulate specific strategies to achieve the goal. If the goal does not fit the student, help them set a more suitable goal to prevent students from repeating failure. Third, counselors and teachers should communicate effectively with students to ensure that students have the positive emotions during the process and remain positive toward their goals.

Parents can also encourage college students' grit, as well as open experience to seek knowledge and explore education and career options, thus helping them make career decisions and better adapt to future career development. First, parents play an important role in influencing their children's interests and ideas, supporting all efforts to achieve their goals and improve students' decision self-efficacy in the form of praise.

TABLE 3 | Results of hierarchical regression analysis.

	Career exploration and decision self-efficacy	Positive affect	Goal commitment	Career adaptability					
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Control variable										
Gender	0.001	−0.009	0.125	−0.008	−0.019	−0.021	−0.064	−0.008	−0.005	−0.046
Age	−0.148	0.013	−0.023	−0.053	−0.030	−0.066	−0.054	−0.027	−0.056	−0.046
Grade	0.144*	0.004	0.016	0.052	0.025	0.054	0.049	0.026	0.051	0.047
Nationality	−0.132	−0.02	0.017	−0.008	0.019	−0.002	−0.013	0.015	−0.004	−0.014
GPA of last academic year	0.015	0.006	0.04	0.000	0.000	0.002	−0.01	−0.002	−0.001	−0.012
Subjective social status	0.154***	−0.001	0.035	0.051***	0.023*	0.055***	0.043***	0.024	0.052	0.041
Parents' education	0.049	0.002	−0.007	−0.008	−0.014	−0.003	−0.001	−0.016	−0.008	−0.006
Independent variable										
Grit	0.596***	0.049**	0.099*	0.417***				0.311***	0.406***	0.386***
Mediating variable										
Career exploration and decision self-efficacy					0.200***			0.178***		
Positive affect						0.297***			0.228**	
Goal commitment							0.337***			0.309***
R^2	0.097	0.014	0.046	0.111	0.190	0.040	0.102	0.235	0.118	0.173
$\triangle R^2$	0.040	0.008	0.007	0.083	0.163	0.012	0.074	0.124	0.109	0.062
F	11.822***	1.592	5.271***	13.814***	25.986***	4.598***	12.549***	30.106***	13.164***	20.540***

N = 893, *p < 0.05, **p < 0.01, ***p < 0.001.

TABLE 4 | Results of total effect, direct benefit, and indirect benefit.

The path	Effect	Se	Bias correcting confidence intervals (Boot95%CI)	
			LLCI	ULCI
Total effect: Grit → Career adaptability	0.417	0.046	0.327	0.507
Direct effect: Grit → Career adaptability	0.287	0.043	0.204	0.371
Indirect effect: Grit → Career adaptability	0.130	0.027	0.077	0.184
Grit → Career exploration and decision self-efficacy → Career adaptability	0.096	0.023	0.052	0.141
Grit → Positive affect → Career adaptability	0.011	0.005	0.002	0.022
Grit → Goal commitment → Career adaptability	0.023	0.010	0.005	0.044

LLCI and ULCI are the lowest and highest values of confidence interval, respectively.

In addition, parents are the main source of vocational knowledge for children, providing information materials on jobs, attending various career development seminars, or providing information on aptitude and interest tests. Parents can help them set career goals that suit them and encourage them to stick with them. Finally, parents can support their children's decisions through communication, express their support and interest in their children's career, help their children find emotional outlets and the right way of expression, be a listener, stand in their children's point of view to experience their feelings and ideas, and express their understanding of their children.

Limitations and Future Directions

First, our measures of grit and career adaptability rely only on self-reported measures, so the scale that generated the scores in our study may be affected by general methodological biases. Future research needs to use the longitudinal design method of self-report, parental report, and outcome variable behavioral assessment to explore the influencing factors and the mediating role of grit on more career outcomes in the process of career development.

Secondly, it is also essential to study the boundary conditions of these relationships. Self-regulation theory proposes that environment (e.g., social support) and basic characteristics of goals (e.g., goal importance) shape people's self-regulating behavior and influencs their career outcomes (Lent et al., 2017;

Hu et al., 2018). For example, parents' cultivation of grit and a harmonious family atmosphere make students more likely to adjust their behavior or goals to adapt their career development. These possibilities need to be validated in future studies.

Thirdly, the research sample has some limitations. The samples of this study are college students in southwest China, so whether the theoretical model proposed by this study is universally applicable to sample groups from other regions or with different educational backgrounds remains to be further verified. Future studies can expand the research sample, and compare whether there are differences in the influence mechanism of grit and SRP on career adaptability in samples from different regions, so as to promote the validity and consistency of research conclusions.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, and further inquiries can be directed to the corresponding authors.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study in line with the Declaration of Helsinki. Research respondents were ensured confidentiality and anonymity. All participation was voluntary.

AUTHOR CONTRIBUTIONS

HL wrote the manuscript and analyzed the data under the guidance of XY and YM. XL contributed to data analysis and editing of the manuscript. XY and YM contributed to study design and data collection. LL and NL contributed to study design and critical revisions. All authors contributed to the article and approved the submitted version.

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Relationship Among Physical Literacy, Mental Health, and Resilience in College Students

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Objectives: The objective of the study is to examine the relationship among physical literacy, mental health, and resilience in college students.

Methods: The study is a cross-sectional study. Participants ($N = 5,265$; 46.6% males) completed perceived physical literacy instruments, mental health continuum short forms, and the 12-item child and youth resilience measures. Mediation models were applied to explore the association among three concepts.

Results: Physical literacy, resilience, and mental health were significantly linked with each other. In the mediation model, the direct effect of physical literacy on mental health was 0.49. The indirect effect of physical literacy on mental health through the mediation of resilience was 0.97. The mediating effect of resilience accounts for 66.30% of the total effect, indicating the partial mediating effect of resilience in the relationship between physical literacy and mental health. In more detailed models, resilience was found to mediate the relationship between physical literacy and social and psychological wellbeing, accounting for 61.02% and 56.92% of the total effect, respectively. In addition, resilience acted as full mediator in the relationship between physical literacy and emotional wellbeing (>100%). These findings suggest that physical literacy increases mental health by improving resilience.

Conclusions: This is the first time to connect physical literacy with mind factors. The mediating effect of resilience on the relationship between physical literacy and mental health was found. Our findings support the development of physical literacy in universities as part of a holistic approach to supporting the wellbeing and mental health of undergraduates. This study provides a new perspective for the development of large-scale interventions in the health of body and mind in college students.

Keywords: physical literacy, mental health, resilience, mediation, association, relationship

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INTRODUCTION

Physical literacy is a multidimensional concept that includes physical, affective, and cognitive factors and is defined as the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engagement in physical activities for life (1, 2). The concept roots in existential and phenomenological philosophy, which sees physical literacy as

an essential component in human thriving and a construct of embodiment to quest harmony and unity among mental, physical, and environmental states (1, 3). Thus, a growing body of research has suggested that physical literacy is the foundation of lifetime physical activity participation (4–7). Previous studies demonstrate the positive relationships between physical literacy and physical activity levels (8, 9). Evidence also supported the beneficial effects of physical literacy on physical fitness (8, 10). Most studies have focused on linking physical literacy with the physical domain, expecting the positive impact on approaches to promote participation in physical activities through physical literacy (3). However, the embodiment of physical literacy supports the belief that body and mind cannot be separated (3). Expecting that physical and mental factors are equally linked with physical literacy is reasonable. Nevertheless, as an integral aspect of physical literacy, the mental health factor has not yet captured attention in this area.

LITERATURE REVIEW

Physical Literacy and Mental Health

The World Health Organization (WHO) defined mental health as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community" (11). Three key components were included in this definition: well-being, effective functioning in individual life, and effective functioning in community life, and the definition builds on two longstanding traditions in studies on life going well (12, 13): the *hedonic* tradition focus on feelings of happiness (emotional wellbeing), whereas the *eudaimonic* tradition emphasizes optimal functioning in individual and social life (psychological and social wellbeing) (14, 15). Mental health is vital to overall well-being, which is just as important as physical health (16). Furthermore, positive mental health is more than the absence of mental disorders or disabilities. Mental health is a state of well-being in which individuals are able to think, emote, communicate, earn a living, and enjoy the ability to live (12). It is a state that needs to be promoted and protected over time.

Based on the model proposed by Whitehead, physical literacy was developed from three domains: affective, physical, and cognitive. At the macro level, physical literacy emphasizes the inseparability of body and mind, with several dimensions interacting with each other. At the micro level, physical literacy emphasizes lifelong movement and positive attitudes (3). Meanwhile, mental health is considered to be the holistic triad of cognitive, behavioral, and affective wellbeing (17). In this respect, it shares partial commonalities with physical literacy (18). The influence of environmental factors on mental health has been demonstrated (19). Similarly, the effects of how environmental factors impact physical literacy were also examined (5). Such common characteristics, as well as the commonality in improving the wellbeing and quality of life of individuals, could be the basis for the association between physical literacy and mental health. However, yet, to date, empirical evidence on the association between physical literacy and psychological or mental health factors remains scarce. One recent study among 184 early adolescents found that physical literacy was positively associated with positive emotions and negatively associated with negative affect (20). Wang et al. used longitudinal studies to demonstrate the interaction between physical literacy and psychological satisfaction among 549 University students (21). However, modern mental health is not only related to positive mood (emotional wellbeing), but it also includes the presence of positive functioning in individual life (psychological wellbeing) and community life (social wellbeing). Moreover, the mechanisms underlying these positive outcomes have yet to be identified. Therefore, there is a need for a more comprehensive study of the relationship between physical literacy and mental health (including emotional, psychological, and social wellbeing), and the contribution of the mediating factors involved in this relationship.

Physical Literacy, Mental Health, and Resilience

Resilience is a multifaceted concept that is defined as the ability of a dynamic system to adapt to the interference that threatens system function, viability, and development (22, 23).

Resilience comes from quality interaction with the environment, which constantly promotes or maintains positive emotions and eventually achieves physical and psychological harmony (24). Thus, the resources that the environment provided influenced the development or maintenance of optimal mental, social, and physical health of youth. Meanwhile, the concept of resilience advocates the development of the ability of people to grow in adversity through quality interaction with the environment and to enjoy the resources provided by it. This concept is consistent with the concept of physical literacy that claims interaction with the surroundings to improve physical and social settings (22, 25). Furthermore, core elements of both physical literacy and resilience are enhanced when an environment is established that helps develop the ability to overcome challenges, obstacles, or adversity. In resilience, this process suggests that appropriate exposure to adversity in proper settings can help individuals gain coping experiences and strategies, which will provide advantages in future encounters (26). Similarly, in physical literacy, engaging in appropriately constructed challenging sports not only boosts confidence but also increases motivation and willingness to further participate in physical activity (3). Therefore, resilience and physical literacy both are dynamic concepts that are influenced by their environment and multidimensional factors throughout life (3, 26). Yet, to the best of our knowledge, only one study examined the association between physical literacy and resilience among 227 school children (9–12 years old) (23). Thus, further examining the relationship between physical literacy and resilience among college students is a paramount need to strengthen the power of current evidence in this area. In addition, studies have asserted that young people with high resilience can adapt quickly when they were exposed to adversity (27). Previous studies, thus, examined how resilience-based interventions can benefit the behavior, mental health, and overall

wellbeing of the individual (28–32). Given the relevance of mental health to the environment (33), it is reasonable to infer that resilience, namely, the ability to bounce back, or recover, in the face of adversity, could promote mental health (34). Moreover, resilience can always serve as mediator between mental health and other mental health-related factors, such as positive affect, social support, perceived stress and risk, and coping (35–38). Therefore, it could be assumed that resilience may mediate the relationship between physical literacy and positive mental health.

Physical literacy, mental health, and resilience are correlated to some degree. The concept of physical literacy as a link between body and mind is theoretically influential in promoting mental health. Resilience, as the ability to combat adversity, should also play an active role in the ability of the individual to achieve mental health. University students are in the last stage of the education process (39). During this period, young people need to take on pressure from a changing environment and adapt to a new phase of socialization and study mode. Research has revealed concerning rates of psychological illness, such as anxiety and depression, among University students (40). Interventions based on cognitive, behavioral, and mindfulness have shown to be effective in reducing stress in University students (40). Therefore, understanding how physical and psychological domains work together can help us better appreciate the mechanisms by which the body and mind operate, and can thereby better inform the instruction of the interventions, such as physical education courses and other movement-based programs. Such a link also supports physical and psychological harmony among students, which leads to a greater sense of well-being (23). Thus, this study provided a new perspective on physical literacy, clarifying the relationship among physical literacy, mental health, and resilience among undergraduates. The hypothesis of this study are as follows:

Hypothesis 1: Physical literacy will positively influence mental health.
Hypothesis 2: Physical literacy will positively influence resilience.
Hypothesis 3: Resilience will mediate the relationship between physical literacy and mental health.

METHOD

Design and Participants

Cross-sectional data was extracted from a 4-year longitudinal study, which tracked changes in physical literacy over the life of an undergraduate under natural circumstances. The study was conducted at Jinan University, China. Questionnaires were distributed through an online website. A total of 5,835 undergraduates participated in the study, and 5,265 completed the questionnaires. The response rate was 90.23%. All participants were fully informed of the details of the study and free to withdraw from participating at any time during the process, either temporarily or permanently. The ethical approval was obtained from the IRB of Jinan University (JNUKY-2021-008).

Measures

Physical literacy was assessed by the simplified Chinese version of perceived physical literacy instrument (PPLI-SC) (41), which is an eight-item instrument to measure the physical literacy of Chinese undergraduates. It consists of three dimensions, namely, *motivation*, *confidence and physical competence*, and *interaction with the environment*. Specifically, *motivation* examined whether individuals would maintain positive attitudes toward physical activity throughout their life. *Confidence and physical competence* detected whether people could move with confidence and poise in a variety of challenging situations. *Interaction with the environment* monitored whether individuals can interact with the environment in the context of each day (1). All three dimensions were defined as the core stage of Whitehead's concept of physical literacy. Each item was rated on a five-point Likert scale, ranging from strongly agree to strongly disagree. PPLI-SC was proven to be a reliable and valid instrument to measure physical literacy of Chinese undergraduates through Cronbach's alpha ($\alpha = 0.86$) and confirmatory factor analysis (CFA) (factor loadings ranged from 0.60 to 0.92, RMSEA = 0.03, AGFI = 0.96, NFI = 0.97, CFI = 0.99) (41). In this study, the Cronbach's alpha was 0.91.

The simplified Chinese version of the Mental Health Continuum Short Form (MHC-SF) was translated from the MHC-SF and was used to measure positive mental health (42). The tool comprises 14 items, representing three dimensions of well-being, which are emotional wellbeing, psychological wellbeing, and social wellbeing. Emotional wellbeing represents positive affect and life satisfaction. Psychological wellbeing accesses individual functioning, including self-esteem, coping strategies, and general self-efficacy. Social well-being reveals the involvement in society, such as social participation and sense of community. The MHC-SF has shown good psychometric properties in Chinese adults through Cronbach's alpha ($\alpha = 0.92$) and CFA (RMSEA = 0.08, AGFI = 0.90, NFI = 0.95, CFI = 0.95) (42). In this study, the Cronbach's alpha was 0.97.

The resilience levels of the students were measured by the simplified Chinese version of the 12-item child and youth resilience measure (CYRM-SC) (43). The CYRM is used to indicate the psychological resilience of an individual, meaning the extent to which people can use the environmental resources to thrive in adversity (44). The CYRM-SC was validated by using exploratory factor analysis and CFA, which resulted in the one-factor solution ($\alpha = 0.92$, RMSEA = 0.06, CFI = 0.96, IFI = 0.96, NFI = 0.95) (43). In this study, the Cronbach's alpha was 0.93.

Statistical Analysis

IBM SPSS 26 and PROCESS macro 3.5 were used for data analysis (45). Descriptive statistics was used to describe the characteristics of the participants. Before the analysis, normality, linearity, and homoscedasticity were examined and found to be supported. This study had two stages. First, standard regression and the bootstrap method were used to identify the mediational hypothesis. The steps were as follows: (1) Physical literacy was significantly associated with mental health. (2) Physical literacy was significantly associated with resilience. (3) Resilience was significantly associated with mental health. (4) If the boot confidence interval (CI) of the indirect effect did not contain

TABLE 1 | Results of the standard linear regression analysis among physical literacy, mental health, and resilience.

	β (SE)	*F (df)*	(95% CI)	*R*	ΔR^2
All					
Physical literacy					
Mental health	1.46 (1.08)[a]	1,731.10 (1, 5,263)	(3.51, 7.76)	0.50	0.25
Resilience	1.01 (0.40)[a]	6,034.55 (1, 5,263)	(17.06, 18.63)	0.73	0.53
Resilience					
Mental health	1.22 (1.18) [a]	2,583.95 (1, 5,263)	(−11.50, −6.88)	0.57	0.33
Males					
Physical literacy					
Mental health	1.31 (1.80)[a]	510.07 (1, 2,451)	(6.20, 13.27)	0.46	0.21
Resilience	1.04 (0.67)[a]	2,315.28 (1, 2,451)	(15.64, 18.26)	0.74	0.55
Resilience					
Mental health	1.05 (1.97)[a]	679.52 (1, 2,451)	(−4.80, 2.93)	0.51	0.26
Females					
Physical literacy					
Mental health	1.56 (1.35)[a]	1,267.31 (1, 2,810)	(0.07, 5.37)	0.53	0.28
Resilience	0.99 (0.50)[a]	3,700.63 (1, 2,810)	(17.49, 19.45)	0.73	0.53
Resilience					
Mental health	1.35 (1.46)[a]	2,067.74 (1, 2,810)	(−18.26, −12.55)	0.62	0.38

[a]*Correlation is significant at the 0.01 level (two tailed).*

zero, the mediating effect would be significant. Second, the mediating effect of resilience on each of the three dimensions of mental health was examined separately. In addition, previous studies have been interested in whether there are differences between men and women in the development of physical literacy (1). Thus, in this study, separate regression analyses for gender were also conducted.

RESULTS

A total of 5,265 current college students participated in the study. Males and females were approximately equal [male = 2,453 (46.60%); female = 2,812 (53.40%)]. The age of the students ranged between 17 and 21 years (total$_{age}$: $M = 18.98$, $SD = 1.10$; Male$_{age}$: $M = 19.51$, $SD = 0.88$; female$_{age}$: $M = 18.67$, $SD = 1.09$), and most of them were 19 years old (38.40%). About half of the participants were year 1 students ($N = 2{,}712$, 51.50%), and others were year 2 ($N = 2{,}553$, 48.50%). The study streams of students were mainly in liberal arts ($N = 1{,}843$, 35.00%) and science ($N = 2{,}685$, 51.00%), followed by medicine ($N = 527$, 10.01%), and law ($N = 210$, 3.99%).

Standard linear regression was used to assess the association among physical literacy, mental health, and resilience (**Table 1**). All correlations were positive and strong, indicating a significant relationship among them. The three regression models were mental health = 5.63 + 1.46 × physical literacy, resilience = 17.84 + 1.01 × physical literacy, and mental health = −9.19 + 1.22 × resilience. **Figure 1** presents the graphical representation of the mediation model and the regression coefficients. Association between physical literacy and mental health (Path c') was found in males ($p < 0.001$) and females ($p < 0.001$). The connection between physical literacy and resilience (Path a), and between resilience and mental health (Path b), showed significance in each gender ($p < 0.001$). The bootstrap method was utilized to assess the mediating effect of resilience on the relationship between physical literacy and mental health (**Table 2**). The mediation model showed a non-zero boot CI (0.88, 1.06) with 0.49 direct effect and 0.97 indirect effect of physical literacy on mental health. Specifically, the mediating effect of resilience accounts for 66.30% of the total effect, indicating a partial mediator in the relationship between physical literacy and mental health.

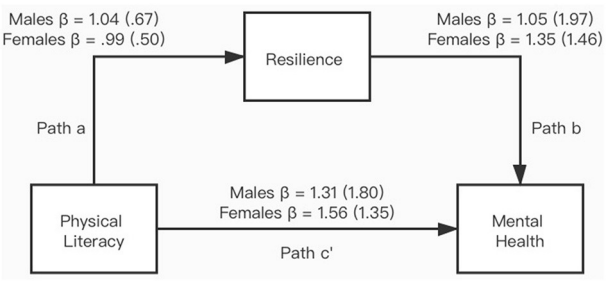

FIGURE 1 | Graphical representation of the mediation model of resilience for physical literacy and mental health.

The bivariate Pearson's product–moment correlation coefficient (r) was calculated to assess the size and direction of the linear relationship among physical literacy, resilience, and the three wellbeing dimensions of mental health (**Table 3**). The result shows that each wellbeing dimension was significantly correlated to physical literacy and resilience. **Table 2** also shows the mediating effects of resilience on the relationship between physical literacy and the three wellbeing dimensions of mental health. The mediating effect of each gender was examined as well. Same with the mediating effect of resilience on physical literacy and mental health, the model that contains social wellbeing and psychological wellbeing showed resilience as the significant partial mediator (social wellbeing: 61.02%; psychological wellbeing: 56.92%) in the mediation model. Different from the above, the mediation model pointing to emotional wellbeing showed that resilience was the significant full mediation. Specifically, with a >100% mediating effect in males and females, the relationship between physical literacy and emotional wellbeing must first pass through resilience. Without resilience, such association disappears. **Figure 2** presents the graphical representation of the three mediation models and the regression coefficients.

DISCUSSION

The results of this study indicated that physical literacy, mental health, and resilience were significantly related to each other. The mediating effect of resilience may contribute to understanding

TABLE 2 | Mediating effect of resilience on the relationship among different variables.

Mediating effect of resilience on the model	Direct effect			Indirect effect			Mediating effect		
	All	Males	Females	All	Males	Females	All	Males	Females
Physical literacy and mental health	0.49	0.51	0.47	0.97	0.81	1.1	66.44%[a]	61.36%[a]	70.06%[a]
Physical literacy and emotional wellbeing	−0.03	−0.05	−0.01	0.24	0.21	0.27	>100%[a]	>100%[a]	>100%[a]
Physical literacy and social wellbeing	0.23	0.30	0.19	0.36	0.32	0.38	61.02%[a]	51.51%[a]	66.67%[a]
Physical literacy and psychological wellbeing	0.28	0.26	0.30	0.37	0.28	0.43	56.92%[a]	51.85%[a]	58.90%[a]

[a] *The mediating effect is significant with non-zero boot CI.*

TABLE 3 | Correlations among physical literacy (PL), resilience, and mental health domains.

Measure	PL	Resilience	Emotional wellbeing	Social wellbeing	Psychological wellbeing
PL	—	0.73[a]	0.32[a]	0.51[a]	0.51[a]
Resilience	—	—	0.47[a]	0.57[a]	0.55[a]

[a] *Correlation is significant at the 0.01 level (two tailed).*

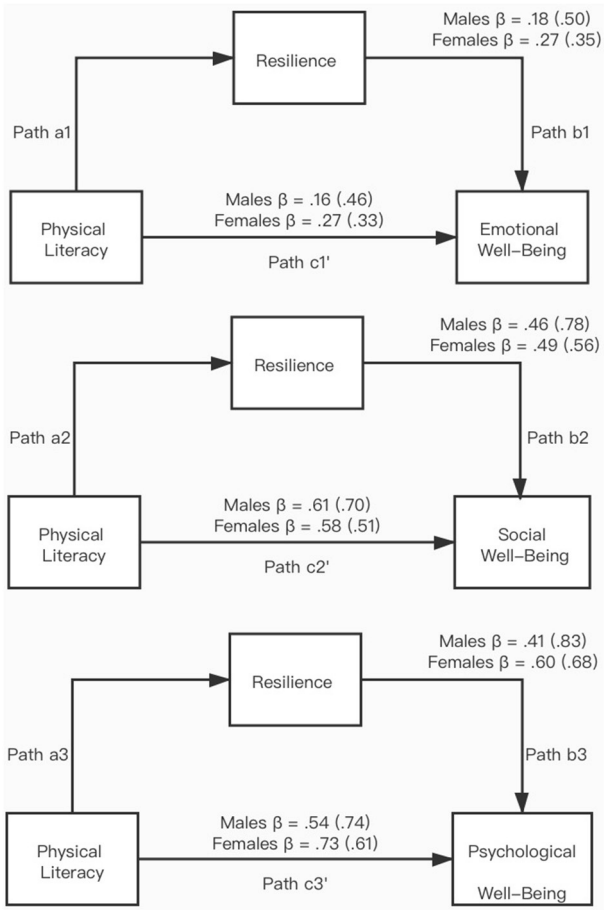

FIGURE 2 | Graphical representation of the mediation model of resilience for physical literacy and the three well-being dimensions of mental health.

the relationship between physical literacy and mental health in a sample of Chinese college students.

In accordance with the definition of mental health and the pathway from physical literacy to mental health (46), this study found that physical literacy was a significant predictor of mental health. Together, this indicates that college students who have higher physical literacy tend to enjoy greater mental health. This finding was consistent with one previous study, which showed positive relationship between physical literacy and positive affect among early adolescents (20). Such association proved to some extent that in addition to developing physical health, physical literacy is inextricably related to mind factors (3).

One potential mechanism linking physical literacy to enhanced metal health is through physical competence and associated perceptions of competence (i.e., confidence). Experiencing perceptions of competence is considered essential for psychological growth and wellness (47). Indeed, if the affective dimensions of physical literacy, such as *motivation and confidence*, go beyond just motor action, then they may also help to promote mental health, and support young adults to the pursuit of a harmony state between the health of the body and the mind. Another potential explanation for the relationship between physical literacy and mental health may be attributed to improved physical activity level. Physical literacy promoted physical activity levels (8, 9); physical activity contributed to positive mental health (48). Moreover, our results support our third hypothesis that resilience represents a potential underlying mechanism that could partially explain how physical literacy is linked with mental health. That is, promoting physical literacy as a way to build up resilience could help to improve mental health among college students. A positive relationship between physical literacy and resilience has been demonstrated in a previous study (23) and the current study. Physical literacy can be a good booster in the process of developing the resilience of college students. Emotional domains, including *motivation and confidence*, of physical literacy contributed to the fundamental to resilience, since they may provide or assist individuals acquire the skills and abilities to better negotiate for, and navigate to, resources that sustain their wellbeing in different circumstances (23). The positive challenge faced in the process of developing physical competence may also position the physical literacy as an antecedent of resilience (23). On the other hand, college students with a high level of resilience tend to have confidence

in dealing with challenges and adversity, and to be able to cope with difficulties; they are more likely to evaluate their mental health with a positive attitude. Our results show no difference with those of previous studies that resilience has been regarded as the defense mechanism for people who are emotionally depressed after facing setbacks, and could promote mental health (49). Moreover, previous studies have brought the relationship between resilience and mental health to interdisciplinary field discussions and have conducted various models based on numerous theoretical and empirical studies (50). This finding was also in line with our results, where resilience is correlated with the psychological wellbeing dimension and shows a strong correlation with wellbeing at the social and emotional dimensions (33). Therefore, the contribution of physical literacy to health may be not only at the level of physical health but also at a more macro level, including both physical and mental health. The statement made by Whitehead, physical literacy should be considered as intrinsic to human flourishing (51, 52), also support these ideas. This is particularly important given the rising mental health issue reported among college students (53, 54). Our findings suggested that physical literacy may be an optimizing way through which these mental issues might be alleviated.

To better understand the mediator role of resilience among physical literacy and mental health, this study also explored the mediating effect of resilience on the relationship between physical literacy and each dimension of mental health, namely, emotional, psychological, and social wellbeing. Based on our model, resilience is the partial mediator in the model of psychological wellbeing. Specifically, resilience can strengthen or weaken the correlation of physical literacy for psychological wellbeing. Psychological wellbeing has been considered as a set of psychological features involved in positive human functioning under the "*eudaimonic* perspective" (13). Theory-guided dimensions of psychological wellbeing including self-acceptance (positive attitude toward the self), positive relations with others, autonomy (self-determining and independent), environmental mastery (has a sense of mastery and competence in managing environment), purpose in life (goals in life and sense of directedness), and personal growth (55). Physically literate individuals with high confidence, enthusiasm for life, and ability to interact with the environment, thus, tend to show high psychological wellbeing. Meanwhile, psychological well-being includes several resilience-related aspects, such as purpose in life (33). Indeed, resilience has been demonstrated to be the predictor of psychological wellbeing (56). Similar to this, resilience is the partial mediator between physical literacy and social wellbeing. Physical literacy improves the ability of individuals to interact with the social environment, and resilience in adversity continues to amplify such ability, thus, maximizing social wellbeing. In addition, it is worth noting that, according to our mediating model, resilience is the full mediator between physical literacy and emotional well-being. In other words, physical literacy improves emotional well-being entirely by promoting resilience. This has very important implications for practice. For example, in physical literacy curricula development, only by cooperating the importance of both physical and psychological factors related to resilience can such a holistic construction promote all three dimensions of mental health among college students.

Nowadays, mental disorders are becoming one of the major diseases in the world (57). College students, especially freshmen, were the majority of patients (58). In this respect, Chinese undergraduates showed no difference from the rest of the world (59). Mental health problems affect the academic performance and behavioral habits of students (60). In the long run, the mental health problem of students was considered as one of the primary obstacles to the continuation of higher education. Mental and psychological health have been recognized as important as physical health and need to be included in health and social policy considerations. In this context, this study provides a novel perspective, encouraging physical literacy to foster resilience and subsequently promote mental health, to address the issue. This has significant practical implications for curriculum development in the universities. Universities can reasonably offer a curriculum designed on the basis of physical literacy and resilience to improve the mental health of students. For example, adding more motivation and confidence building to the physical education course, or taking students to different environments to feel the changes in their bodies and to develop adaptive capacity. Not only physical education course but also other courses can integrate elements of resilience into their curriculum design, including setting relatively difficult and positively challenging content, and encouraging students to overcome them on their own. Students can also be encouraged to participate in meaningful extracurricular activities and try to adapt to different environments. In the process, students will feel psychological satisfaction, which will bring wellbeing and, thus, improve their quality of lives.

LIMITATIONS

The present study was conducted with a group of Chinese undergraduates. Although the mental health issue of college students is a global problem, the different education systems among countries, including higher education, still have an impact on the mediated relationship. Given that University systems differ from country to country, the findings of this study showed limited generalization and applicability to countries with different education systems. Furthermore, the data in this article were self-reported. The measurements provided were not the observations of others, but rather an assessment of oneself. Each person will also have more or less different criteria for evaluation. This may result in deficiencies in the objectivity of this study. There are also limitations in some of the methodological decisions. The article discussed the three factors of mental health separately but did not consider each dimension of physical literacy as well. The different factors may have an impact on the results compared with a single whole. Future research could build a better model through structural equations to have a better explanation of the latent variables. Finally, although the results of this study support the hypothesized relationships described in the existing literature, any causal statements regarding the

relationship between physical literacy, resilience, and mental health should be made with caution. Additional experimental studies are needed to verify the observed causal inferences.

CONCLUSIONS

This study explores the relationship among physical literacy, mental health, and resilience, and directly links physical literacy with mind factors, making it a strong addition to the existing physical literacy research. Our findings support the development of physical literacy in universities as part of a holistic approach to support the wellbeing and mental health of undergraduates. This study provides a new perspective of intervention for improving mental health of college students. Physical education programs can play an important role in this process by designing programs that focus on the concept of physical literacy, thereby improving both the physical and mental health of students. At the same time, other courses can also incorporate resilience-based content into their curriculum to improve resilience of the students and, thus, their wellbeing.

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 IRB of Jinan University (JNUKY-2021-008). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

RM and TL were responsible for conceptualization, formal analysis, and writing. All authors were in charge of collecting and analyzing data and reviewed and approved the manuscript.

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How Labor Values Affect Mental Health: An Analysis From the Perspective of Social Support

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To explore the positive and negative effects of labor values on mental health from the aspects of life satisfaction and psychological distress, and further verify the mediating role of social support. A total of 2,691 primary and secondary school students were surveyed by Labor Values Scale, the Multidimensional Scale of Social Support, General Health Questionnaire and Satisfaction with Life Scale, and the results of which showed that as: (1) labor values can positively predict life satisfaction, while they are negatively correlated with psychological distress; (2) social support can play a mediating role between labor values and life satisfaction; and (3) social support can also play a mediating role in the relationship between labor values and psychological distress. This study revealed that the specific path and mechanism of labor values on mental health. This provided a reference for families and schools to further implement the education of labor values on primary and secondary school students and helped to promote the social construction of an education system that aimed at cultivating individual all-round development.

Keywords: labor values, psychological distress, life satisfaction, social support, mental health

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INTRODUCTION

Values are the concept system that people use to distinguish good from bad, beauty from ugliness, profit from loss, right from wrong, or to judge whether something is in line with their own wishes, etc. (Zhang, 2002; Huang and Zheng, 2015). Values are closely related to mental health (Balzarotti et al., 2016; Rean and Shagalov, 2018; Yurim et al., 2018). Labor values are the abstraction of individuals subjective evaluations on labor (Hao, 2014; Tan, 2019a), which are one of the most fundamental values derived from labor practice. Labor values are not just people's general and fundamental views on the state and extent to which labor satisfies people's needs, which are also the internal needs of individuals, and it can present the labor characteristics or attributes that they pursue in their activities (Guo and Liu, 2016). Therefore, labor values are of great significance in the development of human society.

In the Chinese institutional culture guided by Marxism, labor values have special meanings. According to the research of Tan (2019b), in Chinese culture, labor values refer to the individual's positive labor attitude, that is, refusing to be lazy, hurt others, be self-interest, and own other negative values. At the same time, it encouraged and cultivated people to respect and enjoy the labor process and labor results, and to treat employees and labor results equally. The Chinese official government has also discussed what labor values should be established on many occasions.

For example, President Xi Jinping believes that positive labor values should be established with the main content of honest labor, equal labor, cherishing labor results, love of labor, and distribution of benefits according to labor (Xi, 2015).

However, in recent years, the unique educational value of labor has been neglected to a certain extent, and labor education has gradually faded away, thus leading to part of the young people unwilling to work. In response to this situation, the Chinese government even issued an official document on labor education, which entitled *Opinions on comprehensively strengthening labor education in schools and colleges in the new era*, to emphasize the importance of labor education to the publics. It is suggested that labor education should be incorporated into the whole process of personnel education and integrated with moral education, intellectual education, physical education, and esthetic education, so as to promote students to establish a correct outlook on life, world, and values, and further to improve students' physical and mental health.

Nevertheless, up to now, existing research on the interpretation of the relationship between labor values and mental health is still not comprehensive and in-depth. What has been found is the relationship between work values and mental health (Deci and Ryan, 2000; Yang et al., 2019), but the relationship and mechanism between labor values and individual physical and mental health are still unclear. Based on this, the present study intended to reveal the positive and negative effects of labor values on the mental health of primary and secondary school students from the aspects of life satisfaction and psychological distress. To discuss the relationship between labor values and mental health, we should pay attention to the role of social support. In previous studies, many scholars found that values are an important variable for predicting social support (Xiang et al., 2018; Ren et al., 2019), and social support is an important element that cannot be ignored in individual psychological development (Constantine, 2006; Feng et al., 2012). Social support mainly affects mental health through two mechanisms, namely, the main-effect model and the buffering model. The main-effect theory holds that social support has a direct enhancing effect on individual mental health, and the higher the level of social support is, the higher the level of individual mental health is (Kawachi and Berkman, 2001; Alipour, 2006). According to the buffering effect theory, social support does not directly affect individual mental health but buffers the negative impact of external adversity on individual mental health by influencing individual cognition (Cohen and Wills, 1985; Che et al., 2018). Based on this, it is necessary for us to introduce social support variables while discussing the impact of labor values on individual mental and physical development—mental health. We need to explain from the perspective of social support why labor values affect psychological distress and life satisfaction, so that labor values affect the physical and mental development of individuals.

Besides, since previous studies have emphasized the differences in values and labor participation between men and women (Duffy and Sedlacek, 2007; Hagström and Kjellberg, 2007), we hope to compare whether there are differences in labor values between boys and girls. At the same time, we also want to test the robustness of the model through comparative analysis across gender.

Labor Values and Psychological Distress

As a subjective factor, values are of great importance to indicate individual mental health (Richins and Dawson, 1992; Liliana and Nicoleta, 2014; Balzarotti et al., 2016). And the clarity of values is positively correlated with mental health status, that is, the higher degree of clarity on values, the better mental health level of individuals (Yurim et al., 2018). Of course, there is a complex relationship between different forms of values and mental health. Positive values can significantly inhibit individuals' negative mental health problems (Belk, 1984; Richins and Dawson, 1992). Studies on adolescents have found that adolescents with collectivist values have significantly lower anxiety levels than other adolescents (Sawrikar and Hunt, 2005; Rean and Shagalov, 2018). And studies on female college graduates indicated that those who with Taoist values, such as being open-minded and letting nature, take its course can effectively relieve their anxiety and depression (Luo and Cheng, 2015). The more the college students able to accept traditional Chinese values, the less symptoms of various psychological problems they have (Tong et al., 2010).

Labor is an important variable that requires special attention, which can affect people's mental health (Kleiner et al., 2015; Liu et al., 2018; Kotera et al., 2020). According to Marx and Engels (2009), labor is an important way to create values, and it is also an important premise to create labor happiness. People with different values have different mental health status (Deci and Ryan, 2000; Yang et al., 2019). Chao and Wang (2020) found that positive labor value orientation is significantly negatively correlated with anxiety, depression, and psychological stress. These studies revealed that labor values have significant effects on restraining psychological distress. Therefore, we hypothesized that labor values could have a negative impact on individual psychological distress.

Labor Values and Life Satisfaction

Life satisfaction refers to people's overall judgments on their own life experiences, and an overall evaluation of his or her life quality according to the standard that they chose (Shin and Johnson, 1978; Yang and Ye, 2018), which is a very important positive indicator to measure individual mental health. Previous studies have found that values are important factors affecting individual life satisfaction. For example, the value orientation of materialism has a reverse prediction effect on individual life satisfaction (Hu and Dong, 2020; Ma and Ding, 2020), namely, the stronger an individual's materialistic value is, the lower his life satisfaction would be. A comparative study of happiness in five regions of East Asia in the past two decades showed that although there are significant differences in income levels among residents in different regions, the overall difference in life satisfaction is not as large as that in income (Lim et al., 2020). The possible explanation here is that the more positive a person's material orientation is, the more readily he or she can deal with various situations in life, and the higher his or her life satisfaction will be, which is also evident

in migrant workers. For the migrant workers, their cognition and understanding of labor, especially their insistence on creating wealth and a better life through labor, are an important basis for them to maintain a high degree of life satisfaction (Gu, 2017). Therefore, it can be referred that positive labor value orientation may be closely related to higher life satisfaction. Thus, we hypothesized that labor values could have a positive impact on individual life satisfaction.

Labor Values, Social Support, Psychological Distress, and Life Satisfaction

Although values are closely related to mental health, the underlying mechanism of how values affect mental health is still unclear. Particularly, how labor values affect mental health remains to be explored deeply. Among the factors affecting individual mental health, social support is an important variable. Social support refers to the material and spiritual support that individuals feel from family members, friends, and colleagues when they are under pressure (Yang, 2006). According to different criteria, social support can be divided into explicit social support and implicit social support, objective support and subjective support, material support and emotional support, etc. (Wills, 1991; Taylor et al., 2007). From the perspective of social support theory, social support can effectively relieve personal pressure, get individuals out of trouble, then improve their physical and mental health (Cohen and Wills, 1985; Zeng, 2011; Lu and Wu, 2019). Previous studies have found that people with positive values usually leave others a good impression and give them positive feedback, which makes them be more likely to get recognition and help from others (Feng et al., 2012; Xiang et al., 2018). What's more, Ren et al. (2019) directly found that people with positive values are more sensitive to interpersonal relationships and pay more attention to maintain good interpersonal relationships, thus gaining more social support.

The relationship between social support and mental health is relatively complex. On the one hand, according to the buffering effect theory, social support can help individuals relieve adverse emotions and reactions caused by pressure in life, thus promoting individual mental health (Zhang et al., 2019; Dai and Fang, 2020). More specifically, not only the comfort, care and material support obtained from peer groups, but also the psychological support based on group psychotherapy can significantly improve the mental health of individuals (Cohen and Wills, 1985; Fu and Kai, 2018). And for children, the greater the interpersonal support from the environment, the more likely it is to protect children' s mental health (Jiang and He, 2019).

On the other hand, there are also some relationships between social support and individual life satisfaction. Both objective and subjective support have a positive impact on individual life satisfaction (Song and Fan, 2013). For example, the research on college students found that the higher the material support from the outside world, the stronger the life satisfaction of college students (Ma and Wang, 2013; Miao et al., 2020). However, social support not only directly affects life satisfaction, but also indirectly affects life satisfaction through self-perception. The investigation on the life satisfaction of children who lived with their parents that were migrant workers, the results showed that social support had a significant positive predictive effect on the life satisfaction of these children and that self-cognition and self-evaluation were significantly correlated with life satisfaction (Jiang and Liu, 2016).

Since values have a close relationship with social support, social support has a significant effect on restraining psychological distress. Therefore, it is reasonable to predict that social support may mediate the effect of values on mental health. Although there is no direct evidence that labor values can influence mental health through the mediation of social support, some analyses did indicate that labor values can significantly influence social support (Lan and Liang, 2019). So we hypothesized that labor values may influence individual mental health through the mediating effect of social support.

Based on a review of existing studies, this study would explore the effects of labor values on mental health from the aspects of life satisfaction and psychological distress, and we would also investigate the mediating role of social support. The hypotheses of this study are in the following: H1: Labor values could have a negative impact on individual psychological distress; H2: Labor values could have a positive impact on individual life satisfaction; and H3: Social support could play a mediating role in the relationship between labor values and mental health in the aspects of life satisfaction and psychological distress.

MATERIALS AND METHODS

Participants

Two primary schools, two junior middle schools, and one senior high school in a northeast city of China were selected by the method of cluster sampling, and a total of 2,749 students participated in the survey. Except for those who did not complete the questionnaire or had obvious problems with the answers, the effective sample was 2,691 with effective recovery rate of 97.89%. The participants were ranged from 9 to 18 years old ($M_{age} = 12.50$, SD = 2.00, 44.1% female), including 1,303 primary school students from grade four to grade six, 673 junior high school students, and 715 senior high school students. The specific process of the investigation is as follows: firstly, obtain the school's consent, and the school informs the teacher or parent to obtain the informed consent. On this basis, 40 min are reserved for questionnaire surveys. Researchers participate in the whole measurement process and use standardized instruction. For the sample of elementary school students, based on the consent of the survey respondent, the teacher and parents of the class must agree, while for junior high school students and high school students, the consent of the individual is required. The research was approved by the ethics committee of the researcher's unit.

Measurement

Labor Values

This study adopted the Labor Values Scale compiled by Chao and Wang (2020), which contains 15 items. It was constructed from five dimensions of labor, such as honesty, equality, cherish, love, and distribution. Sample items are like "I enjoy the process of labor" and "I respect laborers of all professions equally, whether they are cleaners or engineers," which were scored by a 5-point Likert scale from 1 "strongly disagree" to 5 "strongly agree." The higher labor values are indicated by higher scores. Since the scale was compiled based on the senior grade of primary school, confirmatory factor analysis was used in this study to explore the reliability of the scale in middle and high school groups. The confirmatory factor analysis indexes were as follows: $\chi^2/df = 7.118$, $p < 0.001$; GFI = 0.93, CFI = 0.92, RMSEA = 0.076, SRMR = 0.0583, which showed that all the indexes meet the requirements of measurement. The Cronbach's alpha coefficient of the scale was 0.832.

Social Support

The Multidimensional Scale of Social Support compiled by Zimet et al. (1988) was adopted, which contains 12 questions, and divided into three supporting sources: family, friends, and significant others. It is a 7-point scale from 1 "strongly disagree" to 7 "strongly agree," and the higher perceived social support is indicated by higher scores. The Chinese version of the Perceived Social Support Questionnaire was used, which has been demonstrated to be reliable and valid in Chinese population (Zhao et al., 2013; Xiang et al., 2020). The Cronbach's alpha coefficient of the scale was 0.934.

Psychological Distress

The Chinese version of the General Health Questionnaire was employed to evaluate psychological distress, which has been demonstrated to be reliable and valid in Chinese population (Lai and Chan, 2002). It is a 4-point Likert scale from 1 "never" to 4 "always," consisting of 12 questions and six of which are reverse scoring questions. Sample item is like "Lost much sleep over worry." Higher scores reveal worse mental health. In this study, the Cronbach's alpha coefficient of the scale was 0.844.

Life Satisfaction

The Satisfaction with Life Scale was applied to measure life satisfaction (SWLS, Diener et al. 1985), which has five items. One sample item is "If I could live my life over, I would almost change my life nothing." All items are answered by a 7-point Likert scale from 1 "strongly disagree" to 7 "strongly agree." The higher level of life satisfaction is reflected by higher scores. The Chinese version of SWLS has been demonstrated to be reliable and valid in Chinese people (Feng et al., 2012; Zhao et al., 2014). The Cronbach's alpha coefficient was 0.824 in this study.

Analytic Strategy

Using SPSS 20.0 and AMOS 22.0 for data analysis. Firstly, perform descriptive statistics and related analysis on all variables in SPSS 20.0; secondly, build a structural model in AMOS 22.0 based on the research hypothesis to analyze the fit of the model; finally, use the Bootstrap method to further test social support. The mediating role between labor values and mental health.

RESULTS

Measurement Model

Four latent variables (e.g., labor values, social support, psychological distress, and life satisfaction) and 14 observed variables were contained in the measurement model. The data indicated a good fitness of the measurement model: $\chi^2(48, 2{,}691) = 612.57$, $p < 0.001$; RMSEA = 0.066; SRMR = 0.038; CFI = 0.963. All the factor loadings for the indicators on the latent variables were significant ($p < 0.001$), indicating that all latent variables were well represented by their indicators. **Table 1** showed that all the investigated variables in the model were significantly associated ($p < 0.001$).

Structural Model

Firstly, labor values can directly predict more life satisfaction significantly ($\beta = 0.61$, $p < 0.001$) while negatively directly predict less psychological distress significantly ($\beta = -0.57$, $p < 0.001$). Then, we set up a structural model (model 1) with social support as a mediator, which has showed that the fitting degree of model 1 was good [$\chi^2(49, 2691) = 810.70$, $p < 0.001$; RMSEA = 0.076; SRMR = 0.045; CFI = 0.9500]. Therefore, we used model 1 as the structural model of this study (see **Figure 1**).

In addition, the significance of the mediating effect in the model was assessed by using bootstrap estimation procedure, with 1000 bootstrap samples randomly extracted from the original data set ($N = 2691$). As expected, the results showed that social support played significant and independent mediating roles between labor values and life satisfaction (95% CI = 0.3736 to 0.4365), as well as between labor values and psychological distress (95% CI = −0.3411 to −0.2719).

Gender Difference

We also examined whether there existed gender differences. Firstly, we tested whether there were gender differences in the four latent variables. The results indicated that there were gender differences in labor values ($t = -3.135$, $p = 0.002$) and psychological distress ($t = -5.666$, $p < 0.001$), and the boy group had significantly higher labor values and psychological distress than girl group. But there were no gender differences in social support ($t = -0.589$, $p = 0.556$) and life satisfaction [$t(2691) = 0.214$, $p = 0.830$]. Because of the gender differences we have found, multi-group analysis was employed to test the stability of the model.

We constructed two models to compare with each other to check whether there are gender differences among their pathways. As suggested by Byrne (2001), two models that keeping basic parameters (i.e., factor loadings, error variances, and structure covariances) equal were established. The first model allowed

TABLE 1 | Descriptive statistics and bivariate correlations for all measures.

	M	*SD*	1	2	3	4	5	6
1.Sex			1					
2.Age	12.50	2.00	−0.06**	1				
3.LV	59.03	8.65	0.06**	−0.17***	1			
4.SS	23.13	6.95	−0.01	−0.00	0.47***	1		
5.PD	24.03	5.98	0.11**	0.12***	−0.36***	−0.52***	1	
6.LS	23.13	6.95	−0.00	−0.18***	0.43***	0.68***	−0.55***	1

***p < 0.01; ***p < 0.001. LV, labor value; SS, social support; LS, life satisfaction; and PD, psychological distress. Boy = 1; girl = 0.*

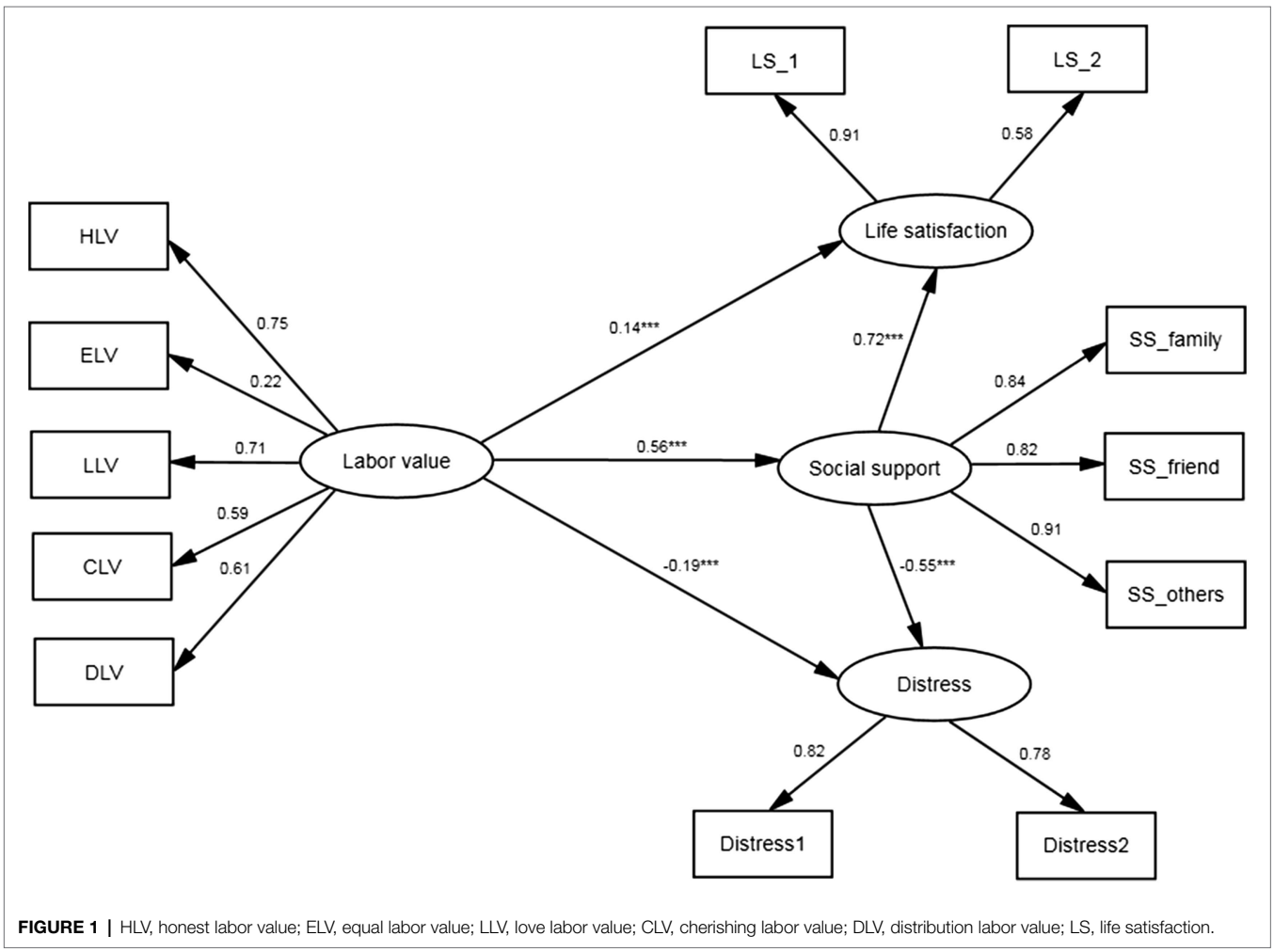

FIGURE 1 | HLV, honest labor value; ELV, equal labor value; LLV, love labor value; CLV, cherishing labor value; DLV, distribution labor value; LS, life satisfaction.

free estimations of the path coefficients between females and males (unconstrained structural paths) and the second constrained all path coefficients to be equal (constrained structural paths). Chi square differences [$\triangle\chi^2(5, 2691) = 15.49$, $p = 0.008$] between the two models were significant, suggesting the structural model was not stable across gender. What's more, the critical difference ratio (CRD) was used to further determine whether there was a significant gender difference in each pathway. An absolute value of CRD greater than 1.96 indicated a significant difference between the two parameters. The results showed that three path coefficient was significantly different ($CRD_{LV \rightarrow SS} = 2.35$, $CRD_{SS \rightarrow PD} = -2.79$, $CR_{SS \rightarrow LS} = 2.73$). As to the pathway of LV → SS, the pathway parameter of boys ($\beta = 0.55$) is less than that of girls ($\beta = 0.57$), which means that compared with boys, girls with positive labor values can perceive a higher level of social support. Then for the pathway of SS → PD, the pathway parameter of boys ($\beta = -0.49$) is more than that of girls ($\beta = -0.60$), which means that girls with more social support can perceive a less psychological distress than that of boys. And for the pathway of SS → LS, the pathway parameter of boys ($\beta = 0.12$) is smaller than that of girls ($\beta = 0.17$), which indicated that the girls perceiving more social support would have higher life satisfaction.

TABLE 2 | Standardized indirect effects and 95% confidence intervals.

Pathways	Estimate	95% Confidence Interval	
		Lower	Upper
LV → SS → LS	0.40	0.3736	0.4365
LV → SS → PD	−0.30	−0.3411	−0.2719

LV, labor value; SS, social support; LS, life satisfaction; and PD, psychological distress

The differences between boys and girls in labor values and psychological distress may be related to school education and family education. Although China has made remarkable achievements in advancing gender equality, people still have more expectations for men in terms of social responsibility. Therefore, in the family education and school education of minors, boys are educated to take responsibility and be brave. In the education of labor values, boys face more expectations. This may cause some psychological distress to boys.

DISCUSSION

This study explored the positive and negative effects of labor values on mental health from the aspects of life satisfaction and psychological distress, and further verified the mediating role of social support. The results showed that positive labor values can significantly promote individual life satisfaction and restrain psychological distress. Meanwhile, social support plays a significant mediating role in the relationship between labor values and mental health.

First of all, labor values are closely related to individual life satisfaction and psychological distress. On the one hand, the more positive the individual's labor values are, the higher the individual's life satisfaction is, which is consistent with the previous conclusions that positive values can promote individual life satisfaction (Lim et al., 2020; Ma and Ding, 2020). As an important aspect of individual value system, labor value can also positively predict individual life satisfaction. It is important for educators to provide students with values education in teaching positively to help students establish correct labor values, and then to improve students' life satisfaction. On the other hand, labor values are negatively correlated with individual psychological distress. That is, labor values can significantly inhibit psychological distress. The more positive the individual's labor values were, the less likely he was to feel psychological distress, which was basically consistent with previous research conclusions (Deci and Ryan, 2000; Yang et al., 2019; Chao and Wang, 2020). There are many factors that may affect individual mental health, and the labor value is an important factor to which educators need to pay attention, but it is often overlooked. Therefore, both parents and educators should pay special attention to cultivating children's labor values when guiding them to maintain a positive and healthy psychological status. No matter in daily family education or school education, children should be guided to participate in the process of labor practice, which helps them establish positive labor values, then improves their life satisfaction, and protects them from negative effect of psychological distress (Liu et al., 2018).

Secondly, social support plays an important mediating role in the relationship between labor values and mental health in the aspect of psychological distress and life satisfaction. On the one hand, social support mediated the relationship between labor values and life satisfaction. That is, the more positive the individual's labor values are, the higher the level of social support they feel from others around them, and the increased social support from others could further promote individual life satisfaction. Although there are few existing studies that directly discussed the effect of labor values on individual life satisfaction through social support, Feng et al. (2012) have found that individual internal traits could affect their life satisfaction through social support. Moreover, existing studies also supported the influence and positive predictive effect of values on social support (Constantine, 2006; Bubic and Erceg, 2018). As an important content of individual internal traits, labor values have a positive impact on individual life satisfaction through the mediating effect of social support. What should be noticed in this study is that there are gender differences when labor values influence individual life satisfaction through social support. It is showed that, compared with boys, the girls with higher perceived social support could be more satisfied with their life.

On the other hand, social support mediated the relationship between labor values and psychological distress. That is, the more positive the students' labor values are, the higher social support they perceived from others, then the students with higher social support could feel less psychological distress. Previous studies on the influence of values on individual mental health through social support have figured out that positive values can make individuals perceive more social support from others around them. For example, Xiang et al. (2018) have found that gratitude can significantly predict more individual social support, that is, cultivation of individual gratitude can enable individuals to obtain more social support. Another study on secondary vocational school students also proved that positive internal qualities can significantly positively influence the mental health of students through perceived social support (Yuan et al., 2021). The results of this study are similar to the above research, that is, labor values can inhibit psychological distress through the mediation of social support. Our study further found that there were significant gender differences in the internal mechanism of labor values inhibiting psychological distress through the mediation of social support. Girls with positive labor values reported higher social support than boys, while boys with higher perceived social support can inhibit psychological distress more effectively than girls. This reminds educators and parents to pay special attention to the psychological pressure that boys may face when educating children on labor values. Labor values education and mental health assessment should be carried out at the same time, especially in school education. We need to maintain a balance between education on labor values and maintaining a healthy mental state. Therefore, an appropriate mental health protection plan for boys may be necessary while carrying out labor value education.

Based on the background of state policy which attaching more importance to the development of labor education, it is the first study to explore the impact of labor values on mental health and its internal mechanism from the perspective of social support

theory, which has its significance in both reality and guiding practice. Specifically, it provides reference for primary and secondary school to practice labor education, helps the students to set up more positive labor values, and helps to promote their development of mental health. However, this study still has some limitations. For example, because the cross-sectional study design was adopted in this study, whether the conclusions can be extended to other age groups need to be further tested. So future studies can do research on different age groups and design longitudinal studies to explore the causal relationship of different variables. In addition, since the data used in this study are all self-reported, some errors may happen due to the interference of various situational and social factors. Therefore, future studies can carry out different ways of data collection to improve the objectivity of measurement.

Moreover, since our research is an explanation of the role of labor values in China's special cultural background, labor values have special cultural significance. In Chinese institutional culture guided by Marxism, labor values have special meanings. In other countries, especially western countries, do labor values have other special connotations different from those in China? Is there a possible difference between the mechanism of labor values on mental health and the research based on Chinese samples? In the future, the above conclusions can be verified through cross-cultural comparative analysis.

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 authors.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Committee of Hunan Normal University. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin. Written informed consent was obtained from the individual(s), and minor(s)' legal guardian/next of kin, for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

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An Updated Evaluation of the Dichotomous Link Between Creativity and Mental Health

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The theory of the mad genius, a popular cultural fixture for centuries, has received widespread attention in the behavioral sciences. Focusing on a longstanding debate over whether creativity and mental health are positively or negatively correlated, this study first summarized recent relevant studies and meta-analyses and then provided an updated evaluation of this correlation by describing a new and useful perspective for considering the relationship between creativity and mental health. Here, a modified version of the dual-pathway model of creativity was developed to explain the seemingly paradoxical relationship between creativity and mental health. This model can greatly enrich the scientific understanding of the so-called mad genius controversy and further promote the scientific exploration of the link between creativity and mental health or psychopathology.

Keywords: dual-pathway model, psychopathology, mental health, creativity, emotion regulation

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INTRODUCTION

Mental health and creativity are the two critical elements driving the sustainable development of human society. With the continued spread of the COVID-19 pandemic around the world, there is an urgent need to address the deepening threats to individuals' mental health and creativity. According to the World Health Organization (1), mental illness, unlike genius, is not a rare phenomenon. In a recent report that surveyed U.S. adults at the end of June 2020, 31% of the respondents reported symptoms of anxiety or depression, 13% reported starting or increasing substance use, 26% reported stress-related symptoms, and 11% reported having had serious suicidal thoughts in the preceding 30 days. These numbers are almost double the rates estimated before the pandemic (2). The ongoing COVID-19 pandemic, an event rife with uncertainty and challenge, has led to a sharp rise in the demand for creativity often seen during such periods of unpredictability and change (3). Essentially, creativity can not only help people find meaning and significance during the pandemic by, for example, giving individuals enjoyment and pleasure but also help them feel an increased sense of purpose in a variety of ways, e.g., by producing better career narratives about their meaning-making at work (4). However, this is not the only reason behind the thirst for creativity during the epidemic; the search for creativity has also stemmed from its importance in scientific discovery and technological breakthroughs. Creativity generally involves the production of original and valuable ideas that can help scientists and medical professionals achieve innovative breakthroughs in epidemic management and vaccine development and therefore save more people. In this sense, examining the association between creativity and mental health is important [e.g., (5)].

Another important reason to examine this issue is the longstanding interest in the madness-creativity nexus or the mad genius hypothesis (6, 7), as illustrated by creative people who suffer or have suffered from serious mental disorders, such as Vincent van Gogh, making this nexus one of the oldest, most controversial and most frequently discussed issues in the domain of creativity (8, 9). In recent decades, many meaningful results have accumulated, including in journal articles [e.g., (8, 9)], chapters [e.g., (10)] and books [e.g., (11, 12)]. Overall, the association between creativity and mental health is an important issue, as partially illustrated by the emergence of the *Journal of Creativity in Mental Health*. Although the studies mentioned above have made important empirical and conceptual advancements, they are mostly fragmented and scattered and do not provide an integrated, accurate or coherent understanding of the topic (13). Given that several authors have already conducted systemic or scoping reviews, this study takes a different approach to update our understanding of the relationship between creativity and mental health. Specifically, the present study involves a state-of-the-art review, wherein a dichotomous approach is taken to integrate the potential positive and negative association between creativity and mental health.

This study is a narrative review that makes at least three contributions. First, it offers a state-of-the-art introduction on mental health and creativity beyond the so-called mad genius hypothesis. Second, this study attempts to profile and theoretically integrate the plausible but seemingly paradoxical association between creativity and mental health from a novel perspective. Third, the present review helps advance related studies on the association between creativity and psychopathology and on the relationship between creativity and mental health (well- and ill-being). Taken together, we provide many useful insights and helpful scaffolding knowledge about theoretical research and practices regarding creativity and/or mental health. The remainder of this paper is structured as follows. We first conceptualize creativity and mental health and then briefly review the findings in the paradox of these two constructs. Next, we critically evaluate previous studies on the association between creativity and mental health and present a novel theoretical account. Finally, the paper ends by describing the new state of the art and recommending directions for future research.

THE PARADOX OF CREATIVITY AND MENTAL HEALTH

This section describes the three steps involved in our research. First, we conceptualize creativity and mental health. Then, we briefly review the negative association between creativity and mental health. Finally, we move to a detailed review of the literature on the positive association between creativity and mental health.

The first step in our analysis was conceptualizing creativity and mental health. Although defining creativity may be easy, establishing a consensual definition of creativity is not. Pursuing differing priorities and focuses, recent studies have provided useful insights into how to conceptualize creativity (14–16). According to one standard definition, creativity is the capacity to produce something new/novel and appropriate/useful within a certain sociocultural context (e.g., devices, ideas, or procedures); this capacity encompasses a creative personality/disposition and creative thinking and typically manifests in a variety of human activities, ranging from everyday life (e.g., environmental adaptation) to advanced technological industries [e.g., medical revolution; see (17)]. Importantly, individual maladaptation to a changing environment can easily result in mental illness and negative mental health trends [see (18)]. Generally, mental health is not a subjective status of the absence of disease but "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (19). This involves positive emotion and positive functioning, which individually represent emotional and psychological well-being (20).

A negative link between creativity and mental health has been speculated for centuries (21), and this idea is still widespread and deeply engrained in contemporary culture (22). Early evidence consisted of observations and examples from the lives of creative individuals (18). The often-cited biographical reports of luminaries, such as Sylvia Plath, as well as those of contemporary creatives, including Carrie Fisher and Amy Winehouse, all provide anecdotal support for the negative connection between creativity and mental health. Empirically, the frequently cited studies by Jamison (23), Andreasen (6), and Ludwig (12), which show a link between mental illness and creativity, have been criticized on the grounds that they involve small, highly specialized samples, use weak and inconsistent methodologies and strongly depend on subjective and anecdotal accounts (24). However, many recent strictly designed investigations have replicated the positive association between mental illness and creativity. Rybakowski and Klonowska (25), for instance, experimentally contrasted patients with bipolar disorder with healthy control participants to examine their potential differences in creativity as measured using the Revised Art Scale and the "inventiveness" subscale of the Berlin Intelligence Structure Test. The study looked for a potential association between creativity and mental illness and provided support for the madness-creativity nexus by showing higher scores among bipolar patients than among healthy persons on some creativity scales. Similarly, based on a cross-sectional design and a multimethod approach, Ruiter and Johnson (26) showed that mania risk is positively associated with self-reported creative achievement and creative personality. Johnson et al. (27) further confirmed the positive association between a validated measure of ambition and creativity.

However, after reviewing the previous literature, we found that there is a paradoxical or varied association between creativity and mental health. Relatively, the negative association between them seems more common than the positive association, with more evidence from the early literature, especially anecdotes, biographies, case studies and qualitative studies, pointing to a negative association between them [e.g., (18, 28)]. However, several humanistic and positive psychologists have argued that

outstanding creativity constitutes a sure sign of better mental health (29, 30), a theory that is particularly supported by research using experimental, psychometric, psychiatric, and historiometric methods (31). Empirically, an increasing number of studies have provided evidence that simply engaging in creative activity can benefit physical and mental health [e.g., (32)]. For example, Shen et al. (33) reported a positive correlation between well-being and creativity and a partial mediating role of mindfulness in this positive association. Based on two meta-analyses, Yu and Zhang (34) revealed a negative association between creativity and negative well-being and a positive association between creativity and positive well-being. Further, Acar et al. (35) assessed the association between creativity and mental health or well-being by synthesizing 189 effect sizes obtained from 26 different studies and replicated a significantly positive, yet modest, link between creativity and mental health, implying that creative individuals tend to have higher well-being or that those with higher well-being tend to be more creative.

Moreover, several recent meta-analytical studies have provided direct evidence for the mad genius paradox, supporting a dichotomous association between creativity and mental health. That is, the answer to the question of whether creativity and mental health are positively or negatively correlated is that they correlate in both ways. For example, Taylor (36) conducted a systematic meta-analysis, wherein the link between mood disorder and creativity was evaluated using three separate approaches to determine whether creative persons are more likely to exhibit mood disorders, whether individuals with mood disorders behave more creatively, and whether a correlation exists between creativity and mood disorders as continuous constructs. The results across the three analyses varied. Simply put, creative (as opposed to non-creative) individuals indeed exhibited greater levels of mood disorders, which was true for all types of mood disorders except dysthymic disorder, while individuals with mood disorders did not exhibit different creativity levels than healthy controls. Although all mood disorder types were positively associated with creativity, there was a significantly stronger association with bipolar (and unspecified) than with unipolar disorder. Importantly, this correlation worked only when creativity was measured in terms of creative accomplishment and behavior. Differentiating between approach-based psychopathology (e.g., positive schizotypy) and avoidance-based psychopathology (e.g., anxiety), Baas et al. (37) conducted a meta-analysis of 57 empirical studies to determine possible linkages between risk of psychopathology and creativity in non-clinical samples and observed some meaningful results: a small positive relationship between positive schizotypy and creativity, a small negative correlation between negative schizotypy or anxiety and creativity, and the finding that the risk of bipolar disorder (e.g., hypomania) is positively associated with creativity, while depressive mood is negatively associated (albeit weakly) with creativity.

Ultimately, the pattern of association between creativity and mental health is complex. Early research, particularly case and clinical studies, tended to support the mad genius hypothesis, that is, either that mentally unhealthy people are more creative or that most creative people are mentally unhealthy. However, the results of a growing number of experimental and relatively tightly controlled clinical and subclinical studies have been mixed on this matter, and a notable portion of the research evidence does not fully support the traditional mad genius hypothesis. Thus, in response to these findings, several researchers have drawn on big data and large sample meta-analysis techniques, presenting generally contradictory results with both significant negative and significant positive associations between creativity and psychological well-being as well as with patterns of association not identical across studies or across measures.

A NEW THEORETICAL ACCOUNT DRAWN FROM THE DUAL-PATHWAY MODEL

In this section, we conduct a critical analysis on the matter and now present our view. In addition to some potential confounding factors or mediation variables mentioned in previous studies [e.g., (38, 39)], we contend that the association between creativity and mental health varies according to whether creativity is considered a "disposition (body)" or a "strategy use." Additionally, creativity is often negatively associated with mental health when it is measured as a relatively stable trait or disposition (personality/ability/achievement), i.e., a trait or ability/achievement, thus reflecting the persistence of creativity mentioned in the dual-pathway model. However, an association in the opposite direction is documented when creativity is considered a "use" or "technique/method," i.e., a flexible approach mentioned in the proposed model or a strategy use. That is, when creativity is measured in terms of strategy use or situational variables, the association between creativity and mental health is mostly positive. We extend this theoretical idea more specifically below.

Nijstad et al. (40) proposed a new theory, namely, the dual-pathway model of creativity, which assumes that creativity is a function of cognitive flexibility and cognitive persistence and that dispositional or situational variables can influence creativity through their effects on flexibility, persistence, or both. After a careful review of previous studies, we find that most studies that took the approach of individual difference reported a negative association between creativity and mental health and tended to consider creativity as a type of dispositional or stable difference, that is, either a personality trait or a kind of capability. In fact, creativity is also considered a strategy, which is typically reflected in the expression of creative problem solving. Certain complex problems involve non-routine challenges with no immediately obvious solutions and are not solved until a creative strategy or a novel approach is used. That is, creative problem solving is a strategy or method that attempts to approach a correct solution or a challenge in an innovative way. Another line of studies is improving individuals' creativity performance through priming a creative mindset [e.g., (41)] or instructing them to think differently [e.g., (42)]. Accordingly, creativity is a level of flexibility in certain situations and can vary according to whether it is treated as a strategy. In this regard, creativity can benefit mental health and help individuals improve their mental health. There is no shortage of examples of creativity

TABLE 1 | Example studies supporting the dichotomous link between creativity and mental health.

No.	Sources	Approaches	Operational definition of creativity	Operational definition of well-being or mental health	Main findings
1	Shen et al. (33)	Creativity as a strategy	Solving remote associate problems	Well-being was measured using the psychological well-being scale	Showing a positive effect of creativity on well-being
2	Conner et al. (44)	Creativity as a strategy	Creative activity was measured in the daily diary	Well-being was assessed through an eight-item Flourishing Scale.	Everyday creativity as a means of cultivating positive psychological functioning.
3	Bujacz et al. (45)	Creativity as a strategy	Three creative tasks: (43) invent titles for a cartoon, (1) list different uses for a rubber band, or (2) improve the design of a table for individuals with impaired vision.	Well-being was measured through a three-item positive emotion scale, a two-item autonomy scale and a two-item task absorption scale.	Engagement in creative tasks promoted autonomous self-expression and brought more positive emotions than noncreative ones.
4	DirŽyte et al. (46)	Creativity as a strategy	A five-item self-reported creativity questionnaire and a scale on the attitude to creativity modified from the creative mindsets scale.	Well-being was measured using an eight-item Flourishing Scale, which includes the dimensions of relationships, self-esteem, purpose, and optimism	Self-reported creativity and attitudes to creativity are significant, positive predictors of flourishing.
5	Fink et al. (47)	Creativity as a strategy	Participants were required to generate as many and as different ways as possible to reappraise presented anger-eliciting situations in a manner that reduces their anger. Neural activity elicited by the generation task was compared with the activity by the alternative uses task.	Well-being was measured by the reduction of anger intensity.	Creative reappraisal is an effective strategy to regulate an ongoing negative emotional state.
6	Wu et al. (48)	Creativity as a strategy	A humorous reappraisal (a creative way) is compared to an ordinary reappraisal.	Well-being was measured by the reduction of negative emotion intensity induced by negative pictures.	Humorous reappraisal was more effective in downregulating negative emotions and upregulating positive emotions both in the short and long term, altogether with the brain-related activation of creative/insightful restructuring and insight experience.
7	Wu et al. (49)	Creativity as a strategy	A series of generated creative reappraisals for standardized negative pictures were rated and provided to participants. There were two control conditions: an ordinary reappraisal condition and an objective description condition.	Well-being was measured by the reduction of negative emotion intensity induced by negative pictures.	Creative reappraisal had a long-lasting effect in reducing negative affect, which also makes standardized negative pictures have a positive rating in emotion.
8	Rominger et al. (50)	Creativity as a strategy	Creatively generating positive reappraisals of adverse events. Meanwhile, a problem-oriented generation task and a de-emphasizing task were used as controls.	Well-being was measured by the reduction of anxiety and anger intensity induced by adverse events.	Creative reappraisal is a useful strategy in regulating the negative experience elicited by adverse events.
9	Wu et al. (51)	Creativity as a strategy	Participants were requested to generate reappraisals of negative stimuli and then evaluate the creativity (rated by experts)	Well-being was measured by the reduction of anxiety and anger intensity induced by adverse events.	Individual creativity and reappraisal appropriateness were significant predictors of the regulating effects of the reappraisal for negative pictures and that creativity was the most dominant predictor.

(Continued)

TABLE 1 | Continued

No.	Sources	Approaches	Operational definition of creativity	Operational definition of well-being or mental health	Main findings
10	Yu et al. (52)	Creativity as a strategy	The metaphorical (high creativity rating) solutions to mental distress problems were compared with literal solutions or problem-restatement solutions.	There was no significant difference in the emotional valence ratings between the metaphorical and literal solutions, but they were significantly higher than the problem-restatement solutions	The metaphorical solution to mental distress problem is a highly creative and useful strategy in regulating negative emotion and improving mental health.
11	Hu et al. (53)	Creativity as a strategy	A metaphorical restructuring intervention is viewed as creative as opposed to a literal restructuring intervention or a no restructuring problem restating intervention.	Well-being is reflected in the alleviation effectiveness of mental distress problems.	The mental distress of the metaphorical restructuring group significantly decreased after the intervention. Furthermore, this group had greater insightfulness during the intervention, and this insightfulness could predict the reduction of negative affect after the intervention.
12	Tan et al. (54)	Creativity as a strategy	Creativity was measured by the participants' self-report (study 1) or receiving a creativity priming task and executing an alternative use task (study 2).	Self-reported subjective well-being was measured by the Scale of Positive and Negative Experience and Satisfaction with Life Scale.	The study shows a positive, cross-sectional relationship between creativity and subjective well-being after controlling the effect of self-perceived stress and demographics. After controlling the effect of self-perceived stress, individuals receiving the creativity priming reported higher subjective well-being scores than their counterparts.
13	Miller et al. (55)	Creativity as a disposition	Individuals' self-rated creativity was measured through the 21-item Creativity Domain Questionnaire-Revised.	Well-being is assessed using a self-report measures of depression and hypo/mania over the past week from 397 participants previously diagnosed with BD.	Those self-reporting clinically significant depressive symptoms had significantly lower creativity scores (particularly in the domains of the drama, interaction and math/science) than those in the hypo/mania and no current symptom groups.
14	Gostoli et al. (56)	Creativity as a disposition	Creativity Assessment Packet encompassing divergent thinking test and creative personality test were used to measure creativity.	The 84-item psychological well-being questionnaire was used to measure well-being, altogether with the Temperament Evaluation of the Memphis, Pisa, Paris and San Diego-Auto questionnaire to assess subclinical psychopathological symptoms.	Significant positive correlations between creativity and bipolar disorder vulnerability, especially hyperthymia, were observed. Creativity was poorly linked to psychological well-being subscales, except autonomy and personal growth.
15	Johnson et al. (27)	Creativity as a disposition	Creativity was determined through multiple measures, including the unusual use test (uniqueness), subjective creativity evaluation, and creative achievement questionnaire.	Well-being was also measured through multiple instruments, including the Beck Depression Inventory, Altman Self-Rating Mania Scale, Modified Hamilton Rating Scale for Depression, and the Young Mania Rating Scale.	Persons with bipolar disorder demonstrate significantly more heterogeneity in creative accomplishment levels compared with those with no bipolar disorder.

(Continued)

TABLE 1 | Continued

No.	Sources	Approaches	Operational definition of creativity	Operational definition of well-being or mental health	Main findings
16	McNeil and Clinic (57)	Creativity as a disposition	Creative ability was determined through the independent ratings of each participant's activities and accomplishments, together with the information on the questionnaires and from the creative product.	Well-being was mainly determined based on participants' records of the Btspebferg Hospital Psychiatric, Military Service, and Psychiatric Register of the Human Genetics Institute.	There is a significant, positive association between creative ability and mental illness.
17	Rybakowski and Klonowska (25)	Creativity as a disposition	The Revised Art Scale and the "inventiveness" part of the Berlin Intelligence Structure Test were adopted to measure creativity.	The Oxford-Liverpool Inventory of Feelings and Experiences was used to estimate schizotypal. Well-being was established based on the aforementioned assessment and the medical diagnosis of bipolar disorder.	The bipolar patients obtained significantly higher scores on the BIS-total as well as on the verbal part of the test, showing higher scores on some creativity scales in bipolar patients compared with the healthy.
18	Santosa et al. (58)	Creativity as a disposition	Creativity was measured through four instruments: the Barron–Welsh Art Scale (BWAS-Total, and two subscales, BWAS-Dislike and BWAS-Like), the Adjective Check List Creative Personality Scale (ACL-CPS), and the Torrance Tests of Creative Thinking – Figural (TTCT-F) and Verbal (TTCT-V) versions	Well-being was determined by whether the participant had suffered from euthymic bipolar (BP) or unipolar major depressive disorder (MDD).	Results showed BP and creative discipline controls (CC) compared to healthy controls scored significantly higher on BWAS-Total and BWAS-Dislike. The CC compared to MDD scored significantly higher on TTCT-F.
19	Taylor et al. (59)	Creativity as a disposition	Creativity was measured through self-reported engagement in productive creative activity.	Well-being was determined based on multiple criteria: persons who had received a clinical diagnosis of self-reporting bipolar disorder, confirmed by the Mood Disorders Questionnaire based on DSM-IV diagnostic criteria for BD	There is a positive association between creativity and bipolar disorder.

benefitting mental health in everyday life, such as through creative writing or creative language comprehension, such as humor understanding. For example, for the picture of the vomit in the toilet, creative cognitive reappraisal interprets it as she being inwardly happy that she finally had a child of her own, despite the fact that she threw up a lot. In general, people often experience a surge in emotion and happiness as a result of creative language use or appreciation (e.g., appreciating a visual metaphor) or of the resolution of interpersonal/social dilemmas by engaging in creative self-deprecation [e.g., disparagement humor; for a review, see (43)]. After reviewing previous studies, **Table 1** was established to selectively list existing studies on the dichotomous association between creativity and mental health [we provide only a small number of studies supporting the positive association between creativity and mental illness; for more studies, please see some influential reviews or meta-analyses, e.g., (35, 36, 60)]. Specifically, Yu et al. (52), for instance, provided participants with descriptions of various scenarios that included some sort of mental distress and asked them to offer a resolution using one of three solution types: creative, literal, or problem restatement. The authors observed that the emotional positivity and strategic adaptability scores in metaphorical and literal solutions were significantly higher than those in problem restatement solutions. Additionally, the results showed that, compared with literal or problem restatement solutions, creative or metaphorical solutions activated two brain networks, each individually associated with basic metaphorical language processing and insightful problem solving, indicating that the use of creative solutions to resolve problems related to mental distress reliably prompts neural activities that generate positive effects (61). In a recent study by Wu et al. (49), creative reappraisal was reported to have superior performance in regulating emotion, especially negative emotion, accompanying the activation of a similar insight-related network encompassing the hippocampus, amygdala, and striatum. Theoretically, as mentioned above, emotional health is a key part of mental health that typically manifests in appropriately managing or regulating both positive and negative emotions. According to studies on dual-pathway models, positive and negative emotions can flexibly boost creativity or certain key processes of creativity, with negative moods being positively associated with cognitive persistence and positive activating moods being predominantly associated with stronger cognitive flexibility (62). This in turn implies that creativity can boost emotional health through either of these two opposing pathways.

Overall, the present research provides useful insights into the association between creativity and mental health, which could explain some of the complex cognitive and neural processes involved in both creativity and psychopathology and has the potential to paint a clearer picture of some overlapping mechanisms in both constructs rather than linking creativity generally to "madness."

DISCUSSION AND CONCLUSION

In this study, we review previous research on the association between mental health and creativity. Overall, a dichotomous association is documented, namely, both positive and negative associations are observed. Based on previous findings and the dual-pathway model of creativity, we offer a new view, wherein the positive–negative nature of the association between creativity and mental health is largely determined by the nature of creativity and/or its corresponding measurements. When creativity is conceptualized or operationalized as dispositional, the association is negative, whereas it is positive when creativity is treated as a strategy (e.g., as an intervention method or regulation activity). Indeed, some studies have provided direct support for this idea. For example, Acar et al. (35) found that the approaches to measure creativity are what account for the variation in the association, with a stronger association occurring when creativity is measured by instruments focusing on creative activity and behavior than by those looking at divergent thinking tasks. Nevertheless, we also acknowledge that some alternative explanations cannot be excluded without rigorously controlled studies. For example, Paek et al. (63) conducted a meta-analysis using 89 studies to examine the overall relationships between the most common psychopathologies and little-c creativity and revealed that the overall mean effect size was not different from zero but varied, with effect sizes ranging from −0.97 to 0.95, and 54% of the total effect sizes being below zero and 44.4% of the total effect sizes being above zero. These results actually confirmed the paradoxical association between creativity and mental health. Additionally, their moderator analyses showed that effect sizes varied by the assessment of both psychopathology and creativity as well as by level of intelligence. Furthermore, Drapeau and DeBrule (64) revealed the role of moderating variables, such as the assessment or domain of creativity, in the association between creativity and mental health, wherein the relationships among hypomania, creativity (divergent thinking and creative achievement), and suicidal ideation in college students were examined. Their results showed that, among the creative domains surveyed, students with high creative achievement in architectural design may experience the highest risk for significant suicidal ideation; furthermore, students with visual arts, creative writing, theater/film, and dance achievements were at moderate risk for significant suicidal ideation, thus implying that the (negative) association between creativity and mental health may vary according to the domain of creativity. Future studies could systemically re-examine this new account and exclude alternative accounts [e.g., the inverted-U relationship between creativity and mental illness, see (11); the shared vulnerability model; see Carson (65)] using additional empirical investigations. For example, Ghadirian et al. (66) reported that creativity was at its highest level in patients who suffered a moderate level of manic-depressive illness, whereas the lowest creativity score appeared in the group of patients identified as severely ill.

Taken together, this research provides a novel and useful perspective to evaluate the relationship between creativity and mental health, which has many theoretical or practical implications. Specifically, this research, as a perspective study or mini review, focuses on the association between creativity and mental health, attempting to reconcile the diverging and even contradictory empirical findings regarding the relationship between creativity and mental health. On the one hand, the present research contributes greatly to facilitating positive mental

health by showing the positive role of creativity as a strategy to regulate negative emotion and improve positive mental health by creatively reducing negative experiences and insightful or creative reappraisal toward negative situations or things. On the other hand, the current study evaluates a longstanding controversy within the domain of mental health and/or creativity. This research has important implications for future studies on the creativity-well-being nexus and health practices. First, this study hints that, when future research attempts to investigate the relationship between mental health and creativity, they should distinguish between individuals' dispositional creativity and strategic creativity and develop creativity-based mental health adjustment strategies and skills to improve mental health literacy and coping skills. Another important aspect of this study was to deepen the analysis of the concept and structure of mental health literacy and to focus on exploring the constructs, skills, and mechanisms associated with creativity. Practically, this research will help to properly understand the theoretical relevance of creativity and mental health and its models and nudge the application of creativity in the mental health field. In this case, special focus is given to the impact of cognitive reappraisal of creativity and emotional cognitive reappraisal on (emotional) mental health, considering the development of creative regulation strategies and/or creative reappraisal skills as an important component of mental health literacy.

AUTHOR CONTRIBUTIONS

RZ and WS conceptualized and designed the work. RZ, ZT, and WS drafted the manuscript, with critical comments from QX and FL. All authors contributed to the article and approved the submitted version.

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Translation, Validity, and Reliability of Mental Health Literacy and Help-Seeking Behavior Questionnaires in Indonesia

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Background and Aim: Mental health is an integral part of adolescent wellbeing. However, only few adolescents understand the importance of mental health and are aware of the right time to seek help. Lack of knowledge and stigma may impede help-seeking behavior. To assess these aspects, three questionnaires have been developed in the English language. This study aims to assess the validity and reliability of an Indonesian version of the Mental Health Literacy and Help-Seeking Behavior set of questionnaires among adolescents in Indonesia.

Methods: This is a cross-sectional study that used The Mental Health Literacy and Help-Seeking Behavior set of questionnaires developed by Kutcher and Wei. The set consists of three questionnaires: the Mental Health Knowledge, Attitude Toward Mental Health, and Help-Seeking Behavior questionnaire. The study was conducted between October 2020 and January 2021 with 68 first-year medical students at the University of Indonesia, who represented adolescents in a transitional phase. The questionnaires were translated into the Indonesian language by a bilingual psychiatrist and reviewed by 10 expert psychiatrists to determine content validity [Item-Level Content Validity Index (I-CVI) and Scale-Level Content Validity Index (S-CVI)]. Cronbach's alpha values were used to assess internal consistency (reliability).

Results: The content validity test produced positive results with an I-CVI scores of 0.7–1.0 and S-CVI scores of 0.87, 0.90, and 0.99 for the knowledge, attitude, and help-seeking behavior questionnaires, respectively. For the reliability test, Cronbach's alpha values were 0.780 for the attitude questionnaire and 0.852 for the help-seeking behavior questionnaire, while the value for the knowledge questionnaire was 0.521.

Conclusion: The ability to properly measure mental health through the availability of accessible, valid, and understandable tools plays an important role in addressing mental health issues among adolescents. In the current study, the Indonesian translations of all three questionnaires examining knowledge, attitude, and help-seeking behavior were considered to be valid and reliable.

Keywords: mental health literacy, help-seeking behavior, adolescents, validity, reliability

INTRODUCTION

Adolescents suffer from mental health problems just like everyone else. Approximately 18% of the Indonesian population suffers from several types of mental disorders (1). Wiguna et al. (2) demonstrated that 33.5% of adolescents who sought help exhibited mood disorders. Self-harm is also prevalent among adolescents, reaching its peak around puberty. Nevertheless, adolescents do not always seek help. One study indicated that only one in four adolescents with depression or one in three adolescents with a mental illness sought help, whereby those who did otherwise may be at risk of drug abuse, risky behavior, decreased quality of life, and lowered life expectancy (3–6). Adolescents may develop mental health problems when facing the experience of transitioning to young adulthood. Their mental health may be affected not only by their biological or executive function development but also by their social environments, for example, family, peers, and schools (7). Adolescents transitioning to adulthood may also need to adapt to new situations and challenges as they pursue higher education. Entering college may promote a sense of accomplishment. However, there may also be new stressors that could trigger mental distress (8).

The recent World Mental Health Surveys conducted by the World Health Organization revealed that 20.3% of college students had 12-month mental health disorders assessed with Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV)/Composite International Diagnostic Interview. Of that group, 83.1% of the students experienced mental health disorders before enrolling in college. Those who experienced the onsets of mental health disorders before entering college had a higher chance of dropping out. In addition, the study revealed that only 16.4% of the students with 12-month disorders had received mental healthcare treatment (9). Among college students, medical students have been reported to have higher rates of perceived stress and emotional distress (10). Atkinson (11) found that one-third of medical students showed stress and depressive symptoms, while half of the students were anxious upon entering their first year. Adolescents entering medical schools while transitioning to adulthood may need to be assessed for their mental health knowledge, attitudes to mental health, and their help-seeking behavior to develop specific measures of early intervention to address their psychological distress and promote help-seeking behavior.

Being able to recognize specific mental illnesses, knowing how to obtain information about treatment and adequate professional help, and performing help-seeking behavior are crucial. One study revealed that among its 2,000 subjects, only 39% were able to identify symptoms of depression, and only 27% were able to identify symptoms of schizophrenia (12, 13). Another study involving adolescents found that only 16.4% of respondents could be classified as adequately informed to identify and intend to seek help for certain issues (14). In 2007, the World Health Organization (WHO) defined health literacy as the cognitive and social skills that determine the motivation and ability of individuals to gain access to, understand, and use information in ways that promote and maintain good health. Mental health literacy was defined as the understanding of how to obtain and maintain good mental health, understanding mental disorders and their treatments, developing capacities to decrease stigma, and developing capacities to enhance help-seeking efficacy (15).

The most powerful determinant of actual help-seeking behavior is help-seeking intentions, with studies demonstrating that help-seeking attitudes could predict help-seeking intentions. Sub-factors of help-seeking attitudes are recognition of the need for help, stigma tolerance, interpersonal openness, and therapist confidence (3). The attitude shown by adolescents toward mental health is important, as overall negative attitudes toward mental health may impede help-seeking behavior. Penn et al. (16) demonstrated that adolescents and young adults had greater mental health knowledge, yet they believed those with mental illnesses to be different to those who are "normal."

There are several factors that facilitate or impede help-seeking behavior: a preference to look to informal sources, e.g., friends and family; a fear of others reacting to their story; and a lack of knowledge of where to seek help (17). Another study found impeding factors related to help-seeking behavior to include a lack of information; biased recognition of severity, cost, shame, time, and distance; and distrust in healthcare professionals (18). According to another study, factors determining help-seeking behavior in adolescents included perceived level of benefit, general health motivation, extraversion, social support, and perceived barriers (cost) (19). Mental health knowledge and attitudes and help-seeking behavior must be assessed to understand the capacity of individuals to seek help, including its accessibility.

Therefore, a comprehensive understanding of mental health literacy is essential for more effective and targeted interventions or programs to address the rise in mental health issues among adolescents (20, 21). Subsequently, utilizing proper and relevant tools would be beneficial in obtaining correct measurements that portray the latest information regarding mental health literacy in adolescence (20). Nevertheless, recent studies on mental health literacy have used limited measures focusing on specific subpopulations. Sorensen et al. (22) mentioned a widely

used instrument called the Health Literacy Survey European Questionnaire 47 (HLS-EU-QS47), which assesses a broad spectrum of mental health literacy topics. In Indonesia, there was a self-reporting questionnaire called Willingness to Seek Professional Counseling Outside the university (WSPCO), which was used as a tool to obtain data regarding contributing factors impeding help-seeking behavior to reach out for psychological help and facilities (18). However, both questionnaires feature more general items and do not portray the division of mental health literacy into three aspects: knowledge, attitude, and help-seeking behavior.

Stan Kutcher and Yifeng Wei developed a questionnaire to measure mental health knowledge and attitudes toward mental health among adolescents, which was further mentioned as a mental health literacy questionnaire by Carr, Wei, Kutcher, and Heffernan (15). Milin et al. (23) then modified and validated a questionnaire first used by the Youth Opinion Survey on attitudes toward mental health in adolescents. Of all items contained in the questionnaire, this mental health literacy questionnaire could help to address the issue of transitional age adolescents in terms of stress and psychological distress (11). However, the questionnaire has not yet been used widely across Indonesia as part of child and adolescent psychiatric services, mainly due to the absence of an Indonesian language version. This study aimed to translate and assess the validity and reliability of the mental health literacy questionnaires designed to assess mental health knowledge, attitudes, and help-seeking behavior among adolescents in Indonesia.

MATERIALS AND METHODS

Design

This was a cross-sectional study, as part of a project to develop a mental health module for university students involving first-year medical students, and was conducted between October 2020 and January 2021 at the University of Indonesia campuses in Depok and Jakarta, Indonesia. The study was approved by the Cipto Mangunkusumo National Hospital, Jakarta, Indonesia, and ethically approved by the Health Research Ethics Committee, Faculty of Medicine, University of Indonesia, numbered KET-527/UN2.F1/ETIK/PPM.00.02/2020 under protocol number 20-05-0538.

Participants

Ten experts in child and adolescent psychiatry were included in the study to determine the internal validity of the questionnaires. There is no consensus on how sample size should be measured in psychometric validation studies. Various sources state that it should be 2–20 times the number of items in the questionnaire (24). In this study, to assess construct validity and reliability, sample size was determined by the proportion difference equation $n = (Z\alpha^2 \times p \times q)/d^2$, used primarily for cross-sectional studies (25). In October 2020, all three questionnaires were administered to 68 first-year medical students who were selected randomly from 170 students to meet the minimum sample number required for the study based on the calculation formula. The proportion (p) was assumed to be 20% taken from a previous study on transitional youth mental health problems (26). Meanwhile, q is 1 – p, d is the limit from error, and α is the confidence degree. Therefore, $n = (1.96^2 \times 0.2 \times 0.8)/0.1^2 = 61.4$. We added 10% and rounded the number up to 68 to ensure that the required sample size was met. We conducted the test on first-year medical students, as they are representative of the group of adolescents in the transition to adulthood who require assessment in terms of their mental health literacy and help-seeking behavior.

TABLE 1 | Demographic information.

Age	Frequency (n = 68)	Percentage (%)
17	12	17.7
18	50	73.5
19	6	8.8
Gender		
Male	25	36.8
Female	43	63.2

Measures

The study used The Mental Health Literacy and Help-Seeking Behavior questionnaires developed by Stan Kutcher, Yifeng Wei, *et al.*, consisting of Mental Health Knowledge, Attitude Toward Mental Health, and Help-Seeking Behavior questionnaires (15). All respondents provided their informed consent to complete the questionnaires and several demographic questions. The Mental Health Knowledge questionnaire consisted of 13 items, in which participants were scored one point for correct answers and zero points for wrong or unsure answers. The maximum and minimum total scores were 13 and 0, respectively. The Attitude Toward Mental Health questionnaire consisted of 12 items, with a 5-point Likert Scale ranging from strongly agree to strongly disagree. The maximum and minimum scores were 60 and 12, respectively. The Help-Seeking Behavior questionnaire consisted of 24 items. Results were deemed satisfactory if the participant scored above average, as determined by the pilot mean/median score.

Translation and Pilot Study

The Mental Health Literacy and Help-Seeking Behavior questionnaires were translated into the Indonesian language by a bilingual psychiatrist. A few adjustments were made in accordance with the input provided by 10 first-year medical student respondents during the trial test of the questionnaires. An additional example was provided for item 7 of the questionnaire, which stated that depression can be treated effectively using alternative treatment, in order to clarify that alternative treatment is not medical treatment, as the questionnaire may be used for students from a non-medical background. The questionnaires were then back translated into English and communicated back to the cross-cultural transition module team, which included

TABLE 2 | Validity test of the Indonesian mental health literacy and help-seeking behavior set of questionnaires.

Mental health knowledge			Attitude toward mental health			Help-seeking behavior		
No.	**Relevancy**	**I-CVI**	**No.**	**Relevancy**	**I-CVI**	**No.**	**Relevancy**	**I-CVI**
1	10	1.0	1	10	1.0	1	10	1.0
2	7	0.7	2	10	1.0	2	10	1.0
3	10	1.0	3	9	0.9	3	10	1.0
4	9	0.9	4	9	0.9	4	10	1.0
5	10	1.0	5	9	0.9	5	10	1.0
6	8	0.8	6	9	0.9	6	10	1.0
7	8	0.8	7	9	0.9	7	10	1.0
8	8	0.8	8	8	0.8	8	10	1.0
9	9	0.9	9	8	0.8	9	10	1.0
10	7	0.7	10	9	0.9	10	10	1.0
11	8	0.8	11	10	1.0	11	10	1.0
12	10	1.0	12	8	0.8	12	10	1.0
13	9	0.9				13	10	1.0
						14	10	1.0
						15	10	1.0
						16	10	1.0
						17	10	1.0
						18	10	1.0
						19	10	1.0
						20	9	0.9
						21	10	1.0
						22	10	1.0
						23	9	0.9
						24	9	0.9
S-CVI/Ave = mean I-CVI	0.87			0.90			0.99	

Relevancy, total number of experts scored "relevant" on the item.
I-CVI, Item-Level Content Validity Index; S-CVI, Scale-Level Content Validity Index.

the authors of the questionnaires, and then set into the final questionnaire.

Validity

Content Validity

To perform the content validity test, each item of the questionnaire was assessed by 10 experts on child and adolescents psychiatry. The scoring was conducted quantitatively, whereby experts determined its relevance using the following scale: (1) not relevant, (2) quite relevant, (3) relevant, and (4) highly relevant. The scoring sheet was transferred into MS Excel. A score of (1) and (2) were deemed irrelevant and given a value of 0, while (3) and (4) were deemed relevant and given a value of 1. Furthermore, the calculation was based on the Item-Level Content Validity Index (I-CVI) and Scale-Level Content Validity Index (S-CVI). The I-CVI and S-CVI were used to demonstrate validity. S-CVI/Ave, the mean of I-CVI value for each item of the questionnaire, was also used. Polit et al. (27) suggested that with 10 or more experts, there is little need to compute values for k^* and that any I-CVI > 0.78 would be considered excellent. Meanwhile, Torkian et al. (28) mention in their study that Content Validity Indexes were considered to be acceptable when I-CVI and S-CVI were at least 0.78 and 0.90, respectively.

Construct Validity

The aim of construct validation is to measure whether the instrument is able to capture what it intends to measure (24). This could be by measuring the relation between each item and the total scores of each category to establish its relation to other variables with which it should, theoretically, be associated positively, negatively, or practically not at all. To quantify construct validity, correlation coefficients and confirmatory factor analysis or structural equation modeling, or other statistical evaluations, can be used (29). Construct validity of The Indonesian Mental Health Literacy and Help-Seeking Behavior Questionnaires was measured using the Pearson correlation coefficient values between each item and the total scores of each category and furthermore between each item (30, 31). The Pearson coefficients are classified as medium (0.30–0.49) and large ($>$0.50) (30). Similar translation adaptation validity studies have used this method (32).

Reliability

The reliability was determined using the Cronbach's alpha measurement (33). As the questionnaire is a self-report, the inter-rater reliability was deemed unnecessary.

RESULTS

Descriptive Findings

The study conducted in October 2020 involved 68 adolescents who were studying as first-year medical students at the University of Indonesia. The mean age was 18.08 for male and 17.81 for female respondents. All respondents were able to understand English and Bahasa Indonesia. Demographic information of the respondents can be found on **Table 1**.

Content Validity

The study tested content validity by having 10 experts on child and adolescent psychiatry assess each item of the questionnaire and calculate the I-CVI and S-CVI. The complete I-CVI and S-CVI data are presented in **Table 2**.

Based on the validity test, the study produced I-CVI scores ranging between 0.7 and 1.0, with S-CVI scores of 0.87, 0.90, and 0.99 on the Mental Health Knowledge, Attitude Toward Mental Health, and Help-Seeking Behavior questionnaires, respectively. The results show that the questionnaires were deemed relevant in measuring the knowledge, attitude, and help-seeking behavior of an individual regarding mental health.

Construct Validity

For the knowledge questionnaire, overall, each item had a medium correlation (over 0.3) with the exception of item 4. The attitude questionnaire had a medium to large correlation ranging from 0.41 to 0.76, except for item 10. Finally, for the help-seeking behavior questionnaire, most items had a medium to large correlation ranging from 0.30 to 0.69, as seen in **Table 3**.

Reliability

A reliability test was performed to identify correlative reliability between items and internal consistency. The study revealed that the Cronbach's alpha values for the reliability test were 0.521, 0.780, and 0.852 for the Mental Health Knowledge, Attitude Toward Mental Health, and Help-Seeking Behavior questionnaires, respectively. The results of the reliability test on each questionnaire are provided in **Table 4**. The inter-item correlations for each item are presented in **Tables 5–7**. The mean score for the Mental Health Knowledge questionnaire was 6.97 (SD 2), 47.26 (SD 5.397) for the Attitude Toward Mental Health questionnaire, and 46.66 (SD 6.825) for the Help-Seeking Behavior questionnaire.

DISCUSSION

The current study aimed to provide evidence of the validity and reliability of tools for assessing mental health among Indonesian adolescents in three categories: mental health knowledge, attitude toward mental health, and help-seeking behavior. An Indonesian version of the Mental Health Literacy and Help-Seeking Behavior questionnaires, which could be used to assess the mental health literacy and help-seeking behavior of Indonesian adolescents, is yet to exist. Youth well-being is an important component attributing to improved mental health services across the nation. Therefore, by having access to valid and reliable questionnaires,

TABLE 3 | Item-total correlation coefficients for the Indonesian mental health literacy and help-seeking behavior set of questionnaires.

Questionnaire	Item number	Item-total correlation
Knowledge		
	1	0.32**
	2	0.32**
	3	0.34**
	4	0.28*
	5	0.51**
	6	0.45**
	7	0.39**
	8	0.38**
	9	0.37**
	10	0.37**
	11	0.53**
	12	0.43**
	13	0.46**
Attitude		
	1	0.41**
	2	0.48**
	3	0.51**
	4	0.63**
	5	0.55**
	6	0.48**
	7	0.59**
	8	0.76**
	9	0.67**
	10	0.25*
	11	0.65**
	12	0.64**
Help-seeking behavior		
	1	0.38**
	2	0.52**
	3	0.57**
	4	0.68**
	5	0.63**
	6	0.59**
	7	0.60**
	8	0.68**
	9	0.69**
	10	0.68**
	11	0.68**
	12	0.48**
	13	0.41**
	14	0.32**
	15	0.41**
	16	0.43**
	17	0.39**
	18	0.30*
	19	0.21
	20	0.33**
	21	0.40**
	22	0.08
	23	0.22
	24	0.33**

***p-level = 0.01, *p = 0.05.*

TABLE 4 | Internal consistency of the Indonesian mental health literacy and help-seeking behavior set of questionnaires.

Scale	Item	Corrected-item total correlation	Cronbach's alpha if item deleted	Cronbach's alpha
Mental Health Knowledge				0.521
	1	0.103	0.526	
	2	0.182	0.506	
	3	0.232	0.501	
	4	0.033	0.551	
	5	0.303	0.472	
	6	0.251	0.487	
	7	0.159	0.514	
	8	0.274	0.495	
	9	0.129	0.524	
	10	0.193	0.502	
	11	0.334	0.462	
	12	0.340	0.490	
	13	0.291	0.480	
Attitude toward mental health				0.780
	1	0.267	0.781	
	2	0.329	0.775	
	3	0.399	0.767	
	4	0.532	0.754	
	5	0.430	0.764	
	6	0.365	0.770	
	7	0.480	0.758	
	8	0.683	0.736	
	9	0.565	0.749	
	10	0.054	0.811	
	11	0.563	0.751	
	12	0.548	0.752	
Help-seeking behavior				0.852
	1	0.277	0.853	
	2	0.421	0.846	
	3	0.480	0.844	
	4	0.600	0.838	
	5	0.552	0.840	
	6	0.534	0.842	
	7	0.516	0.842	
	8	0.628	0.838	
	9	0.624	0.837	
	10	0.620	0.838	
	11	0.614	0.838	
	12	0.388	0.847	
	13	0.356	0.848	
	14	0.275	0.850	
	15	0.348	0.848	
	16	0.377	0.847	
	17	0.335	0.848	
	18	0.234	0.851	
	19	0.161	0.852	
	20	0.300	0.851	
	21	0.369	0.849	
	22	0.066	0.853	
	23	0.199	0.852	
	24	0.297	0.850	

TABLE 5 | Inter-item correlation coefficients for Indonesian adolescents mental health knowledge questionnaire.

Knowledge item	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1.000	–	–	–	–	–	–	–	–	–	–	–	–
2	0.060	1.000	–	–	–	–	–	–	–	–	–	–	–
3	0.000	−0.143	1.000	–	–	–	–	–	–	–	–	–	–
4	−0.068	−0.018	0.140	1.000	–	–	–	–	–	–	–	–	–
5	0.018	0.241	0.167	−0.071	1.000	–	–	–	–	–	–	–	–
6	0.160	0.173	0.156	−0.176	0.221	1.000	–	–	–	–	–	–	–
7	−0.035	0.182	0.068	−0.168	0.064	0.151	1.000	–	–	–	–	–	–
8	0.144	0.363	0.063	−0.140	0.374	0.139	0.189	1.000	–	–	–	–	–
9	0.068	−0.122	0.015	0.233	0.120	0.033	−0.046	−0.140	1.000	–	–	–	–
10	0.161	0.004	−0.060	0.094	0.052	−0.039	0.065	0.060	0.254	1.000	–	–	–
11	0.090	0.113	0.085	0.011	0.209	0.263	0.307	0.179	−0.051	0.061	1.000	–	–
12	0.041	0.067	0.251	0.084	0.144	0.218	0.022	0.054	0.084	0.094	0.301	1.000	–
13	−0.069	−0.004	0.399	0.306	0.121	0.039	0.099	0.110	0.066	0.085	0.108	0.295	1.000

TABLE 6 | Inter-item correlation coefficients for Indonesian adolescents' attitude toward mental health questionnaire.

Attitude item	1	2	3	4	5	6	7	8	9	10	11	12
1	1.000	–	–	–	–	–	–	–	–	–	–	–
2	0.363	1.000	–	–	–	–	–	–	–	–	–	–
3	0.257	0.349	1.000	–	–	–	–	–	–	–	–	–
4	0.162	0.100	0.197	1.000	–	–	–	–	–	–	–	–
5	0.152	0.156	0.087	0.35	1.000	–	–	–	–	–	–	–
6	0.120	0.024	−0.126	0.547	0.442	1.000	–	–	–	–	–	–
7	0.295	0.474	0.328	0.198	0.193	−0.072	1.000	–	–	–	–	–
8	0.109	0.138	0.207	0.523	0.482	0.414	0.397	1.000	–	–	–	–
9	0.136	0.267	0.374	0.241	0.259	0.203	0.340	0.581	1.000	–	–	–
10	−0.071	−0.01	0.253	−0.078	0.041	−0.079	0.173	0.017	0.194	1.000	–	–
11	0.146	0.047	0.179	0.617	0.285	0.467	0.301	0.643	0.374	−0.137	1.000	–
12	0.015	0.118	0.225	0.519	0.241	0.416	0.187	0.629	0.409	0.033	0.631	1.000

health professionals could better understand the mental health situation among adolescents within the community before conducting further studies or interventions.

Content Validity

Content validity was assessed based on relevancy, clarity, and ambiguity. For Mental Health Knowledge, the internal validity test showed an I-CVI ranging between 0.7 and 1.0, with a S-CVI of 0.87, meaning that 87% of the items were deemed relevant, clear, and unambiguous by the panel of experts. Similarly, the internal validity test on the questionnaire measuring Attitude Toward Mental Health had an I-CVI of 0.8–1.0, with an S-CVI of 0.90, showing that 90% of the items were also deemed understandable. As for Help-Seeking Behavior questionnaire, each item showed an I-CVI of either 0.9 or 1.0, with an S-CVI of 0.99, meaning that 99% of the items were deemed relevant and clear.

Seven of the 10 experts deemed all items to be appropriate. As the study could be used as the pilot study for further research with similar purposes, there was no precise cutoff point to set the baseline for the questionnaire being considered valid.

Construct Validity

A construct validity test was conducted to assess whether the questionnaires measured the intended constructs, which were knowledge, attitudes, and help-seeking behavior. To measure whether each questionnaire is homogeneous, we conducted Pearson *r* item-total correlation analysis. The Pearson correlation is used to assess the linear association between variables. Although most items revealed a moderate to high correlation, a few of the items had a low correlation and were statistically insignificant. It has been noted that it would be helpful if further evidence of construct validity could be obtained, for example, convergent evidence and discriminant evidence, which could be retrieved from factor analysis (32, 34).

Reliability

In order to evaluate the internal consistency of the research tool, the Cronbach's alpha coefficient was used. This method has been the most widely employed method in validation studies (35). An alpha value >0.70 is considered good, whereby when reliability increases, the fraction of a test score attributable to error will decrease. Out of the questionnaires, the Attitude Toward Mental Health questionnaire and Help-Seeking Behavior questionnaire had an alpha value of above 0.70, demonstrating their effectiveness and acceptability.

The set of questionnaires was disseminated to 68 respondents, surpassing the minimum sample number of 62. Wei et al. (36) also suggested in their findings that, in order to examine the internal consistency and the dimensionality of the tool, a sample size of at least 30 individuals may be required. The Cronbach's alpha value for the Mental Health Knowledge questionnaire obtained in this study was 0.521. This value is relatively fair and considered to be low to moderate in terms of reliability, but not unacceptable (37). The English version of the Mental Health Knowledge questionnaire, which was used for a randomized clinical trial on high school students, and which was the reference for the Indonesian questionnaire, demonstrated a Cronbach's alpha of 0.40 (preintervention) and 0.54 (postintervention) (23).

To acquire a higher Cronbach's alpha value, it has been suggested that providing a larger number of items in the scale could be taken into consideration. A low alpha value could be caused by the following reasons: fewer numbers of questions, poor inter-item correlation, or heterogeneous constructs of the items (38). Nevertheless, if the items targeting a unidimensional construct are parallel, one alternative method to enhance the alpha value is to develop a set of highly correlated items in the tool, without unduly increasing the number of items with a lack of inter-item correlation (39).

Future Appliance and Practical Settings

This validity and reliability study indicates that the translated mental health literacy questionnaires are reasonably valid and can be further applied for wider use in the setting of psychiatric services for adolescents. We also suggest that our study could be used to address the finding made by Vidourek *et al.*, in which a lack of support and inadequate treatment from health professionals could increase the risk of students not finishing their studies, which subsequently leads to worsening mental health conditions (40).

Several studies have shown that students, who are in the period of transitioning from adolescents to young adults, tend to seek informal help from relatives or friends, rather than professional help when they encounter psychological distress. This lack of willingness to seek professional support results in higher stress levels and poor academic performance (41, 42). With the existence of these questionnaires in Indonesia, mental health professionals will be able to further understand and gain detailed insights into why individuals are hesitant to seek help.

Currently, according to the Indonesian 2020–2024's Plans of Actions in Mental Health and Psychoactive Drugs, one strategic issue faced by the government is a lack of funding, while not all district authorities have set policies to address mental health issues (43). This study suggests that the questionnaires could be utilized to create a hassle-free experience and are able to penetrate all layers of the community. In the future, these questionnaires could serve as tools for the government and relevant stakeholders to establish affordable mental health policies. Moreover, a study in Indonesia showed that despite the high number of university students suffering from anxiety (95.4%), ∼90–96.4% exhibited positive coping strategies, and nearly 50% reported self-harming and had suicidal thoughts (21). We suggest that the tools examined in this study be applied by health facilities in universities to perform initial assessment of first-year students. In the long term, the data obtained can be used as a reference for more effective and accurately targeted interventions to address mental health issues in adolescents.

Study Limitations

There are several limitations to this study. The sample group for the study was adolescents in the transitional phase who are first-year medical students. In order to further examine the effectiveness of these questionnaires, the coverage could be expanded to include adolescents in different phases and from a

TABLE 7 | Inter-item correlation coefficients for mental health help-seeking behavior of Indonesian adolescents questionnaire.

Help-seeking item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2	−0.082	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3	0.151	0.298	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4	0.095	0.591	0.217	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5	0.082	0.254	0.618	0.443	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
6	0.237	0.242	0.251	0.542	0.437	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
7	0.205	0.265	0.334	0.356	0.418	0.286	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	0.205	0.297	0.315	0.406	0.431	0.480	0.345	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
9	0.234	0.246	0.490	0.382	0.447	0.388	0.590	0.452	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
10	0.261	0.247	0.179	0.441	0.292	0.405	0.379	0.654	0.460	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–	–
11	0.257	0.264	0.350	0.385	0.400	0.403	0.342	0.388	0.427	0.501	1.000	–	–	–	–	–	–	–	–	–	–	–	–	–
12	0.334	0.394	0.197	0.338	0.173	0.271	0.233	0.235	0.103	0.0.363	0.421	1.000	–	–	–	–	–	–	–	–	–	–	–	–
13	0.015	0.161	0.217	0.270	0.174	0.348	0.039	0.101	0.219	0.122	0.267	0.051	1.000	–	–	–	–	–	–	–	–	–	–	–
14	0.256	0.147	0.184	0.116	0.019	−0.132	0.422	−0.009	0.188	0.047	0.034	0.080	0.194	1.000	–	–	–	–	–	–	–	–	–	–
15	0.033	0.211	0.122	0.235	0.122	0.072	0.044	0.418	0.179	0.344	0.192	−0.008	0.311	0.287	1.000	–	–	–	–	–	–	–	–	–
16	0.205	0.067	0.200	0.154	0.279	0.149	0.253	0.174	0.380	0.295	0.063	−0.019	0.331	0.485	0.422	1.000	–	–	–	–	–	–	–	–
17	0.181	−0.033	−0.001	0.172	0.070	0.181	0.078	0.389	0.292	0.557	0.341	0.073	0.187	−0.054	0.423	0.338	1.000	–	–	–	–	–	–	–
18	0.026	−0.100	0.042	0.072	0.077	0.061	0.030	0.168	0.115	0.251	0.322	0.006	0.456	0.233	0.215	0.223	0.312	1.000	–	–	–	–	–	–
19	0.131	0.064	−0.053	0.047	−0.053	−0.004	−0.081	0.195	0.013	0.037	0.198	0.147	0.221	0.106	0.241	0.019	0.190	0.285	1.000	–	–	–	–	–
20	0.012	0.220	0.205	0.224	0.205	0.111	0.173	0.172	0.154	0.042	0.133	0.095	0.114	0.144	0.022	0.026	−0.104	0.047	0.113	1.000	–	–	–	–
21	0.089	0.289	0.201	0.294	0.133	0.145	0.182	0.226	0.247	0.115	0.174	0.100	0.150	0.247	0.106	0.076	0.015	0.137	0.201	0.763	1.000	–	–	–
22	−0.151	0.125	0.117	0.127	0.117	0.063	−0.097	0.098	−0.011	−0.106	0.075	−0.056	0.065	−0.045	0.096	−0.076	−0.142	−0.137	−0.051	0.569	0.434	1.000	–	–
23	0.122	0.070	0.166	−0.021	0.166	0.090	0.071	0.139	−0.015	−0.012	0.107	0.156	0.093	0.207	−0.042	0.086	−0.026	0.155	0.419	0.386	0.284	−0.021	1.000	–
24	0.014	0.256	0.088	0.261	0.163	0.129	0.176	0.200	0.129	0.082	0.154	0.139	0.133	0.103	0.068	−0.016	−0.037	0.096	0.073	0.859	0.648	0.489	0.326	1.000

general academic background. Furthermore, a test–retest study could also be considered to re-evaluate the set of questionnaires in the future.

CONCLUSION

The mental health and wellbeing of adolescents is a dynamic and growing issue that must be addressed properly in the field of psychiatry considering that literacy around the underlying causes, the existence of stigma, and sense of severity could impair an individual's quality of life. The availability of proper means of measurement by the existence of accessible yet valid tools is an integral part of addressing the issue. This is the first set of mental health literacy tools which have been translated and validated into the Indonesian language. From the results of our study, the Indonesian version of the Mental Health Literacy and Help-Seeking Behavior questionnaires is considered to be valid and reliable. These tools are easily understood by all levels of society and could be used to support future studies focusing on mental health literacy among adolescents.

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 Health Research Ethics Committee, Faculty of Medicine, University of Indonesia. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

FK, RI, and TW: designed the study and methods. SP, WI, HG, and VP: contributed to the design of the study and review the interpretation of the data. FK and CM: carried out the data collection. FK, CM, GN, and MA: analyzed the data and write the draft of the manuscript. FK, RI, TW, KM, and SRP: contributed in finalizing the manuscript. TT, MK, and AS: contributed to the interpretation of the data and critically reviewed and approved the final draft of the manuscript. All authors agree to accept responsibility for all aspects of the work.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.764666/full#supplementary-material

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ORIGINAL RESEARCH
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An Evaluation of an Online Training Platform for Teaching Positive Emotions for People With Schizophrenia

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Background: The dissemination of new interventions in clinical practice remains challenging. E-learning may provide wide access in various settings and allow tailored learning trajectories and an adapted training pace. This study evaluates an online platform to train professionals to lead the Positive Emotion Program for Schizophrenia (PEPS) for patients with anhedonia. This study aims to test the reception provided by clinicians to the platform and its perceived usefulness and investigate whether e-PEPS training improves knowledge about the facilitation of PEPS.

Materials and Methods: Participants were recruited through advertisements. All participants provided their informed consent on a registration form and completed two pre-test questionnaires, a knowledge test on negative symptoms in schizophrenia, learning strategies and the partnership relationship, and a test on the ability to savor pleasant moments. After the training, they completed the same questionnaire and an evaluation form of the training and its application in personal and professional life.

Results: Two-hundred and ten participants were registered to participate into the study, 185 received the access to the platform, and 101 participants completed the training and the post-test assessments. Satisfaction with training was high. The results showed that the participants significantly improved their knowledge about PEPS and increased the skills taught in their personal repertoire after the training. The training allows most clinicians to plan to lead a PEPS group in the year following training.

Discussion: As a result of this study, training has been improved and is now freely available to all interested clinicians.

Keywords: e-learning, anhedonia, apathy, schizophrenia, motivation, pleasure, partnership, learning strategies

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INTRODUCTION

Anhedonia and avolition hamper the quality of life and functioning in people with schizophrenia, and the efficacy of drug-based treatments and psychological interventions on primary negative symptoms remain limited (1). The Positive Emotions Program for Schizophrenia (PEPS) has been developed to target these symptoms by increasing the anticipation and maintenance of positive emotions and beliefs about future performance (2).

PEPS involves eight 1-h group sessions administered using visual and loud audio materials and presented as PowerPoint presentation slides projected onto a screen. The program uses a collaborative egalitarian approach. A pilot study indicated that PEPS is both a feasible intervention and is associated with a specific reduction in anhedonia and apathy (3). A randomized controlled trial, in which raters were blinded to the conditions under which participants were randomized, was conducted and analyzed using an intention-to-treat analysis. Results showed statistically significant clinical improvement in PEPS participants compared with non-PEPS participants at post-test and 6-month follow-up assessments for the apathy and anhedonia composite scores on the Negative Symptom Rating Scale (4). Finally, a field test showed that PEPS could be easily administered after a day of training, with a reduction in negative symptoms and an improvement in social functioning in patients (5).

The dissemination of new interventions in clinical practice remains challenging. Traditionally, new psychosocial interventions are presented face-to-face and supplemented with manuals and clinical supervision. This training method places a high demand on human resources because the developers of new interventions may be involved in clinical practice and may want to pursue their research and development work. The number of participants will be limited because of geographical factors and limited class sizes to teach practical skills (6). E-learning may help overcome these obstacles, allowing extensive access in various settings (home, work, mobile phones), tailored learning trajectories and adapted training pace. The lack of peer support may be overcome by suggesting online teams. Creating an online community of practice may also allow us to surmount feelings of isolation or lack of peer support.

e-PEPS, an online training platform that prepares healthcare and social work professionals to run the Positive Emotions Program for Schizophrenia (PEPS), was created to address the aforementioned challenges. e-PEPS is intended to help these professionals achieve the following objectives:

- Become familiar with the theoretical and clinical foundations of PEPS to promote the development of positive emotions in participants.
- Identify learning strategies and mobilize educational strategies to support the learning of participants in an individualized manner.
- Strengthen the partnership posture between facilitators and participants to ensure regular participation in sessions, reduce stigma and self-stigma, and strengthen the therapeutic alliance.

The program consists of three modules that address these three objectives. On the home page, there is advice on building one's own training pathway based on prior knowledge or learning style. The main content is brought through video clips, which include theoretical videos presenting the concepts underlying the design of PEPS clinically and pedagogically, demonstration videos featuring animation sequences of the program, training videos to identify significant elements for the conduction of the program, and reflective videos to analyze practices by highlighting significant elements in the facilitation of sessions. Quizzes, reflective activities, and practice exercises are offered or integrated into videos, making them interactive. The downloadable texts and articles completed the training.

This evaluation of e-PEPS online training on professional aspects and competences aimed to test the reception provided by clinicians to the platform and its perceived usefulness. It will investigate whether e-PEPS improves knowledge score about the animation of PEPS and their dispositional beliefs about their ability to appreciate positive experience. The study will also measure how the clinician use the skills taught in their repertoire and apply them in their actual clinical practice.

MATERIALS AND METHODS

The e-PEPS online training was evaluated between September 15 and December 15, 2020. Participants were recruited through the Swiss Society of Social Psychiatry, the International Association of Schizophrenia and Mental Health Days and the popular magazine "Santé mentale," a monthly magazine for psychiatric care teams. They gave their informed consent on a registration form and completed two pre-test questionnaires, a knowledge test on negative symptoms in schizophrenia, learning strategies, and the partnership relationship, and a test on the ability to savor pleasant moments, the Savoring Belief Inventory (7, 8). After the training, the participants completed the same questionnaires and an evaluation form of the training and its application in personal and professional life. They received only one reminder message. Once the file was complete, the participants received a message to log into the training. A reminder message was sent 1 month later to complete the post-test questionnaires.

Instruments

The knowledge assessment questionnaire measures knowledge about negative symptoms, skills taught in PEPS, learning strategies, partnership relationships, and support strategies used in program facilitation. It consists of 14 multiple-choice questions. A score between two and six points was given for each question for a total of 41 points (7 2-point questions, 3 3-point questions, 3 4-point questions and 1 6-point question). The knowledge questionnaire was tested by comparing 11 people trained to facilitate PEPS with 12 people who were unfamiliar with the program. Experienced people obtained an average score of 29.91 (SD 3.9), and novices had an average score of 11.67 (SD 6.53), and their score was statistically significant in this test compared to novices [$t_{(18.23)}$, $p = 0.000$]. To assess the stability of the test, eleven participants took the test 15 days apart; the test was particularly stable [Spearman's rho $= 0.75$, $p = 0.008$; $t_{(10)} = 0.000$, $p = 1.00$].

The French version of the Savoring Beliefs Inventory (SBI) (8) is a self-assessment questionnaire composed of 24 items divided into three-time dimensions: past, present, and future each represented by eight items. It is a self-report measure of people's dispositional beliefs about their ability to appreciate positive experience in each of these three temporal (9). Half of the items are formulated positively, while the other half are formulated negatively. Each item is scored on a 7-point Likert scale, ranging from "strongly disagree" to "strongly agree". The

total score of the SBI is calculated by subtracting the total score of items framed negatively from the total score of items formulated positively. The three subscales: the anticipation of pleasure, pleasure in the present moment, and recalled pleasure from a positive experience, are calculated similarly. The anticipation of pleasure subscale measures the ability to savor a positive future event in advance, the present moment pleasure subscale measures the enjoyment of positive events when they occur, and the remembered pleasure subscale measures the recall of positive past events after they have occurred. The original English version of the SBI was independently translated by three native French speakers and compared until full agreement was reached. The translation was authorized by the author of the original version. The factor structure of the French version of the SBI was adequate, and all items contributed significantly to their corresponding factor: Anticipating pleasure, Present moment pleasure, and Reminiscing pleasure (8).

The post-test evaluation questionnaire is composed of 10 items that evaluate the interest, usefulness, achievement of objectives, navigability, coherence of training in a global way, and specific criteria by type of video and educational activities. Twelve items evaluated learning in personal and professional life. Respondents could make comments and suggestions. Each item is evaluated on a 4-points Likert scale (Fully disagree, partially disagree, partially agree, fully agree).

The Intervention e-PEPS

The training is available at https://www.e-peps.ch. It is recognized by the Swiss Society of Social Psychiatry for 10 h of continuing education upon successful completion of a questionnaire at the end of the training, which attests to the acquisition of knowledge to facilitate PEPS. During the present study, the project was on a development platform, and access was given under registration. The platform was built with LMS LearnDash on WordPress. The e-PEPS has a simple architecture that allows easy navigation for the participants. The five main tabs help to find the way around the platform. The home page of the site is accessible to everyone. It provides general information on the use of the site and directs the training registration link. The training tab leads to three modules that constitute the training. A PEPS tab leads to a download link to obtain the PEPS program. A PEPS community tab allows the users to register for the discussion via a forum. Finally, an account tab allows the user to configure its personal account.

The training was organized into three modules: module 1 is training for the animation of PEPS, module 2 develops skills for pedagogical support, and module 3 teaches the principles of the partnership relationship (see **Figure 1**). The three modules of training are divided into sequences and activities. Module 1 presents the theoretical foundations of the program and demonstration videos in a concrete manner with presentations of sequences between facilitators and participants. The theoretical contributions are supplemented by a range of scientific and professional articles. The second part of this module presents the PEPS skills: savoring pleasant experiences, accentuating the expression of emotions, capitalizing on positive moments by sharing them with others, and anticipating pleasant moments. The concepts underlying these skills are presented in a video capsule, and each PEPS skill is illustrated in the animation of a session of the program. Practical exercises are also offered to practice and test knowledge. Learners are encouraged to watch a video of a PEPS session on interactive videos. The third sequence of module 1 presents PEPS exercices that aim to reduce at reducing defeatist beliefs. As in the previous sequences, a theoretical video capsule explains the influence of defeatist beliefs on motivation and the difficulty in achieving goal-directed behaviors. Two other activities are offered to learners to work on those beliefs. A video shows the steps to help PEPS participants identify and modify these beliefs. An interactive video then suggests practicing the same skills. The fourth sequence of this module introduces relaxation exercises, explains the value of relaxation in managing emotions, and demonstrates simple exercises. Learners can practice exercising using a recorder. Module 2 focuses on educational support. The first sequence familiarizes learners with theoretical contributions resulting from experiential learning from the work of Kolb and Kolb (10). It emphasizes the four main learning strategies described in the model and helps understand how they are inserted into the PEPS program. Knowledge of learning strategies is useful for facilitators to identify those of the participants and to better support them in their learning during PEPS exercises. Again, theoretical and practical videos are used to develop the skills to accompany patients who follow PEPS according to their learning strategies and learning styles. Sequence 2 of this module presents Jerome Brunner's scaffolding strategies, again with theoretical and concrete exercises. Module 3 focuses on partnership relationships. It is divided into two sequences: one on self-disclosure practice and the other on the phenomenon of status, roles, and places in the therapeutic relationship. As the animation of PEPS requires facilitators' personal involvement, facilitators participate in sharing their experiences during exercises along with patients. They show how to describe life experiences related to PEPS skills and actively engage patients in the exercises. In sequence 2 of this third module, participants explored the dynamics of places in the therapeutic relationship. The sharing of personal experiences prescribed by the program prompts the facilitators not only to lead the group in PEPS learning activities but also to take on the role of participants, beyond the institutional functions (educator, nurse). This prescription of egalitarian participation acts on the relationships between places and favors the empowerment of the participants (11, 12). This sequence offers a theoretical description of this interactional phenomenon using a video capsule and practical illustrations of the posture valued by the program. Participants learn about the different facets of the therapeutic relationship at the deontic, epistemic, and affective levels.

Ethical Considerations

Interested persons had to register for the training test via an online questionnaire and respond positively to the informed consent: I am interested in participating in the test of this training and give my consent so that the data collected can be used for this evaluation. The data were processed anonymously. A detailed description of the study was available on the websites of

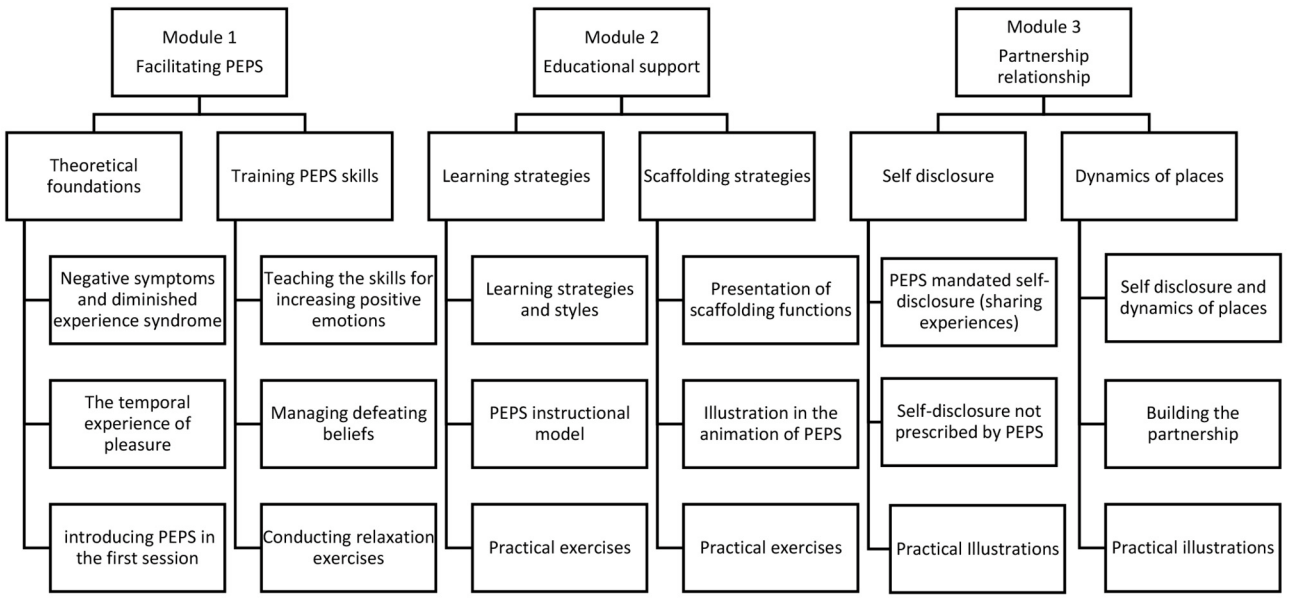

FIGURE 1 | Stage by stage content of the training.

the study. This study is outside the scope of the Swiss Human Research Act because no personal data concerning human diseases and the structure and function of the human body were collected. Therefore, this study did not need to be authorized by Swiss ethics.

Statistical Analysis

Descriptive statistics were used for statistical analysis. Pre- and post comparisons were made using a paired-sample *t*-test. Correlations were calculated using Spearman's rho rank correlation. The differences in scores were calculated by subtracting the post-test from the pre-test. Cohen's *d* effect sizes were calculated for within-subjects, correcting for dependence among means to make direct comparisons with effect sizes from between-patient studies. Formula 8 of Morris and DeShon was used (13).

RESULTS

The flowchart of the study showed that 210 participants registered to participate in the study (**Figure 2**). One participant was no longer available a few days after registration because hired on the front line for the second wave of the COVID-19 pandemic. Eighteen participants did not complete the pre-test questionnaires and did not respond to the message reminder. One hundred and ninety-one persons had a complete file and received access to online training. Two of these 191 people had given invalid e-mail addresses and could not receive their login message. Three encountered video streaming problems related to their Internet connection. Finally, a second person was hired on the front line of the second wave of COVID-19. Thus, 185 participants could follow the training. One hundred and one participants completed the training. The sample consisted of 101 people, 88 women and 13 men, with an average age of 35.12 years (e-t. 10.02). The participants were psychologists ($n = 28$), registered nurses ($n = 26$), clinical bachelor student nurses ($n = 17$), social workers ($n = 15$), occupational therapists ($n = 6$), psychiatrists ($n = 4$), peer practitioners ($n = 3$), social science teacher ($n = 1$), and medical secretaries ($n = 1$). Twenty-five of those who completed the training worked in socio-therapeutic or nursing homes, 19 in day centers, 13 in hospitals, 12 in outpatient clinics, 8 in mobile teams, 1 in sheltered workshops, 2 were unemployed, and 3 worked in university and 17 students were in 8-weeks clinical internship. Fifty-five lived in Switzerland, 44 in France, two in Belgium, and two in Martinique.

People who took the training estimate that they completed it in an average of 8 h and 33 min (SD 3 h 42) over an average period of 29 days (SD 24 days). The results showed that the participants who took the training significantly improved their results on the knowledge test [$t_{(100)} = -18.01$; $p = 0.000$] by doubling their scores (**Table 1**). Thus, they join the scores of the facilitators already trained. They also statistically significantly improved their ability to savor the future [$t_{(100)} = -3.54$, $p = 0.001$], present [$t_{(100)} = -2.87$, $p = 0.005$], past [$t_{(100)} = -3.50$, $p = 0.001$], and total SBI score [$t_{(100)} = -4.35$, $p < 0.000$] measured using the Savoring Belief Inventory-French version.

Check for difference between sex or correlation with age for the different variables have been explored but no differences or correlation were observed. On the other hand, we observed a slight correlation between the duration of training estimated by the participants and the improvements in the knowledge test (Spearman's rho 0.23, two-sided $p = 0.02$), on the SBI ability to savor the future (Spearman's rho 0.33, two-tailed $p = 0.001$), and SBI total score (Spearman's rho 0.26, two-tailed $p = 0.009$). Satisfaction with the training was high (see **Table 2**). The results of the satisfaction questionnaire and specific users'

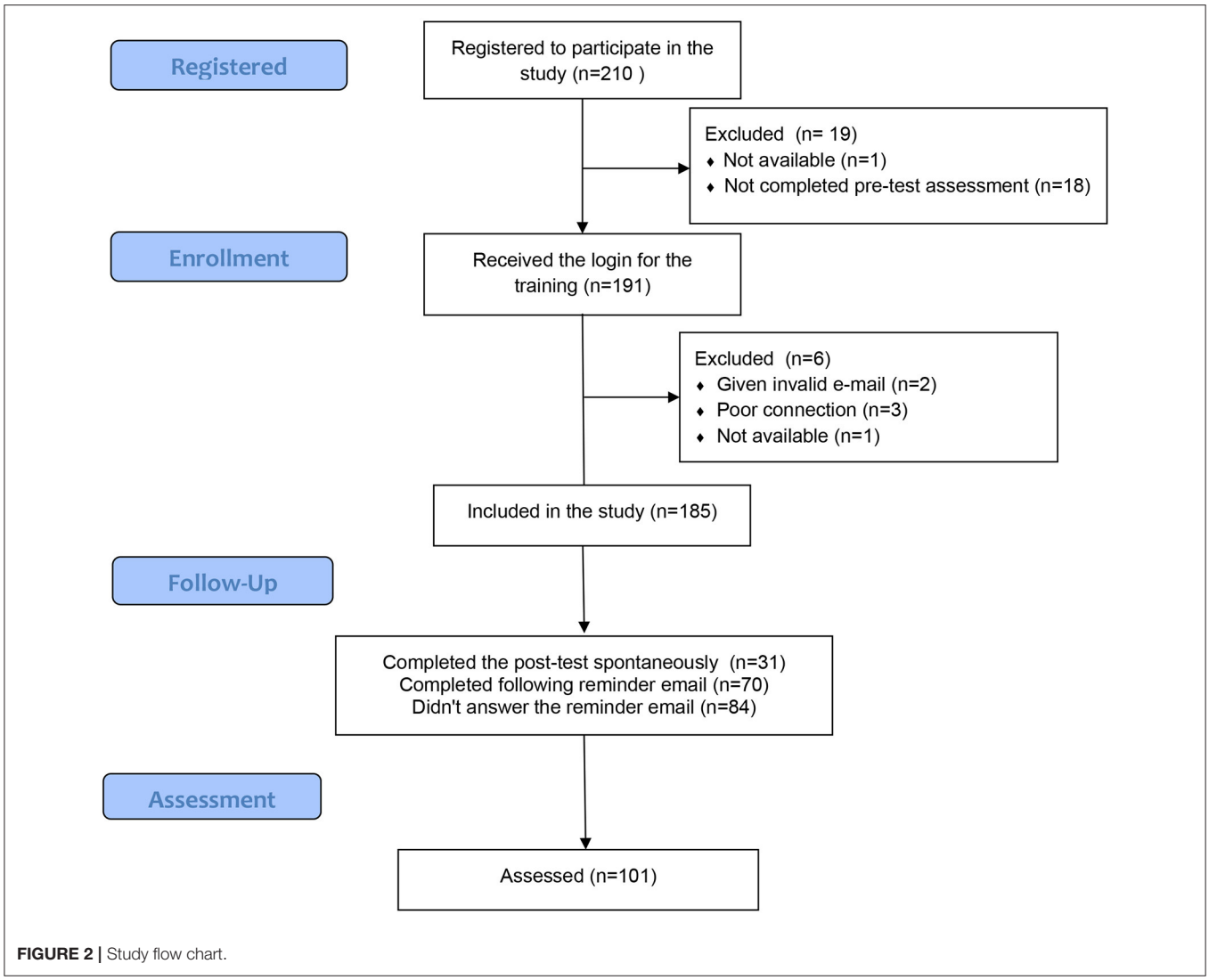

FIGURE 2 | Study flow chart.

TABLE 1 | Pre and post-tests results.

	Pre-test mean (SD)	Post-test mean (SD)	*T* (df), *p*	Cohen's d
Knowledge test about PEPS	15.47 (7.03)	29.56 (7.41)	$t_{(100)} = -18.01; p = 0.000$	1.80
SBI anticipation of pleasure	5.84 (0.73)	6.06 (0.68)	$t_{(100)} = -3.54, p = 0.001$	0.35
SBI pleasure in the present moment	5.29 (0.96)	5.47 (0.96)	$t_{(100)} = -2.87, p = 0.005$	0.29
SBI recalled pleasure	5.88 (0.74)	6.07 (0.67)	$t_{(100)} = -3.50, p = 0.001$	0.35
SBI total	17.01 (2.12)	17.60 (2.02)	$t_{(100)} = -4.35, p = 0.000$	0.43

SBI, savoring beliefs inventory; SD, standard deviation.

comments could be considered to improve the platform. Two videos had to be re-recorded, and some presentation texts were clarified. Four recorded situations with students could not be turned around and were subtitled to work around sound problems.

As a result of the training, the participants made more use of the skills taught in PEPS in their personal lives, 82% to savor the pleasant experience, 66% to accentuate the expression of positive emotions, 70% to relate more pleasant experiences to others, 66% to anticipate good times, 48% to use the calm crisis, and 79% to manage my defeatist beliefs.

Regarding the transferability of learning in practice, 23 participants were excluded from this analysis because they were either students who completed 8-week clinical practice placements alternating with their course, unemployed, or with no

TABLE 2 | Assessment of the satisfaction with the platform e-PEPS ($n = 101$).

	Disagree	Partially disagree	Partially agree	Fully agree
Overall, this e-PEPS course met my expectations			40.6%	59.4%
I find the content of the training useful		1%	19.8%	79.2%
The objectives of the training are clearly presented		4%	21.8%	74.3%
The content of the training is coherent with the announced objectives			19.8%	80.2%
The objectives of the training are achieved			47.5%	52.5%
The training is structured and well-organized		1%	31.7%	67.3%
The videos proposed facilitate learning		3%	27.7%	69.3%
Reflective activities and practical exercises contribute to learning			30.7%	69.3%
The site is easy to navigate		3%	47.5%	49.5%
I will recommend this e-learning course to other			22.8%	77.2%

clinical practice. These participants could not implement groups in the clinical practice.

Twenty of the 78 clinicians fully agreed that they felt capable of putting PEPS into practice in their field, 48 partially agreed, and 10 did partially disagree. To the question, "I have planned to set up PEPS groups" 34 participants answered not now, 21 within a year, 8 in the next 6 months and 15 in the next 3 months. The ability to put PEPS into practice in the field is highly correlated with the feeling of competence to be able to lead PEPS (Spearman's rho 0.71, $p = 0.000$) as well as the pedagogical skills acquired (Spearman's rho 0.50, $p = 0.000$), skills acquired in participating as a model for patients (Spearman's rho 0.27, $p = 0.02$), and the ability to share their own experiences in the therapeutic relationships (Spearman rho 0.33, $p = 003$).

Fifty-five participants in this sample of clinicians believe that their work context facilitates the establishment of a PEPS group. It appears that 84% of the participants working in a day program, 75% in outpatient clinics, 72%, in socio-therapeutic or nursing homes and 54% in hospitals and 50% in mobile teams see their clinical field as facilitating to lead a PEPS group.

DISCUSSION

This evaluation of e-PEPS online training on professional aspects and competencies aimed to test the reception given to the platform by clinicians and its perceived usefulness. Of the 185 available participants, 56% completed the training. In comparison, a review of completion rates for 221 Massive Open Online Courses show variation from 0.7 to 52.1%, with a median value of 12.6% (14). A major challenge of e-learning courses is to keep students motivated to complete the training (15, 16). Satisfaction with the training is high with a wide and varied audience from various health and social professions. It is also a pre and post-test study to investigate whether e-PEPS improves knowledge about the facilitation of PEPS, the use of skills taught in the clinicians' own repertoire, and application in actual clinical practice. The results showed that the participants significantly improved their knowledge about PEPS and increased the use of the skills taught in their personal repertoire after the training. The training allows most clinicians to plan to lead a PEPS group in the year following the training. The best places to run PEPS groups seem to be clinical settings where contact with patients is easier to plan, such as day programs or outpatient clinics, as well as socio-therapeutic or nursing homes. Implementation of psychosocial interventions in psychiatry remains a major challenge and translating knowledge into practice can take years and even decades (17). Availability of training and materials is a first condition. Training tends to improve attendees' knowledge, attitudes, and confidence in working with clients (18) but a training-only approach has not demonstrated effectiveness in changing provider behavior (19). Only a small proportion of our sample feel capable to running PEPS in clinical practice and this seems to be consistent with the data in the field. The main advantage of e-PEPS over live training is that participants can return to the online training to learn and update their knowledge at any time. Follow-up consultation, supervision, or feedback are recommended for long-term adoption of skills, but even such attempts to promote adoption of evidence base psychosocial intervention in community mental health clinics can be deceiving (19). To support the adoption and maintenance of new therapeutic approaches, it is also important to overcome organizational barriers. Organizations' willingness to bring the best services to patients and ability to train professionals and retain qualified personnel is critical for successful implementation efforts and in the delivery of high-quality services (17). Systems of rewards for new practices could also be a way to insure implementation in clinical settings. Severe workload, time pressure and pessimistic views of recovery for clients with psychosis were crucial barriers to implementation as well as (20). However, our questionnaire did not specifically examine these facilitating factors or obstacles encountered. It would be necessary to do this in the next studies on the implementation of the training. Training materials were recorded before the first wave of the COVID-19 pandemic, but the training test took place during the second wave between October and December 2020. The primary motivation for developing this online training was to respond to the many requests for training and seek an alternative to the lack of resources to provide these workshops. The evaluation took place in a period that accelerated the development of alternatives to the traditional training for clinical interventions that consisted of face-to-face workshops supplemented by manuals and clinical

supervision (21). Movement restrictions linked to public health strategies to combat the pandemic probably had a positive effect on the high participation rate.

Data on the effects of e-learning in psychotherapeutic interventions are still scarce, and it is difficult to compare our results because the evaluation methods are very specific. The development of online training programs in the field of psychotherapeutic intervention education is growing (22) and uses either pre-experimental or quasi-experimental designs (23–25) or experimental design (26–29). These studies suggest that there is no difference in these learning outcomes when online and face-to-face teaching modalities; both modalities produce positive learning outcomes. According to group comparison studies, online training appears to be equal to or superior to textbook training in terms of knowledge acquisition (26, 27), which can be equal to face-to-face training (28) or superior (29). Regarding the application of course content in clinical simulations, in the study by Sholomskas et al. (26), online training was superior to textbook reading but inferior to face-to-face training, but online training was rudimentary and text-based in the following study. This superiority is repeated in a second study by Sholomskas and Carroll (27) who did not compare face-to-face training. In Dimeff et al.'s study (29) all three methods led to comparable improvements in clinicians' ability to apply course content in clinical simulations.

Compared to these data, the present study shows that knowledge about PEPS is improved, but we have no data on the effects of face-to-face training on knowledge acquisition. The SBI was improved in the study, but the data for face-to-face training showed a greater improvement than in the current study. It is possible that specifically practicing the ability to savor in a face-to-face group may have more impact than sitting alone in front of a computer. This should be investigated in future studies. This study did not measure the effects of training on the observation of clinical skills but only on feelings of competence. Future studies should use the observation of competence in a clinical simulation and fidelity check in real practice. The main limitations of this study are the lack of a control group and the lack of a behavioral measure to assess competence acquisition. A future study should offer post-training supervision sessions to increase the likelihood of implementation. The high representation of women in the sample could be identified as a limitation. However, in psychiatric care, psychologists, nurses, and occupational therapists are predominantly female. The sample reflects the clinical reality. Its main strength is that it makes PEPS facilitation training available at no cost at any time. Also, this study shows that this online training is accompanied by an improvement in the knowledge of program facilitation and the use of the skills taught in the everyday life of the participants.

The e-PEPS online training platform has aroused the interest of professionals in the field of psychiatry in French-speaking Switzerland, France, and Belgium. The training improves knowledge about PEPS and makes those who have taken it feel able to conduct the training in their place of practice. PEPS is predominantly conducted in places of living, day centers, and outpatient consultations. As a result of this study, training has been improved and is now freely available to all interested clinicians.

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 review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AN, LF, and JF, in equal measure, conceptualized this research, recorded the training material, conceptualized e-PEPS, acquired, analyzed, interpreted the data, and drafted the first version of the manuscript. AK contributed to the technical management, the design of the platform, and critically revised the article for important intellectual content. All authors approved the final version for publication, agree to be accountable for all aspects of the work by ensuring that any questions related to its accuracy or integrity can be appropriately investigated, and resolved.

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OPINION
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Hope and Optimism as an Opportunity to Improve the "Positive Mental Health" Demand

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Keywords: hope, positive mental health, mental health literacy, nursing, optimism

INTRODUCTION

As the world confronts the COVID-19 pandemic and its consequences, including an associated mental health crisis, finding meaning and building positive processes and capacities will help strengthen future mental health (Waters et al., 2021). Existential perspectives use this basic insight to advocate that suffering is an inherent part of life that must be confronted, rather than avoided or amended (Israelashvili, 2021). Positive psychology studies adaptation to adversity and aims to identify factors that favour good psychological adjustment, as well as physical and mental health (Reppold et al., 2015; Phan et al., 2020). Notwithstanding, the mental-ill health approach is still predominant, with authors suggesting the need to improve "mental health literacy" and promote access to mental health services (Mansfield et al., 2020).

Recently, there has been increased interest in assessing the attributes, structure and individual variability of wellbeing and identifying its psychological promotors. This research has begun to clarify the determinants of positive mental health (Gallagher and Lopez, 2009; Das et al., 2020). Positive mental health encompasses the personal resources to face life's challenges, foster satisfactory relationships with others, and achieve psychological wellbeing, including feelings of satisfaction with life, vitality and energy, and physical wellbeing (Teixeira et al., 2019). Applied to Meleis (2010) theory, positive mental health can facilitate a healthy changeover within a transitional process, since personal, community, and social conditions can foster or restrict healthy transitions and the outcome of transitions.

There is a need for mental health literacy programs that are focused on hope, and provide accurate information about disorders and recovery. Positive expectations for the future, commonly conceptualised as hope and optimism in the literature, can act as potential mechanisms toward achieving positive mental health (Gallagher and Lopez, 2009, 2018). The conceptualizations of dispositional hope (Snyder, 2002) and dispositional optimism (Scheier and Carver, 1985; Carver and Scheier, 2014) share several elements: (a) personality traits, (b) cognitive constructs, (c) reference to general expectancies, (d) relation to significant personal goals, (e) future orientation, and (f) acting as determinants of behaviour (Krafft et al., 2021). Hope and optimism, although often used interchangeably in clinical discourse, are in fact distinct constructs, corresponding to distinct mechanisms by which expectations shape human behaviour and produce positive outcomes (Gallagher and Lopez, 2009; Schiavon et al., 2017).

This opinion paper aims to examine some differences between optimism and hope, and integrate these constructs in the context of positive mental health. We also intend to point out some interventions that promote hope and optimism, where mental and psychiatric health nursing play an important role.

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BENEFITS OF OPTIMISM AND HOPE FOR POSITIVE MENTAL HEALTH

Whether optimism and hope can affect physical and mental health has been discussed among academics around the world (Milona, 2020). There is empirical evidence supporting the notion that both attitudes contribute to positive outcomes (Schiavon et al., 2017; Pleeging et al., 2021). In this context, optimism is defined as a cognitive variable reflecting one's favourable view about their future (Carver and Scheier, 2019). Optimists generally have more positive than negative expectations and tend to report less distress in their daily lives, even in the face of challenges (Carver et al., 2010). What is expected to happen in the future can affect how people experience situations in their daily lives, their health, and how they deal with emotions and stress.

Optimists are more focused on generalised expectations rather than how or why the goal is achieved (Carver and Scheier, 2002). Studies has found that optimism is related to fewer symptoms of depression, higher levels of wellbeing, lower attrition rates, and stronger perceptions of social support (Forgeard and Seligman, 2012; Schug et al., 2021). The positive repercussions of optimism may be related to the greater probability of adopting health-promoting behaviours and coping strategies that enable better psychic adjustment (Carver and Scheier, 2014, 2019). Recent evidence reveals that optimism is modifiable and associated with better cardiovascular health (Boehm et al., 2020) and increased likelihood of healthy aging (James et al., 2019; Lee et al., 2019). In contrast, pessimists have a less favourable perception of the world and are more likely to adopt risky behaviours, such as the use and abuse of alcohol and other drugs (Carver and Scheier, 2019), and display more harmful reactions and adaptations to adversities, compared to optimists (Forgeard and Seligman, 2012; Carver and Scheier, 2019).

Snyder (1991, as cited in Schiavon et al., 2017, p. 2) defined "hope as a state of positive motivation based on three components: objectives (goals to be achieved), pathways (planning to achieve these goals), and agency (motivation directed toward these objectives)." Hope theory emphasises the presence of personal agency related to goals and the recognition of strategies to achieve those goals (Snyder, 2002). Therefore, this theory suggests that a hopeful person would endorse statements such as "I will achieve my goal," but also "I have a plan [. . .] to achieve this goal" and "I am motivated and confident in my ability to use this plan to achieve this goal" (Gallagher and Lopez, 2009, p. 548). According to recent research, an individual's level of hope is often determined by innate personality characteristics and influenced by psychosocial conditions (success in attaining goals and facing stressors, social support, goal-concordant care), physiological factors (including stress hormones, immune mediators, and neurotransmitters) and environmental factors (Corn et al., 2020).

Snyder (2002) hope theory is not the only perspective that distinguishes hope from optimism: Herth's model of hope assumes that hope is a cognitive and motivational attribute needed to initiate and support action towards goal achievement (Arnau et al., 2010).

Currently, mental health literacy programs aim to understand how to reach and maintain positive mental health, recognise mental disorders and their beliefs about treatments, reduce stigma towards mental disorders, and enhance the help-seeking ability, namely when and where to seek help, but also how to best manage and improve one's own mental health (Kutcher et al., 2016). As a catalyst for positive change, hope promotes overall mental health and may help heal specific conditions, including severe mental illness, suicidal ideation, depression, anxiety and trauma-related disorders (Huen et al., 2015; Gallagher et al., 2020; Tomasulo, 2020; Sari et al., 2021). Research also demonstrates that hope promotes wellbeing more than optimism or self-efficacy (individual's belief in their own ability perform task and attain goal) (Krafft et al., 2021). In addition, research shows that hope has strong associations with several psychosocial process and outcomes, including positive affect, emotional adjustment and illness-related coping, greater life satisfaction, enhanced perceptions that life is meaningful, a higher sense of purpose in life, quality of life, and social support (Corn et al., 2020; Long et al., 2020).

A large longitudinal study among older adults exploring the potential public health implications of hope for subsequent health and wellbeing outcomes revealed that "a greater sense of hope was associated with: better physical health and health behavior outcomes (e.g., reduced risk of all-cause mortality, fewer chronic conditions, and fewer sleep problems), higher psychological wellbeing (e.g., increased positive affect, life satisfaction, and purpose in life), lower psychological distress, and better social wellbeing" (Long et al., 2020, p. 1).

Long-term, mental health promotion in vulnerable populations is deeply intertwined with hope-based interventions. At a time when predictions regarding mental health are particularly grim, those involved in promoting mental health, need to pay close attention to the relation between evidence, hope and intervention.

STRATEGIES THAT PROMOTE HOPE AND OPTIMISM IN PSYCHIATRIC-MENTAL HEALTH NURSING

Psychiatric-mental health nursing is grounded in interpersonal engagement and includes a broad range of helping activities, from teaching to counselling (Hartley et al., 2020). Within this interpersonal context, it is well known that expectations about the future directly influence the subject's wellbeing. Given the protective effect of optimism and hope in people's lives, especially with regard to better physical and mental health, two questions must be considered: is it possible to develop or enhance levels of optimism and hope? How they can be mobilized as an intra/interpersonal healing resource?

The techniques grounded in cognitive-behavioural therapy can be an effective strategy to develop more positive beliefs about the future. Using this approach, nurses can help their patients understand the schemes that coordinate their thoughts, behaviours and feelings (Carver and Scheier, 2014). Optimism can be activated by training and cognitive restructuring regarding

TABLE 1 | Strategies to cultivate a hope/optimism mind-set (based on Newport Academy, 2020).

Emphasis on strengths	Identifying and exploring individual strengths fosters a sense of hope and resilience. Bonding with others is one of our strengths, thus reaching out to friends and loved ones can create hope and positive emotions (Pleeging et al., 2021)
Reframe negative thoughts	When a person feels anxious or desperate, focusing on what is scary and seeing it in a positive way can bring an immediate sense of pleasure and pride in themselves (Das et al., 2020). For example, if we think "I'm never going to stop feeling anxious about everything that's going on," we can shift to "It's normal to be anxious, and there are things I can do to make it better"
Practice hopeful thinking	A focus on hopeful thinking as an intervention enabling individuals to reengage in pleasant activities and improve self-talk. Hopeful thinkers take intentional action to achieve a desired outcome. Practice of hopeful thinking involves the perceived capacity to envision workable routes together with the energy towards goals attainment (Snyder, 2002). In depressed individuals, practising hopeful thinking decreases symptoms of sadness and depression and improves meaning in life, happiness and wellbeing (Gallagher and Lopez, 2018)
Increasing self-esteem and self-awareness	Mindfulness-based interventions—including activities like sensory awareness, guided meditation, breath control—foster happiness and self-awareness (Goldberg et al., 2018). When a person feels optimistic and hopeful, they often view themselves as benefiting from another person's generosity, leading them to feel valued. This increases self-esteem, which in turn leads to higher levels of psychological wellbeing (Allen, 2018)
Hang out with hopeful and optimistic people	Surrounding ourselves with hopeful and positive people can, by "emotional contagion," lead us feel that way ourselves. Evidence reveals that both positive and negative emotions are "contagious," so we need to choose our social environment and interactions (Herrando and Constantinides, 2021)
Practice gratitude	Simple gratitude practices—like journaling, self-compliments, or sending thank you notes—can bring sanctity and authentic happiness (Bohlmeijer et al., 2021) and be more effective than self-control, patience, or forgivingness in generating hope for the future
Reinforcing positive affect	Induced positive affect (by several different means such as viewing a comedy film, receiving a gift) facilitates flourishing and predicts subjective wellbeing. Hope is related with positive affect and inversely with negative affect (Gallagher and Lopez, 2018). Positive emotions are particularly important to mental health in the context of high stress (Israelashvili, 2021)
Training resilience and finding a sense of purpose	Resilience refers to the ability to recover quickly from adverse events and experiences. Resilient people tend to maintain a more positive outlook and cope with stress more effectively (Vos et al., 2021). Facing crises can be strengthened by finding a sense of purpose in life. This might implicate involvement in the community, cultivating spirituality or participating in meaningful activities (Manning et al., 2019)

the subject's way of thinking and acting (Carver et al., 2010; Carver and Scheier, 2014).

The evidence suggests the possibility of applying optimism and hope through different strategies and intervention programs (Malouff and Schutte, 2016), especially psychoeducation and cognitive restructuring strategies aimed at extracting positive aspects of everyday situations. Testing such interventions is a first step toward producing and spreading effective programs that underscore the positive effects of optimism (Carver and Scheier, 2014).

Mental health, hope and optimism are intimately related, and can be reinforced with simple daily actions that boost mental strength, even in the midst of uncertainty such as currently faced with the COVID-19 pandemic. Thus, we recommend some evidence-based practices to promote hope/optimism and support better mental health literacy (**Table 1**).

CONCLUSION

In sum, optimism and hope are important adaptive phenomena that foster wellbeing, quality of life, and psychological adjustment in the general population and in specific groups, such as people living with mental health conditions. Optimistic and hopeful individuals adapt better to adversity, have lower chances of developing mental disorders, and exhibit behaviours that are healthier and related to greater satisfaction with life. Given these benefits, understanding how hope and optimism arise and flourish is of great interest, and will help develop promotors of mental health. More evidence is needed to develop hope-based interventions and establish their true efficacy. Ideally, these studies would involve randomized control trials (RCTs) with appropriate sample sizes that compare optimism and hope-based interventions to already validated gold standard treatments.

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

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Relationship Between Physical Activity, Parental Psychological Control, Basic Psychological Needs, Anxiety, and Mental Health in Chinese Engineering College Students During the COVID-19 Pandemic

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The issue of mental health among college students is of increasing concern during the COVID-19 outbreak. Since course characteristics of engineering college students determine the particularities of their mental health, the specific objectives of this study were: (1) to analyze the relationship between physical activity, parental psychological control, basic psychological needs, anxiety, and mental health in Chinese engineering college students during COVID-19 pandemic; and (2) to examine the mediation effect of anxiety between the relationship of basic psychological needs and mental health. A cross-sectional study was conducted among several universities in Shandong Province, China. We randomly selected 254 Chinese engineering college students from these colleges. Participants who were given questionnaires completed the Physical Activity Rating Scale (PARS-3), Basic Needs Satisfaction in General Scale (BNSG-S), Parental psychological control Questionnaire, the Beck anxiety inventory (BAI), and the Kessler 10 (K10) scale. The mediation model was conducted to assess the mediation effect of anxiety between the relationship of basic psychological needs and mental health. Among 254 Chinese college students majoring in engineering, the results showed that their mental health was in the mid-level range. Besides, physical activity and basic psychological needs is positively correlated with mental health, respectively, while parental psychological control is not correlated with mental health. Anxiety is negatively associated with mental health. Mediation analysis revealed that anxiety played a mediation role in the relationship between basic psychological needs and mental health. In conclusion, mental health of Chinese engineering college students deserves extensive attention during the COVID-19 pandemic. Proper intervention on physical activity, basic psychological needs, and anxiety may be beneficial to improve their mental health. In addition, meeting basic psychological needs is beneficial to reduce anxiety and improve mental health further.

Keywords: physical activity, parental psychological control, basic psychological needs, anxiety, mental health

INTRODUCTION

The outbreak of COVID-19 represents a public health emergency of international concern, and citizens were urged to stay at home for quarantine measures that obligate individuals to stay home or significantly limit their out-of-home activity, which may have a negative psychological impact on them (Wathelet et al., 2020). In recent years, the mental health of college students has been a subject of social attention, especially with suicides among college students being reported from time to time (Chen et al., 2020). Universities closed in most of the regions as countries started implementing preventive quarantine and lockdown interventions, which may have an adverse implication on the mental health of college students. A web-based survey among 746,217 college students during the COVID-19 outbreak in China has found widespread mental health problems such as acute stress and depressive symptoms exist in college students (Ma et al., 2020). A recent study found that engineering students were twice as likely to experience mood and anxiety disorders compared with the general college population (Danowitz and Beddoes, 2018).

As a special group of students, engineering students' learning levels are notoriously stressful and competitive, requiring long hours of study, training and practice, which ultimately affects their physical and mental health (Siddiqui et al., 2020). Compared with other professional disciplines (such as liberal arts and business), engineering students need to learn a large amount of knowledge in a limited time and may feel more psychological pressure due to their academic burden, fear of employment after graduation, and lack of confidence (Karthikeson and Jagannathan, 2016; Jensen and Cross, 2021). Therefore, it is of great significance to clarify the influencing factors of engineering college students' mental health during the COVID-19 pandemic to formulate corresponding intervention measures and improve their mental health. The identification of influencing factors (such as physical activity) will help to formulate corresponding strategies to improve the well-being of engineering students and maintain their mental health under the condition of high intensity of study.

Physical activity is recognized as an important dimension that affects mental health. Studies have proven that regular physical activity significantly enhances the mental health and well-being of college students (Herbert et al., 2020). Regular physical activity protects college students from mental health problems and has a positive impact on mental health (Alhaqbani et al., 2020). Herbert et al. found that short-term exercise interventions may have beneficial effects on the mental health and well-being of college students (World Health Organization, 2010; Herbert et al., 2020). According to WHO, moderate-to-vigorous physical activity including daily activities that require energy expenditure can have a positive impact on the mental health of students (Tudor-Locke et al., 2001; WHO, 2020). For example, Xiang et al. (2020) also proved that college students engaged in high-level physical activity are less likely to have anxiety or depression than those engaged in low-level physical activity. Nonetheless, college students have been shown to spend less time on moderate and vigorous physical activity during COVID-19 confinement and require due attention (Rodriguez-Larrad et al., 2021).

Parental psychological control refers to parents' attempts to interfere with their children's mental and emotional development (Zhou et al., 2021). In China, parental control has been determined to be negatively correlated with children's mental health, which will destroy children's sense of autonomy at the appropriate age, thus leading to the misbehavior of teenagers and damaging their mental health (Zhou et al., 2017; Shek et al., 2019). Parental control includes behavioral control and psychological control (Barber, 1996). Studies have proved that parental behavioral control can promote the good development of children and adolescents, while psychological control is not conducive to their physical and mental health, and may inhibit their emotions (Barber et al., 2005; Wang et al., 2007; Sheldon, 2011; Zhou et al., 2021). However, one study demonstrated that parental control was positively associated with children's mental health in China when used occasionally (Shek and Lee, 2007). The researchers argue that parental control can undermine a child's sense of proper age autonomy, leading to adolescent misbehavior and mental health damage (Barber and Harmon, 2002; Shek et al., 2018).

Basic psychological needs theory was proposed by Deci and Ryan, who believed that the competence need, autonomy need and relatedness need are the basic nutrients for human growth, integrity, and health (Ryan and Deci, 2000). Self-determination theory is the core of the theory of basic psychological needs (Orkibi and Ronen, 2017). According to the self-determination theory, whether the basic psychological needs can be met not only affects the possibility of individual development, but also reflects the individual's mental health (Shannon et al., 2019). When the psychological needs are continuously met, people will maintain healthy physical development, optimal functional state and a high degree of happiness (Junior et al., 2019). Research shows that positive functioning and optimal mental health follow when basic needs are met (Deci et al., 2001). Studies have proved that basic psychological needs are closely related to anxiety, depression and life satisfaction, and can enhance happiness and promote the healthy growth of individual mental health (Sheldon et al., 2001; Gunnell et al., 2013; Van den Broeck et al., 2016). Zhou et al. (2020) have revealed that anxiety, such as health anxiety or social anxiety, can adversely affect an individual's physical and mental health.

There have been few studies on the mental health of engineering college students during the COVID-19 pandemic. Therefore, understanding the factors affecting the mental health of engineering college students is helpful to formulate corresponding intervention measures against the backdrop of the normalization of epidemic prevention and control in China. Based on this, the purpose of this study is to: (1) analyze the relationship between physical activity, parental psychological control, basic psychological needs, anxiety and mental health of Chinese engineering students during COVID-19; (2) To study the mediation role of anxiety in the relationship between basic psychological needs and mental health. The representation of the structural model is shown as follows (**Figure 1**).

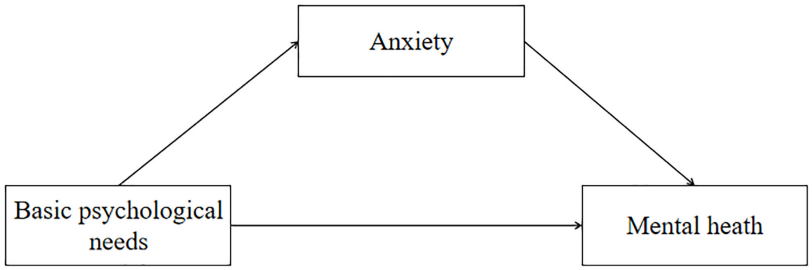

FIGURE 1 | Structural framework.

MATERIALS AND METHODS

Participants and Procedures

A total of 269 Chinese college students majoring in engineering in several universities in Jinan, Shandong province, were selected through convenience sampling in spring semester 2021. All investigators involved in the study received the required formal training. Before the research, researchers explain the concept and the purpose of this study to students who want to participate in this study. Participants were asked to fill out an electric questionnaire seriously if they have consented to the study. The trained researchers collected data on basic sociodemographic information, physical activity, parental psychological control, basic psychological needs, anxiety and mental health of college engineering students. The questionnaire was administered to students before their class and they were allocated 20 min for completion. After each interview, quality control was 100% checked on completed questionnaires. 254 valid questionnaires were obtained, with an effective rate of 95.2%. The Ethics Committee of Shandong University approved this study (No. 20190912).

Instruments

All of the survey tools detailed below were used by the research team during school sessions to assess different variables. For the purpose of examining the differences by sex, we used age, height, weight, and whether or not a single parent lived in a household as basic demographic variables. Body mass index (BMI) was calculated as body mass in kilograms divided by stature in meters squared.

Physical activity assessment was performed using the physical Activity Rating Scale (PARS-3), modified by Liang and Liu (Liu et al., 2020), which measures intensity, duration, and frequency of physical activity. A 5-point Likert scale was used for quantification, with a score of 1–5 for each item. Total physical activity score = activity intensity score × (activity time score - 1) × activity frequency score, the scoring interval is 0–100 points.

The Chinese version (Yu et al., 2012) of the General Scale of Satisfaction with Basic Needs (BNSG-S) (Gagné, 2003) was used to measure the satisfaction of basic psychological needs. BNSG-S consists of 21 items, including six items measuring competence needs, seven items measuring autonomy need, and eight items measuring relatedness needs. The items used a seven-point Likert scale ranging from 1 "not at all" to 7 "very much." Across the scale, 12 items were rated positively, such as "I feel I can decide how to live my life," and nine other items were rated negatively, such as "I often feel incompetent." The higher the sub-scale score, the greater the satisfaction with corresponding needs.

Compiled by Wang et al. the Parental psychological control scale (Bleakley et al., 2016) consists of 18 items that measure parental behaviors such as feelings of guilt, withdrawal of love, and authoritarianism, such as "If I don't see things my parents' way, they will be less nice to me." Teens were asked to report how well each program matched their parents' actual situation. A five-point score is used, ranging from "completely inconsistent" to "very consistent," and the higher the score is, the more serious the parental psychological control is.

Anxiety was assessed using the Beck Anxiety Inventory (BAI), which was designed by Aaron Beck in 1985 (Kim et al., 2020). The scale has a total of 21 items with a four-level score in each item. The main evaluation of anxiety is the extent to which participants are bothered by various anxiety symptoms. The rating level is divided into none; Mild, without much bother; Moderate, uncomfortable but tolerable; Severe, just barely tolerated. The score for this time is "none," and so on, the more serious the score will be higher. The rough score is converted to the standard score using the formula y = int (1.19×). A higher score indicates more anxiety, while a lower score indicates less anxiety. BAI is helpful to understand an individual's anxiety and the change of anxiety during treatment and is a clinical tool to analyze participants' subjective anxiety symptoms.

The Kessler 10 Psychological Distress Scale, developed by Kessler and Mroczek (Kessler et al., 2002), is a short self-management rating Scale that can detect the risk of Psychological conditions in a crowd. The 10-item scale measured the frequency of non-specific mental health-related symptoms such as anxiety and stress levels experienced in the previous 4 weeks. Likert's 5-point scoring method was used for each question, and 5∼1 points were scored all the time, most of the time, some of the time, occasionally and hardly. The higher the score, the worse mental health.

Statistical Analysis

The original data were exported from the Wenjuanxing questionnaire platform.[1] All of the statistical analyses

[1]https://www.wjx.cn/

were performed with SPSS version22.0 (IBM, Armonk, NY, United States) for windows. According to the research purpose, measurement data were expressed as the mean ± standard deviation (SD) and categorical variables were expressed as numbers (*n*) and percentages (%). Descriptive statistics were performed on all variables by chi-square test and *T*-test or analysis of variance (ANOVA) according to gender. Spearson's correlation was used to examine the association between physical activity, parental psychological control, basic psychological needs, anxiety and mental health. Hayes' PROCESS macro in SPSS (version 3.3) was performed in the mediation analysis (Hayes, 2013). The bootstrap method (sampling was repeated 5,000 times) was used to estimate 95% confidence intervals (CIs) for significance testing of mediating effects. When the CI did not include zero, the direct or indirect effect was considered significant. All variables were standardized before entering the mediation model.

RESULTS

A total of 254 Chinese engineering college students surveys were used in the analysis, including 241 (94.8%) males and 13 (5.1%) females. The mean (standard deviation) age of the participants was 18.93 (0.881) years. Among these samples, 67 (26.4%) of participants were from rural areas, and 187 (73.6%) were from urban areas. 22 (86.6%) lived in a single-parent family (**Table 1**). The mean (standard deviation) of physical activity, parental psychological control, basic psychological needs, anxiety and mental health was 32.53 (13.16), 2.61 (0.99), 3.05 (0.49), 32.53 (13.17), and 3.58 (90.85), respectively (**Table 2**). The results showed that only physical activity was significantly different between groups.

Table 3 shows the associations between physical activity, parental psychological control, basic psychological needs, anxiety and mental health. Physical activity, basic psychological needs and anxiety were significantly correlated with mental health ($r = 0.148$, $p < 0.05$; $r = 0.218$, $p < 0.01$; $r = -0.318$, $p < 0.01$). In addition, our study also found that there was a significant negative correlation between parental psychological control and basic psychological needs ($r = -0.150$, $p < 0.05$), and there was a significant negative correlation between basic psychological needs and anxiety ($r = -0.144$, $p < 0.05$).

Table 4 shows the regression coefficients of anxiety mediators. The results showed that basic psychological needs were significantly negatively correlated with anxiety and positively correlated with mental health. Meanwhile, anxiety was negatively correlated with mental health.

Mediation analysis based on 5,000 bootstrap samples was conducted to estimate the indirect effects of basic psychological needs on mental health mediated by anxiety. **Table 5** illustrates the results of the mediation analysis. The direct effect of basic psychological needs on mental health was significant (95% CI: 0.095–0.495), and the indirect effect was also significant (95% CI: 0.017–0.086). The indirect effect of basic psychological needs on mental health via the mediation of anxiety was 0.378 (95% CI: 0.168–0.588) (**Table 5** and **Figure 2**). The results revealed that there is mediating effect of the anxiety between basic psychological needs and mental health.

DISCUSSION

The current investigation examined the cross-sectional links between physical activity, basic psychological needs, anxiety, and mental health in Chinese engineering college students during the COVID-19 pandemic and investigated the mediation effect of anxiety between basic psychological needs and mental health. In the current study, we found that physical activity, basic psychological need was positively associated with mental health, while anxiety was negatively correlated to mental health. Besides, anxiety played a mediation effect in the relationship between basic psychological needs and mental health. The present study suggests that gender differences exist in overweight among Chinese engineering college students. Similarly, Shan et al. (2019) investigated 536 undergraduate students in Shijiazhuang, China, and found that there was a significant gender difference in obesity or overweight among male and female college students. Males were more likely to gain weight than females. The reason may be that men eat more sweets, engage in more sedentary behaviors (Zhang et al., 2020) such as playing video games and have fewer opportunities for physical activity during the pandemic period.

TABLE 1 | General characteristics of participants according to gender among Chinese engineering college Students.

Variables		Total (*n* = 254)	Boys (*n* = 241)	Girls (*n* = 13)	T	*p*-Value
Age (years)		18.93 (0.881)	18.95 (0.889)	18.62 (0.650)	1.306	0.193
Place of residence, *n* (%)	Rural	67 (26.4)	64 (95.5)	3 (4.5)		
	Urban	187 (73.6)	177 (94.7)	10 (5.3)	-0.276	0.783
A single parent family or not (%)	Yes	22 (86.6)	22 (100)	0 (0)		
	No	232 (13.4)	219 (94.4)	13 (5.6)	-4.910	0.000***
Weight (Kg)		68.679 (11.027)	69.286 (10.871)	57.423 (7.449)	5.438	0.000***
Height (m)		1.771 (0.064)	1.778 (0.057)	1.637 (0.034)	3.882	0.000***
BMI (Kg/m^2)		21.871 (3.122)	21.897 (3.161)	21.393 (2.313)	0.567	0.571
Overweight (%)	Yes	45 (17.7)	44 (18.3)	1 (7.7)		
	No	209 (82.3)	197 (81.7)	12 (92.3)	32.780	0.000***

*Data were described as n (%) or mean ± SD. ***p < 0.001.*

TABLE 2 | Descriptive data of participants' physical activity, parental psychological control, basic psychological needs, anxiety and mental health divided by gender.

	Total mean ± SD	Males' mean ± SD	Females' mean ± SD	T	*p*-Value
Physical activity	32.53 ± 13.16	25.14 ± 25.29	13.54 ± 12.59	2.235	0.001***
Parental psychological control	2.61 ± 0.99	2.60 ± 1.00	2.81 ± 0.87	−0.746	0.467
Basic psychological needs	3.05 ± 0.49	3.05 ± 0.49	2.97 ± 0.44	1.155	0.249
Anxiety	32.53 ± 13.17	32.34 ± 13.16	35.92 ± 13.41	−0.176	0.861
Mental health	3.58 ± 0.85	3.58 ± 0.86	3.52 ± 0.53	−0.093	0.926

****p < 0.001.*

TABLE 3 | Correlation matrix for physical activity, parental psychological control, basic psychological needs, anxiety, and mental health.

Variables	Physical activity	Parental psychological control	Basic psychological needs	Anxiety	Mental health
Physical activity	1				
Parental psychological control	−0.073	1			
Basic psychological needs	0.103	−0.150*	1		
Anxiety	−0.055	0.086	−0.144*	1	
Mental health	0.148*	−0.015	0.218**	−0.358**	1

***p < 0.01, *p < 0.05.*

TABLE 4 | Regression coefficients of the mediating of anxiety between basic psychological needs and mental health.

Outcome variables		Goodness-of-fit indices			Regression coefficient and significance	
	Predictors	R	R^2	*F*	β	*t*
Mental health	Basic psychological needs	0.218	0.048	12.569***	0.218	7.369***
Anxiety	Basic psychological needs	0.144	0.021	5.307**	−0.144	8.533**
Mental health	Basic psychological needs	0.396	0.157	23.280***	0.170	2.903***
	Anxiety				−0.334	−5.694***

****p < 0.001, **p < 0.01*

TABLE 5 | Mediating effects of anxiety between basic psychological needs and mental health by process.

Effect types	Path	95% CI	Effect
Direct effect	Basic psychological needs→Mental health	0.095-0.495	0.295
Indirect effect	Basic psychological needs→Anxiety→Mental health	0.017-0.086	0.083
Total effect	—	0.168-0.588	0.378

Demographic variables as covariance.

The findings of the present study reveal a significant positive correlation between physical activity and mental health. The mental health benefits of regular physical activity and exercise are undisputed in the literature, and there is a wealth of evidence to support participation in physical activity to enhance mental health and reduce some of the negative effects on mental health such as physical dissatisfaction, depression, and perceived stress (Knapen et al., 2015; Alhaqbani et al., 2020; Herbert et al., 2020). Engineering college students are confronted by considerable stress concerning academic demands, adjusting to life away from home and occupational future, etc. (Chen, 2015). Timely physical activities can help them to get rid of their negative emotions, which is conducive to their mental health development. Al Dhaheri et al. (2021) recommend physical activity and exercise as a therapeutic approach to combat the negative mental consequences of isolation during COVID-19. Our study revealed a significantly positively correlation between basic psychological needs and mental health of engineering college students. Due to the COVID-19 pandemic, some global higher education institutions turned to emergency distance learning or other physical and social distancing measures in early 2020, which could compromise the university students' basic psychological needs (Pelikan et al., 2021). Our results are consistent with prior literature, which have confirmed that satisfying basic psychological needs is beneficial to the healthy mental growth of individuals, such as life satisfaction or enthusiasm (Barber et al., 2005; Howell et al., 2011; Aldrup et al., 2017; Zhou et al., 2017; Ren and Jiang, 2021). Due to their unique disciplinary characteristics, engineering students spend most of their time in the laboratory (Jensen and Cross, 2021), and they may need to satisfy their basic psychological needs (such as relationship needs). Some measures taken by the government or schools to

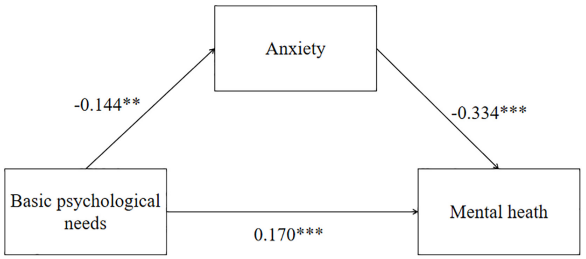

FIGURE 2 | Mediation effect analysis of anxiety between basic psychological needs and mental health; ***$p < 0.001$, **$p < 0.01$.

meet their basic psychological needs may be beneficial to their mental health development. Schools can be encouraged to create conditions (such as psychological counseling or physical activity) for engineering students to engage in activities that cultivate their autonomy and ability, and develop more interpersonal skills in the activities, so as to satisfy basic psychological needs at the source.

Our study confirmed that anxiety is negatively correlated with the mental health of engineering college students, which is consistent with prior studies. Studies have shown that both general health anxiety and specific anxiety can affect mental health (Kashiwazaki et al., 2020). Anxiety is a common mental disorder, which can cause physical and mental problems in patients, including sleep disorder, attention deficit, and even suicide intention (Michelsen et al., 2017). Consistent with the findings of Nurunnabi et al. (2020), our study found that female college students experienced more severe anxiety symptoms than male college students during COVID-19 (Hou et al., 2020). This might have occurred because female college students are less adaptable to the epidemic and bear higher pressure, so the severity of anxiety is higher. Engineering college students reported that their lack of sleep, intense competition, lifestyle changes, and other important stressors throughout their undergraduate education could further raise their stress and anxiety levels, which could be detrimental to their mental health (Ross et al., 1999). At present, there are researches about parental psychological control on children and adolescents (Shek et al., 2018; Shek and Dou, 2020), but few studies discuss whether parental psychological control will have different degrees of influence on college students. One primary finding of our study is that there was no correlation between parental psychological control and the mental health of engineering college students, which may be because most engineering college students live on campus and are independently busy with their studies, thinking and life, so parental psychological control has little influence on them.

The current COVID-19 pandemic has brought about an economic crisis that may see paid employment increasingly disappear and liquidation of organizations (Adewumi, 2021), which may have an impact on the psychological state of university students. Research suggests that about 45% of students may have symptoms of acute stress, anxiety or depression during the COVID-19 pandemic (Ma et al., 2020). Our results revealed that anxiety plays a mediating role in the relationship between basic psychological needs and mental health of engineering college students. Our findings support previous researches that foundational psychological needs are negatively correlated with anxiety and positively correlated with mental health (Deci et al., 2001; Van den Broeck et al., 2016). According to the two-process model of needs presented by Sheldon et al. under the framework of self-determination theory (Sheldon, 2011), if an individual's basic psychological needs are not satisfied, the individual will not be able to conduct normal self-regulation. Given this, if the basic psychological needs of engineering college students cannot be satisfied, they may appear maladaptive state, and even feel anxious (Bartholomew et al., 2011; Quested et al., 2011). Engineering college students are twice as likely to experience psychological problems such as emotion and anxiety as ordinary college students (Danowitz and Beddoes, 2018). Anxiety is negatively correlated with mental health, and the development of anxiety may lead to a low level of mental health (Zhou et al., 2017), which is not conducive to their physical and mental development. In other words, the satisfaction of basic psychological needs can further affect mental health by affecting anxiety.

Theoretically, such mediation models support self-determination theory, which suggests that Once the basic psychological needs of individuals are not satisfied, they will fall into a state of maladaptation. Practically, this study is of great significance for guiding engineering college students to reduce anxiety and promote their mental health development. Despite these findings, the current research is not without limitations. The most important limitation of these analyses is the use of cross-sectional samples; some universities closed completely and switched to online learning due to the epidemic control measures and a few allowed engineering college students to practice in LABS or take physical education classes outdoors, which added to the difficulty of collecting samples; real mediation requires longitudinal data to determine time priorities. Second, the sample size of the study is relatively small. Our study found only gender differences in physical activity among engineering college students, and the results require further studies in a large sample of them. Finally, self-reported data has a possibility for reporting bias.

CONCLUSION

To our knowledge, this is the first study to examine the relationships between physical activity, parental psychological control, basic psychological needs, anxiety, and mental health in Chinese engineering college students during the COVID-19 pandemic. In conclusion, there is a significant correlation between physical activity, basic psychological needs, anxiety, and mental health in Chinese engineering college students during the COVID-19 pandemic, meanwhile, anxiety plays a mediation role in the relationship between basic psychological needs and mental health. Government or educators can guide and help

students' basic psychological needs met, in the true sense as to encourage and create conditions for college students to cultivate their autonomy and capacity and meet the need of social activities (design specialized online courses and activities, such as network counseling courses, home-based exercise guidance), on the source satisfy basic psychological needs, thus reducing the anxiety level and promote their mental health. These findings suggest potential mechanisms through which the satisfaction of basic psychological needs can improve Chinese engineering colleges students' mental health, and targeted interventions can be developed to improve their mental health. School administrators should also pay more attention to students whose family homes have been severely affected by the outbreak. The current study expands the literature on physical activity, basic psychological needs and mental health during the COVID-19 pandemic and is helpful to guide engineering university students to reduce anxiety and promote the development of their mental health. Future studies in college students who are not majoring in engineering or adolescents are awaited.

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 the Ethics Committee of Shandong University (No. 20190912). The patients/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

XZ and ZL designed and implemented this study, collected, sorted out, and analyzed the data, and wrote the introduction and methods section. All authors participated in the statistical analysis phase of the project, wrote the results part of the manuscript, provided detailed feedback on other parts of the manuscript, and approved the final clause.

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"It's Something That We All Need to Know": Australian Youth Perspectives of Mental Health Literacy and Action in Schools

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Young people expressed concern about their mental health before COVID-19, and these concerns have escalated in response to the pandemic. A lack of knowledge, stigma and unfamiliarity with how to seek help contribute to low self-efficacy in mental health care. There is a need for school settings to include mental health education, or mental health literacy (MHL), to address youth mental health needs. Evaluation of school-based MHL programs often occur without the consultation of key stakeholders, such as young people. This study aimed to understand young people's experience of mental health education in their school and their perspectives of how future mental health education can be tailored to suit their needs. Four online group discussions were conducted with 13 participants aged 11 to 18 years old. Eight main themes were generated from these discussions: (1) limited mental health education and understanding in school, (2) struggle to help seek, (3) negative mental health attitudes, (4) desired content about mental health education, (5) understanding of mental health, (6) school as a place for support, (7) suggestions for mental health education, and (8) ways for schools to be responsive to youth needs. All the young people in this study expressed concerns around the lack of mental health education in their schools and indicated that this must change for the wellbeing of all youth.

Keywords: mental health literacy, young people, perspectives, experiences, education, school-based

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INTRODUCTION

Engaging youth as partners in research can play a crucial role in aligning preventative mental health approaches with their needs (Ozer, 2016; Sprague Martinez et al., 2018). Involving youth voice in development of school-based programs can lead to increased motivation, self-confidence and knowledge related to the program outcomes (Stewart-Brown, 2006; Nordin et al., 2010). A systematic review of youth participation in all stages of school-based health promotion programs identified this approach contributes to positive outcomes including effectiveness of the program and likelihood of acceptance among the targeted community (Griebler et al., 2017). Young people need their voices included to feel a sense of belonging and respect as active contributors who are also beneficiaries of these programs (Lind, 2007).

Mental illness accounts for 16% of the global burden of disease and injury in youth aged 10 to 19 years (World Health Organization [WHO], 2020). This is higher compared to previous

generations (Collishaw et al., 2004; Allen and McKenzie, 2015) and has been exacerbated by COVID-19 (Nearchou et al., 2020). Young people report most concern about coping with stress and mental health, with the impact of COVID-19 on education, mental health and social isolation also raised as areas of concern (Tiller et al., 2020).

The Need for Mental Health Literacy

Given the rising rates of mental health concerns among youth, there is a need to develop innovative approaches that support youth mental health. Targeting mental health education and support within school environments has the potential to produce long term positive effects on mental, social, and behavioral development (Graham et al., 2011; Ekornes, 2020; Grové and Laletas, 2020; Kostenius et al., 2020). Yet youth have inadequate information about mental health, especially within their learning environment (Rickwood et al., 2005; Teng et al., 2017; Tharaldsen et al., 2017; Radez et al., 2021). Barriers for youth seeking help for mental health problems include negative attitudes toward mental illness, a lack of knowledge and help available (Radez et al., 2020). Negative stereotypes associated with mental illness may be internalized by individuals suffering mental health problems, termed self-stigma (Corrigan and Rao, 2012). Self-stigma can lead to negative emotional reactions such as low self-esteem and poor self-efficacy (Watson et al., 2007). Stigma, including self-stigma, is a large barrier to help seeking for mental illness among youth (Clement et al., 2015). These barriers could be addressed through educating youth on mental health, or mental health literacy (MHL; Wei et al., 2013). MHL has been defined as the ability to recognize mental health problems, knowledge of mental health, resilience building strategies and appropriate help-seeking behaviors (Jorm, 2012; Riebschleger et al., 2017; Morgan et al., 2018; Bale et al., 2020). Increasing young people's MHL through a preventative approach in a school-based program could reduce prevalence of and stigma toward mental illness (Clement et al., 2015; Kutcher et al., 2016; Riebschleger et al., 2019). Linking education with actions to take care of one's mental health through MHL programs is needed (Jorm, 2020). Research based in the United States, Canada and Norway have demonstrated positive effects on MHL from school-based programs, however, little research exists in Australia (Dix et al., 2020; Seedaket et al., 2020; Marinucci et al., 2021). A school provides an optimal context for mental health education as a large population of youth can be reached, the learning environment is already established and schools have an existing role in health and wellbeing development of youth (Conley and Durlak, 2017). This type of setting allows for promotion of mental health, resilience and early intervention (Allen and McKenzie, 2015).

Studies have examined youth perspectives of mental health care services (Coates and Howe, 2014; Loughhead et al., 2018), though little research has been conducted on their perspective of mental health education in a school setting. Kostenius et al. (2020) found Scottish and Swedish youth aged 15 to 21 years reported teaching mental health should be given the same time as teaching physical health, and youth demonstrated a desire to increase their knowledge of mental health to reduce stigma. Similarly, Tharaldsen et al. (2017) and Ekornes (2020) found Norwegian youth want to learn about mental health at school as part of regular curriculum. An Australian study found that youth have difficulty assisting peers who may suffer mental health problems, with fear of rejection stated as a barrier to discussing mental illness (Teng et al., 2017). Teng et al. (2017) suggest that youth need to be educated at school with practical information about mental health, though this study did not directly ask youth what mental health knowledge they want to learn about and whether this would be accepted in a school environment.

Mental health literacy skills should be taught before the need for them arises (Rickwood et al., 2005), and neglecting youth voice in research risks misinterpretation of their needs and misguided intervention approaches (Dennehy et al., 2020). A whole school approach combines health and wellbeing with learning in the school environment and includes the perspectives of both young people and school staff in development and implementation of such interventions (Rowling, 2009; Kostenius et al., 2020). Young people represent approximately 20% of the Australian population (Australian Bureau of Statistics, 2021), and inclusion of their voice in research provides a nuanced understanding of their unique knowledge, experience and perspectives (Grové et al., 2020). Scarce research exists on Australian youth perspectives and experience of school-based mental health education and this information is crucial to ensure future initiatives are guided by the needs of the community (Ennis and Wykes, 2013; Hellström and Beckman, 2021).

This study aims to understand the perspectives of youth on mental health education and MHL in school settings and is guided by the research question:

> What are young people's perspectives and experiences of mental health literacy and mental health education programs within a secondary school setting?

It is anticipated this study will contribute to evidence supporting inclusion of youth and their voice in mental health research and collaboration in development of MHL programs in future.

MATERIALS AND METHODS

Research Design

This study used a youth participatory action approach with qualitative data analyzed using Braun and Clarke's (2021) method for thematic analysis. The study was approved by the University Human Research Ethics Committee (Project ID: 27638). Informed consent and assent were gained prior to the online group discussions by parents of participants and the participants themselves.

Participants

Participants were recruited for the study using snowballing and social media. Advertisements were placed on Facebook and Instagram to recruit participants. The researchers emailed professional and personal contacts and youth-based organizations, such as community centers and youth hubs, to distribute a flyer outlining the study to recruit young people. The

flyer was also posted on the personal and professional Twitter, Instagram, Facebook and LinkedIn accounts of the researchers. Recruitment took place between April to June 2021. The flow of recruitment was as follows:

1. Prospective participant completed an expression of interest form *via* Qualtrics.
2. Participant and their parent/guardian were invited to participate, provided with an explanatory statement about the study and a consent form *via* email.
3. Consent form completed by parent/guardian and returned *via* email.
4. At the beginning of the online group discussion, participant completed an assent form *via* Qualtrics.

A total of 27 young people completed the expression of interest form during the recruitment process. Thirteen responded to the email invitation, completed the consent form, and participated in the online group discussions. In total, four online group discussions took place. Participants were grouped by age and availability to participate in the online discussions. Participants' demographic characteristics are presented in **Table 1**.

TABLE 1 | Demographic characteristics of participants (*N* = 13).

Category	Sub-category	*n*	Proportion (%)
Age	11	1	7.7
	12	2	15.4
	14	2	15.4
	15	5	38.5
	17	2	15.4
	18	1	7.7
Gender	Male	6	46.2
	Female	6	46.2
	Other	1	7.7
Ethnicity	Australian	5	38.5
	Asian Australian	1	7.7
	Filipino Australian	1	7.7
	Indian Australian	1	7.7
	Russian Australian	2	15.4
	Dutch Australian	1	7.7
	Filipino Chinese	1	7.7
	Hongkonger	1	7.7
Grade	7	3	23.1
	9	3	23.1
	10	4	30.8
	11	2	15.4
	12	1	7.7
Type of School[a]	Government	5	38.5
	Independent	2	15.4
	Private	5	38.5
	Catholic	1	7.7

[a]*In Australia, government schools are within the public sector, and independent, private, and Catholic schools are within the private sector.*

Procedure

Online group discussions were used to facilitate a collaborative partnership with the participants, reinforce that their perspective is valued and that they are the experts in their experience by providing a safe environment to voice their views, and identify their concerns (Grové et al., 2020). This was informed by the youth participatory action research methodology (DeJonckheere et al., 2017) and a research protocol was developed to carry out the online group discussions. The protocol was created based on previous research examining youth perspectives of mental health and youth involvement in research (Woolfson et al., 2009; Ekornes, 2020; Grové et al., 2020). The procedure for the online group discussions aimed to support participants to feel comfortable and share their perspectives. An explanatory statement was distributed to participants with helplines and resources if they felt distressed during or after the online group discussion. At the beginning of sessions, consent to audio and video recording was obtained for analysis purposes, group values were established, such as there were no right or wrong answers, and participants were able to pass on a question or withdraw from the online group discussion at any time. Participants were given a rationale for the research and invited to openly discuss their views on mental health education.

The online group discussions followed a semi-structured group interview style. Participants were split into groups of three to four based on their availability for the online group discussions led by two researchers. The online group discussions were carried out in June and July 2021 using online teleconferencing platform, Zoom Video Communications (2021). Each online group discussion took a minimum of 40 min to complete and were recorded and transcribed using Zoom.

To build rapport participants played a welcome game as a group which involved agreeing or disagreeing with fun "get to know you" statements, for example Snapchat over Instagram, camps are more fun than sports days. Questions were framed so youth responded based on their personal experience. Participants verbally answered questions or typed answers into the chat box function. Predetermined probing questions were asked such as "Does your school discuss mental health?", "What is mental health?", "What do you want to learn about in terms of mental health?", "Are there barriers to talking about mental health?", "Do you think school would be a good place to learn about mental health problems and where you can go for help if you develop symptoms?". Participants were asked if they wanted to include more information that was missed before the online group discussion concluded. In one online group discussion, reluctance to help others due to fear of crossing personal boundaries was added at the end of the session.

Data Analysis

Descriptive statistics were analyzed using Statistical Package for the Social Sciences Statistics, version 27.0.1.0 (IBM, 2021). Qualitative data from the online group discussions were extracted and analyzed according to Braun and Clarke's (2021) method for thematic analysis with an inductive approach. This six-phase

approach is used to identify, analyze and report patterns within data with the aim to organize and describe our verbatim records (Braun and Clarke, 2012). Transcriptions of the recordings were read several times by all authors to code patterns and themes of the data, to establish a coding scheme (Campbell et al., 2013). Two authors coded the data independently using Excel spreadsheets and named potential themes with data collated to each theme. Following this, the two authors met to discuss, review and refine the final themes. A third author reviewed the coding scheme and generated themes. Finally, using a negotiated coding approach for inter-rater reliability (Garrison et al., 2006), all authors collaborated to determine consistent or inconsistent themes across the data. No major discrepancies were identified during this process. Initially, 18 themes were identified from the transcriptions. After consultation and collaboration among the authors, eight themes were agreed upon with several themes of the 18 condensing into two or three main themes due to repetition of content.

RESULTS

Eight main themes and six subthemes were identified describing young people's perspectives and experiences of mental health literacy and mental health education programs in schools. The main themes are: (1) limited mental health education and understanding in school, (2) struggle to help seek, (3) negative mental health attitudes, (4) desired content about mental health education, (5) youth understanding of mental health, (6) school as a place for support, (7) suggestions for the structure of mental health education, and (8) ways for schools to be responsive to youth needs. See **Table 2** for main themes, subthemes, and their descriptions.

Theme 1: Limited Mental Health Education and Understanding in School

Young people stated that they do not receive enough information about mental health at school: "you have to go and figure it out yourself" (female, 14 years). Mental health is "vaguely" covered in health classes and the education that is provided is not clear or sufficient: "(teachers) don't really explain it well enough so you don't really understand" (female, 15 years).

Mental health topics that are discussed are general and youth expressed dissatisfaction that mental health is given little attention in their school environment: "I haven't been happy with how little they talk about mental health" (male, 18 years). The content that is covered in school varied and included stress, anxiety, supporting others who may experience mental illness, and to speak out if experiencing mental health difficulties. Specific programs, such as bullying prevention programs and self-awareness interventions had been implemented, however, some were not viewed as useful: "we did this horrible thing called the (specific program name removed which targeted self-confidence, self-awareness and communication) it's sort of irrelevant" (male, 18 years).

Mental health in relation to transitioning to secondary school and scheduling an appointment with the school counselor was discussed in Year 7, though it has not been discussed again, with the young person now in Year 10. A sense of incompetence and self-reliance was a shared experience: "The application of that (mental health information) into helping others (is) up to you, for you to figure out how to use that information to help others or to deal with mental health as an issue" (male, 17 years). Reflection on the self in wellbeing class was a common activity.

Mental health was discussed in homeroom classes, assemblies, and health classes, though often a brief discussion: "overall it's just general it doesn't go really in depth, it's just kind of a reminder for people" (female, 15 years). Youth perceived lack of mental health

TABLE 2 | Themes and subthemes with descriptions.

Theme	Subtheme	Description
Theme 1. Limited mental health education and understanding in school		Little information about mental health is discussed at school. Information that is provided is not clear, consistent, or sufficient.
Theme 2. Struggle to help seek	Subtheme 2.1. Sources of help	Where and how young people seek help.
	Subtheme 2.2. Barriers to help seeking	Reported barriers to young people seeking help.
Theme 3. Negative mental health attitudes	Subtheme 3.1. Stigma	Negative attitudes toward mental health that young people observe of others and hold from their own individual context.
	Subtheme 3.2. Breaking down stigma	How young people believe stigma can be reduced.
Theme 4. Desired content about mental health education		What young people want to learn about and ideas to promote mental health in schools.
Theme 5. Youth understanding of mental health		How young people view and define mental health.
Theme 6. School as a place for support		School is viewed as a safe and accessible environment for mental health education. Perspectives of the school's role in supporting youth mental health.
Theme 7. Suggestions for the structure of mental health education		Who and how young people think mental health education should be taught or incorporated into curriculum.
Theme 8. Ways for schools to be responsive to youth needs	Subtheme 8.1. Proactive rather than reactive	How young people view current approaches from schools as responsive to their needs.
	Subtheme 8.2. Target all year levels	Perspectives toward building on mental health education throughout schooling years.

education as having negative ramifications on helping others: "they don't really talk about how you can help other people deal with it (mental health), so, like, then it is harder to help your friends" (female, 15 years). Group discussions that allow for open conversations and building on previous knowledge, but not as part of the syllabus, was found to be helpful. How to help a friend experiencing suicidal ideation was perceived as extremely important:

> "If you have friends who are suicidal or whatever, you don't know what to do, but it's a bold thing to do for a school, but it's also very important, because a lot of people don't know how to respond to someone if they say they want to, you know" (male, 17 years).

A wellbeing team, school counselor, psychologist, or teachers were available for support for most but not all young people: "there's nothing that's like, a constant teacher, which you can go to" (female, 15 years). Barriers to providing support and mental health education were mentioned:

> "The only problem they could face is time and if the teachers didn't have time. I know a lot of schools probably wouldn't have the budget or money it can be a lot to hire someone and get the whole presentation ready it's up to the amount of money you'd have to pay" (male, 11 years).

> "Some schools don't know what could be triggering and not and they don't want to make anything too hard on the kids, but also, like, it makes (it) a big barrier there just needs to be the right way to go around it, which is probably what the school struggle(s) with" (female, 15 years).

As the online group discussions took place during COVID-19, the impacts of "lockdowns" were mentioned. In Australia, lockdowns were imposed by state governments and entailed restricted movement and travel, schools closed, and only essential businesses operating. Communication was difficult during lockdowns and mental health was discussed less:

> "When we're online it's a lot harder to get information out, so there are just topics that they just don't touch on anymore, because already it's hard to keep kids, like, at a screen all day, so yeah I feel like it's talk(ed) about definitely less" (female, 15 years).

Theme 2: Struggle to Help Seek

Help seeking behavior and experiences were identified as the second theme from the online group discussions. Overall, youth identified family, friends, and the internet as sources of help, however, this was dependent on the difficulties: "if it's a bigger mental health issue that my friends wouldn't be able to cope with, then I would go to my parents" (female, 14 years). Seeking help for themselves and others was difficult at times due to perceived stigma of talking about mental health, exposing vulnerability, and uncertainty of how to support a friend who may be experiencing mental health problems: "sometimes you have to get to the nitty gritty but not everyone's comfortable with those details" (female, 15 years). This was separated into two subthemes: sources of help, and barriers to help seeking.

Subtheme 2.1: Sources of Help

This subtheme pertains to where and how youth seek help if they experienced a mental health problem. A family member was a common help source: "I would most of the time go to family because I would feel a tiny bit weird approaching a teacher about problems" (non-specified, 14 years). Others specified that they would go to their friends unless they thought it was a larger issue that their friends would not be able to cope with. The internet, scholarly articles and specific websites such as Headspace, ReachOut.com, Google and Reddit were a source of initial information and support. Counselors, teachers and trusted adults were identified as sources of help, however, informal sources such as family and friends were preferred: "I would talk to friends about it cos that's just easier for me" (female, 14 years) and "I would go to a family member before I went to the teacher because it just feels better going to a family member first" (male, 12 years).

Subtheme 2.2: Barriers to Help Seeking

Barriers to seeking help included feeling disconnected from others and so unwilling to share mental health difficulties: "sometimes you're in a group of people that you just don't want to talk about these issues with" (female, 15 years). There is a reluctance to discuss mental illness in fear of offending someone or pushing boundaries if a peer is suspected to be experiencing mental health difficulties:

> "I think through my conversations of mental health that sometimes you want to go deeper. To really know the person more and to really take care of them you want to make everyone feel comfortable in your conversations, you don't want to take that risk of them feeling like it's an invasion of privacy" (male, 17 years).

Young people want to be genuine in their approach to support a friend if they were struggling with mental health concerns, however, felt unsure how to convey this: "it's a very unclear, gray area about what is considered to be correct to talk about with someone, and I think because of that we just generally go for the safest option which seems a bit ungenuine" (male, 17 years).

Theme 3: Negative Mental Health Attitudes

Negative mental health attitudes in young people's environment and individual context exist, with mental health described as a "hush hush topic," "taboo," and associated with "negative relationships." However, young people are aware of how attitudes could be changed, such as through normalizing mental health problems, understanding mental health and openly talking about it at school. Two subthemes were generated: stigma and breaking down stigma.

Subtheme 3.1: Stigma

From young people's perspectives, there is stigma surrounding mental illness including self-stigma, an internalized stigma response from one's own individual context, and observed stigma, stigma responses in one's community from others. Mental health and mental illness is often framed negatively: "you could get into a panic state, like oh my God I'm the only one who has this and it's

going to affect me really badly" (male, 11 years) and "no one really wants to openly talk about if they're struggling with something, because then they don't really know how other people will react" (female, 15 years).

Language surrounding mental illness also appeared problematic, for example: "I had a friend, he made a comment that, "oh I have a depressed friend now," when another friend said that they have depression, like not really talked about in a very positive way" (female, 15 years). Mental health and mental illness still seems to be a "taboo" topic and some people hold negative views of those who experience a mental illness: "I do think there is some groups that don't take it seriously and do enforce some kind of harmful attitudes toward other people" (female, 15 years). Youth perceive that mental illness in young people goes unrecognized: "I don't think that people realize that kids can experience bad mental health days" (female, 15 years). A lack of understanding of mental health was proposed as a contributing factor to stigma of mental illness: "When people don't understand something they become afraid of it" (male, 17 years) and "it's a bit alien to some people I think it's always uncomfortable when they don't really understand" (male, 18 years).

Subtheme 3.2: Breaking Down Stigma

Suggestions of how to break down stigma included discussing mental health in school, sharing individual experiences, advertisements and normalizing mental health problems. Discussing mental health and sharing personal experiences of mental illness was identified as a helpful way to reduce stigma: "talking about mental health in class and in school regularly would make people feel a lot more comfortable with these things and they'd be able to openly express their feelings and ideas" (female, 15 years) and "other people sharing their story what they're going through (so) other people don't feel like they're alone" (non-specified, 14 years).

Mental health should be discussed across settings and contexts: "those discussions can start (a) from an early age and, (b) they need to be discussed in more than one place, it shouldn't just be (discussed) at school" (female, 15 years). By increasing the discussion of mental health and normalizing mental health problems, people would be more likely to show empathy toward those who experience mental illness. Mental health was a topic that young people believe to be important to understand: "it's a sensitive topic it's something that we all need to know about and just by learning about it from a young age, means that kids can grow up and be more comfortable talking about it" (female, 15 years).

Theme 4: Desired Content About Mental Health Education

The main content that youth wanted to learn about was how to recognize mental health symptoms in themselves and in others:

> "I'd like to learn about how to spot these things if someone chooses not to be open and talk about what they're going though I think definitely how to be able to see very clearly what is going on and take action, because I know it can be very, very difficult if you don't understand or you can't see the signs of what's going on, and then something bad happens and you're like oh man I should have seen the signs" (male, 17 years).

Young people want to know how to manage mental health symptoms in a practical way: "how to manage it, but not in a condescending, oh you know just organize yourself and chill out, have some "you" time in a way that is sort of out of touch" (male, 18 years) and "even learn about normal everyday things that can help you. Like things that might prevent people from having low self-esteem" (female, 15 years). Self-care behaviors, coping strategies, knowledge of mental illnesses and impact of mental illness were areas of interest:

> "I think coping strategies could be good, because if you, like, originally don't know any good coping strategies, you can turn to more negative things they could teach, like, basic counseling skills that can be very beneficial for students with anxiety in a classroom and you don't exactly need a counselor to teach you that" (female, 15 years).

Certain topics should not be avoided in mental health education, such as suicide or self-harm as "if they exist, people are going to know about them" (male, 17 years):

> "I think that there should be no limits school should prioritize educating their students on the most, kind of, relevant mental health issues and how to tackle those but I don't think they should completely close off things (a) because we don't know we only know things based on our previous experience, but what if there is a student who's sitting right next to us who's going through something that we could never even think possible (b) because you could experience that in the future, and if you're equipped with everything you need to know prior to that experience you could better tackle that and you could better bounce back from that difficult time in the future if you're equipped with the knowledge of how to overcome that issue" (female, 15 years).

Trigger and content warnings were recommended for sensitive mental health topics. Ways to incorporate mental health education in schools was through a special week (e.g., mental health awareness week), a program that runs every year or month and advertisements. A point of contact within schools as well as places outside of school and a list of resources to refer to were preferred as resources provided by schools:

> "I just think plenty of options different options will suit everyone differently if the school can give you ways to find people outside of school and still have access to people inside of school, then I think that's probably the best way to go about it" (male, 17 years).

Theme 5: Youth Understanding of Mental Health

Young people defined mental health as someone's state of mind:

> "Basically similar to physical and social health but it just revolves around, like, the mind, and I suppose how you deal with your emotions and, kind of, thoughts about yourself and others similar to physical health, you can have, you know, different health conditions and issues" (male, 17 years).

Mental health was described as serious, sensitive, and how someone copes, with some understanding mental health based on

knowledge of depression, suicide, and mental health problems. The difference between physical and mental health underlined difficulties in recognizing mental illness, "I think sometimes that can be a lot harder to deal with because it's quite a lot more underlying than, say, a broken toe" (male, 17 years). Young people acknowledged that mental health constitutes more than feeling happy:

> "It's not necessarily being happy, but it's more being, like, in touch with yourself understanding that life has a meaning and wanting to wake up every day. I think there's a common misconception that mental health is just being happy 100% of the time which isn't true, and we all know that you're not going to be happy 100% of the time" (female, 15 years).

Overall, mental health was not discussed solely in relation to mental illness and most participants held a holistic view of mental health, that mental health is more than the absence of mental illness.

Theme 6: School as a Place for Support

Schools are a place of support and resources for mental health. Youth described school as a safe, easily accessible place to learn about mental health: "I think school is a place where they feel, you know, comfortable with their friends and their teachers and I think that makes for (a) good environment to talk about things like mental health" (male, 17 years) and "schools should be a place where people can speak about it, but it's obviously going to be different for everyone" (female, 15 years). Young people spend most of their time in the school environment during their schooling years and so it is logical to have mental health education in school: "it's almost like a second home, and within that second home, mental health needs to be the safe discussion topic" (female, 15 years). Schools should have "a really warm and friendly atmosphere where people are comfortable with talking to teachers" (male, 15 years). Schools, including teachers and wellbeing teams, have a critical role in supporting youth mental health:

> "Schools really should have an obligation it should be their job to at least provide the service at least basic services and obviously they will have counselors, I think that if you went to school without counselors, that's a whole other issue. . .(but) just because there are counselors doesn't mean there aren't other things that schools can do" (male, 18 years).

Theme 7: Suggestions for the Structure of Mental Health Education

A trained professional who is knowledgeable in mental health, such as a teacher, counselor, psychologist or wellbeing leader, should deliver mental health education. Sport and health teachers were identified as ideal candidates for teaching mental health in classes: "sport teachers should take a bit of like, a responsibility to tell kids exactly what is happening" (female, 14 years) and "health teachers should be the ones teaching it, but I think every teacher has a responsibility and have a role in it" (female, 15 years). Whilst school counselors were recognized as important, regular classroom teachers were suggested to teach mental health as a connection to the person was perceived as important: "(it) needs to be someone who knows it really well and has, like, a good connection with the students. If you don't feel comfortable talking to someone about it, then it's not really going to be a good conversation" (male, 17 years). Young people want to know the services available to them and how to use online services, such as online counseling through Headspace, as providing a number to call is not sufficient. Guiding young people through websites and creating an account were perceived as helpful steps to explaining online services available.

There were various perspectives on whether mental health education should be formally taught or be informal discussions only: "if it was more formal, it would have more meaning to it. Because a lot of the time, when you only have one session a term or a few a year, people don't really pay attention" (female, 15 years) and "with informal, those individualized check ins could be really helpful for the support for people who need that" (male, 17 years). For information not addressed in class, a mental health professional could lead a Q&A session with youth to address any concerns not covered in mental health educational classes. A curriculum adjustment was seen to be necessary: "I definitely think that more classes need to be done in it, I think the curriculum should be changed that makes it pretty much compulsory to talk about because I think it's really important" (female, 15 years). This should be during regular classes, rather than after school due to obligations outside of school hours and homework: "outside of schools means kids definitely would not want to go I feel like (it) would be hard to justify making kids stay longer" (male, 18 years) and "if it was after school, they would feel like they're being forced to go" (non-specified, 14 years). Weekly or fortnightly sessions with group discussions incorporated appeared to be preferred by young people. Some youth may not feel comfortable talking about mental health in school, however, if everyone received mental health education, rather than opt in, this could mitigate potential stigmatized views:

> "I think that if you're doing it at school, then, if kids, like, don't really want to talk about their mental health or don't want to make it known that, you know, they're going to these mental health classes, then I think it's a lot better to (do) it in an environment where everyone has to do it because, not only will it help people, like, who don't want anyone to know, it will also help everyone else understand" (female, 15 years).

The ability to reach a wide range of young people is a benefit of incorporating mental health education in schools.

Theme 8: Ways for Schools to Be Responsive to Youth Needs

Schools need to be responsive to youth mental health needs. Instead of responding to crises or during times of stress, such as during exam periods, young people want mental health to be consistently discussed throughout their school years. Inclusion of their perspectives and needs in decision making of mental health education and support is a way schools could be responsive to youth needs. This resulted in two subthemes: proactive rather than reactive and target all year levels.

Subtheme 8.1: Proactive Rather Than Reactive

Schools often approach mental health in a reactive way and respond in times of crises or observed difficulty: "it feels more, kind of, spontaneously if something pops up they'll do a talk about it and it feels kind of rushed" (female, 15 years) and "the conversation is more done one on one if you bring something first" (female, 15 years). Discussions surrounding mental health appeared to be more prominent during exam periods and the upper year levels (e.g., Year 12). The overall experience appeared that schools would not ask young people what they wanted to learn about:

> "It should be more about stuff that students actually have, like, worries over, I guess, rather than on a general level, what they think everyone is dealing with because not everyone is dealing with the same thing, and I think the school just does what they think and it's like, but we don't apply to that or we think that we should focus on this" (female, 14 years).

However, if the school notices students talking about a specific topic, they will address this directly: "if it was a bit of a problem then they would spend quite a bit of time talking about it, whereas if it's not really an issue, then they wouldn't talk about it" (male, 12 years).

Subtheme 8.2: Target All Year Levels

There is a clear need to target all year levels and begin in younger schooling years for mental health education: "Younger kids should be learning about it as well" (non-specified, 14 years) and "I definitely think that it needs to be discussed from a much younger age, from the primary school age" (female, 15 years). Young people are frustrated that they had not learnt skills to manage their mental health when younger:

> "If we would have learnt it when we were younger, we would have already had the skills before. They just had to, like, suddenly teach it because we were going into exams talking about it as a kid would make it definitely more comfortable for us to talk about it as adults, instead of ignoring it as a child, and then when you become an adult, suddenly you have to deal with it all" (female, 14 years).

Young people would feel it easier to manage stress and mental health difficulties if they were explicitly taught about mental health and coping strategies before secondary school.

DISCUSSION

This study aimed to address the research question: What are young people's perspectives and experiences of mental health literacy and mental health education programs within a secondary school setting? Overall, young people in this study did not find that the current mental health education in their school addressed their needs nor did it cover what they wanted to understand. In their perspective, this has contributed to difficulties in seeking help for mental health problems and helping friends who may experience mental health problems. Youth viewed school as a good place to learn about mental health and support and wanted schools to be more proactive in their response to their wellbeing. There is an understanding of mental health being more than the absence of illness, demonstrating a move away from the traditionally medicalized view of mental health. The young people in this study wanted to learn about how to recognize declining mental health, self-care practices and strategies to obtain and maintain positive mental health. This content was viewed to be best taught within a school environment during regular classes as part of the curriculum to increase accessibility to youth. Programs targeting MHL within school settings that are delivered consistently and across different year levels may address the concerns raised by the young people who participated in this study.

The findings in this study are similar to those of Tharaldsen et al. (2017), O'Reilly et al. (2018), Ekornes (2020), and Kostenius et al. (2020). Youth consider schools to be a critical environment to increasing MHL by providing resources and support services, encouraging positive mental health behaviors, such as coping strategies and resilience, and promoting discussion of mental health to reduce stigmatized attitudes (Woolfson et al., 2009; Ekornes, 2020). There is a desire from youth to learn about mental health, and a shared view that teaching of health should include physical and mental health (Kostenius et al., 2020). This study and previous research identifies that youth should be engaged as key stakeholders in decisions of wellbeing curriculum within schools, as this was raised as a contributing factor to limited mental health education and schools not responding to youth needs (O'Reilly et al., 2018; Kostenius et al., 2020). Young people feel reluctant to reach out to others who they suspect may be experiencing mental health difficulties, as there is a fear of acting inappropriately or crossing a boundary (Teng et al., 2017). Existing literature highlights that youth tend to approach those with a mental illness cautiously (Secker et al., 1999; Teng et al., 2017). Teng et al. (2017) describes contradictions and confusion amongst young people regarding facets of mental health. Additionally, barriers to youth seeking help include perceived stigma, embarrassment and public stigma (Radez et al., 2020). Without adequate education of risk and protective factors for mental health, one's ability to obtain and maintain good mental health is impaired and both negative views of mental illness and poor help-seeking behaviors may develop (Radez et al., 2021). There is a need for guidance and education of mental health and help seeking actions, such as through a MHL program, to empower youth to care for their own mental health and increase confidence in supporting others (Tharaldsen et al., 2017). A school setting is an optimal place for this to occur, with provision of accurate mental health information and strategies that could be incorporated into the health and wellbeing curriculum (Teng et al., 2017; Kostenius et al., 2020).

The findings from this study reveal that young people want schools to provide mental health education that is comprehensive and responsive to their needs. Directing youth to helpline phone numbers is not enough and there is a need to explicitly teach youth about the sources of help available to them and the steps to attain that help. There are still stigmatized attitudes toward mental health in the school environment. Educating

young people on mental health throughout their schooling years and normalizing a discussion around mental health may reduce this stigma. Schools are viewed as a place for support, and young people want to learn how to recognize signs of mental illness, how to help others, and how to use practical coping strategies in this environment. The findings of this study suggest that more needs to be done in the school environment to support youth mental health. According to participants, ineffective mental health education at school contributed to in their lack of MHL. A lack of MHL was identified as an obstacle to seek help for mental health related concerns, assist friends and peers experiencing mental illness as well as contributing to negative attitudes and stigma associated with mental illness. Young people want classes focused on MHL with a deliberate effort from schools to include their voice in determining their needs.

The majority of MHL research investigates youth perspectives of mental illness with existing symptomatology of mental illness (Radez et al., 2021) or those with family members with a mental illness (Reupert et al., 2013; Bee et al., 2014; Grové et al., 2016; Riebschleger et al., 2019), however, this study contributes to a developing body of literature investigating youth perspectives of their mental health education in the general population. This study has a few limitations. Young people opted into the study, therefore the results may be subject to selection bias and participants may have had a pre-existing interest in mental health. The method of recruitment was through social media advertisements which were posted online, and therefore those without access to the social media sites would not have been reached. Future research could look at a larger sample of participants recruited through various means to determine whether these perspectives are held by a wide range of young people such as youth in rural or regional areas. Finally, the results may be limited by reliability of the data coding process. Although the authors independently coded the data and used a negotiated coding approach (Garrison et al., 2006), the themes generated may be biased by the authors' judgments based on their knowledge and experience in research and the field of youth mental health. Future research could use standard reliability measures for coding data to determine a Krippendorff's alpha (Hayes and Krippendorff, 2007).

FUTURE DIRECTIONS AND CONCLUSION

This study highlights that from the perspectives of 13 young Australians, the current education system is not meeting their MHL needs. Youth shared a desire to learn about mental health, however, felt that the current mental health content is vague and ineffective. The lack of adequate mental health education and MHL content was perceived as a contributing factor to stigma of mental illness, and difficulties in help seeking behaviors and use of self-care strategies. Schools were considered a key environment for mental health education and support, with advocacy for a proactive and preventative approach. It is evident there is a need to address the lack of mental health education in the school curriculum. Mental illness among youth has been linked to an increased risk of academic failure, withdrawal from school, poor physical health outcomes, difficulty maintaining healthy relationships, and substance use (Chen et al., 2006; McGorry et al., 2013; McGorry et al., 2007; World Health Organization [WHO], 2020). Youth are vulnerable to mental illness (Woodward and Fergusson, 2001; Lee et al., 2014; Gee et al., 2018), though are inadequately informed about mental health (Rickwood et al., 2005; Teng et al., 2017; Radez et al., 2020, 2021). School-based MHL programs have demonstrated favorable outcomes (Seedaket et al., 2020), and increasing MHL of youth may prevent future development of mental illness. Young people want to learn about mental health, how to help others and how to care for their own mental health (Rosvall, 2020). Schools need to move from a reactive to a proactive approach to youth mental health. By highlighting that the school environment is considered a key avenue for mental health education and support, the importance of developing school-based interventions to increase youths' inadequate knowledge of mental health is emphasized (Rickwood et al., 2005; Teng et al., 2017; Radez et al., 2021). Promoting mental health at school is particularly salient as school based MHL programs have demonstrated favorable outcomes (Grové and Laletas, 2020; Seedaket et al., 2020), and increasing MHL of youth may decrease the likelihood of future development of mental illness. A proactive and preventative school-based approach includes:

- Accessible MHL programs with input from young people as key stakeholders;
- Youth voice included in future development and research of MHL programs to ensure their relevant needs are addressed appropriately;
- Various mental health resources for youth to access and clear instruction on how to access these resources;
- Open discussions of mental health in the school environment;
- Increased awareness of where and how to seek help in the school environment, including what to do if immediate professional support is not available.

Young people want to be equipped with comprehensive MHL linked with actions to support their own and other's mental health. Future research is needed to determine how MHL can be incorporated into the current education curriculum to address the needs of youth.

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 Monash University Human Research Ethics

Committee. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

AM contributed to the literature review, research design, data collection, and data analysis. CG contributed to the research design, supervised analysis, and the development of the manuscript. GR contributed to the data collection and data analysis. All authors contributed to the article and approved the submitted version.

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How Social Support Impact Teachers' Mental Health Literacy: A Chain Mediation Model

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Teachers have an important social role, and their mental health literacy is very important to their own abilities as educators and to the growth and development of those they educate. This study explored the mechanism underlying the influence of social support on teachers' mental health literacy by conducting a questionnaire survey of 573 teachers. The results showed that social support can influence teachers' mental health literacy not only through the separate effects of life satisfaction and coping tendency but also through the chain mediation effect of life satisfaction and coping tendency; however, the direct effect of social support on the teachers' mental health literacy is not significant. This study is conducive to understanding the internal mechanism underlying the relationship between social support and mental health literacy. It reminded us that when formulating mental health literacy promotion programs for teachers, we should not only provide adequate social support to improve but also should pay attention to improvements in their coping tendencies and life satisfaction.

Keywords: mental health literacy, social support, coping tendency, life satisfaction, chain mediation

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INTRODUCTION

Mental health, which has been become an important issue for a long time (American Psychiatric Association [APA], 2000; World Health Organization [WHO], 2004). Previous studies have been found that schools can play an important role in the promotion of positive mental health (UCLA School Mental Health Project: Center for Mental Health in Schools, 2009; Wei and Kutcher, 2012). At the same time, it has been found that one of the most effective ways to improve the schools' role is to improve teachers' mental health literacy. For example, Miller et al. (2019) have been found that improving the teacher's mental health literacy can have an indirect impact on students, which in turn is helpful for the effective implementation of mental health promotion programs (Whitley et al., 2018). Intervention studies with teachers as the focus have found that, after teachers receive mental health literacy training, their mental health knowledge increases, which enhances their confidence in providing help to others and makes them more likely to take the lead in early intervention actions to students (Mazzer and Rickwood, 2015). Therefore, this study aims to explore the factors that influence teachers' mental health literacy and the mechanism underlying it to lay a solid foundation for the development of a more complete plan for improving teachers' mental health literacy.

Relationship Between Social Support and Teachers' Mental Health Literacy

Mental health literacy refers to knowledge and beliefs that help individuals identify, manage, and prevent mental illness, including the following six factors: the ability to identify specific disorders and different types of psychological distress; knowledge and beliefs about risk factors and causes; knowledge and beliefs about self-help interventions; knowledge and beliefs about available professional help; mental health stigma; and information about how to seek help for mental health (Jorm, 2000). More recently, some scholars have further developed a definition of mental health literacy as "the knowledge, attitudes and habits developed by individuals to promote the mental health of themselves and others and to cope with mental illnesses in themselves and others" (Jiang et al., 2020, p. 235).

As a social and cultural environmental factor, teachers' social support may have an impact on their mental health literacy. Social support refers to the material, emotional, informational, and instrumental assistance that individuals perceive from their social networks (Cobb, 1976). Police officers serving as peer-support team members have indicated that peer support increased their mental health knowledge and greatly reduced their sense of stigma (Milliard, 2020), thereby improving their level of mental health literacy. The main effect model of social support purports that, regardless of the stress that an individual experiences, social support plays a direct role in promoting mental health; that is, social support has a general beneficial effect, and increasing social support can effectively improve an individual's mental health (Cohen and Wills, 1985). Compared with teachers with low levels of social support, teachers with a stable social support system have stronger self-coping abilities, a more optimistic assessment of the severity of their own and students' problems, and stronger mental health help-seeking intentions (Andoh–Arthur et al., 2015). The buffering effect model posits that social support exists as a buffer and often works via people's internal cognitive system (Cohen and Wills, 1985); that is, social support affects the physical and mental health of individuals in a state of stress by reducing stress. Teachers with high total scores for social support can make full use of social resources under stressful conditions and have stronger mental health help-seeking intentions and intentions to help others (Ju et al., 2015). In addition, some studies have found that individuals are more likely to receive professional psychological treatment and services when they have the support and encouragement of close partners (Woodward et al., 2008; Downs and Eisenberg, 2012). Based on these theories and empirical findings, we hypothesize that H1: Social support can have an impact on teachers' mental health literacy.

The Relationships Among Life Satisfaction, Social Support, and Mental Health Literacy

Life satisfaction, as a cognitive component of well-being, is an individual's overall evaluation of his or her quality of life (Singh and Jha, 2008). Previous studies have found that social support can significantly positively predict life satisfaction; that is, the more the social support an individual receives from close friends, the more likely that individual is to express positive emotions, and the higher his or her life satisfaction is (Siedlecki et al., 2014; Kalaitzaki et al., 2021). Additionally, people with high self-esteem have a positive attitude toward seeking professional help, are more tolerant of mental health stigma, are more confident in the effects of psychological counseling and treatment (Salmivalli, 2001; Peng and Hao, 2020), and have a higher level of mental health literacy. In addition, some scholars have found that parents of children with mental illness are prone to experiencing interpersonal tension, lower levels of social support, and decreased life satisfaction (Brei et al., 2015; Ginevra et al., 2018); however, they still regard seeking professional help as a threat to their self-esteem, and most of them engage in a vicious circle of using ineffective methods to cope with stress, which results in serious stigma (Gülşen and Özer, 2009; Yildirim et al., 2020) and poor mental health literacy. However, whether these results of previous literature are equally applicable to teachers remains to be investigated. Based on these, we hypothesize that H2: Life satisfaction plays a mediating role in the impact of social support on teachers' mental health literacy.

The Mediating Role of Coping Tendency

Coping tendency, as a mediating variable, may be the mediating factor underlying the impact of social support on teachers' mental health literacy. Coping tendency refers to the cognitive and behavioral methods that individuals use in the face of frustration and stress (Folkman et al., 1986); it is a specific dynamic process that can affect the resolution of stress in the short term and the physical and mental health of the individual in the long term (Zhou et al., 2017). As an individual preference, coping tendency can be divided into positive coping and negative coping; an individual's coping tendency is predicted to be stable under emergency conditions (Bouchard et al., 2004). The social support that teachers receive may have an impact on their coping tendencies. A comparative study of teachers in regular and specialized schools in France found that when teachers receive help from colleagues during work, they are likely to adopt problem-centered positive coping strategies (Boujut et al., 2016). Earlier studies of teachers in ordinary primary and secondary schools and special education teachers in China reported similar results (Shen, 2009; Minghui et al., 2018), which indicates that the impact of teachers' social support on their coping tendencies has cross-cultural and cross-subject consistency. Coping tendency has a significant impact on mental health literacy. Positive coping can enhance the individual's coping efficiency, enabling the individual to maintain a good attitude in the face of stressful events, solve problems through various means, and be more willing to seek help from important others and professionals. Under these conditions, the degree of mental health stigma is relatively weak (Zhou et al., 2010), and the level of mental health literacy is high. Based on these, we hypothesize that H3: Coping tendency plays a mediating role in the impact of social support on teachers' mental health literacy.

The Chain Mediation Effect of Life Satisfaction and Coping Tendency

As one of the most authoritative theories in the study of cognitive behavior, Theory of Reasoned Action (TRA) has been confirmed in many fields and has also been widely used in health psychology research in recent years (Jung et al., 2017). It assumes that the individual behavior can be reasonably inferred from behavioral intention to some extent, and individual behavioral intention is determined by the attitude to behavior and subjective criteria. People's behavioral intention is a measure of people's intention to engage in a specific behavior, while attitude is people's positive or negative feelings about engaging in a target behavior, which is determined by the main belief of the behavior result and the estimation of the importance of the result.

Previous studies have found that high social support has been proved to produce positive attitudes, such as positive coping tendency (Zhou et al., 2020) and high life satisfaction (Jung et al., 2017). Meanwhile, life satisfaction has also been proved to further improve coping tendency (Deniz, 2006). According to this theory of TRA, mental health literacy, as a positive behavioral intention, also can be affected by these positive attitudes. Based on these, we hypothesize that H4: Life satisfaction and coping tendency have a chain mediation role in the relationship between social support and teachers' mental health literacy.

Overall Hypothetical Model

In order to test these hypothesizes, this study intends to use a questionnaire survey to explore the relationships between social support and teachers' mental health literacy and the roles of life satisfaction and coping tendency in the relationship between social support and teachers' mental health literacy. The research hypotheses are as follows: (1) social support has an impact on teachers' mental health literacy; (2) life satisfaction plays a mediating role in the relationship between social support and teachers' mental health literacy; (3) coping tendency plays a mediating role in the impact of social support on teachers' mental health literacy; and (4) life satisfaction and coping tendency play a chain mediation role in the relationship between social support and teachers' mental health literacy.

MATERIALS AND METHODS

Subjects

This cross-sectional study took a stratified random sampling, with participating frontline teachers were recruited from seven schools (one primary school, one junior high school, two high schools, and three universities) in Hubei Province, China. This study was conducted online through a survey website. A hyperlink to the survey was sent to E-mail address of the full-time psychology teachers at selected schools, who then forwarded the questionnaire to participants. Between May and August 2020, a total of 700 questionnaires were distributed and 573 valid questionnaires were recovered, with an effective recovery rate of 81.86%. The study was reviewed and approved by Ethics Committee of Hubei Normal University. All participants signed informed consent prior to filling out the questionnaire. They were paid 10 yuan after completing the questionnaire. Among the participants, 137 were male teachers (23.9%), and 436 were female teachers (76.1%); 78 were 21–30 years old (13.6%), 228 were 31–40 years old (39.8%), 173 were 41–50 years old (30.2%), and 94 were 50–60 years old (16.4%).

Materials

Social Support Rating Scale

This study used the social support rating scale (SSRS) developed by Xiao (1994), which includes three dimensions of objective support, subjective support, and utilization of support that comprise 10 questions. The higher the total social support score is, the better the respondent's social support. The SSRS has been proven to be highly authoritative and suitable for the Chinese population. In this study, the internal consistency coefficient was 0.830.

Simplified Copying Style Questionnaire

The simplified copying style questionnaire (SCSQ), developed by Xie (1998). It comprises a total of 20 items, including two subscales (positive coping and negative coping), and a four-point scale of 0–3 is used for scoring. The difference between the positive coping standard score and the negative coping standard score is the coping tendency score, and the higher the coping tendency score is, the stronger the respondent's inclination to adopt positive coping strategies. The internal consistency coefficient for this study as 0.841.

Satisfaction With Life Scale

The satisfaction with life scale (SWLS), developed by Diener et al. (1985) was used. The SWLS consists of five items with responses given on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The higher the total score is, the higher the individual's satisfaction with his or her current life. The internal consistency coefficient for this study was 0.882.

Mental Health Literacy Questionnaire

The mental health literacy questionnaire (MHLQ) developed by Jiang et al. (2020) was used. The questionnaire includes the following six subscales: (1) knowledge and concepts related to mental health; (2) knowledge and concepts related to mental illness; (3) attitudes and behavioural tendency to promote one's own mental health; (4) attitudes and behavioural tendency to promote the mental health of others; (5) attitudes and behavioural tendencies to cope with one's own mental illness; and (6) attitudes and behavioural tendencies to cope with the mental illness of others. These six subscales respectively address the six core components of mental health literacy. The mental health literacy questionnaire includes 60 questions; Questions 1–30 are scored as 0 or 1, and Questions 31–60 are scored using a 5-point Likert scale. To calculate the total mental health literacy score, the responses based on the 5-point Likert scale are converted to the 0–1 point scoring system. In this study, the internal consistency coefficient is 0.838.

Statistical Processing

SPSS21.0 was used to perform general descriptive statistics and Pearson correlation analysis (two-sided test $p < 0.05$ was

considered to be significantly correlated); In order to ensure the accuracy of the results, variance inflation factor (VIF) method was used for collinearity test (if VIF > 10, there is a serious collinearity problem between the variables and the corresponding variables need to be eliminated). Model 6 in the process plug-in compiled by Hayes (2017) was used for chain mediation effect analysis, and the bias correction percentile Bootstrap method was used to test the significance of the mediation effect. If the 99% confidence interval did not contain a value of 0, it was considered statistically significant (Erceg-Hurn and Mirosevich, 2008). In addition, Harman's one-factor test was used to test for common method deviation before analyzing the data (Podsakoff et al., 2003).

RESULTS

Common Method Bias Test

Because this study used self-report scales to collect data, which can lead to common method bias, the Harman single-factor method was used to include the mental health literacy, social support, coping tendency, and life satisfaction items in an exploratory factor analysis. Only 10.411% of the variance was explained by the largest factor, which is less than the critical value of 40%, it indicates that there was no significant common method bias in this study.

Correlation Analysis for Social Support, Coping Tendency, Life Satisfaction, and Mental Health Literacy

Pearson's product moment correlation analysis was used to analyse social support, coping tendency, life satisfaction, and mental health literacy (**Table 1**). The results showed that ① social support is significantly positively correlated with teachers' mental health literacy, coping tendency, and life satisfaction ($r = 0.221$, $p < 0.01$; $r = 0.393$, $p < 0.01$; $r = 0.446$, $p < 0.01$); ② coping tendency is significantly positively correlated with teachers' mental health literacy and life satisfaction ($r = 0.283$, $p < 0.01$; $r = 0.299$, $p < 0.01$); ③ life satisfaction is significantly positively correlated with teachers' mental health literacy ($r = 0.214$, $p < 0.01$).

Relationship Between Social Support and Mental Health Literacy: A Chain Mediation Effect Test

The above analysis showed that there was a significant correlation between the variables and that collinearity may exist. Therefore, before testing the effect, the predictive variables in the equation were standardized, and collinearity diagnostics were performed. The results showed that the variance inflation factors (1.375, 1.277, and 1.210) of all of the predictors were less than five. Therefore, there was no serious collinearity in the data used for this study, indicating that they were suitable for further mediation effect tests.

The process plug-in developed by Hayes was used to evaluate the 95% confidence interval (CI) of the mediation effect of life satisfaction and coping tendency on the impact of social support on the teachers' mental health literacy (the bootstrap sample size was 5,000), and the chain mediation model was established (**Figure 1**). The results showed that the predictive effect of social support on mental health literacy was not significant ($\beta = 0.09$, $p > 0.05$), but social support could significantly positively predict coping tendency and life satisfaction ($\beta = 0.45$, $p < 0.001$; $\beta = 0.39$, $p < 0.001$); life satisfaction could not only significantly predict the teachers' coping tendency ($\beta = 0.19$, $p < 0.001$) but could positively predict their mental health literacy ($\beta = 0.11$, $p < 0.05$); and coping tendency could significantly positively predict the teachers' mental health literacy ($\beta = 0.18$, $p < 0.001$).

Further testing of the mediation effect (see the **Table 2**) showed that the bootstrap 95% CI of the total effect of life satisfaction and coping tendency on the impact of social support on the teachers' mental health literacy was (0.0812, 0.1893), which does not include 0; this indicated that life satisfaction and coping tendency are the mediating variables in the impact of social support on teachers' mental health literacy, and they have a total indirect effect of 0.134, accounting for 60.56% of the total effect. This mediation effect is mainly composed of the following three paths: (1) social support→life satisfaction→mental health literacy [95% CI = (0.0084, 0.0911), standard error (SE) = 0.0207], the mediation effect is 0.0494, accounting for 22.32% of the total effect, and Hypothesis 1 is supported; (2) social support→coping tendency→mental health literacy [95% CI = (0.0387, 0.1065), SE = 0.0174], the mediation effect is 0.0698, accounting for 31.54% of the total effect, and Hypothesis 2 is supported; (3) social support→life satisfaction→coping tendency→mental health literacy [95% CI = (0.0055, 0.0266), SE = 0.0054], the mediation effect is 0.0148, accounting for 6.69% of the total effect, and Hypothesis 3 is supported.

DISCUSSION

This study explores the effects of different social supports on teachers' mental health literacy and the mediating role of life satisfaction and coping tendency. The results show that social support is significantly positively correlated with teachers' mental health literacy, life satisfaction, and coping tendency; social support can not only influence teachers' mental health literacy through life satisfaction and coping tendency separately but can also indirectly influence teachers' mental health literacy through the chain mediation effect of life satisfaction and coping tendency.

First, life satisfaction mediates the impact of social support on teachers' mental health literacy; that is, obtaining social support can improve individuals' life satisfaction and thus promote the improvement of their mental health literacy. The results show that the direct effect of social support on the teachers' mental health literacy is not significant, which is inconsistent with the results of previous studies, i.e., that individuals' mental health literacy can be improved through peer support (Kola-Palmer et al., 2020). That is, there is a snowball effect of seeking professional help: when an individual seeks professional help, private interpersonal conversations can result in changes in the

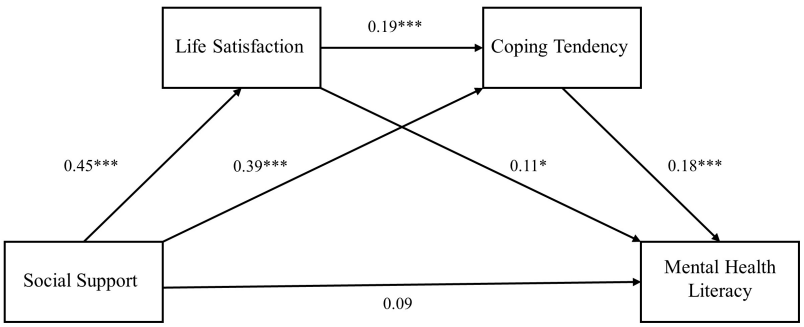

FIGURE 1 | The chain mediation model. *$p < 0.05$ and ***$p < 0.001$.

TABLE 1 | Descriptive statistics and correlation matrix for each variable.

Variable	Mean (M)	Standard deviation (SD)	1	2	3	4
Mental health literacy	0.673	0.127	1			
Social support	4.593	0.795	0.221**	1		
Life satisfaction	4.526	1.358	0.214**	0.446**	1	
Coping tendency	−0.001	1.209	0.283**	0.393**	0.299**	1

***Significant correlation at the 0.01 level (Two-tailed test), $p < 0.01$.*

TABLE 2 | Bootstrap analysis of the mediation effect test.

	Effect	Boot SE	Boot LL CI	Boot UL CI	Relative mediation effect
Indirect effect 1	0.0494	0.0207	0.0084	0.0911	22.32%
Indirect effect 2	0.0698	0.0174	0.0387	0.1065	31.54%
Indirect effect 3	0.0148	0.0054	0.0055	0.0266	6.69%

attitudes of those around him/her toward seeking help, which could promote their own help-seeking behavior. This finding may relate to common mental health problems. Teachers with poor mental health who receive social support from parents or friends may reduce their pain in the short term when faced with common mental health problems (such as depression) and greatly alleviate their discomfort, so they largely believe that they no longer need to seek formal mental health services (Clark et al., 2020). Robichaud and Dugas (2012) also came to the same conclusion in the generalized anxiety disorder population, that regular reassurance (often from parents in adolescents) can reduce short-term suffering, although eventually the anxiety disorder remains. Based on the buffering effect model (Cohen and Wills, 1985), the influence of the external environment (such as social support) plays a role via the individual's personal factors (such as life satisfaction). Teachers who receive sufficient social support have a higher level of understanding and use of social support resources, and experience higher life satisfaction after experiencing more positive emotions, which can reduce stress in the face of stressful events, have a more positive attitude toward seeking professional help, have a strong willingness to help when they suspect that others are having psychological problems, and have a high mental health literacy. In contrast, teachers who lack social support during their careers can have reduced life satisfaction, and the lack of happiness and weak psychological capital can easily make it difficult for them to extricate themselves from negative emotions (Huang et al., 2020). Because of their own pessimism and negativity, teachers with a low level of social support are more likely to have negative views regarding professional help and treatment effects, which seriously affects their mental health literacy.

Second, this study shows that coping tendency has a mediating role in the relationship between social support and teachers' mental health literacy. The results of this study are consistent with previous studies (Dong, 2019). Research shows that social support can significantly positively predict coping strategies (Kong et al., 2019). Teachers with a high level of social support have stronger social adaptation abilities and tend to adopt positive coping strategies for solving problems. When their mental state is abnormal, they are also more willing to help themselves, seek help from important others and professionals, and have a low sense of stigma regarding psychological counseling and treatment. In addition, due to the psychology of repayment, social support is significantly related to altruistic behavior. Individuals who receive social support are prone to show altruistic behavior (Romig and Bakken, 1992), and they can often identify and help others' mental health problems in a timely manner based on their own experience.

Finally, this study shows that life satisfaction and coping tendency separately could predict teachers' mental health literacy.

Based on the TRA (Fishbein and Ajzen, 1977), positive behavioral intention, can be affected by these positive attitudes. Teachers with high life satisfaction, or positive coping tendency, can clearly understand themselves and make full use of their own resources, and can actively self-regulate to eliminate external pressure. These positive attitudes allow teachers to have positive behavioral intention, regarding the prevention and treatment of possible psychological problems, which effectively improves their mental health literacy.

As a relatively important type of social group, the mental health status of teachers is crucial to their own ability to educate people and the growth and development of the educated group, and improving the mental health literacy of teachers can expand the beneficiary group to all students, which suggests that we should pay more attention to the mental health literacy of the majority of teachers. This study explores the possible influencing factors of teachers' mental health literacy, fills the gap in the literature to a certain extent and helps us to deeply understand the mechanism of life satisfaction and coping tendencies between social support and teachers' mental health literacy, and provides possible directions for future plans to improve teachers' mental health literacy.

However, the current study still has some limits. First, this study only involves the attitude and habit level of mental health literacy, there is still a lack of research on the knowledge level of mental health literacy, and a comprehensive investigation of this aspect still needs to be added in the future; Second, due to conditions, this study only studies the relationship between social support, life satisfaction, coping tendencies and teachers' mental health literacy, and the causal relationship between various variables is not yet known, and it still needs to be further tracked and verified.

CONCLUSION

1) Teachers' social support is significantly positively correlated with their mental health literacy, coping tendency, and life satisfaction; coping tendency is significantly positively correlated with mental health literacy and life satisfaction; and life satisfaction is significantly positively correlated with mental health literacy.
2) Teachers' social support affects mental health literacy through the separate mediation effects of life satisfaction and coping tendency.
3) Teachers' social support indirectly affects mental health literacy through the chain mediation effect of life satisfaction and coping tendency.

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 Ethics Committee of Hubei Normal University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

YJ contributed to conception and design of the study. SL and YS wrote the first draft of the manuscript. YS revised and delivered the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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A Meta-Analysis of Teachers' Job Burnout and Big Five Personality Traits

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Introduction: To explore the relationship between teachers' job burnout and big five personality traits through meta-analysis.

Methods: Chinese and foreign databases, such as China Knowledge Network Infrastructure (CNKI), VIP Database, Wanfang database, Chinese excellent master's degree full text, Science Direct, Web of science, Wiley online library, Springer link, Taylor & Francis, and APA PsycNET, were searched, and the relevant literature was collected and screened for meta-analysis.

Results: A total of 28 literatures were included, and the total sample size was 12,103. Meta-analysis showed that the dimensions of emotional exhaustion and depersonalization were moderately negatively correlated with conscientiousness, openness, extroversion, and agreeableness, and the effect values were −0.20 (−0.26 ∼ −0.13), −0.11 (−0.17 ∼ −0.05), −0.18 (−0.24 ∼ −0.12), −0.14 (−0.22 ∼ −0.06), −0.27 (−0.33 ∼ −0.22), −0.12 (−0.16 ∼ −0.08), −0.19 (−0.24 ∼ −0.14), and −0.28 (−0.36 ∼ −0.19), respectively. The effect values were 0.30 (0.21 ∼ 0.40) and 0.26 (0.17 ∼ 0.34). The dimension of low sense of achievement was negatively correlated with the five dimensions of conscientiousness, openness, neuroticism, extroversion and agreeableness of the big five personality traits, and the influence values were −0.02 (−0.18 ∼ 0.13), −0.02 (−0.14 ∼ 0.10), −0.03 (−0.16 ∼ 0.10), −0.04 (−0.18 ∼ 0.19), −0.05 (−0.16 ∼ 0.06) respectively. The correlation between each dimension of big five personality traits and each dimension of teachers' job burnout is adjusted by teaching segment, region, big five personality traits scale, and publication age.

Conclusion: The dimensions of emotional exhaustion and depersonalization are negatively correlated with conscientiousness, openness, extroversion, and agreeableness, and positively correlated with neuroticism. The dimension of low personal achievement is negatively correlated with the dimensions of big five personality traits. According to the results of this study, teachers generally have the problem of job burnout, and their personality characteristics have a significant impact on job burnout. School managers should pay attention to this problem and implement necessary interventions. At the same time, the conclusions of this study also provide some guiding significance for teachers' career development.

Keywords: teacher, big five personality, meta-analysis, moderate effect, personality

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INTRODUCTION

Job burnout is the exhaustion state of emotion, attitude, and behavior caused by an individual's inability to effectively deal with various long-term pressures at work. It is composed of three parts: emotional exhaustion, depersonalization, and low personal sense of achievement (Maslach et al., 2001; Zheng and Guo, 2018). Job burnout is regarded as an occupational disease (De Heus and Diekstra, 1999), and is listed in the international classification of diseases by the World Health Organization (WHO). The new version of the classification has come into force in January 2022. It is not only the biggest occupational hazard in the 21st century, but also a hot issue of global concern (Leiter and Maslach, 2005) and one of the common mental health problems among teachers. The teaching profession involves long-term participation in teaching activities and interaction between faculty and staff. During this period, a heavy workload is generated, which could bring emotional discouragement and frustration (Chang, 2020), and this could cause job burnout. The professional work of teachers is arduous and complicated, including a large amount of teacher-student interaction and a lot of education and teaching work. The complicated nature of work creates bad emotions and frustration in teachers, which in turn leads to job burnout. Teachers with job burnout have low job satisfaction and reduced job investment (Akbari and Eghtesadi Roudi, 2020), and also have behaviors, such as turnover intention, absenteeism, and turnover (Swider and Zimmerman, 2010; Rajendran et al., 2020). Teachers' job burnout not only affects the teachers' mental health and wellbeing but also affects the classroom atmosphere, students' wellbeing, and academic performance (Swider and Zimmerman, 2010; Schonert-Reichl et al., 2017). Therefore, the study of teachers' job burnout and its related factors is very necessary to prevent and intervene in teachers' job burnout, and protect and improve teachers' mental health levels.

Previous studies have shown that the causes of teachers' job burnout arise from three aspects: social system, organizational environment, and individual factors. Although teachers' job burnout comes from these three aspects, when faced with the same social system and organizational environment, not all teachers will have job burnout. Therefore, under the same system and environment, individual factors are an important reason for the differences in teachers' job burnout, in which the personality characteristics of individual factors play an important role.

At present, the discussion on the relationship between personality and teachers' job burnout mostly starts from the big five personality traits. In the recent 10 years, many empirical studies have discussed the relationship between teachers' job burnout and big five personality traits at home and abroad, but there are still differences among the research results, and it is difficult to draw a more consistent conclusion, mainly in the aspects detailed below.

First, there are great differences in the relationship between teachers' job burnout and big five personality traits. For example, studies have confirmed that the depersonalization dimension of teachers' job burnout is significantly positively correlated with the three factors of neuroticism, openness, and extroversion of big five personality traits, and negatively correlated with conscientiousness and agreeableness (Hu and Zhao, 2019). However, some scholars have confirmed that the depersonalization dimension of teachers' job burnout has a significant negative correlation with the agreeableness, openness, and conscientiousness of the big five personality traits, and a significant positive correlation with neuroticism (Wu et al., 2018). Some foreign scholars have used meta-analysis technology to prove the relationship between teachers' job burnout and big five personality traits (Kim et al., 2019), but there are some deficiencies in their research. First, they have not discussed the relationship between the three dimensions of teachers' job burnout and the five factors of big five personality traits, but only discussed the relationship between chief teachers' job burnout and the five factors of big five personality traits. Second, meta-analysis only covers seven foreign kinds of literature, which are too few and involve other languages. A large number of empirical studies have emerged one after another with the continuous advancement of relevant research, which provides effective materials for exploring the relationship between teachers' job burnout and big five personality traits.

Second, different researchers have adopted different types of measurement tools for teachers' job burnout and big five personality traits. For example, for teachers' job burnout scale, some studies have adopted the job burnout scale prepared by Li Yongxin (Tao and Feng, 2019), while others have adopted the scale prepared by Maslach and Jackson (Bhowmick and Mulla, 2021). In case of the big five personality traits scale, some studies used the scale with 38 items compiled by McCrae and Costa (Teven, 2007), while others used the simplified big five personality traits scale with 60 items (Miao et al., 2018). Therefore, the results of different studies cannot be directly compared, as different measurement tools will affect the nature of the relationship between teachers' job burnout and big five personality traits, and hence it is difficult to explain the difference between them.

Third, different studies have selected teachers in different educational levels, such as preschool teachers, primary and secondary school teachers, college teachers, and researched different cultural backgrounds. It is worth exploring whether educational levels and cultural backgrounds can affect the relationship between teachers' job burnout and big five personality traits. Therefore, it is necessary to conduct a meta-analysis on the relationship and regulatory effect between them.

To sum up, the purpose of this study is to comprehensively evaluate the nature of the relationship between teachers' job burnout and big five personality traits by using meta-analysis technology, and to explore the regulatory variables of the relationship, such as measurement tools, teachers' gender, teaching period, cultural background, and publication time, to make up for the gap in existing literature and point out the direction for future research.

MATERIALS AND METHODS

Search Strategy and Study Selection

Through China Knowledge Network Infrastructure (CNKI), VIP Database, Wanfang database, China excellent master's degree

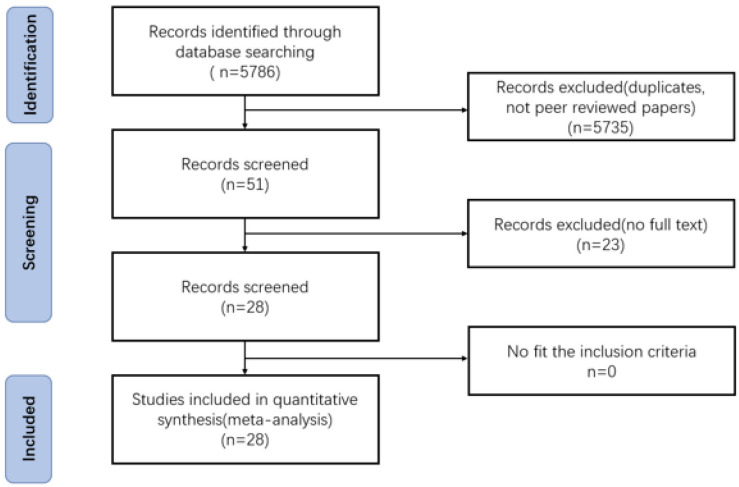

FIGURE 1 | PRISMA flowchart.

full-text database, and China Doctoral Dissertation Full-text Database, Chinese literature retrieval was carried out under the retrieval conditions of "teacher," "job burnout," and "personality." Foreign language databases, such as Science Direct, Web of science, Wiley online library, Springer link, Taylor & Francis, and APA PsycNET, were used for foreign language literature retrieval with the keywords "teacher," "job burnout," and "personality." The retrieval time was from the time of database establishment to August 2021.

A total of 5,786 kinds of literature were preliminarily retrieved. By reading the title and abstract, 5,735 literature unrelated to the topic, reviewed, and that did not consider teachers as the research object were removed, and 51 relevant kinds of literature were obtained. After reading the full text, 23 kinds of literature that could not calculate the effect quantity and did not report the correlation coefficient were removed, and 28 were finally included, including 19 in Chinese and 9 in English (see **Figure 1** for details).

Eligibility Criteria

Inclusion criteria were: ① literature research is an empirical study including two variables: teachers' job burnout and big five personality traits, which are not included in literature review; ② in the literature, it is necessary to report the sample size of the research on Teachers' Job Burnout and big five personality traits, and the correlation coefficient r or T value or F value between them. ③ the respondents are teachers, including pre-service teachers, preschool teachers, primary and secondary school teachers, and college teachers; and ④ if the same batch of data is published many times, only one of them is included. If the dissertation is published in journals and magazines at the same time, the journals shall prevail.

Data Extraction

The documents that meet the above inclusion criteria are coded. Each independent sample is coded only once, and the coding contents include: ① basic information, such as the first author, publication time, sample size, cultural background, teaching section, publication type (Journal/dissertation), and measurement tools; ② the correlation coefficient r between the total score of teachers' job burnout and the dimensions of big five personality traits; ③ the correlation coefficient r between the dimensions of teachers' job burnout (emotional exhaustion, depersonalization, low personal achievement) and the dimensions of big five personality traits; and ④ gender, each independent sample was coded in the proportion of men.

The document coding process was carried out independently by two researchers. After the coding, the two coding results were compared, and the inconsistencies were discussed and solved jointly.

Statistical Analysis

Excel 2019 was used for coding. Comprehensive meta-analysis software, version 3.0 (CMA 3.0) was used for estimation of overall mean effect value and 95% confidence interval (CI), heterogeneity test, meta-regression analysis, and publication bias test, and the correlation coefficient r was used as the effective value.

RESULTS

Basic Characteristics of Included Literature

A total of 28 pieces of literatures were included in this study, including 19 Chinese literature and 9 English pieces of literature. All were cross-sectional related studies, with a maximum sample size of 2,186, a minimum sample size of 48, and a total sample size of 12,103. See **Table 1** for basic information. The r value of the correlation coefficient between each dimension of job burnout and each dimension of the big five personality traits is too numerous and has been transferred to **Supplementary Table 1**.

TABLE 1 | Studies included in the meta-analysis.

References	*N*	Male ratio %	Cultural background (Country)	Phase of studying	The big five personality traits measurement tool	Burnout measurement tool
Colomeischi (2015)	575	0.35	(Europe) Romania	PSS	Other	Other
Grist and Caudle (2021)	207	0.01	(North America) United States	PSS	Other	MBI-ES
Çevik Kiliç (2018)	278	0.32	(Asia) Turkey	PSS	Other	MBI
Duan (2016)	205	0.26	(Asia) China	PSS	NEO-FFI	MBI
Ge (2008)	516	0.01	(Asia) China	PSS	NEO-FFI	MBI-GS
Guo (2015)	487	0.39	(Asia) China	PSS	NEO-FFI	MBI
He (2018)	507	0.32	(Asia) China	PSS	NEO-FFI	MBI
Hu and Zhao (2019)	190	0.38	(Asia) China	CU	CBF	MBI-GS
David and Quintão (2012)	404	NA	(Europe) Portugal	CU	BFI	MBI
Teven (2007)	48	0.56	(North America) United States	CU	Other	MBI
Yilmaz (2014)	303	0.47	(Asia) Turkey	PSS	Other	MBI
Li (2014)	296	0.01	(Asia) China	PSS	CBF	MBI-ES
Li et al. (2018)	184	0.35	(Asia) China	PSS	NEO-FFI	other
Mao and Zhao (2013)	150	0.57	(Asia) China	PSS	CBF	MBI-ES
Mei and Zhou (2008)	199	0.34	(Asia) China	PSS	CBF	Other
Miao et al. (2018)	373	0.03	(Asia) China	PSS	NEO-FFI	Other
Poraj (2009)	312	0.00	(Europe) Poland	PSS	NEO-FFI	MBI
Poraj (2009)	78	1.00	(Europe) Poland	PSS	NEO-FFI	MBI
Qin (2008)	563	NA	(Asia) China	PSS	BFI	MBI-GS
Tasic et al. (2020)	302	0.00	(Europe) Serbia	PSS	Other	MBI-GS
Castillo-Gualda et al. (2019)	237	0.35	(Europe) Spain	PSS	BFI	MBI
Tao and Feng (2019)	277	0.47	(Asia) China	CU	CBF	Other
Wang et al. (2015)	2186	0.21	(Asia) China	PSS	BFI	Other
Wu et al. (2018)	345	NA	(Asia) China	PSS	BFI	MBI-ES
Xu (2017)	194	0.38	(Asia) China	PSS	CBF	Other
Yuan (2018)	452	0.30	(Asia) China	PSS	NEO-FFI	MBI-GS
Zhang and Cheng (2016)	260	0.54	(Asia) China	CU	NEO-FFI	MBI-GS
Zhong and Ling (2014)	1831	0.27	(Asia) China	PSS	NEO-FFI	MBI-ES
Zhou (2016)	144	0.19	(Asia) China	PSS	CBF	MBI

PSS, primary and secondary schools; CU, on behalf of colleges and universities; NEO-FFI, big five personality traits short-form scale; CBF, the Chinese version of big five personality traits short-form scale; the big five personality traits scale compiled by BFI, Loehlin et al. (1998); MBI, 22 item job burnout scale compiled by Maslach; MBI-ES, teacher version job burnout scale compiled by Maslach; MBI-GS, the job burnout scale revised by Li Chaoping and Shi Kan, and compiled by Maslach; Others, if the original document does not specify which measuring tool to use or the total use frequency of a measuring tool is less than 2, it shall be recorded as others.

Heterogeneity Test

The heterogeneity test was conducted for the relationship between each dimension of the big five personality traits and each dimension of teachers' job burnout (**Table 2**). From the results, the Q value was observed to be between 155.03 and 1,972.58 ($p < 0.001$), and $I^2 > 75\%$, indicating that the heterogeneity of effect values is significant, so the random effect model was selected for meta-analysis. At the same time, the heterogeneity of effect value indicates that there may be significant moderating variables in the relationship between each dimension of the big five personality traits and each dimension of teachers' job burnout, and the moderating effect analysis is also needed.

Main Effect and Publication Bias Test

Table 3 shows the main effect test results of each dimension of the big five personality traits and each dimension of job burnout. It can be seen from **Table 3** that the effect values of each dimension of emotional exhaustion, depersonalization, and big five personality traits are medium effects, and 95% CI does not include 0, indicating that the results are relatively stable. The effect value of each dimension of low personal achievement and big five personality traits is a small effect, and 95% CI includes 0, indicating that the result is unstable. At the same time, this study comprehensively uses the loss of safety coefficient, Egger's regression coefficient test, Begg's rank

TABLE 2 | Heterogeneity test.

Burnout dimensions	The big five personality traits dimensions	*K*	Heterogeneity				*Tau-squared*			
			Q	*df(Q)*	*P*	I^2	Tau^2	*SE*	方差	*Tau*
Emotional exhaustion	C	28	379.84	28	0.000	92.63	0.03	0.01	0.000	0.18
	O	28	282.65	28	0.000	90.09	0.02	0.01	0.000	0.15
	N	28	924.87	28	0.000	96.97	0.08	0.03	0.001	0.28
	E	28	315.38	28	0.000	91.12	0.03	0.01	0.000	0.16
	A	28	518.92	28	0.000	94.60	0.04	0.02	0.000	0.21
De-personalization	C	28	262.58	28	0.000	89.34	0.02	0.01	0.000	0.14
	O	28	155.03	28	0.000	81.94	0.01	0.01	0.000	0.11
	N	28	704.46	28	0.000	96.02	0.06	0.02	0.001	0.25
	E	28	214.78	28	0.000	86.96	0.02	0.01	0.000	0.13
	A	28	716.93	28	0.000	96.09	0.06	0.02	0.001	0.25
Low personal achievement	C	28	1972.58	28	0.000	98.58	0.18	0.07	0.005	0.42
	O	28	1147.40	28	0.000	97.56	0.10	0.04	0.002	0.32
	N	28	1340.89	28	0.000	97.91	0.12	0.04	0.002	0.34
	E	28	1568.33	28	0.000	98.22	0.14	0.05	0.003	0.37
	A	28	1009.54	28	0.000	97.23	0.09	0.03	0.001	0.30

C, due diligence; O, openness; N, neuroticism; E, extraversion; A, agreeableness. The same is below.

TABLE 3 | Main effect test results.

Burnout dimensions	The big five personality traits Dimensions	*K*	*r*	95% CI		*Z*	*P*	*Nfs*
				LL	UL			
Emotional exhaustion	C	28	−0.20	−0.27	−0.13	−5.76	0.000	3310
	O	28	−0.11	−0.17	−0.05	−3.65	0.000	1117
	N	28	0.30	0.21	0.40	5.81	0.000	7882
	E	28	−0.18	−0.24	−0.12	−5.66	0.000	3034
	A	28	−0.14	−0.22	−0.06	−3.50	0.000	1797
De-personalization	C	28	−0.27	−0.33	−0.22	−9.52	0.000	6052
	O	28	−0.12	−0.16	−0.08	−5.28	0.000	1182
	N	28	0.26	0.17	0.34	5.52	0.000	5689
	E	28	−0.19	−0.24	−0.14	−7.08	0.000	3085
	A	28	−0.28	−0.36	−0.19	−6.04	0.000	6556
Low personal achievement	C	28	−0.02	−0.18	0.13	−0.31	0.756	428
	O	28	−0.02	−0.14	0.10	−0.38	0.707	283
	N	28	−0.03	−0.16	0.10	−0.48	0.633	0
	E	28	−0.04	−0.18	0.09	−0.62	0.535	427
	A	28	−0.05	−0.16	0.06	−0.88	0.379	409

correlation test, and shear compensation method to test whether there is publication bias in the literature included in this meta-analysis. The loss of safety coefficient can be used to estimate how much insignificant sample literature is needed to reverse the meta-analysis results. When the loss of safety factor is greater than 5K + 10 (K is the number of documents included), there is no publication bias. On the contrary, the smaller the loss of safety factor, the greater the possibility of publication bias. In addition, when the *p*-value of Egger's regression coefficient test or Begg's rank correlation test is significant ($p < 0.05$), the publication bias is tested by the pruning method, which affects the meta-analysis results. If the effect value after pruning does not change significantly, it can be considered that there is no publication bias (Xie et al., 2016; Xiang et al., 2017). The results of the loss of safety factor, Egger's regression coefficient test, and Begg's rank correlation test in this study are shown in **Table 4**. It can be seen from **Table 4** that the insecurity coefficient of low personal achievement and neuroticism index variables are much less than 5K + 10, and the others are greater than 5K + 10. Secondly, except for the dimensions of emotional exhaustion and extroversion, depersonalization and extroversion, low personal achievement and job burnout, the *p* values of Egger's regression coefficient test or Begg's rank correlation test of other variables were not significant ($p > 0.05$). In this regard, it is only necessary

TABLE 4 | Publication bias test results.

Burnout dimensions	The big five personality traits dimensions	*K*	Fail-safe *N*	Egger's regression coefficient test		Begg's rank correlation test		Trim and fill			
								Before cutting and mending		After cutting and patching	
				Intercept	*P*(Double Tail)	*Z*	*P* (Double Tail)	*r*	95% CI	*r*	95% CI
Emotional exhaustion	C	29	3310	2.51	0.140	0.53	0.599				
	O	29	1117	2.56	0.079	0.00	1.000				
	N	29	7882	−3.28	0.220	0.08	0.940				
	E	29	3034	3.99	0.007	0.83	0.409	−0.18	(−0.24,−0.12)	−0.18	(−0.24,−0.12)
	A	29	1797	3.28	0.097	0.23	0.822				
De-personalization	C	29	6052	1.15	0.422	0.04	0.970				
	O	29	1182	1.26	0.250	0.53	0.599				
	N	29	5689	−3.71	0.107	0.41	0.680				
	E	29	3085	2.91	0.019	0.56	0.574	−0.19	(−0.24,−0.14)	−0.19	(−0.24,−0.14)
	A	29	6556	1.50	0.528	0.04	0.970				
Low personal achievement	C	29	428	10.46	0.004	0.64	0.524	−0.02	(−0.18,0.13)	−0.02	(−0.18,0.13)
	O	29	283	7.17	0.012	1.20	0.230	−0.02	(−0.14,0.10)	−0.02	(−0.14,0.10)
	N	29	0	−8.39	0.006	0.11	0.910	−0.03	(−0.16,0.10)	−0.03	(−0.16,0.10)
	E	29	427	7.49	0.026	0.75	0.453	−0.04	(−0.18,0.09)	−0.04	(−0.179,0.09)
	A	29	409	5.86	0.030	0.45	0.653	−0.05	(−0.16,0.06)	−0.05	(−0.159, 0.06)

TABLE 5 | Moderating effects of teaching segments on the relationship between big five personality traits and job burnout.

Burnout dimensions	The big five personality traits Dimensions	Academic segments	*K*	*n*	*r*	95% CI		*Z*	*P*	*Q*	*P*
						LL	UL				
Emotional exhaustion	C	CU	5	1179	−0.16	−0.24	−0.08	−3.98	0.000	0.54	0.46
		PSS	24	10924	−0.20	−0.28	−0.13	−5.16	0.000		
	O	CU	5	1179	−0.18	−0.36	0.01	−1.88	0.060	0.74	0.39
		PSS	24	10924	−0.10	−0.16	−0.03	−2.96	0.003		
	N	CU	5	1179	0.41	0.36	0.45	14.72	0.000	4.41	0.04
		PSS	24	10924	0.28	0.16	0.39	4.57	0.000		
	E	CU	5	1179	−0.09	−0.27	0.09	−1.00	0.317	1.14	0.29
		PSS	24	10924	−0.20	−0.26	−0.13	−5.88	0.000		
	A	CU	5	1179	−0.16	−0.29	−0.02	−2.26	0.024	0.05	0.82
		PSS	24	10924	−0.14	−0.23	−0.05	−3.00	0.003		
De-personalization	C	CU	5	1179	−0.23	−0.31	−0.15	−5.51	0.000	0.82	0.37
		PSS	24	10924	−0.28	−0.34	−0.22	−8.57	0.000		
	O	CU	5	1179	−0.07	−0.25	0.12	−0.73	0.466	0.36	0.55
		PSS	24	10924	−0.13	−0.17	−0.08	−5.57	0.000		
	N	CU	5	1179	0.30	0.13	0.46	3.40	0.001	0.33	0.57
		PSS	24	10924	0.25	0.14	0.34	4.68	0.000		
	E	CU	5	1179	−0.09	−0.23	0.06	−1.15	0.250	2.45	0.12
		PSS	24	10924	−0.21	−0.26	−0.15	−7.69	0.000		
	A	CU	5	1179	−0.30	−0.36	−0.25	−10.73	0.000	0.25	0.61
		PSS	24	10924	−0.28	−0.37	−0.17	−5.09	0.000		
Low personal achievement	C	CU	5	1179	−0.07	−0.40	0.27	−0.40	0.691	0.08	0.78
		PSS	24	10924	−0.01	−0.18	0.16	−0.17	0.866		
	O	CU	5	1179	0.04	−0.34	0.40	0.18	0.857	0.11	0.74
		PSS	24	10924	−0.03	−0.16	0.09	−0.54	0.587		
	N	CU	5	1179	0.08	−0.15	0.31	0.71	0.480	1.00	0.32
		PSS	24	10924	−0.06	−0.20	0.09	−0.75	0.451		
	E	CU	5	1179	−0.16	−0.41	0.12	−1.14	0.254	0.77	0.38
		PSS	24	10924	−0.02	−0.17	0.14	−0.24	0.810		
	A	CU	5	1179	−0.12	−0.42	0.20	−0.74	0.460	0.24	0.62
		PSS	24	10924	−0.04	−0.15	0.08	−0.58	0.564		

TABLE 6 | Regulatory effect of cultural background on the relationship between big five personality traits and job burnout.

Burnout dimensions	The big five personality traits Dimensions	Cultural background	*K*	*n*	*r*	95% CI		*Z*	*P*	*Q*	*P*
						LL	UL				
Emotional exhaustion	C	North America	2	255	−0.45	−0.54	−0.34	−7.62	0.000	16.63	0.000
		Europe	6	1908	−0.24	−0.31	−0.17	−6.54	0.000		
		Asia	21	9940	−0.17	−0.25	−0.08	−3.87	0.000		
	O	North America	2	255	−0.15	−0.50	0.25	−0.72	0.474	1.73	0.421
		Europe	6	1908	−0.16	−0.22	−0.10	−4.81	0.000		
		Asia	21	9940	−0.09	−0.17	−0.02	−2.46	0.014		
	N	North America	2	255	0.55	0.46	0.63	9.80	0.000	15.36	0.000
		Europe	6	1908	0.29	−0.05	0.57	1.70	0.090		
		Asia	21	9940	0.29	0.18	0.39	5.27	0.000		
	E	North America	2	255	−0.28	−0.46	−0.07	−2.64	0.008	3.69	0.158
		Europe	6	1908	−0.25	−0.30	−0.19	−8.10	0.000		
		Asia	21	9940	−0.16	−0.23	−0.08	−3.81	0.000		
	A	North America	2	255	−0.34	−0.47	−0.20	−4.53	0.000	6.37	0.041
		Europe	6	1908	−0.09	−0.27	0.10	−0.88	0.380		
		Asia	21	9940	−0.14	−0.23	−0.05	−3.03	0.002		
De-personalization	C	North America	2	255	−0.51	−0.59	−0.41	−8.81	0.000	19.84	0.000
		Europe	6	1908	−0.24	−0.30	−0.17	−6.71	0.000		
		Asia	21	9940	−0.26	−0.33	−0.20	−7.49	0.000		
	O	North America	2	255	−0.16	−0.49	0.21	−0.86	0.388	1.77	0.414
		Europe	6	1908	−0.15	−0.20	−0.11	−6.75	0.000		
		Asia	21	9940	−0.11	−0.16	−0.05	−3.76	0.000		
	N	North America	2	255	0.41	0.30	0.51	6.88	0.000	5.69	0.058
		Europe	6	1908	0.18	−0.05	0.39	1.52	0.128		
		Asia	21	9940	0.26	0.17	0.36	5.27	0.000		
	E	North America	2	255	−0.27	−0.38	−0.15	−4.42	0.000	2.19	0.334
		Europe	6	1908	−0.21	−0.26	−0.15	−7.05	0.000		
		Asia	21	9940	−0.17	−0.24	−0.11	−5.15	0.000		
	A	North America	2	255	−0.41	−0.51	−0.30	−6.86	0.000	4.21	0.122
		Europe	6	1908	−0.21	−0.40	0.00	−1.94	0.052		
		Asia	21	9940	−0.29	−0.39	−0.19	−5.28	0.000		
Low personal achievement	C	North America	2	255	0.17	−0.46	0.69	0.51	0.611	3.67	0.160
		Europe	6	1908	0.21	−0.09	0.48	1.39	0.164		
		Asia	21	9940	−0.11	−0.28	0.06	−1.24	0.215		
	O	North America	2	255	0.32	0.02	0.57	2.07	0.039	8.36	0.015
		Europe	6	1908	0.17	−0.10	0.42	1.21	0.225		
		Asia	21	9940	−0.11	−0.23	0.02	−1.62	0.105		
	N	North America	2	255	−0.03	−0.70	0.66	−0.08	0.938	18.82	0.000
		Europe	6	1908	−0.33	−0.44	−0.21	−5.20	0.000		
		Asia	21	9940	0.06	−0.07	0.18	0.90	0.366		
	E	North America	2	255	−0.03	−0.65	0.62	−0.08	0.939	2.59	0.274
		Europe	6	1908	0.19	−0.14	0.48	1.11	0.266		
		Asia	21	9940	−0.11	−0.26	0.04	−1.42	0.156		
	A	North America	2	255	0.14	−0.55	0.71	0.37	0.715	2.06	0.357
		Europe	6	1908	0.10	−0.19	0.37	0.67	0.500		
		Asia	21	9940	−0.11	−0.22	0.01	−1.86	0.063		

TABLE 7 | Moderating effects of big five personality traits measurement tools on the relationship between big five personality traits and job burnout.

Burnout dimensions	The big five personality traits Dimensions	Big five personality traits measurement tools	*K*	*n*	*r*	95% CI		*Z*	*P*	*Q*	*P*
						LL	UL				
Emotional exhaustion	C	BFI	5	3735	−0.20	−0.42	0.03	−1.71	0.087	8.01	0.046
		CBF	7	1450	−0.13	−0.26	−0.01	−2.06	0.039		
		NEO−FFI	11	5205	−0.17	−0.25	−0.10	−4.41	0.000		
		Other	6	1713	−0.31	−0.39	−0.23	−7.07	0.000		
	O	BFI	5	3735	−0.15	−0.30	0.01	−1.84	0.066	3.01	0.391
		CBF	7	1450	−0.02	−0.15	0.12	−0.21	0.831		
		NEO-FFI	11	5205	−0.13	−0.21	−0.04	−2.96	0.003		
		Other	6	1713	−0.16	−0.25	−0.06	−3.18	0.001		
	N	BFI	5	3735	0.33	0.16	0.49	3.65	0.000	0.44	0.932
		CBF	7	1450	0.32	0.19	0.45	4.46	0.000		
		NEO-FFI	11	5205	0.34	0.21	0.45	5.16	0.000		
		Other	6	1713	0.20	−0.21	0.55	0.97	0.332		
	E	BFI	5	3735	−0.20	−0.39	0.01	−1.84	0.066	16.57	0.001
		CBF	7	1450	−0.03	−0.12	0.06	−0.61	0.539		
		NEO-FFI	11	5205	−0.23	−0.30	−0.15	−5.77	0.000		
		Other	6	1713	−0.25	−0.30	−0.19	−8.20	0.000		
	A	BFI	5	3735	−0.18	−0.42	0.08	−1.37	0.170	1.65	0.649
		CBF	7	1450	−0.06	−0.22	0.10	−0.77	0.439		
		NEO-FFI	11	5205	−0.18	−0.26	−0.09	−4.05	0.000		
		Other	6	1713	−0.13	−0.33	0.08	−1.25	0.211		
De-personalisation	C	BFI	5	3735	−0.19	−0.35	−0.02	−2.21	0.027	6.81	0.078
		CBF	7	1450	−0.20	−0.30	−0.08	−3.43	0.001		
		NEO-FFI	11	5205	−0.31	−0.39	−0.23	−7.57	0.000		
		Other	6	1713	−0.35	−0.44	−0.26	−7.28	0.000		
	O	BFI	5	3735	−0.19	−0.26	−0.11	−4.57	0.000	11.83	0.008
		CBF	7	1450	0.03	−0.08	0.14	0.59	0.558		
		NEO-FFI	11	5205	−0.15	−0.21	−0.09	−4.73	0.000		
		Other	6	1713	−0.16	−0.23	−0.10	−4.85	0.000		
	N	BFI	5	3735	0.23	0.04	0.40	2.39	0.017	1.22	0.749
		CBF	7	1450	0.30	0.17	0.42	4.46	0.000		

(Continued)

TABLE 7 | (Continued)

Burnout dimensions	The big five personality traits Dimensions	Big five personality traits measurement tools	*K*	*n*	*r*	95% CI		*Z*	*P*	*Q*	*P*
						LL	UL				
		NEO-FFI	11	5205	0.30	0.18	0.41	4.93	0.000		
		Other	6	1713	0.15	−0.18	0.44	0.87	0.382		
	E	BFI	5	3735	−0.16	−0.32	0.01	−1.80	0.072	14.19	0.003
		CBF	7	1450	−0.05	−0.14	0.04	−1.11	0.268		
		NEO-FFI	11	5205	−0.25	−0.31	−0.19	−7.48	0.000		
		Other	6	1713	−0.23	−0.27	−0.18	−9.58	0.000		
	A	BFI	5	3735	−0.19	−0.40	0.03	−1.67	0.095	4.19	0.242
		CBF	7	1450	−0.21	−0.31	−0.10	−3.74	0.000		
		NEO-FFI	11	5205	−0.38	−0.50	−0.24	−5.18	0.000		
		Other	6	1713	−0.25	−0.45	−0.02	−2.09	0.036		
Low personal achievement	C	BFI	5	3735	0.01	−0.37	0.38	0.04	0.971	0.29	0.961
		CBF	7	1450	−0.03	−0.32	0.27	−0.18	0.855		
		NEO-FFI	11	5205	0.01	−0.28	0.29	0.05	0.964		
		Other	6	1713	−0.10	−0.41	0.22	−0.63	0.532		
	O	BFI	5	3735	−0.03	−0.35	0.30	−0.16	0.871	0.88	0.831
		CBF	7	1450	−0.08	−0.27	0.12	−0.81	0.417		
		NEO-FFI	11	5205	0.04	−0.14	0.22	0.44	0.660		
		Other	6	1713	−0.07	−0.37	0.25	−0.40	0.689		
	N	BFI	5	3735	0.03	−0.26	0.32	0.22	0.829	1.08	0.781
		CBF	7	1450	0.03	−0.09	0.14	0.46	0.645		
		NEO-FFI	11	5205	−0.05	−0.26	0.17	−0.43	0.670		
		Other	6	1713	−0.12	−0.40	0.18	−0.80	0.423		
	E	BFI	5	3735	−0.01	−0.29	0.27	−0.06	0.948	0.94	0.816
		CBF	7	1450	0.00	−0.24	0.23	−0.04	0.970		
		NEO-FFI	11	5205	−0.01	−0.28	0.26	−0.06	0.951		
		Other	6	1713	−0.18	−0.47	0.14	−1.12	0.264		
	A	BFI	5	3735	0.11	−0.24	0.44	0.62	0.537	1.87	0.599
		CBF	7	1450	0.00	−0.20	0.20	−0.02	0.982		
		NEO-FFI	11	5205	−0.10	−0.27	0.08	−1.08	0.279		
		Other	6	1713	−0.15	−0.39	0.11	−1.15	0.250		

TABLE 8 | Moderating effects of job burnout measurement tools on the relationship between big five personality traits and job burnout.

Burnout dimensions	The big five personality traits Dimensions	Burnout measurement tools	*K*	*n*	*r*	95% CI		*Z*	*P*	*Q*	*P*
						LL	UL				
Emotional exhaustion	C	MBI	11	3003	−0.19	−0.28	−0.11	−4.26	0.000	2.16	0.540
		MBI-ES	5	2829	−0.25	−0.40	−0.09	−3.04	0.002		
		MBI-GS	6	2283	−0.13	−0.24	−0.01	−2.21	0.027		
		Other	7	3988	−0.23	−0.36	−0.09	−3.10	0.002		
	O	MBI	11	3003	−0.06	−0.14	0.01	−1.67	0.095	2.06	0.560
		MBI-ES	5	2829	−0.11	−0.22	0.01	−1.85	0.065		
		MBI-GS	6	2283	−0.17	−0.32	−0.01	−2.13	0.033		
		Other	7	3988	−0.13	−0.26	0.00	−2.00	0.045		
	N	MBI	11	3003	0.35	0.19	0.50	4.07	0.000	0.82	0.844
		MBI-ES	5	2829	0.32	0.15	0.48	3.61	0.000		
		MBI-GS	6	2283	0.33	0.23	0.43	5.81	0.000		
		Other	7	3988	0.19	−0.16	0.49	1.04	0.296		
	E	MBI	11	3003	−0.20	−0.28	−0.12	−5.04	0.000	1.92	0.589
		MBI-ES	5	2829	−0.20	−0.27	−0.13	−5.23	0.000		
		MBI-GS	6	2283	−0.10	−0.23	0.04	−1.40	0.161		
		Other	7	3988	−0.20	−0.34	−0.05	−2.63	0.009		
	A	MBI	11	3003	−0.18	−0.25	−0.10	−4.60	0.000	2.80	0.424
		MBI-ES	5	2829	−0.20	−0.38	−0.01	−2.09	0.037		
		MBI-GS	6	2283	−0.01	−0.20	0.19	−0.06	0.956		
		Other	7	3988	−0.16	−0.31	0.00	−1.99	0.046		
De-personalization	C	MBI	11	3003	−0.33	−0.40	−0.26	−9.07	0.000	6.76	0.080
		MBI-ES	5	2829	−0.32	−0.46	−0.17	−3.99	0.000		
		MBI-GS	6	2283	−0.16	−0.28	−0.03	−2.39	0.017		
		Other	7	3988	−0.25	−0.34	−0.15	−4.72	0.000		
	O	MBI	11	3003	−0.14	−0.17	−0.10	−7.49	0.000	1.37	0.712
		MBI-ES	5	2829	−0.10	−0.24	0.03	−1.49	0.136		
		MBI-GS	6	2283	−0.08	−0.19	0.04	−1.30	0.194		
		Other	7	3988	−0.15	−0.24	−0.06	−3.35	0.001		
	N	MBI	11	3003	0.28	0.11	0.43	3.14	0.002	1.74	0.628
		MBI-ES	5	2829	0.30	0.17	0.42	4.32	0.000		
		MBI-GS	6	2283	0.32	0.23	0.41	6.43	0.000		
		Other	7	3988	0.13	−0.16	0.39	0.86	0.390		
	E	MBI	11	3003	−0.21	−0.27	−0.15	−6.45	0.000	1.62	0.654
		MBI-ES	5	2829	−0.18	−0.26	−0.10	−4.46	0.000		
		MBI-GS	6	2283	−0.12	−0.25	0.01	−1.87	0.061		
		Other	7	3988	−0.21	−0.33	−0.08	−3.20	0.001		
	A	MBI	11	3003	−0.37	−0.48	−0.25	−5.72	0.000	6.13	0.105
		MBI-ES	5	2829	−0.34	−0.48	−0.18	−4.11	0.000		
		MBI-GS	6	2283	−0.05	−0.29	0.18	−0.44	0.657		
		Other	7	3988	−0.28	−0.40	−0.16	−4.29	0.000		
Low personal achievement	C	MBI	11	3003	0.08	−0.17	0.31	0.63	0.530	3.79	0.285
		MBI-ES	5	2829	0.01	−0.36	0.39	0.07	0.942		
		MBI-GS	6	2283	0.02	−0.20	0.24	0.19	0.849		
		Other	7	3988	−0.25	−0.47	0.01	−1.89	0.058		
	O	MBI	11	3003	0.07	−0.14	0.27	0.64	0.521	4.48	0.214
		MBI-ES	5	2829	−0.02	−0.23	0.20	−0.14	0.888		
		MBI-GS	6	2283	0.02	−0.25	0.29	0.13	0.894		
		Other	7	3988	−0.20	−0.37	−0.03	−2.25	0.024		
	N	MBI	11	3003	−0.08	−0.26	0.09	−0.93	0.353	1.01	0.800
		MBI-ES	5	2829	0.00	−0.30	0.29	−0.03	0.976		
		MBI-GS	6	2283	0.03	−0.11	0.18	0.44	0.659		
		Other	7	3988	−0.03	−0.36	0.31	−0.15	0.880		
	E	MBI	11	3003	0.08	−0.17	0.32	0.63	0.525	3.78	0.287
		MBI-ES	5	2829	−0.03	−0.33	0.28	−0.18	0.853		
		MBI-GS	6	2283	−0.06	−0.26	0.15	−0.53	0.599		
		Other	7	3988	−0.23	−0.43	−0.02	−2.15	0.032		
	A	MBI	11	3003	0.03	−0.18	0.23	0.24	0.811	3.46	0.326
		MBI-ES	5	2829	0.05	−0.23	0.32	0.36	0.715		
		MBI-GS	6	2283	−0.09	−0.19	0.02	−1.64	0.102		
		Other	7	3988	−0.20	−0.38	−0.01	−2.08	0.037		

TABLE 9 | Meta-regression analysis of the moderating effects of publication age and male proportion on the relationship between each dimension of big five personality traits and each dimension of job burnout.

Burnout dimensions	The big five personality traits Dimensions	Modulator	*K*	Coefficient	*SE*	95% CI		*Z*	*P*
						LL	UL		
Emotional exhaustion	C	Year of publication	29	−0.01	0.01	−0.03	0.01	−1.35	0.176
	O		29	−0.02	0.01	−0.03	0.00	−2.19	0.028
	N		29	0.01	0.01	−0.01	0.04	0.95	0.344
	E		29	−0.01	0.01	−0.02	0.01	−0.98	0.326
	A		29	−0.01	0.01	−0.03	0.01	−1.32	0.187
De-personalization	C		29	−0.01	0.01	−0.03	0.00	−2.16	0.030
	O		29	−0.01	0.01	−0.02	0.00	−2.26	0.024
	N		29	0.01	0.01	−0.02	0.01	0.65	0.515
	E		29	0.00	0.01	−0.02	0.01	−0.40	0.690
	A		29	−0.02	0.01	−0.04	0.01	−1.49	0.135
Low personal achievement	C		29	−0.01	0.02	−0.05	0.03	−0.48	0.634
	O		29	0.00	0.02	−0.03	0.03	−0.28	0.780
	N		29	0.00	0.02	−0.03	0.03	−0.04	0.970
	E		29	0.00	0.02	−0.04	0.03	−0.14	0.890
	A		29	0.00	0.01	−0.03	0.03	0.04	0.965
Emotional exhaustion	C	Male ratio	26	−0.03	0.17	−0.37	0.31	−0.17	0.862
	O		26	0.13	0.16	−0.18	0.44	0.83	0.405
	N		26	−0.18	0.27	−0.71	0.35	−0.67	0.502
	E		26	0.16	0.16	−0.14	0.47	1.04	0.296
	A		26	−0.21	0.19	−0.59	0.17	−1.08	0.279
De-personalization	C		26	−0.08	0.13	−0.33	0.17	−0.61	0.542
	O		26	0.22	0.12	−0.02	0.45	1.79	0.073
	N		26	−0.11	0.24	−0.57	0.36	−0.45	0.652
	E		26	0.09	0.13	−0.17	0.35	0.69	0.488
	A		26	−0.26	0.20	−0.66	0.14	−1.27	0.203
Low personal achievement	C		26	0.14	0.39	−0.63	0.92	0.37	0.715
	O		26	0.02	0.30	−0.56	0.61	0.08	0.935
	N		26	−0.10	0.33	−0.75	0.54	−0.31	0.757
	E		26	−0.07	0.35	−0.76	0.62	−0.21	0.838
	A		26	−0.05	0.27	−0.59	0.48	−0.20	0.845

to test the impact of publication bias on the meta-analysis results of emotional exhaustion and extroversion, depersonalization and extroversion, and low personal achievement and job burnout. The results are shown in **Table 4**. It can be seen from **Table 4** that the effect values of emotional exhaustion and extroversion, depersonalization and extroversion, low personal achievement, and job burnout did not change before and after pruning. Therefore, there is no publication bias in this study.

Regulatory Effect Test

The heterogeneity of effect values indicates that there may be this regulatory variable in the process of the big five personality traits, affecting teachers' job burnout. Therefore, this study analyzes the regulatory effects of subjects' teaching segment, publication type, region, big five personality traits measurement tools, job burnout measurement tools, publication age, male proportion, and other factors on the relationship between big five personality traits and teachers' job burnout, as shown in **Tables 5–9**.

The results of the adjustment effect of the subject teaching section on the big five personality traits and teachers' job burnout (see **Table 5**) show that except for the adjustment effect of the subject teaching section on emotional exhaustion and neuroticism being significant ($p < 0.05$), the others are not significant. Among them, college teachers have a high positive correlation between emotional failure and neuroticism ($r > 0.4$), and primary and secondary school teachers have a medium positive correlation between emotional failure and neuroticism.

The regulatory effect of region on the relationship between big five personality traits and teachers' job burnout (see **Table 6**) shows that there are significant differences in the regulatory effect of region on emotional exhaustion and conscientiousness, neuroticism, and humanity ($p < 0.05$), while there were no significant differences in the regulatory effect of region on emotional exhaustion and openness and extroversion. Secondly, there were significant differences in the regulatory effects of regions on depersonalization and conscientiousness ($p < 0.05$), while there were no significant differences in the regulatory effects of regions on personalization and openness, neuroticism, extroversion, and humanity. Finally, there were significant differences in the regulatory effects of the region on low personal achievement, openness, and neuroticism ($p < 0.05$), while there were no significant differences in low personal achievement, conscientiousness, extroversion, and agreeableness.

The regulatory effects of big five personality traits measurement tools on the relationship between big five personality traits and teachers' job burnout are shown in **Table 7**. The regulatory effects of big five personality traits measurement tools on emotional exhaustion, openness, neuroticism, and humanity are not significant. There were significant differences in the regulatory effects of the big five personality traits measurement tools on emotional failure, conscientiousness, and extroversion ($p < 0.05$). Among them, emotional failure was significantly negatively correlated with conscientiousness and extroversion in different big five personality traits measurement tools. There is no significant difference in the regulatory effects of the big five personality traits on depersonalization, conscientiousness, neuroticism, and humanity. There were significant differences in the regulatory effects of big five personality traits measurement tools on depersonalization, openness, and extroversion ($p < 0.05$). Depersonalization and openness were positively correlated with the big five personality traits measurement tools of the Chinese version of big five personality traits short-form scale (CBF) type and negatively correlated with the other two types of measurement tools. Depersonalization and extroversion were negatively correlated in different big five personality traits measurement tools. There was no significant difference in the regulatory effects of big five personality traits measurement tools on the dimensions of low personal achievement and big five personality traits.

The results of the moderating effects of the measurement tools on the big five personality traits and teachers' job burnout are shown in **Table 8**. There is no significant difference in the moderating effects of the measurement tools on each dimension of the big five personality traits and each dimension of teachers' job burnout.

Meta-Regression Analysis

The publication age and male ratio are taken as independent variables to test whether the relationship between each dimension of big five personality traits and each dimension of teachers' job burnout is regulated by the publication age and gender (male ratio), and the correlation coefficient between each dimension of big five personality traits and each dimension of teachers' job burnout is taken as the dependent variable for meta-regression analysis. The results (see **Table 9**) show that there are significant differences in the regulatory effects of publication age on emotional exhaustion and openness ($p < 0.05$), and there are also significant differences in the regulatory effects of depersonalization, conscientiousness, and openness ($p < 0.05$). In addition, there is no significant difference in the regulatory effect of male proportion on the dimensions of big five personality traits and teachers' job burnout.

DISCUSSION

This study conducted a meta-analysis of 28 studies on the relationship between the big five personality traits and teachers' job burnout at home and abroad. The study found that the dimensions of emotional exhaustion and depersonalization were negatively correlated with conscientiousness, openness, extroversion, and agreeableness, and positively correlated with neuroticism. The dimension of low personal achievement was negatively correlated with the dimensions of the big five personality traits. In relevant studies, there are differences in the relationship between the dimensions of teachers' job burnout and the dimensions of the big five personality traits (Swider and Zimmerman, 2010; Wang et al., 2015; Miao et al., 2018), but the conclusions of this study support that the dimensions of responsibility, openness, extroversion, and agreeableness in the big five personality traits significantly negatively predict the dimensions of emotional exhaustion and depersonalization. Neuroticism positively predicted emotional exhaustion and depersonalization. Each dimension of the big five personality traits significantly negatively predicted low personal achievement. The results are similar to previous studies (Pishghadam and Sahebjam, 2012). This conclusion shows that teachers with high responsibility are more reliable, have a higher ability to resist pressure, and have higher professional ethics and achievement orientation. High achievement-oriented teachers also have high productivity and will achieve excellent work as the goal, so they will not easily leave their educational work (Zhang and Zhu, 2016). Therefore, teachers with conscientious personalities are responsible for their work till the end, and hence do not easily produce job burnout. Teachers with high openness often have a rich imagination, strong creativity, are curious about things, and devote more energy to their work (David and Quintão, 2012; Göncz et al., 2014; Mousavi, 2017). In addition, teachers with high openness will not easily produce depression and anxiety about the uncertain future but will look forward to future life and be able to perform well in the working environment. Therefore, teachers with high openness do not easily produce job burnout. Teachers with high extroversion can effectively deal with social events and are more likely to have the quality of "advocating morality," which means doing things first without considering returns (Zhang and Li, 2017). Some studies have also shown that because extroverted individuals have a stronger tendency of sociality or love, such individuals have more popularity and get along well with colleagues (Swietochowski, 2011). Therefore, teachers with high extroversion do not easily produce job burnout. Teachers with high agreeableness often have interpersonal characteristics, such as altruism, forgiveness, compassion, dislike of competition, and not prone to conflict (Cervone and Pervin, 2015), attach importance to the interests of others, and take care of the surrounding students and colleagues. Therefore, teachers with high humanity do not easily produce job burnout. Teachers with high neuroticism can experience more negative emotions, such as psychological pressure and tension, and have poor emotional coping and regulation ability. They also have too many requirements and impulses for themselves and the outside world, so it is not easy for them to study and work hard. At the same time, neurotic teachers have strong self-awareness and pay less attention to their colleagues, resulting in their inability to coexist with the people around them (Onuigbo et al., 2018). In addition, teachers with higher neuroticism set higher work goals for themselves. If they fail to achieve

these goals, they develop a sense of loss. In the long run, teachers undergo emotional exhaustion in their work and finally experience job burnout.

The overall conclusion of meta-analysis is not a negation of some unsupported specific studies in reality. Here, only the simple relationship between the two variables is considered, and the closeness of their relationship is likely to be adjusted or disturbed by other variables. Therefore, this study selects variables, such as teaching segment, region, big five personality traits measurement tool, teachers' job burnout measurement tool, publication age, and male proportion, for regulatory effect analysis.

This study finds that the subject teaching segment plays a regulatory role in the relationship between emotional failure and neuroticism, i.e., the relationship between emotional failure and neuroticism is affected by the subject teaching segment, and this relationship is established no matter which type of subject is taught. The relationship between emotional exhaustion and neurotic personality traits is affected by the types of subjects taught, and the positive correlation between them is the strongest among college teachers, followed by primary and secondary school teachers. The reason for this result may be that when compared with primary and secondary school teachers, most college teachers are employed, sign work contracts for a certain number of years, face a variety of choices after retirement, and have uncertainty about the future. At the same time, in addition to completing teaching tasks, most college teachers also need to complete scientific research tasks, and the workload is more than that of primary and secondary school teachers. Generally speaking, college teachers are under great pressure and face a certain risk of unemployment, which makes teachers with high neuroticism more prone to negative emotions, such as anxiety and tension. At the same time, the increase of self-awareness increases their sense of competition and even behavior with others. Over a long period, teachers' job satisfaction decreases, resulting in job burnout (Friedman, 2000).

The region is also a moderating variable that affects the relationship between big five personality traits and teacher burnout. First of all, the regulatory effect of region on emotional exhaustion, openness, and extroversion is not significant, which shows that openness, extroversion, and emotional exhaustion are negatively correlated without being affected by region, and the relationship between emotional exhaustion and conscientiousness, neuroticism, and agreeability is affected due to the impact of different regions. Second, the relationship between depersonalization and conscientiousness is affected by different regions, and the relationship between individualization and openness, neuroticism, extroversion, and pleasantness is not affected by different regions. Finally, the relationship between low personal achievement and openness, with its relationship with neuroticism, is affected by different regions, while the relationship between low personal achievement and sense of responsibility, extroversion and agreeableness are not affected by different regions. This result is similar to the research results of Saboori and Pishghadam (2016) on English teachers in Iran. Among them, the negative correlation between conscientiousness, agreeableness, and emotional exhaustion, the negative correlation between conscientiousness and depersonalization, and the positive correlation between neuroticism and emotional exhaustion were the strongest in North America, which could be due to cultural differences and social factors. In the study, the subjects in North America were American teachers, and the subjects in Asia were mostly Chinese teachers. From the perspective of cultural characteristics, the United States and some European countries attach great importance to individualism. The connotation of American individualism includes advocating personal value and personal dignity, advocating people's all-around development, and encouraging free competition. The goal pursued by the United States is democracy, equality, independence, and the self-centered development of the world. At the same time, American individuals treat people or things based on their interests, i.e., they will give priority to their own needs and happiness. When their self-consciousness is highly independent, they will put their feelings in the first place and will not care about the views of others. However, most of Asia values collectivism, respects the virtue of humility, is more introverted and low-key in personal achievement and performance, considers the interests of others, and values collective consciousness. Therefore, in the context of individualism culture, the impact of teachers' conscientiousness, neuroticism, and agreeableness on emotional exhaustion and conscientiousness on emotional exhaustion is higher than that of collectivist culture. In addition, from the perspective of social factors, the social status of teachers in the United States is high, and their salary ranks sixth among the thirteen industries in China, which belong to the upper-middle level, while the salary of teachers in China is still relatively low. Second, China is a country with a large population, and the employment situation is severe. Some teachers choose the "teacher" profession as a means of making a living or a career springboard. Relatively speaking, some European and American countries have large population mobility, people are willing to try new things, and their career choices are mostly interest-oriented. Some studies have found that most of the current teachers love this profession very much (Xin, 2015). Therefore, influenced by social factors, the influence of European and American countries on the relationship between openness, neuroticism, and low personal achievement is higher than that of Asian countries. The existing literature rarely discusses the impact of cultural differences on the relationship between big five personality traits and teachers' job burnout. Relevant cross-cultural studies mostly investigate the meta-analysis of teachers' emotional intelligence and teachers' job burnout and also find that there are cultural differences (Zheng and Guo, 2018).

The big five personality traits measurement tool has a moderating effect on the relationship between emotional exhaustion and conscientiousness and extroversion, and it also has a moderating effect on the relationship between depersonalization and openness and extroversion. Among them, emotional exhaustion is significantly negatively correlated with conscientiousness and extraversion in different big

five personality traits measurement tools. The relationship between conscientiousness, extraversion, and emotional exhaustion measured by other questionnaire measurement tools is relatively high, indicating that other questionnaires measurement tools have a greater impact on the relationship between conscientiousness, extroversion, and emotional exhaustion. Other questionnaires are mostly questionnaires that only appear once or the author compiles one himself according to the teaching section of the research object. It can be seen that researchers have used targeted measurement tools in different research objects and obtained better measurement results, which also reflects the diversity of the big five personality traits measurement tools from the side. Therefore, the measurement content, dimensions, and cultural applicability of different big five personality traits measurement tools are different, which affects the relationship between teacher burnout and big five personality traits. Future research needs to choose more appropriate measurement tools to explore the internal mechanism between Big Five personality and teachers' job burnout. The moderating effect of job burnout measurement tools on the relationship between the dimensions of big five personality traits and teachers' job burnout is not significant, indicating that the correlation between big five personality traits and job burnout is less affected by job burnout measurement tools. Firstly, as far as the job burnout measurement tools Maslach Burnout Inventory (MBI), MBI – Educator Survey (MBI-ES), MBI – General Survey (MBI-GS), and other scales are concerned, although there are differences in the number of questions in the four types of scales, the measurement covers the important components of job burnout, including the three dimensions of emotional exhaustion, depersonalization, and low personal achievement (Ge, 2008; Guo, 2015; Hu and Zhao, 2019), followed by MBI-ES and MBI-GS, the two measurement tools, were compiled and revised based on the MBI scale prepared by Maslach. Therefore, teachers' job burnout can be measured to a certain extent, and hence it has no significant impact on the relationship between big five personality traits and teachers' job burnout.

The publication age has a regulatory effect on the relationship between emotional exhaustion and openness, as well as on the relationship between depersonalization and conscientiousness and openness, and the publication age plays a negative regulatory role in the relationship between them. The significant moderating effect of the publication age shows that a growing number of researchers have begun to pay attention to the importance of each dimension of the big five personality traits to each dimension of teachers' job burnout, which indirectly shows that researchers are paying more attention to teachers' job burnout, and this in turn promotes the development of the research on the relationship between big five personality traits and teachers' job burnout. In addition, based on the results of previous studies (Meidani et al., 2019), it is once again verified that teachers should pay attention to reflective teaching with the progress of time, not from the negative perspective of the past, but from the positive perspective. Only in this way can teachers have lower job burnout. Finally, the proportion of men has no moderating effect on the relationship between the dimensions of big five personality traits and teachers' job burnout. This is similar to the conclusions of previous studies (Zhang et al., 2019). The concept of gender equality holds that his/her role in the field of family and work is determined according to the physiological differences between men and women (Brighouse and Olin Wright, 2008). The higher gender equality view holds that both men and women should actively participate in work and family affairs. The lower view of gender equality holds that work is more important for men while family is more important for women. It can be found that both men and women have their areas of responsibilities, i.e., their careers. They need to spend more time and energy on their careers. Once they get frustrated in this process, it will seriously affect their job satisfaction and lead to job burnout.

CONCLUSION

The results of this study have certain theoretical and practical significance. The conclusions of this study not only provide theoretical reference for the maintenance of teachers' mental health and the improvement of teaching quality but also provide practical guiding significance for teachers' on-the-job training. We can set up special personality education courses as part of on-the-job training, adhere to cognitive education and behavior training in the process of personality education, and help and guide teachers to cultivate stable emotion, conscientiousness, openness, extroversion, agreeableness, and pleasant personality traits.

This study uses meta-analysis to point out the relationship between the dimensions of the big five personality traits and the dimensions of teachers' job burnout. In the future, we can further explore whether the relationship between the dimensions of big five personality traits and the dimensions of teachers' job burnout is regulated by other variables. Secondly, this study mainly involves cross-sectional research and cannot make causal inferences. In the future, we should increase longitudinal research to determine the relationship between the dimensions of the big five personality traits and the dimensions of teachers' job burnout.

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/s.

AUTHOR CONTRIBUTIONS

ZL and YL conducted data collection, sorting, and analysis. ZL, YL, WZ, and YH participated in the planning and drafting of the manuscript. ZL took the lead in writing the manuscript with the close support of YL and DL. YH participated in the proofreading of the manuscript. All authors participated in the writing of the discussion part of the manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2022.822659/full#supplementary-material

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New Life Transition of Former Caregivers: Positive Mental Health Approach

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After the end of their time as a caregiver, former caregivers have needs and feelings that have been subject to little study to date. The aim of the study is to determine and analyse the feelings, perceptions and practices of former caregivers in the reconstruction of their daily lives. This is a qualitative study based on the Grounded Theory developed by Charmaz. The study involved 14 former caregivers who had cared for their relative for more than 2 years and who had stopped caring for them more than 2 years previously. Fourteen in-depth interviews were conducted and data were collected over 13 months between 2015 and 2017. Data were analysed using the Grounded Theory Method. In addition, this study was approved by the ethics committee of the Institut Universitari d'Investigació en Atenció Primària Jordi Gol. The former caregiver experiences a transition, which begins in the days before the death of their relative and may continue for more than 3 years. Three critical moments in the post-caring transition were found: (1) the post-caring emptiness; (2) the end of the period as a caregiver; and (3) the movement towards a new life. Family and professional support is needed during this transition. Former caregivers experience a transition in the rebuilding of their daily lives; furthermore, former caregivers may be a source of support for other caregivers, which is linked to positive mental health factors. Healthcare organisations need to acknowledge the emotional, psychosocial and psychological health of former caregivers.

Keywords: caregiver, positive mental health, end of life, family care, qualitative study

INTRODUCTION

The increase in the aging of the population and improvements in health care have led to an increase in the proportion of the population with chronic diseases and dependent people. In Europe, chronic diseases cause 86% of deaths and affect 40% of the population over the age of 15 (Busse et al., 2010). Also, 88% of the care for dependent individuals is provided *via* an informal system of care, from a close relative, with no specific training for the care they provide, no financial remuneration and requiring high levels of dedication, 24 h a day, 365 days a year (Martínez-Marcos and De la Cuesta-Benjumea, 2014).

A close relationship is established between the caregiver and the relative, which gradually becomes a total commitment in which the caregiver gives up their opportunities to engage "almost

exclusively" in caring for their relative. The caregiver gradually becomes immersed in the life and routines of the cared-for relative and a strong existential bond is established between the caregiver and the cared-for relative (Pereira and Rebelo Botelho, 2011).

Studies of family caregivers of chronically ill and/or dependent individuals have increased in recent years, particularly in the field of primary and/or home care. However, there is little evidence about the experience of former caregivers regarding the reconstruction of their daily lives.

This article attempts to answer the following research questions: What happens when a family caregiver stops providing care? What feelings, perceptions and needs do they experience? How do they (re)build their everyday life? This is the first study in our sociocultural milieu on the transition process among former caregivers.

Most publications study grief among former caregivers (Juozapavicius, 2001; Robinson-Whelen et al., 2001; Crespo et al., 2013) and describe two opposing models. Some authors, such as McGartland et al. (2001), advocate the model of relief after the death of the cared for relative and argue that after the person cared for has died, the caregiver is relieved of the burden of care and therefore their well-being improves. In contrast to this model, authors such as Ling et al. (2013) argue that post-caregivers show increased levels of depression 1 year after the death of their relative, due to the great existential void and emptiness that they experience.

Two of the qualitative studies describe the experiences and feelings of former family caregivers after the death of their relative. Larkin (2009) described three interrelated phases that former caregivers go through: (1) the post-caregiving emptiness phase, in which the former caregiver has to deal with changes in their life and particularly in their day-to-day routine, to cope with the pain or emptiness that the end of their time as a caregiver entails; (2) the phase of closure of the caring period, which involves the caregiver making a critical assessment of their caregiving experience and accepting it as a positive life experience; and (3) the phase of reconstructing life as a former caregiver, in which the former caregiver sees the light and tries to rebuild his or her daily life. These phases involve complicated and difficult transitions, which require the former caregiver to make an effective and continuous effort to adapt to everyday life.

Cronin et al. (2015) define three worlds: the pre-caring world, the caring world and the post-caring world. The study focuses on the feelings and needs of former caregivers in the transition from the caring world to the post-caregiving world. Three stages are identified from this transition, which coincide with those described by Larkin (2009). The loss of the world of caring is the first stage, in which the caregiver experiences many losses: the loss of identity as a caregiver, the loss of the person they care for and the loss of the social support network they had. The second phase, called living with loss, occurs when former caregivers report feelings of guilt due to the sensation of relief; in some cases, they are angry with their social and support network, as they feel abandoned. Many barriers to progressing towards the final stage emerge, such as financial problems and some caregivers will become trapped in the intrusive thoughts described in the Larkin (2009) model. Finally, the third phase (moving on) is when caregivers begin to move towards the new world. They begin to take care of themselves, become active, participate in community activities and get out of the home.

Recently, Corey and McCurry (2018) suggested that there may be long-term effects of caregiving on health that persist well beyond the first year post-caregiving. The study concludes that former caregivers would benefit from further research into the physical and psychological health of former caregivers after the first year post-caregiving. Moreover, Armstrong et al. (2019), who conducted telephone interviews with caregivers and family members of individuals who died with Dementia with Lewy Bodies, found a lack of communication between health care teams and families and discussed how it can affect the end of life process.

This transition has an impact on people's mental health. Lluch (1999) proposed a multifactor model of positive mental health (PMH), comprising six factors that together constitute the PMH construct, which are: personal satisfaction, prosocial attitude, self-control, autonomy, problem solving and self-actualisation and interpersonal relationship skills.

PMH is defined globally as "a dynamic and fluctuating state in which the person tries to feel and be as well as possible within the circumstances in which he finds himself" (Lluch, 2008).

AIM

To examine and describe the experience, feelings and strategies used by former caregivers on the process of reconstructing daily life after the grieving process.

MATERIALS AND METHODS

This study follows the constructivist grounded theory approach (Charmaz, 2006). Unlike the classical grounded theory method, this approach accounts for the context of the research itself and the position that the researchers have in it. It considers multiple social realities and recognises that knowledge is interpretative and constructed with the participants of the study. Data collection and analysis run simultaneously; data are explained through their interpretation and conceptualisation (Charmaz, 2009).

Sample and Procedure

Fourteen former caregivers who had been family carers for at least 2 years and who had ceased to be a caregiver at least 2 years previously volunteered to take part in the research and were fully informed of all aspects of the study. The inclusion criteria were: (1) having cared for a dependent relative for more than 2 years; (2) being at least 18 years old; (3) having given informed consent to participate in the study; and (4) having stopped being a caregiver at least 2 years previously. The final criterion was established to capture the experiences of the different stages which former caregivers go through without interfering with the grieving process. Most of the participants were wives and parents

with a high level of education. Their ages ranged from 40 to 87 and their relatives had been dead for between 3 and 20 years (see **Table 1**). The participants were contacted for the interviews with the help of the health professionals working in the health centres and in addition to the help of caregiver associations.

As the study developed, theoretical sampling took place to reach the saturation of categories (Strauss and Corbin, 1998). Thus, former caregivers with different family relationships, educational backgrounds and relatives they had cared for were searched and the interview guide was modified to saturate emerging categories.

Data Collection

A total of 14 semi-structured interviews (Kvale and Brinkmann, 2009) were conducted between May 2017 and June 2018. Interviews lasted between 50 and 90 min and were recorded and transcribed in full. Interviews began with exploratory questions that became more specific as the codes and categories were developed. A script was prepared based on the literature review and modified during the research process (see **Box 1**). Emphasis was placed on the family former caregivers' everyday life and their experiences and feelings between the death of their relative until the day of the interview. At the end of the interview, the researcher repeated the core question, giving the informant the opportunity to reflect upon and further expand their description. Data collection ended with the saturation of categories.

Data Analysis

The analysis was conducted as the data were collected. The analysis and coding process was as follows:

a) Collection of empirical data. The appropriate techniques for approaching the informants through our own sources of primary care nurses as well as various associations of patients and relatives were used in this first step in the application of the method. Transcription of the interviews began at the same time as the data collection process. Line-by-line analysis was performed using the constant comparison method.
b) Codification. This is the procedure by which the data collected were reordered, related and conceptualised by the researchers. During the process, the data began to be sorted, conferring the necessary methodological rigour on the scientific process, identifying nuances and developing the foundation, density, sensitivity and integration necessary to generate the theory.

According to grounded theory, data analysis is a dynamic and creative process (Glaser and Strauss, 1967; Dantas et al., 2009). At the end of the analysis, we obtain a deeper understanding of the issue of the transition of post-care and the reconstruction of the daily life of former caregivers.

The use of textual references and their conceptualisation, as well as the clear description given of the different stages of the research, contribute to the credibility of the results and their transferability. The data and results underwent a process of analysis to ensure the validity of the study. The authors used an audit trail. First, there were contributions by a multidisciplinary group of experts composed of nurses, psychologists and social workers for the various associations participating in the study. Second, we performed a requested validation, i.e., those involved had access to the lead researcher's interpretation based on the data generated and were able to corroborate the reading of the context and the interpretation. Furthermore, all of the researchers read and analysed the data independently.

Ethical Consideration

Ethical approval was obtained in June 2014 from the Healthcare Ethics Committee of the Jordi Gol Primary Healthcare Research University Institute in Barcelona (Spain). To preserve anonymity,

TABLE 1 | Characteristics of the informants.

Code	Gender	Age	Marital status	No. Children	Education	Employment status	Person cared for	Main pathology	Years as a caregiver	Years since care ended Caregiver
CG1	Female	74	Widow	3	Primary	Retired	Husband	Cancer	5	3
CG2	Female	76	Widow	2	Primary	Retired	Husband	Cancer	7	3
CG3	Female	83	Widow	4	Illiterate	Retired	Husband	Parkinson's	7	3
CG4	Female	55	Divorced	1	Secondary	Employed	Father/mother	Schizophrenia/ Alzheimer's	20	3
CG5	Male	71	Divorced	2	University	Retired	Mother	Alzheimer's	13	15
CG6	Male	87	Widower	2	University	Retired	Woman	Traffic accident	30	2
CG7	Male	40	Single	0	University	Employed	Mother	Alzheimer's	5	2
CG8	Female	62	Married	1	University	Employed	Daughter	Cerebral palsy	14	5
CG9	Female	76	Single	0	University	Retired	Mother	Alzheimer's	20	4
CG10	Female	64	Single	1	University	Employed	Mother/father	P. Mobility	2	9
CG11	Female	66	Widow	3	University	Retired	Husband	Cancer	7	5
CG12	Female	72	Widow	2	University	Retired	Husband	Cancer	3	2
CG13	Male	53	Married	1	Secondary	Unemployed	Son	Rare disease	11	2
CG14	Male	53	Married	1	University	Employed	Son	Encephalopathy	9	5

Compiled by the author.

BOX 1 | Guide for interview.

Caregiver period
- What did caring for your relative mean?
- Process of dying
- How did you experience the time when you stopped providing care?
- What were the main changes in your life when you stopped providing care?

Financial situation
- General situation
- Work Assess return to work
- Social condition

Health
- Health problems (physical/mental)
- How you felt after the caregiving period
- Did you feel that your health improved after you stopped providing care? How?
- Changes in health
- Use of services

Family and social life
- Did your relationship with your relatives change after you stopped providing care?
- Changes in daily routine
- How do you experience traditional events? (Christmas, birthdays, family events)
- Networks of caregivers
- Do you have any hobby or interest since caring for your relative?
- How do you spend your time?
- How do you think you would help people in the same situation as you?

Emotions
- Feelings experienced (Questions such as: How do you feel now? Different feelings during the process)
- What helped you during the transition?
- Beliefs
- Roles
- Helping other caregivers

pseudonyms are used in the text below. All of the names and places that appear in the text are fictitious. In addition, informed consent was obtained from the participants.

RESULTS

In the data analysis, it was identified that former caregivers experience a transition which begins in the days before the death of their relative and can continue for more than 3 years. Three critical moments in the transition from former carer were found: (1) the emptiness in post-caring; (2) the end of the period as a caregiver; and (3) the movement towards a new life (**Table 2**). An analysis of the content of each category is presented below.

The Emptiness in Post-caring

The concept of emptiness emerged spontaneously in all interviews. They described it as an indescribable existential phenomenon, with former caregivers mentioning a *lack of meaning in their life*, while others compared it to being submerged in a *black hole.* All informants highlighted the concept of loss.

> *"Somebody's death is an emptiness. A very large emptiness. I would call it an existential emptiness"* (CG8).

In the study population, the concept of emptiness consists of an instrumental factor, which refers to the lack of the aspects related to care tasks and routines, as well as physical space and an emotional factor determined by the end of the bond between the caregiver and their relative. The former caregiver must break the strong connection that has been established with the dependent person and start their new life, beginning once again to establish goals, routines and ambitions that they have neglected for a long period of time. The first feeling they reported related to emptiness was loneliness:

> *"I always feel lonely, but I think that people are born and live alone, you have to adapt to a variety of circumstances, but we always live alone"* (CG6).

Loneliness increases and prolongs in time the feeling of emptiness as a result former caregivers need the company of their family.

During this transitional phase, the post-caregiver must find a new purpose in their life, achieve new goals and giving meaning to new routines and activities that will allow them to restore their spirits and fill the void on a physical, social and emotional level.

There is also a loss of control over time management, since their life during the caregiving period was structured around the care of the relative, i.e., their time was determined by various tasks related to hygiene, food, support and basic care for the relative; subsequently their time organisation has been completely broken down:

> "*You find an enormous emptiness, you've been caring for someone for 24 h a day for 5 years and you suddenly find that you no longer have that responsibility, so you're on your own with your life and with all the time in the world to decide what to do with it*" (CG7).

Although the grieving process is part of the emptiness in post-caring, this feeling of emptiness lasts for some time, while grief is overcome within approximately a year and a half (Tizón, 2013). In addition to the process of mourning the loss of the family member, the emptiness in the task of post-caring is identified as broad-based throughout the transition process and has a positive or inhibiting effect.

Post-caring emptiness sets different factors of PMH in motion. First, the self-concept is affected, which is included in the personal satisfaction factor. The void generates a loss of meaning in life since there is a step towards a new life and the person must break with the life as a caregiver. In this way, self-control mechanisms are activated and the post-caregiver has to cope with stressful situations.

End of the Period as a Caregiver

This category includes the activities or processes for closure that emerged from the discourse of the former caregivers. The first time that most of them became aware of the end of their time as a caregiver was on the day of the funeral. The former caregivers retained an emotional memory of the ceremony and experience it as a tribute to their relative and their work.

> "*Thousands of messages on Facebook, acquaintances and greetings. and I don't remember ever having embraced so many people or*

TABLE 2 | Relationship established between categories and PMH factors (Lluch, 1999).

Category	Concepts	PMH factor	Verbatim
Emptiness of post-caring	Emotional emptiness Instrumental emptiness	F1: Personal satisfaction F3: Self control	*F1: "Thousands of messages on Facebook, acquaintances and greetings., and I don't remember ever having embraced so many people or having so many people embrace me as on the day of his funeral. And I think we feel this energy" (CG14)* *F3: "I always feel lonely, but I think that people are born and live alone, you have to adapt to a variety of circumstances, but we always live alone" (CG6).*
End of the period as a caregiver	Routines of closure. Post-caregivers' health. Support received during closure.	F2: Prosocial attitude F3: Self-control	*F2: "Sometimes I went to see Pedro because I felt sorry for him and he was pleased to see me but the poor man was in a very bad way"*
Movement towardss the new life	Recovery of activities Joining the labour market. Feeling good about oneself.	F5: Problem-Solving and Self-Actualisation F4: Autonomy F6: Interpersonal Relationship Skills	*F4: "The second year was fine. Besides, I've always travelled a lot and I carried on travelling." (CG11)*

Complied by the author.

having so many people embrace me as on the day of his funeral. I think we feel this energy" (CG14).

The closure stage contains routines and tasks directly related to the death, such as administrative, financial and legal formalities, as well as getting rid of the belongings of the deceased person that are no longer needed. Although this ritual is part of the routines for closure when anyone dies, in the case of caring for the dependent population, this stage is increased by the volume of technical aids and medical equipment used during the caring. All of these materials are redistributed to individuals and institutions that need them, although post-caregivers have very strong memories of the difficulties involved in obtaining them in the past as well as their high financial cost. All of the interviewees agree that this emptiness appears within 3 months.

"We *gave all the technical aids to hospital*" (GC5).

There is a wide variety of administrative and governmental institutions, with all of the participants mentioning difficulties in carrying out administrative procedures after their relative's death, the slowness and complexity of the administrative procedures, which led to strong feelings of powerlessness and anger, as well as sadness and anxiety about the death of their relative which enhanced their unhappiness. These results highlight the need to improve policies to be able to make post-mortem formalities more flexible.

Another phenomenon that emerged was "*staying connected during the closure*"; i.e., in this stage of closure, former caregivers sought something to keep them connected in some way with their past life as a caregiver to fill the emptiness and remember their work. As Ángeles explains, her husband was admitted to hospital; when he died, she went to visit him and took care of his roommate:

"*Sometimes I went to see Pedro because I felt sorry for him and he was pleased to see me but the poor man was in a very bad way* [.] *he was my husband's roommate and I was very sorry for him, a young boy and with that life and it was no skin off my nose and he was glad to see me and that way I saw people at the hospital*" (CG3).

Nine of the fourteen participants repeated similar behaviour. While it did not take place in the hospital, they sought neighbours or relatives to help and offer their support to as expert caregivers in order to keep a link to caring.

It is this phase the pro-social attitude is activated. Former caregivers take on the role of helping other caregivers, becoming a source of support and increasing personal satisfaction. Due to the changes experienced in this phase, defined by some authors as a crash, health problems may appear, including depressive syndromes like those described by Hash (2006) and Kim (2009). Four caregivers in our sample implicitly said that they suffered from stress and depression. Depression in former caregivers consists of biopsychosocial changes related to age and loss (Montesó et al., 2012):

"*I started to have a lot of somatic symptoms, in terms of illness, stress levels, gallstones and not eating; I even got depression*" (CG10).

Regarding the support perceived by the informants in our socio-cultural context, all of them reported having good support from family and friends, which is in contrast to the results of Larkin (2009) and Cronin et al. (2015). However, a lack of professional support was apparent, meaning that no specific support from health professionals is perceived.

One of the most problematic issues in the transition for former caregivers was comments made by acquaintances about the well-deserved rest due to their time as a caregiver having ended.

"An obsession that people have, who say 'well, at least now you'll be more relaxed, you won't have so much work.' And you thought: 'Don't tell me that.'" (CG14).

The participants reported a complete misconstruction of reality, or completely opposite points of view. On the one hand, there are people who have never been caregivers or whose experience is far away from the daily life of caregivers, who often see the world of caring for a disabled person throughout

their entire life as a difficult process with a high emotional cost. On the other, there are former caregivers who are immersed in the process of breaking up and reconstructing their lives, where their life's purpose (to take care of their dependent child) has come to an end. Consequently, what society considers as a relief is experienced by former caregivers as a misfortune; this contradictory perspective may lead to moral confrontations that affect their relationships with other people. These discrepancies require flexibility to adapt to change. An attitude of continuous growth and personal development is important; problem solving and self-realisation are observed in this phase.

The Movement Towards a New Life

This concept refers to how former caregivers begin to mobilise their energies to rebuild a new life. The strategies that helped participants in the transitions include activities related to self-care, staying active, starting to become involved in social activities and becoming aware of changing situations. These results have similarities with those of Cronin et al. (2015). The phases of the transition are non-linear, so each person experiences their own process and begins this movement at their own pace. The discourse includes indications that refer to the tempo each person needs to resume activities, travel and recover friendships, among other activities. It is a complex transition, in which former caregivers begin to move towards the reconstruction of their new daily lives. The informants defined their transition in terms of time and movement as follows:

> "*The second year was fine. Besides, I've always travelled a lot and I carried on travelling*" (CG11).

An interesting fact is that more than a third of the participants mentioned a third year, in which there is a sense of improvement and when they start rebuilding their lives.

Some of the difficulties that former caregivers experience during this phase are changes in their friendships, as their social relations change during the caregiver period; once the period is over, they have to re-establish new ones. However, these will not be as close as in their period as a caregiver in most cases, as they shared very intimate aspects of care related to hygiene, elimination, feeding, difficulties in communicating etc., during the caring period with other family members and professionals.

During this period, the former caregiver also feels that they are going through a phase in which they have to redefine their personal projects, family relationships and relationships with the employment world. These issues are particularly important when the person has neglected their personal projects for many years in order to take care of their relative.

Former caregivers must leave behind the life of the family member they cared for and take charge of their own. People increasingly find ways to spend their time redefining their roles and social relationships, so the windows from the caregiver period close and a daily life defined by new routines and new relationships with others is (re)constructed.

Former caregivers have to break the link they had created with their relative and deal with the discrepancies that arise in the task of post-care, must go to work to occupy their time and must find a new purpose in life.

The last phase is where a new world is built, where former caregivers must understand their new life. At this stage, they must develop all PMH factors to facilitate their mental well-being.

DISCUSSION

Most of the studies included in the research literature provide substantial evidence of the effects of the death of the relative, but very few describe the needs, feelings and perceptions experienced by the family caregiver in the reconstruction of their life as a family former caregiver.

This study has described the transition from post-caring and the reconstruction of the everyday life of former caregivers in our sociocultural environment. The study was conducted in Spain with middle-aged participants who had cared for their relatives. The findings might be different in another culture and context. However, there are similarities with recent qualitative studies performed by Larkin (2009); Cronin et al. (2015) and Corey and McCurry (2018) in the English-speaking environment. Some of the commonalities between these studies and this paper relate to the transition phases.

One of the aspects in our findings that is consistent with previous authors (Larkin, 2009; Cronin et al., 2015) refers to the loss of the caregiver role, consisting of factors such as the end of tasks from caring and a loss of recognition and power within the family as a caregiver. Most participants define this as a loss of purpose in life. In Spain, the caregiver assumes full responsibility for caring and a strong bond is established between the caregiver and the family member cared for, where the caregiver experiences depersonalisation because they neglect their own life in order to devote themselves to caring for their relative (Pereira and Rebelo Botelho, 2011).

All of the studies agree on three main phases characterised by a psychological and instrumental emptiness, a phase of closure in the caregiver's activities and life and a phase of moving towards a new life defined by the reconstruction of everyday life. There is a big difference in the time frame of the transition. Our findings regarding the timing are in contrast with those of Larkin (2006), who stated that the transition lasted for approximately 1 year; in the sample of this study, the transition lasted for over 3 years, perhaps because of the time spent caring for the relative and the strength of the relationship established. During these years, the former caregiver must overcome grief, find closure for their time as a caregiver and search for a new purpose in life.

One of the differences between this work and the study of Cronin et al. (2015) is the characteristics of the sample; the previous authors considered former caregivers to be people who stopped providing care when their relative was admitted to a nursing home. In our cultural context, this profile of former caregivers has not been included because families still have a strong presence in hospitals, as reported by previous studies (Mora-Lopez et al., 2016); we believe it is interesting to analyse this phenomenon to identify similarities and differences.

Another item of interest is the need to implement a training programme for healthcare professionals and design a specific

programme for attention to former caregivers, as well as to evaluate its effectiveness.

Another point of interest is the need to implement a training programme for healthcare professionals and design a specific care programme for former carers, as well as evaluating its effectiveness.

At the end of the family caregiving period, family former caregivers experience a multifaceted transition in which they have to redefine their identity and rebuild their daily lives. This transition starts before the relative's death and continues beyond the grieving process. During this process, former caregivers express multiple experiences and feelings that are crucial to the reconstruction of their new identity as former caregivers. The fact that caregivers have ongoing emotional needs post-care indicates that this stage should be considered as part of the caregiver's life (Orzeck and Silverman, 2008).

The emptiness of the post-caring task takes shape in the transition from post-caring and involves multiple factors: an instrumental process related to the (re)organisation of time and the loss of meaningful tasks, routines and activities and the emptiness in the physical space. In addition, there is an emotional process related to the various losses: the death of the relative, the loss of their role and power in the family and all that forms an existential emptiness.

According to Corey and McCurry (2018) and Armstrong et al. (2019), there is an evident lack of medical and social support in the transition from family post-caring. Medical support should be led by nurses, as they are the closest figure to families and they are the ones who have established a strong bond during the caregiving period. This implies a multidisciplinary effort to get to know the person: assessing each process of transition to create an individual profile of the client's readiness and thus empowering the individual to create the optimum conditions for the transition (Meleis et al., 2000). Finally, we believe that work on the family post-caregiver should continue, as well as research to create further evidence that can guide care for families and post-caregivers.

According to other authors, the post-caregiving period should be viewed as an integral part of the caregiving career, with recognition that former carers continue to have practical and psychological needs once caregiving comes to an end (Cavaye and Watts, 2016).

Transition from caregiver to post-caregiver presumes an instrumental and emotional transition in people's lives. The Positive Mental Health model (Lluch-Canut et al., 2013; Lluch, 2015) can be used to understand some emotional changes as well as to establish a therapeutic plan aimed at promoting positive mental health in former caregivers (**Table 2**).

LIMITATIONS

It is plausible that the transition of former caregivers may be different in other sociocultural situations. Another limitation is that the caregiver period ending when the relative enters a nursing home has not been taken into consideration, as caregivers have a very active presence in hospitals and nursing homes in Spain, unlike in other countries.

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 below: https://www.tesisenred.net/handle/10803/399228.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by IDIAP JORDI GOL. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

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

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CONCEPTUAL ANALYSIS
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Positive Mental Health Literacy: A Concept Analysis

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Background: The positive component of Mental Health Literacy (PMeHL) refers to a person's awareness of how to achieve and maintain good mental health. Although explored recently, the term still lacks a clear definition among healthcare practitioners.

Aim: To identify the attributes and characteristics of PMeHL, as well as its theoretical and practical applications.

Methods: Literature search (using the Medline and CINAHL databases) and review, covering the last 21 years, followed by concept analysis according to the steps described by Walker and Avant approach.

Results: Positive component of Mental Health Literacy is considered one component of MHL, integrating positive mental health. The concept's attributes include: (a) competence in problem-solving and self-actualization; (b) personal satisfaction; (c) autonomy; (d) relatedness and interpersonal relationship skills; (e) self-control; and (f) prosocial attitude. Four case scenarios (model, borderline, related and contrary cases) were used to clarify the antecedents (individual factors and social/contextual factors) and consequences (individual sphere; relational/social sphere; contextual/organizational sphere) of PMeHL.

Conclusion: Positive component of Mental Health Literacy is considered a component of MHL, which deserves attention throughout the lifespan, in different contexts and intervention levels. Considering PMeHL as a multi-faceted and dynamic construct will help understand the mechanisms that improve mental health and promote healthy behaviors. Priority should be given to robust primary research focused on nursing interventions that enhance and sustain PMeHL in people and families.

Keywords: mental health literacy, mental processes, positive mental health, concept analysis, health literacy, personal autonomy

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INTRODUCTION

Mental Health Literacy (MHL) is an evolving concept, originally conceptualized by Jorm et al. (1997) (Wei et al., 2015; Bjørnsen et al., 2017) and today recognized as a determinant of a population's mental health (Jorm, 2012; Wei et al., 2013; Kutcher et al., 2016a; Bröder et al., 2017). MHL should not be limited to mental health professionals or people with mental health illnesses (Sweileh, 2021). Rather, MHL at the societal and community level is of great importance, as a means of promoting mental health and healthcare and achieving the economic, environmental, and social ambitions of the 2030 Agenda for Sustainable Development Goals (World Health Organization [WHO], 2019). Integrating MHL interventions into strategies of health promotion, disease prevention, and acute and chronic disease management will be essential to engage individuals in a person-centerd model that configures individual and holistic approaches (Pelletier and Stichler, 2014; Jorm, 2019).

While originally developed for adults, the concept of MHL has since been extended to adolescents (Morgado et al., 2021a), as the first onset of many mental disorders usually occurs in childhood or adolescence (Jorm, 2019). MHL has been recognized as an important factor in promoting the youth's mental health, potentially benefiting both individual and public mental health (Kutcher et al., 2015; Wei et al., 2015; Marinucci et al., 2022). MHL can be further strengthened through educational initiatives (Kutcher et al., 2016a). A recent systematic review found a positive effect of school-based educational interventions on improving mental health literacy (MHL) in adolescents (Olyani et al., 2021). The evidence has also underlined the need to promote MHL throughout the life span and in different contexts (Morgado et al., 2021b), because it increases the quality of life of people (Jafari et al., 2021).

Mental health literacy consists of components related to the knowledge and abilities necessary to benefit mental health (Jorm, 2012; Kutcher et al., 2016b). Based on MHL research, Kutcher et al. (2016b, p.567) defined distinct but related components, the foremost being: "Understanding how to obtain and maintain good mental health." This central element for health promotion—referred to as Positive Mental Health Literacy (PMeHL) (Bjørnsen et al., 2017)—is complemented by the following three components of MHL: the recognition of mental disorders; help-seeking efficacy; and help-seeking strategies (e.g., Jorm, 2012; Kutcher et al., 2013, 2015; Wei et al., 2013; Bjørnsen et al., 2018). Bjørnsen et al. (2017) emphasized that this conceptualization goes beyond previous notions of MHL as mere knowledge of mental disorders and proposed the concept of PMeHL.

Practice and research have mostly focused on mental ill-health; however, growing evidence demonstrates that supporting positive mental health has long-term benefits (PMH) (Bjørnsen et al., 2018; Teixeira et al., 2019). Note that PMeHL does not exist in a vacuum, but rather interacts with other factors such as personality traits, literacy skills, availability of information, and personal motivation.

Therefore, fully understanding and defining the concept of PMeHL is necessary. Although there has been increased research on the concept of MHL, few concept analyses, if any, have specifically addressed PMeHL (Bjørnsen et al., 2017). To fill this gap, we aim to describe the current definition of PMeHL based on the more recent literature incorporating well-grounded practices and potential measurement tools. We also propose an illustration of the concept analysis.

MATERIALS AND METHODS

This concept analysis was based on the framework proposed by Walker and Avant (2019). The method involves eight steps: (1) selecting the concept; (2) identifying the aim of the analysis; (3) identifying how the concept is used; (4) determining the concept's defining attributes; (5) identifying model cases, where all attributes are exhibited; (6) identifying borderline, related and contrary cases, respectively, where most, part or no attributes are exhibited; (7) identifying determining antecedents and consequences; and (8) defining empirical referents.

Database Search

A comprehensive literature search from 2000 to the present was conducted using two databases (Medline and CINAHL). The following search terms [MeSH] were used in combination: (Mental health literacy OR mental health*) AND (Positive mental health*) AND (Nursing OR Positive, Psychology) NOT (Child*). The studies published over the last 21 years reflect the changing perspectives and uses of the term.

The inclusion criteria for articles included in the analysis were: (1) a definition of PMeHL, a concept analysis, or a list of defining attributes; (2) instruments or methods to measure PMeHL; and (3) strategies to enhance PMeHL. We also included (4) position statements and definition papers addressing PMeHL. Only articles published in Portuguese and English were included.

Data Source

Figure 1 shows an overview of the article selection process. Of the 68 articles retrieved, 19 duplicates were excluded, and 30 titles/abstracts were deemed irrelevant, leaving 19 for full-text screening. Full-text screening excluded another four articles. Three additional articles were found with Google search engine, resulting in 18 included studies.

RESULTS

The 18 articles found during our search were critically analyzed to help identify PMeHL's key attributes and develop case scenarios.

Definitions and Uses of Concept

During the initial stage of concept analysis, Walker and Avant (2019) emphasize the need to identify the concept's definitions and multiple uses.

Positive component of Mental Health Literacy is one component of MHL and refers to the knowledge and ability to obtain and sustain good mental health (Bjørnsen et al., 2017, 2018, 2019). This is in line with the previous broader concept

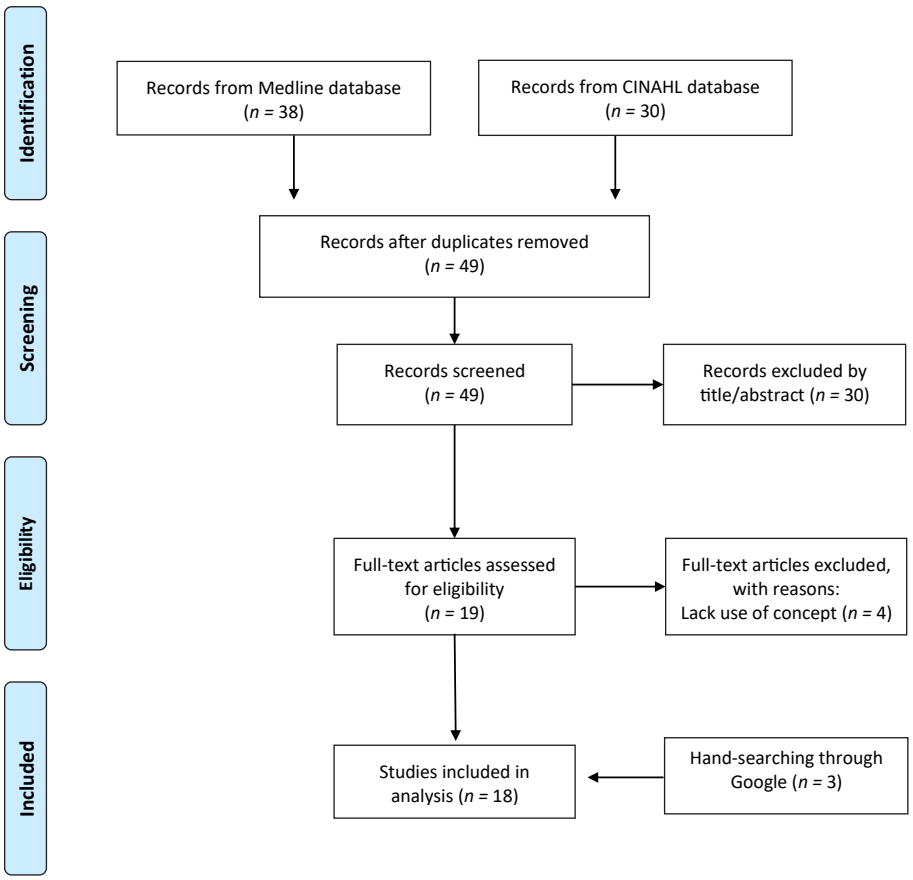

FIGURE 1 | PRISMA flow diagram.

of MHL, as defined by Kutcher et al. (2016b), which contains two aspects: knowledge about mental health, implying access to information and understanding that information; and the abilities to obtain and maintain good health, namely the skills needed to promote mental health and well-being and reduce the impact of mental illness in a Mental Health Continuum (Bjørnsen et al., 2018; Teixeira et al., 2019; Santini et al., 2020).

Positive component of Mental Health Literacy can include three dimensions of Positive Mental Health: (a) emotional (hedonic), covering the presence of positive affect and satisfaction with life; (b) social (eudaimonic), including both social functioning and connection to broader society; and (c) psychological (eudaimonic), covering intrapersonal and interpersonal functioning (Santini et al., 2020). Therefore, PMeHL can be understood as a process covering the search for knowledge and skills to obtain hedonic well-being (based on positive emotional states like happiness) and eudaimonic well-being (focuses on positive individual and social experiences and functioning) (Santini et al., 2020).

When making informed, effective decisions, PMeHL demands a strategy that appropriately conceptualizes the complex, dynamic nature of mental health literacy and includes the positive side of mental health for all participants.

Defining Attributes

From the perspective of Walker and Avant (2019), defining attributes are critical characteristics that help differentiate related concepts and clarify their meaning. These characteristics are always included in a concept's description. The key attributes of PMeHL are linked to fulfilling basic psychological needs (Deci and Vansteenkiste, 2004 cited in Bjørnsen et al., 2017), namely three inherent psychological demands for competence, relatedness, and autonomy. These are vital ingredients for proactivity, optimal development, and psychological health (Deci and Vansteenkiste, 2004 cited in Bjørnsen et al., 2017).

The multifactorial model of Positive Mental Health—based on a holistic perspective of health, wherein physical and mental health are intimately related—is also one of PMeHL's critical characteristics (Lluch-Canut et al., 2013; Puig Llobet et al., 2020). Lluch's conceptual model of PMH includes six factors, which are also used to define PMeHL attributes: personal satisfaction, prosocial attitude, self-control, autonomy, problem-solving, self-actualization, and interpersonal relation skills (Teixeira et al., 2022).

Furthermore, connection to mind and emotions encompasses the entire spectrum of basic cognitive, emotional, and psychological human experience, including the seven rights

for mental health: a sense of belonging, control or mastery, self-esteem, meaning-making, values, motivation, and the need for secure relationships (Bjørnsen et al., 2018).

Therefore, the defining attributes of PMeHL are synthesized as follows:

(a) Competence in problem-solving and self-actualization—refers to a sense of mastery and efficacy in controlling one's surroundings (e.g., handling stressful situations in a good manner, believing in oneself, having good sleep routines, mastering negative thoughts and experiencing school mastery) (Lluch-Canut et al., 2013; Bjørnsen et al., 2017; Santini et al., 2020); includes analytical capacity, decision-making ability, and flexibility to adapt to changes, demonstrating an attitude of continuous growth and personal development (Lluch-Canut et al., 2013; Bjørnsen et al., 2017; Santini et al., 2020).

(b) Personal Satisfaction—alludes to self-concept, self-esteem and self-acceptance, the ability to be satisfied with one's personal life, and having an optimistic outlook on the future (Lluch-Canut et al., 2013; Santini et al., 2020). This attribute also includes interest and motivation that leads to emotional and psychological well-being (Bjørnsen et al., 2018; Santini et al., 2020) and feelings of happiness and life satisfaction (Santini et al., 2020).

(c) Autonomy—relates to personal security and self-confidence, as well as independence, a sense of personal choice or acting toward one's own goals and according to one's ideals, and self-regulation of one's behavior (e.g., influencing daily living activities, acting out one's wishes, making decisions based on one's will, setting limits for one's actions and setting limits for what is good for oneself) (Lluch-Canut et al., 2013; Bjørnsen et al., 2017).

(d) Relatedness and interpersonal relationship skills—includes the capacity to form interpersonal relationships, as well as empathy, which is defined as the ability to comprehend another's feelings (Lluch-Canut et al., 2013). It covers the need to engage with, connect with, and care for others (e.g., having at least one good friend, being a good friend, feeling secure at home, feeling like a member of a community, and feeling worthwhile regardless of one's own successes).

(e) Self-control—the capacity to manage stress/conflict, *via* emotional balance/control, and tolerate frustration, anxiety, and stress (Lluch-Canut et al., 2013).

(f) Prosocial attitude—an active predisposition toward society, including altruism and helping/supporting others, as well as acceptance of others and different social characteristics (Lluch-Canut et al., 2013). This predisposition is evidenced in terms of social functioning, such as contributing to the community, functioning well in the respective community and broader society, searching for social acceptance, actualization, and integration (Santini et al., 2020).

Antecedents

Antecedents are the events or attributes that must exist prior to the occurrence of a concept (Walker and Avant, 2019). The 2000s brought enormous advances in "people's knowledge, motivation, and competencies to access, understand, appraise, and apply information to make judgments and take decisions in everyday life concerning healthcare, disease prevention, and health promotion, and thus maintain and improve quality of life throughout the life course" (Sørensen et al., 2012, p. 3). From a salutogenic and socioecological perspective, the intervention of health care professionals takes place in different contexts and on a continuum, with special emphasis on health promotion and prevention.

The growing interest in searching for credible mental health information and being an active part in health decision-making has highlighted the person-centerd care model (Pelletier and Stichler, 2014). Many factors affect individual PMeHL, such as (a) individual factors (e.g., sex, race and ethnicity, educational level, mental health literacy, cognitive and emotional skills, feelings of vulnerability and resilience, physical and mental condition, self-determination and help-seeking behavior) and (b) social/contextual factors (e.g., cultural background, social and interpersonal skills, environmental events, exposure to health information and social resources in community) (Bjørnsen et al., 2017, 2018, 2019; Santini et al., 2020).

Consequences

Consequences are occurrences or incidents that might happen because a concept is present and that frequently leads to new ideas or study areas for that concept (Walker and Avant, 2019). In this sense, consequences of PMeHL can be grouped into three spheres:

(a) Individual sphere

- Potential to promote, protect and restore mental health (Bjørnsen et al., 2017, 2018, 2019).
- Prevention of the development of mental disorders, with positive relevance to physical health (Iasiello et al., 2019; Mansfield et al., 2020; Puig Llobet et al., 2020).
- Maximization of hedonic and eudaimonic well-being (Santini et al., 2020).
- Improved satisfaction with life (Santini et al., 2020), connection, optimism and well-being (Jay et al., 2021).
- Increased autonomy in problem-solving ability and improved productivity, self-esteem, learning outcomes, resilience and motivation (Lluch-Canut et al., 2013; Sokołowska et al., 2018; Iasiello et al., 2019; Mansfield et al., 2020).
- Management of mental disorders and their treatments (Kutcher et al., 2016a; Sweileh, 2021).
- Increased help-seeking efficacy (Kutcher et al., 2016b).
- Improved health decisions to promote well-being (Bjørnsen et al., 2017).

(b) Relational/Social sphere

- Promotion of interaction, social well-being, and social functioning and satisfaction (Sokołowska et al., 2018; Iasiello et al., 2019; Mansfield et al., 2020) at the family, community or societal level (social contribution, social

integration, social update, social acceptance, and social coherence) (Santini et al., 2020).
- Promotion of good mental health and personal wellness among nurses, leading to more human connections, positive feelings, work satisfaction, and better care provision (Jay et al., 2021).
- Promotion of the positive component of MHL among non-professional caregivers through mhealth intervention (Ferré-Grau et al., 2021).

(c) Contextual/organizational sphere

- Development of mental health promotion programs (Garmy et al., 2014; Bjørnsen et al., 2018; Teixeira et al., 2020) involving a mixture of professions [school social workers, teachers, psychologists, and other healthcare professionals] (Garmy et al., 2014; Diaz and Caboral-Stevens, 2021) and aligned with all development phases (Bjørnsen et al., 2018, 2019; Teixeira et al., 2019; Santini et al., 2020).
- Decreased stigma associated with mental illness (Kutcher et al., 2016a; Sweileh, 2021).
- Development of "organizational empathy" (Jay et al., 2021) as part of the nursing curricula. This competence facilitates the student's transition to real workplace environments.

Diagram Model of PMeHL

Figure 2 illustrates the link between antecedents, attributes, and positive consequences in a comprehensive model of PMeHL.

Case Scenarios

Cases help articulate the concept's meaning. The model case displays all of the concept's defining attributes, whereas the borderline case demonstrates most but not all of them, and the related case demonstrates only half of them. Lastly, the contrary case shows what the concept is not (Walker and Avant, 2019).

Model Case

According to Walker and Avant (2019), a model case is a circumstance in which all of the concept's defining characteristics are present. In order to improve comprehension of PMeHL, we created a scenario to describe it with all of its identifying characteristics.

John is a 15-year-old son of divorced parents, has no siblings, and lives with his mother, with whom he has a good relationship. He feels safe at home. He has already flunked twice and is currently attending the 7th grade. He doesn't identify much with his classmates because they are younger, although he demonstrates a willingness to participate in class activities and support his colleagues when they ask. He has a special friend with whom he shares his daily difficulties. To be with friends of the same age, who are already in high school, he spends some time at the skate park, which gives him personal satisfaction. His mother gets home quite late, for she has two jobs to balance the family finances. John reveals a good study-life balance and is able to set limits to his own actions. His remaining free time is spent on social media and the internet, which ends up being a source of information when he wants to learn more about Mental Health, problem-solving strategies and self-esteem promotion, and ways to deal with stress and anger. One of his favorite sites is https://mentalhealthliteracy.org/. He is accompanied by the Advanced Practice Psychiatric Nurse (PMH-APRN) from the school's health service, whom he often turns to on his own initiative. Due to these regular encounters, he feels more relaxed, confident and valued after talking. In addition, these meetings help him deal with adversities and daily problems. Sometimes he analyses and discusses the information obtained from these sources with his colleagues and teachers. He considers himself a resilient person, but sometimes he feels pressured by the stereotypes and negative social visions around him. In this model case, John has adequate PMeHL to make his own decisions, as demonstrated by his accurate understanding of how to obtain and maintain good mental health.

Borderline Case

According to Walker and Avant (2019), a borderline case contains most of the defining attributes but not all of them. John is now 17 years old. After attending high school, he began to distance himself from friends, spending most of his time playing computer games, which gives him great satisfaction. For this reason, sleepless nights are increasingly common. His classmates begin to notice some anger and irritability in John's behavior, revealing a lack of self-control. His school performance and results have deteriorated. In conversations with the PMH-APRN, he recognizes and expresses some depressive symptoms and loneliness. He accepts the idea of a specialized medical consultation, which his mother supports. John is ambivalent about taking sleep medication, as he fears becoming addicted. After sharing his concerns and receiving information, John decides to start his medication regimen. Whenever he has doubts or attributes an effect to the medication, he looks for information on the internet and asks the nurse for help. John receives support and understanding from his friends and feels comfortable sharing what is happening to him. This is an example of a borderline case, because John demonstrates all PMeHL attributes except one (e.g., self-control), but still demonstrates moderate PMeHL and makes some inappropriate health decisions.

Related Case

Related cases are instances in which the concept has some relation to the concept of focus, but does not contain every defining attribute (Walker and Avant, 2019). Upon entering higher education, John moves to another city, leaving his closest friends behind. As part of his new academic routines, he goes out at night and parties with new colleagues, which provides him personal satisfaction. These new routines interfere once again with his sleep pattern. He begins to have difficulty accomplishing the therapeutic regimen and sometimes voluntarily suppresses some doses. John becomes more anxious and testier with colleagues, which affects school performance and generates conflicts with classmates and housemates. He seeks help from the PMH-APRN, but does not feel the same empathy and understanding as in high school, and consultations become less frequent. John begins to question his symptoms and treatment regimen, and his medication adherence wavers. He searches for new ways

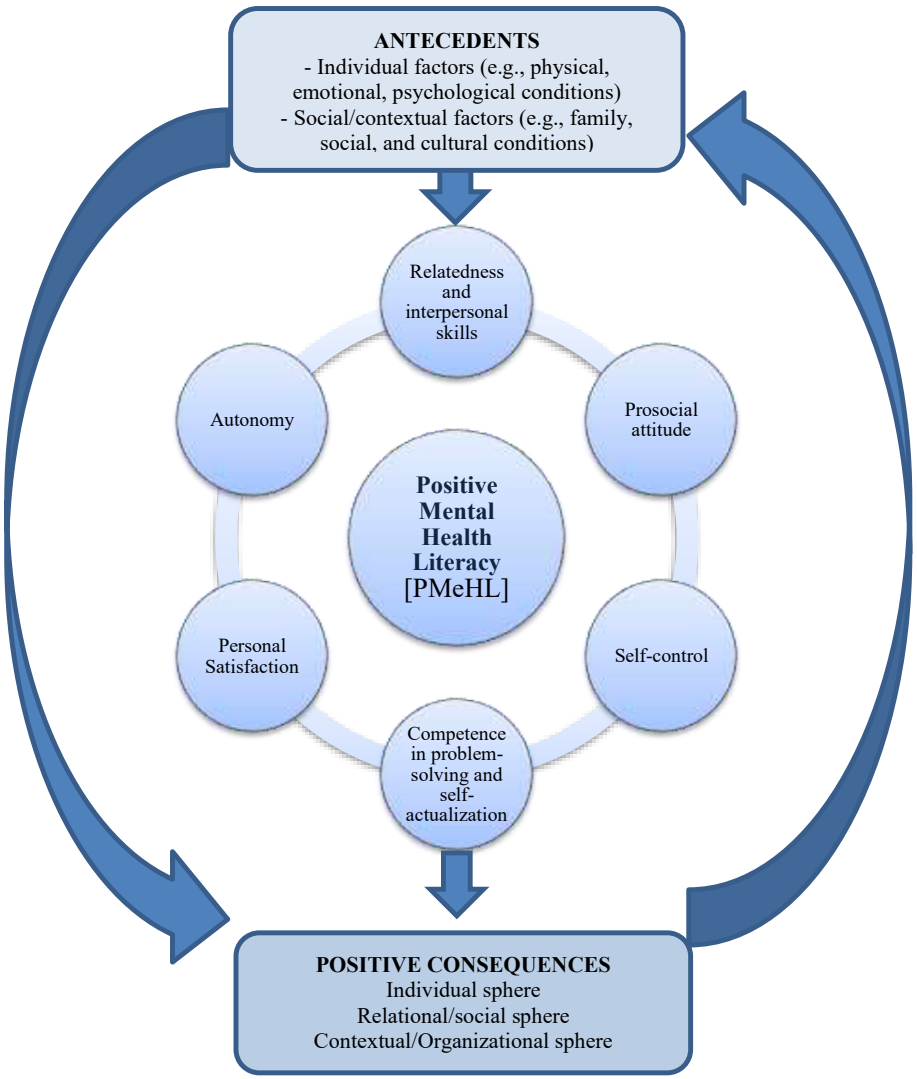

FIGURE 2 | The link between PMeHL's antecedents, attributes, and positive consequences is illustrated in this conceptual model.

to control symptoms and gets information from less reliable sources, without scientific support. Colleagues move away from him, due to some of John's disruptive behaviors. This related case scenario lacks half the PMeHL attributes (e.g., relatedness, self-control, competence in solving problems).

Contrary Case

Mary is a 17 years-old college student who has been diagnosed with schizophrenia. She questions her diagnosis and the need for treatment, showing little insight into her situation. She is very reluctant to adhere to the proposed therapeutic regimen, which she abandons frequently, thinking herself cured. She does not seek help or information and is very unreceptive and sometimes reactive when health professionals offer her help. Her symptoms worsen and begin to interfere with her social relationships, family dynamics, and school performance, even leading her to drop out of school. This final case is an example of a contrary case because Mary lacks all of the defining attributes of PMeHL. She does not make the best judgments for her own care. She fails to control her mental illness, and because of her lack of PMeHL, she will suffer long-term effects.

Empirical Referents

Empirical referents are measurable indicators of the concept's occurrence (Walker and Avant, 2019). Across evaluated studies, only the 10-item Mental Health Promoting Knowledge (MHPK-10) scale measured knowledge of how to obtain and maintain good mental health (Bjørnsen et al., 2017). This valid and reliable one-dimension instrument was developed from the previous MHL definition, presented by Kutcher et al. (2016b), and the three dimensions of Basic Psychological Needs Theory (competence, autonomy, and relatedness) (Deci and Vansteenkiste, 2004 cit in Bjørnsen et al., 2017). To establish a solid grounding for the instrument, the items were based

on a sound theoretical framework, adolescents' opinions, and recognized experts (Bjørnsen et al., 2017). Respondents are asked to rank each item on a 6-point scale [do not know (0), completely wrong (1) . . . completely correct (5)], where a higher score implies greater knowledge. The MEST project (Bjørnsen et al., 2018, 2019) used the MHPK-10 to assess mental health-promoting education activities aimed at enhancing variables favoring mental health and better customizing these programs among Norwegian adolescents. Every item in the MHPK-10 is deemed appropriate and translatable to public health practice, since MHL is recognized as an outcome of mental health promotion actions (Bjørnsen et al., 2017).

DISCUSSION

In the current literature, PMeHL is a dynamic concept, viewed simultaneously as: a) an outcome of mental health promotion actions, with a positive connection to physical health, social interaction and functioning, problem-solving ability, productivity, self-esteem, learning outcomes, resilience and motivation (Lehtinen, 2008; Bjørnsen et al., 2017; Iasiello et al., 2019; Mansfield et al., 2020); and b) a resource or mediator of mental health and well-being, allowing the person to play a preventive role in the development of mental disorders (Bjørnsen et al., 2017).

In a broad sense, the antecedents that promote PMeHL represent the balance between the individual and the environment. These antecedents are clustered into two main categories: individual factors and experiences, and social/contextual interactions (including societal resources, and cultural values) (Bjørnsen et al., 2017, 2018, 2019; Santini et al., 2020). The defining attributes that characterize people with PMeHL include: (a) how they accept and value themselves; (b) how they control emotions by focusing on positive thoughts; (c) how they establish positive connections with others; (d) how they transform life's disappointments into personal satisfaction; and (e) how they make their own decisions, revealing problem-solving skills. PMeHL is a phenomenon that manifests positive consequences, including the maximization of individual well-being on emotional, psychological and social domains (Santini et al., 2020). This potential to promote, protect and restore mental health protects the individual against several negative outcomes in both people with and without mental disorders (Bjørnsen et al., 2017, 2018, 2019). For Kutcher et al. (2016b), PMeHL increases the effectiveness in seeking help (knowing when, where and how to get good mental health care and developing the necessary skills for self-care) (Bjørnsen et al., 2018). Interestingly, age, gender, personality, educational, urban-rural, and cross-cultural differences in PMeHL may differentially affect rates of help-seeking across different settings/sectors, including health, education, and workplace context (Furnham and Swami, 2018).

According to Seedaket et al. (2020), two types of interventions are widely used to improve PMeHL: education-based and community-based interventions. The same authors concluded that stand-alone education-based interventions are likely more effective for improving MHL among adolescents. Nevertheless, community-based interventions could be more effective in later stages of the lifespan, namely adulthood and old age, because they include a wider range of outcomes, including mental health-related knowledge, quality of life, and social well-being (Castillo et al., 2019).

Because PMeHL is dynamic, it is important to assess a person's level of comprehension, motivation for behavioral change, and changes in age or health condition. Individuals with greater PMeHL levels are more likely to engage in self-care and seek out resources from their family or social structure, community, or healthcare system. Individuals should be asked questions in an active voice that motivates them to ask more questions or seek more information while they are being educated (Parnell et al., 2019). Importantly, nurses and other healthcare professionals must realize that every encounter with individuals and family members is a chance to assess people's mental health literacy and encourage learning and capacity to attain and maintain good mental health. Encouraging autonomy and personalizing treatment are two important aspects of effective nursing care.

Nurses must be educated on how to teach and incorporate mental health education into all elements of their normal care delivery, rather than consider it an additional duty (Parnell et al., 2019). Traditional methods of education, such as those based on written materials or delivered in a classroom setting, must be reconsidered. Other active learning strategies, such as roleplaying simulations, digital health interventions, and communication skills training (e.g., conveying compassion and empathy, offering hope and humor, assertiveness, and active listening techniques), are required in basic and continuing education (Parnell et al., 2019; Laranjeira and Querido, 2021).

Besides, a systematic approach to mental health promotion, such as MEST (Bjørnsen et al., 2018, 2019), suggests that school nurses, teachers and stakeholders collaborate and include positive MHL in mental health education. In addition, primary research focused on nursing interventions that enhance and sustain PMeHL in people and families should be prioritized. The findings of this concept analysis can be used to provide a conceptual framework for future study in this area.

Limitations

There are a few limitations to this concept analysis. First, the literature search was thorough, but limited to two databases and the English and Portuguese literature; therefore, relevant publications may have been missed. Moreover, the established list of attributes, antecedents, and consequences may not be complete, and other existing PMeHL elements may have been excluded from the current concept analysis. Third, while the research focuses mostly on adolescents, PMeHL is a phenomenon that may occur in a variety of contexts (families, schools, streets, and workplaces) and health/illness type transitions, throughout the lifespan. Finally, the area is still dominated by a mental-illness perspective, with just a few measures used to examine PMeHL. Further studies should look toward creating new measures that are reliable, valid, and feasible, as well as testing measurement invariance on existing PMeHL measures across cultures. This might help understand cultural differences in

mental health discourse and what it means to be positive mental health literate.

CONCLUSION

The PMeHL concept is considered a component of MHL, integrating positive mental health, which deserves attention throughout the lifespan in different contexts and intervention levels. Emphasis on person-centerd care calls for a transformation of the mental-ill health paradigm (Whitaker et al., 2021). Thus, PMeHL can be operationalized in two ways: (a) as a resource or potential mediator between individual determinants and health(-related) outcomes and (b) as an outcome when attempting to decrease the impact of social/contextual inequalities on health(-related) outcomes. PMeHL is not restricted to a particular action and may alter as circumstances change. In sum, by approaching PMeHL as a multi-faceted and dynamic construct, we must learn more about the processes of improving mental health and promoting good behaviors.

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

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Role of Cultural Resources in Mental Health: An Existential Perspective

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A reductionist view of mental health tends to give limited results. While some important benefits are still achieved, other key elements are left unaddressed. These gaps tend to wipe out the gains which were made by focusing on the dominant aspects of mental health that are promoted by a reductionist view. This paper explores such gaps by looking at those healing traditions which view health and wellness from a broader perspective. Through the live experience of such traditions the paper tries to illustrate how the deeper aspects of mental health are also relevant. The paper attempts to argue that diverse cultures have inbuilt repositories of existential wisdom which can help in promoting and maintaining positive mental health through a conceptual exploratory analysis.

Keywords: mental health, festivals, existential psychotherapy, yoga, ayurveda, Vedanta

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INTRODUCTION

What role does culture play in mental health? The question has been explored in various ways and this article looks at it from an existential, dialogical and ontological perspective. The question assumes significance because the role of self is important in mental health (van Deurzen, 2012). This is so because the lived experience of an individual may become structured, overbearing, rigid and accessing deeper levels of self can help individuals in many ways. It enables them to create spaces for mental health and rejuvenation (Schneider, 2009). How can this rejuvenating aspect of self be used for mental health? This article explores this question in the phenomenological settings of Indic festivals and their spiritual moorings. In this process the article argues toward the need for a broader discourse about mental health.

To enliven agency wherein individuals can use their ontological resources for mental health requires a cogent sense of self. Such a self can help the individual in many ways such as by creating a sense of direction and reducing dysfunctional ambivalence. Yet in a world of competing narratives and shared meanings, finding an enduring, lasting sense of self is a difficult proposition. Few people are able to attain a selfhood which can come in contact with the world and not get disturbed by it. The role of culture in attaining such selfhood is intriguing. The more vocal view seems to be that culture can act as a barrier in the process of knowing oneself. At the same time, it has also been argued that self is itself a social construct. Whatever view one may hold, it is evident that the role of culture vis-a-vis self needs to be given importance. Therefore culture in a regressive form has come to be associated with dogma, superstition and rituals which hamper the mind in forming cogent and correct opinions about self or the world, thereby stifling mental health (Ellis, 1974).

The cognitive turn in psychology has used this view and created robust frameworks which are vital for the mental health of individuals (Butler et al., 2006). Under such frameworks disturbed emotions and mental states have been swiftly corrected by cutting into the illogical and distorted

thinking patterns of an individual. While such an approach is necessary it loses salience as higher dimensions of psychological health, such as having a deeper appreciation of beauty or spontaneity, are aspired for Assagioli (1989). In other words, psychotherapy based on scientific and cognitive models of mental health require complementary frameworks that can support deeper needs of the human consciousness. When these needs are addressed, the subtle dimensions of human health are opened up as illustrated by the following excerpt from Jane Austen's famous novel Persuasion:

"...Mrs. Smith's enjoyments were not spoiled by this improvement of income, with some improvement of health, and the acquisition of such friends to be often with, for her cheerfulness and mental alacrity did not fail her; and while these prime supplies of good remained, she might have bid defiance even to greater accessions of worldly prosperity. She might have been absolutely rich and perfectly healthy, and yet be happy. Her spring of felicity was in the glow of her spirits, as her friend Anne's was in the warmth of her heart..." (Austen, n.d.).

These dimensions of mental wellness lie outside the scope of mainstream psychotherapies which have to tailor themselves for clinical formats, scientific testing in order to fit into the economic system of medical expenses (Leonhardt, 2021). Thus, it has become difficult for individuals to acquire such spaces of human consciousness by using solid knowledge frameworks that are supported by robust clinical and research work. Instead, it has led to the proliferation of pseudo-spiritual approaches which may appear promising on the surface but in reality are spurious and toxic to mental health. Often these approaches feed on the criticism of mainstream frameworks to push in fads which are of limited therapeutic value and have the potential to cause great harm to mental health (Assagioli, 1989). As a consequence, the discourse around mental health has underrated the whole issue of deeper aspects of psyche and their role in healing. However, with widespread social conflict and deteriorating psychological health of large sections of the population, these deeper aspects can't be overlooked for long (Leonhardt, 2021).

Paradoxically these deeper aspects can be easily accessed by individuals as they lie embedded in their cultural resources. However, the process to enliven them lies outside the scope of the current discourse of mental health. Indic healing traditions of Yoga, Ayurved and Vedanta have long given space to both the subtle and gross aspects of mental health. In the ensuing sections, the paper explores the lived experiences of these traditions to explore how this integration has been made possible. In this way, the paper argues that if the role of cultural resources in mental health is given more space, then it can become an important step in the attainment and maintenance of positive health. This study bases itself on the strong foundations of several healing traditions and their scholars, notably Existential psychotherapy, Yoga, Ayurveda, and Vedanta.

MENTAL HEALTH

There are numerous ways of looking at mental health that range from purely biological approaches on the one hand to profoundly philosophical approaches on the other. The medical perspective gives more importance to neurobiological antecedents for mental health issues. However, unlike issues wherein other organs of the body are involved, mental health problems can occur both due to neurobiological as well as psychological causes. Often both causes tend to get mixed up, making mental health issues more problematic to address. Therefore, it is no surprise to find that the etiological factors of various mental health issues have not been clearly identified. In such a scenario, a comprehensive approach requires a wide spectrum of healing protocols to provide comfort and support to an individual. As a recognition of this current treatment guidelines use a combination of both pharmacotherapy and psychotherapy (Generalized Anxiety Disorder, 2021).

This article explores a third dimension of mental health which also needs to be made a part of the healing equation. This dimension looks at the nature of life itself and examines the possibilities of healthy mental states in it. In other words, this dimension explores the proposition that given the various constraints, influences and complexities of life, meaning of mental health cannot be restricted to biological and psychological aspects only (Schneider, 2019). It is imperative that for robust mental health the "givens" of life need to be discovered, accepted and negotiated. While the biological and psychological aspects may bring an individual to a firm ground and reduce the scope of negative emotions like dissatisfaction, irritation, frustration, anxiety, etc. they are unable to provide a sense of satisfaction, meaning and fulfillment to the individual by themselves.

In the absence of satisfaction, closure, meaning individuals are likely to become disillusioned and act in ways that may lead to psychological or biological problems. This in turn can disturb the mental health of an individual and it often becomes difficult to ascertain the triggers of the current poor state of an individual. This is so because the three dimensions of mental health namely biological, psychological and spiritual/existential are in a dynamic state of balance and changes in one aspect have consequent changes in the other. Hence, a comprehensive view of mental health needs to give due importance to existential issues as well (Yalom, 2020).

Existential Humanistic approach views health from a unique perspective viz. the 'givens' perspective. The 'givens' perspective is a deceptively simple concept, which is easy to understand but difficult to apply. This perspective points out that life as such has a challenging course wherein an individual encounters various existential challenges and her response to these challenges has a great bearing on her experience of life. Outside the existential framework, it has sometimes been looked down upon by other approaches as a fatalistic philosophy, one that is morose and boring. The Existential approach has often been misunderstood as pessimistic or impractical and is categorized as a philosophical approach with limited medical value. Indeed, the existential framework is a far more wide and profound framework which critiques mainstream mental approaches for their propensity to pathologize individuals and box them into categories.

A three dimensional perspective of mental health makes it evident that while issues might start in any one of the three dimensions, but the other dimensions are soon effected. In the initial stages, the other dimensions tend to act as a support system

and help restore balance in the disturbed dimension. However, if the disturbed dimension remains in a state of problem then the other dimensions also start getting distorted. Thus, the dynamic equilibrium of the three major dimensions and their interconnectivity should be at the heart of a mental health discussion. A broad and unified view allows for early diagnosis and greater relief from pain and suffering for individuals.

For instance, let's take the case of an individual who is biologically healthy. As there are no biological deficits in the individual, his mental health issues are likely to be less chronic and generally episodic. If the psychological factors are addressed by brief psychotherapy or psychoeducation then the individual can be brought to an even level wherein he feels disturbed emotions to a lesser degree or within normal limits. At this point the current mainstream mental health discourse tapers off and it is felt that unless some major challenges occur in the life of the individual he is likely to have a healthy experience of life. However, when individuals acquire stable mental health, their focus shifts toward acquiring deeper levels of satisfaction, peace and actualization of their potential. This forms the starting point of the existential dimension which dwells on the fascinating situation of a meaning seeking organism searching for meaning in a meaningless world (Frankl, 1985).

There can be broadly three outcomes of such a search for meaning by an individual. The first outcome being that of regression, i.e., faced with such a powerful existential question, the person finds himself over awed. Consequently, he leaves the quest for answering the deeper questions that bother him and returns back to the comforts of living with the knowns. In such a case, he may continue to live in a state of neither peace nor war scenario wherein an undercurrent of unease may be felt because he wants to express himself and realize his potential. To soothe and paper over this disquiet, the individual may also show an increased tendency for thrill seeking behavior as an attempt to shut down his higher sensibilities. This situation of existential limbo can continue for a long time, wherein there may be occasional instances of irritability, frustration and general displeasure. However, if a major challenge occurs in the life of such an individual then she may find it difficult to cope with it because her psychological reserves and resilience have been compromised due to her continual repressive efforts. With passage of time even small testing situations may become difficult to handle.

In the second outcome the individual may show fortitude and courage instead of getting overawed. Consequently, he starts to engage with his existential questions and makes efforts to seek guidance for handing his existential situation. Since the mainstream discussion on mental health considers such inquiries outside the scope of the mental health framework, the individual is unlikely to find much support. On the contrary, there is a greater likelihood of him getting confused and perturbed, prompting him to reconsider his attempts for deeper peace and wellness. These outcomes are encouraged by the vacuum which gets created by a reductionist view of mental health. Due to this vacuum, individuals tend to get attracted to pseudo-existential approaches that are usually filled with mystical, semi religious, dogmatic self-help fads that stand on very weak grounds.

There is little body of clinical work or philosophical basis for such fads and generally they are a collection of popular symbols, myths, and stereotypes about spiritualism. In the initial stages the individuals may feel he is making rapid progress in his quest for deeper meaning, but the hollowness of these systems soon catches up, and characteristically the individual opts out of these manipulative, exploitative systems as a disillusioned and dejected person. Herein, as in the first outcome, life challenges prove to be too overbearing for such an individual as he has limited reserves of psychological strength due to an unfulfilled quest for seeking maturity and meaning.

The third outcome could be of an individual who attempts to explore his existential moorings and is lucky to tap into reserves which equip him for such a journey. In such cases the individual is able to access support systems that are rooted in well researched, long traditions of intellectual inquiry into the nature of being. Such existential support provides the individual with the basic tools which are required for an existential quest. Equipped with these tools, the existential process becomes a gradual process of self-discovery and developing wisdom to understand the "givens" of life such as death anxiety, loneliness, responsibility and meaning. This kind of existential support may reach the individual in myriad ways. Sometimes it may be in the form of civilizational traditions such as poetry, art and spiritualism and at other times in the form of dialog, conversations and engagement with mentors or therapists (Shukla, 2021). The moot point being that a basic framework becomes the starting point of existential work upon which a life-long process of self-discovery and understanding tends to get built.

Without such a grounding it becomes difficult for individuals to separate the genuine from the spurious, especially in the face of sophisticated marketing campaigns which claim to provide wisdom and sense of purpose as a series of simple steps with a money back guarantee. Thus, the pathways that allow individuals to develop a basic grounding about the existential dimension are significant, as they enable individuals to make better choices about the resources they would like to tap into in their quest for higher dimensions of mental health.

INDIAN HEALING TRADITIONS

Indian healing traditions give prime importance to mental health in the overall health and wellbeing of an individual (Shukla, 2020). For example, as per Indian traditions, the self exists at three levels, namely 'Sthul Sharir' or physical body, ' Shukshma Sharir' or subtle body and 'Karana Sharir' or 'astral/causal/existential body'(Halpern, 2017, August 11). These three bodies are different manifestations of the same being, and a condition of ill health affects the self at all three levels. Thus, it is said that "Adhi ke mool mein vyadhi aur vyadhi ke mool mein avidya' meaning that behind the disease/discomfort in the physical body are incorrect cognitions that are present in the psychological self, which themselves arise out of lack of knowledge existing in the spiritual self). Therefore, in order to heal the self it is desirable to work on all the three bodies in a composite way since the three bodies or levels of existence are inter connected.

The Ashtanga yoga of Patanjali prescribes an 8 stage model of growth and rejuvenation namely yam, niyam, asan, Pranayam, Pratyahara, Dharna, Dhyan, Samadhi to work on the different dimensions of the self (Bryant, 2015). These different stages focus on specific pathways to reach the various levels of existence and include physical exercise, breath work, mediation, behavioral work and developing existential understanding. However, it is common to find that in spite of the huge popularity of Yoga as a means of health and wellness only the physical aspects of Yoga are given importance. In the absence of these deeper elements, the process of healing is incomplete as it does not touch the different levels of the self. A reason for this is the lack of understanding is a poor appreciation about the role of cultural resources in a healing/growth processes. Only few yoga protocols have been able to preserve these deeper aspects such as the Kundalini Yoga protocols which have been developed by David Shannahoff-Khalsa as taught by Yogi Bhajan (Shannahoff-Khalsa et al., 2019).

To help an individual reach deeper levels of existence and develop existential understanding, Indic healing traditions had developed various cultural resources such as Indic festivals. In the present times, such cultural resources do not receive much attention and have receded into the background. The role of cultural resources can be understood by looking at the deeper layers of Indic festivals and their linkages with Indian healing traditions. In their modern form, Indic festivals have become commercialized and have lost some of their subtle aspects of healing. Today, the focus of these festivals has shifted to consumption and marketing of various kinds of products and services. Yet, if the deeper aspects of these festivals are explored it gets revealed that these festivals still have the potential to provide an opportunity for individuals to do existential work.

One of the illuminating concepts of Indic healing traditions for approaching existential work is described in a classical treatise by Adi Shankaracharya known as the concept of 'Shat Sampatti' or the 'Six treasures'(Tejomayananda, 2000). The stance of referring to existential understanding as the six treasures is to nudge the individual to experience a feeling of "awe" and initiate a process of healing by shifting our consciousness to the importance of mental health in our lives. The different treasures of 'Shat Sampatti' are elaborated as follows:

- *Shama*, or the ability to be calm and keep a peace of mind
- *Dama*, or the ability to control the senses and, therefore, reactions to external stimuli
- *Uparati*, or renouncing anything that doesn't fit your dharma (duty)
- *Titiksha*, or persevering through suffering
- *Shraddha*, or trusting and having faith in the path of Jnana yoga
- *Samadhana*, or total concentration and focus of the mind

It can be discerned that these six qualities are interdependent and form a healing gestalt which allows a person to participate in existential work. For instance, to do existential work one must have trust and faith about the importance of existential understanding which can be seen from the aspect of *Shraddha.* Once such a trust is developed, a process of self-discovery begins which involves reflection, study and dialog. This aspect is referred to as *Uparati* wherein one is focused on the task at hand and is able to steer away from distractions. However, to stay steadfast on one's journey in the presence of distraction requires self-control at the level of the mind and body. Shama & Dama, stand for these sensibilities and reinforce the fact that as one progresses on the journey of self-exploration, an individual shall have to negotiate with different life situations. A person who has resilience shall be able to successfully negotiate with the different kinds of situations and not go off track. Together with these psychological endowments a seeker needs to cultivate a sense of focus which is reflected by the aspect of *Samadhana.*

On a cursory look it may look that various dimensions of Shat Samapati are self-evident and are applicable to any important project in life. However, a deeper reflection will reveal that these psychological endowments are requisite for commencing on a journey of existential understanding. This leads us to the important question as to how these psychological endowments can be developed. Existential traditions point out that the role of dialog, study and reflection can be critical in the development of these psychological endowments. Yet, although the process of dialog, study and reflection may form the core of the process for developing existential understanding, the role of adjunct factors may be useful. It is here that Indic festivals due to their unique rituals, festivity and celebration create occasions wherein these abilities can be harnessed and kindled. At times these occasions provide an opportunity for advanced seekers to revise various aspects of existential wisdom, while at other times they start a process of self-discovery for young seekers. In the ensuing section the paper explores the various dimensions of Indic festivals and delves into their experiential side.

INDIC FESTIVALS

Festivals are occasions of celebration in which people enjoy along with each other in a spirit of togetherness. They are an integral part of a culture and tend to develop over a long period of time. Indic festivals are no different and have a long history that goes back to the glorious traditions of Vedas and Yoga. Indic festivals are multidimensional and are rooted in the agricultural practices of the region. Thus, major Indic festivals coincide with the season of harvest wherein there is abundance of grain and agricultural produce. As a ripe crop is being harvested, it is also the time for sowing of a new crop. The time between harvest and sowing season becomes a time to reflect, relax and rejuvenate. Set in this background, the festivals become an occasion for positive affect and mental peace. With grains being in abundance, rich food and a lavish cuisine is strongly associated with Indic festivals, adding to the overall positive mood and joy of these times.

Traditionally, harvesting or sowing of crops required different sections of the society to cooperate with each other so that cutting, transport and storage of the crop can be properly done. All these activities were labor intensive and required the involvement of all the members of a household. The rituals of Indic festivals developed from these requirements and promoted prosocial behavior. Although Indian society has

TABLE 1 | Prominent Indic festivals and their characteristic features.

	Diwali: the grand festival of lights	*Holi: the vibrant festival of colors*	*Krishna janmashtami: the birth of lord krishna*
Description	During this festival of lights, houses are decorated with clay lamps, candles, and Ashok leaves. People wear new clothes, participate in family puja (worship), burst crackers, share sweets with friends, families and neighbors. It is one of the most popular festivals in India.	On the eve of Holi, people make huge (Holika) bonfires and sing/dance around it. On the day of Holi, people gather in open areas and apply dry/wet colors of multiple hues to each other.	People fast throughout the day and break it with a special meal after dusk. They visit temples, pray, dance, and sing bhajans (hymns) at midnight as a part of the celebrations of the birth of Lord Krishna. Often, small children dress up like Lord Krishna on this day. Images and picturization of Lord Krishna's life story are depicted as tableau or "jhankis."
Significance	The festival marks the return of Lord Rama, along with his wife Sita and brother Lakshmana, after a long exile of 14 years.	It signifies the victory of good (Prince Prahlad) over evil (Holika) and the arrival of spring.	It is the annual celebration of the birthday of Lord Krishna.
Key attractions	Homes decorated with fancy lights, candles and clay lamps, bustling shops and markets, fireworks and crackers.	Holika bonfire, playing with colors, and thandai (flavored milk with nuts & spices).	Janmashtami puja and festivities in the temples and jhankis of Lord Krishna
When	The darkest new moon night of Kartik month of the Hindu lunisolar calendar, which corresponds to mid-October – mid-November as per the Gregorian Calendar.	Full moon (Purnima) of the Phalgun month of the Hindu lunisolar calendar, which corresponds to the month of March of the Gregorian calendar.	8th day (Ashtami) of Krishna Paksha (dark fortnight) of the month of Bhadrapada according to the Hindu lunisolar calendar, which corresponds to August or September of the Gregorian calendar.
Things to do	Light diyas, decorate your home, share sweets and gifts with family and loved ones.	Holika bonfires and sing/dance around it, play with colors, eat sweets esp. Gujiya.	Visit Krishna temples and attend a special puja that includes bhajans and jhanki.

modernized, the timing, spirit and ethos of the festivals have remained the same. Even though the techniques of farming have undergone a significant change, the crop cycles of the region have remained steady. These crop cycles tend to coincide with seasonal changes like from winters to summers or from summers to winters. Traditional healing traditions in India like Ayurveda emphasize a balance between Purusha and Prakriti or the self and cosmos and therefore recommend that periods of seasonal change should result in corresponding changes in meals, daily routine, clothing and recreation to maintain a balance which forms the basis of health and wellness (Shukla, 2020). Health and wellness is described in these terms by the famous Ayurveda surgeon Sushrata, "Samadosha, samagnischa samadhatumala kriyaha prasanna atmenindriya manaha swasthya ityabhidheeyate." which means ". that the doshas must be in equilibrium, the digestive fire must be in a balanced state and the tissues (dhatus) and malas (wastes) must work in a normal state. The sensor, motor organs and mind, atma must also be in a pleasant state. Such a person is called a healthy person or Swastha" (Mishra, 1997).

In order to help individuals to make changes in their daily routines, during times of seasonal change, the changes in lifestyle were formalized as oral traditions and rituals of the festivals. This enabled the knowledge regarding these changes/adjustments to be preserved and recorded. Indic traditions have a sense of unity among different knowledge frameworks and regarded festivals as occasions wherein wellbeing and harmony can be catalyzed through various means. So just as traditions of Ayurveda blended in with the iconography of Indic festivals so also were the features of yoga enmeshed in them to make them occasions of holistic rejuvenation.

Religious and divine aspects helped in giving a stable structure to the festivals such as allowing in fixing the dates in advance. They also helped in making these occasions spiritual by taking a stance of being careful with the consumption of material goods or hedonism. The festivals celebrate the universal values of health and well-being through an embodiment in the form of a deity. The worship of a deity through various rituals allows for merging of different cultural modalities and becomes a distinguishing feature of Indic festivals. The parapsychological, theological aspects of the festivals are beyond the scope of this article yet the lived experience of performing all the religious ceremonies can have a profound existential impact. The ensuing section discusses the various pathways through which Indic festivals catalyze a process of healing and rejuvenation. Following (**Table 1**) are a few of the most famous and widely celebrated festivals in India.

DISCUSSION

As described earlier, one of the distinguishing features of Indic festivals is the worship of a deity who is closely associated with the festival through religious stories. At a spiritual level the deity is an embodiment of some cherished universal values such as knowledge, wisdom, equanimity, dignity and prosperity. The whole persona of the deity, i.e., their form, symbolism, traits portray these values and are enlivened through stories and folklore. The process of worship such as recitals of sacred hymns and chants create a divine experience. This along with the celebratory mood of festivals make it easy to get closely connected to with these values as they get manifested in symbolic ways in various forms. Thus, one gets a chance to closely experience these values which may be akin to intense identity or actualization experiences. In humanistic existential traditions, such experiences have been referred to as peak experiences and can be moments of epiphany or satori (Maslow, 2013). In this

sense they have the potential to provide enlightening insight which may lead to growth and rejuvenation. The main pathways through which a process of healing and growth may proceed can be delineated as follows:

Experience of Awe

The divine/spiritual experience helps in developing an attitude of trust toward the universal values of health and wellness. In the routine of life these values appear as sterile, bookish and akin to verbal games. It becomes difficult for individuals to relate with them and develop a deep understanding about them. Thus, when these values are exhibited and enlivened by the rituals and iconography of the festivities they are brought to life. Such lived experiences results in moments of awe that have a transcendental quality and help us break out from our scripted patterns of behavior (Schneider, 2004). The experience of awe is enhanced due to the special situation formed out of a general mood of festivity and the addition of aesthetic elements emerging out of a process of worship. These experiences can result in curiosity about deeper aspects of self and mark the beginning of an existential/spiritual quest.

Experience of awe allows us to re-access those capacities which have become dormant due to fixation with competitiveness, peer pressure and the obsession of winning. As Rank put it "First comes the perception of difference from others as a consequence of becoming conscious of self... then interpretation of this difference as inferiority." Rank (cited in Kramer, 1996). When we regather the aesthetic sense, the capacity of awe even our inferiority looks beautiful and evokes a sense of wonder and embrace. From this solid grounding it becomes possible for the individual to dig deep into the meaning of inferiority and ultimately transcend it. "The mere fact of difference," according to Rank, "in other words, the existence of our own will as opposite, unlike, is the basis for the [self-] condemnation which manifests itself as inferiority or guilt-feeling" Rank (cited in Kramer, 1996). To handle such an enormous anxiety requires an art and aesthetic sense that gets rekindled by an experience of awe. The moments of relish within a festive atmosphere reintroduce individuals to an aesthetic sense which allows them to deal with their existential unconscious at a deeper level, and the same is exhibited in more enriching lives at an outer level.

Insight About Symbols

The rituals performed during the Indic festivals involve a feeling of respect and reverence to the deity by offering him various items such as food, clothes and gifts as one would to a real person. The offerings are symbolic in nature and serve as a mark of affection to the universal values which are being manifested in the form of the deity in the here and now. Thus, working with symbols as one would in dream work in the celebrated traditions of existential psychotherapy an individual learns the importance of symbols and their role in psychological growth. This may lead to important learnings for the individual and enables him to apply this wisdom in his own life. For instance, a high need for achievement may make an individual very active leading to many accomplishments in life.

Yet, even after acquiring these accomplishments sometimes such individuals often feel a sense of incompleteness which goes contrary to their expectations. Although, they had thought that by achieving their goals they would find an enduring sense of satisfaction, instead even after the long struggle of completing their targets the hollowness of the situation disturbs them. Rollo May in his book, Man's search for himself, captures it like this:

"...By that I mean not only that many people do not know what they want; they often do not have a clear idea of what they feel. When they talk about lack of autonomy, or lament their inability to make decisions – difficulties which are present in all decades- it soon becomes evident that their underlying problem is that they have no definite experience of their own desires or wants. Thus they feel swayed this way and that, with painful feelings of powerlessness, because they feel vacuous, empty..." (May, 2009, pg. 4).

When faced with such challenges individual surmise that since their accomplishments were not sufficient, they need to pursue new goals and set bigger targets. This leads to a formation of a vicious circle wherein compulsive striving followed by incompleteness occur recursively. Often, even when individuals are able to become high achievers in life by such compulsive striving their inner life remains highly impoverished due to loss of humanness.

Sometimes, individuals do realize that their approach to life is leading to diminishing returns but they are unable to break out of this vicious pattern of behavior. Herein, an insight about the role of symbols in life may come in very handy. It can start a process of inner working which can lead to the identification of those symbolic closings which the individual was yearning for but was not aware of due to his obsession with outer goals and targets. Such symbolic work can result in actualization of self and help a person to move forward in his journey of self-realization and psycho-synthesis.

Working With Defense Mechanisms

Defense mechanisms prevent rational, well adjusted, existential information processing from taking place on a regular basis. This leads to the formation of unfinished gestalts that seek closure and sap the psychological reserves of a person (Perls et al., 1951). Often, these unfinished gestalts manifest themselves in the form of projection and reaction formation. The unfinished gestalts may get resolved when the conscious self gets engaged in some activity and other parts of the self can work on this incomplete gestalt leading to better adjustment and closure. However, the general routine of life does not provide us with opportunities wherein a balance between our conscious and unconscious selfs can be created. Festivals provide individuals with these occasions wherein the usual defense mechanisms are bypassed because of the general ambiance of celebration and festivity. This allows for readjustment of self and its conscious and unconscious parts without the hindrances which are caused due to defense mechanisms.

Many psychotherapeutic modalities that do not emphasize the centrality of a dialog also use this principle to initiate a process of healing. For instance therapies like eye movement desensitization and reprocessing (EMRD) use alternative

bio-mechanical stimulation/activity during a therapy session to engage the conscious self so that the unconscious self can readjust itself (Oren and Solomon, 2012). This allows processing of embodied cognition or unprocessed psychological material which leads to the formation of different kinds of dysfunctional psychological symptoms in a client to be processed or assimilated. After assimilation clients witness lessening of dysfunctional symptoms and a better quality of life.

Indic festivals create a similar lived experiences wherein the aesthetic settings allow individuals to get absorbed in the here and now leading to processing of unfinished gestalts. Once individuals witness such therapeutic effects they may become aware about new ways to address their personal issues. At the same time individuals gain insight about using different kinds of cultural resources for re-setting or rejuvenating their personality systems. In this way cultural resources help in preventing deterioration of sub clinical symptoms into full fledged pathologies.

Invitation to Be in the Here and Now

Present Centeredness is an important aspect of mental health in humanistic traditions (Perls et al., 1951). The ability to stay in the here and now is both a sign of health and a therapeutic process in itself. With wide spread awareness about mindfulness it has become common knowledge that staying in the present moment is an important pathway for a richer life. Yet, even after such awareness many individuals find it very difficult to practice mindfulness and conclude it to be impractical. On the other hand, there is another category of individuals who after knowing the utility of mindfulness try to achieve it in such a mechanical way that the soul of the process is itself lost. Such individuals try to explore so much about the various techniques of mindfulness that they get lost and confused about which technique is to be followed. Paradoxically, it is this very fussiness that mindfulness can help an individual transcend. Yet, by bringing in a hyper achievement oriented mindset, a simple process of being in the moment is converted into a complicated affair, wherein a whole gamut of software and gadgets are used in order to track/monitor mindfulness.

An important aspect which supports such a dysfunctional approach is the discourse of hyper competitiveness which is promoted by a consumer oriented, consumption driven socioeconomic system. With this being the dominant discourse, individuals are fixated with its processes and tend to use it in those areas of life which require a different approach. Thus, even when trying to be mindful, the strong desire of intellectualizing and quantifying it is difficult to curtail. As Kierkegaard writes in The Sickness Unto Death,

"A self is the last thing the world cares about and the most dangerous thing of all for a person to show signs of having. The greatest hazard of all, losing the self, can occur very quietly in the world, as if it were nothing at all. No other loss can occur so quietly; any other loss – an arm, a leg, five dollars, a wife, etc. – is sure to be noticed"(The Guardian, 2010).

In such cases, if the dominant discourse is set in abeyance for sometime, then individuals may find it easy to be present centered. Indic festivals create such an atmosphere by nudging people to be prosocial, collaborative and accommodating of each other. The celebratory aspects, rituals, worship and customs lead to easing of competitiveness and individuals can come in the here and now. Such occasions can lead to insights wherein individuals may reassess their approach toward life and understand that they need to create spaces wherein this dominant discourse of competitiveness is not intrusive. When mindfulness practices unfold with such an understanding in the background, it becomes easy to integrate them as a part of self-leading to lasting growth and healing.

The above pathways highlight how Indic festivals create an atmosphere of healing and rejuvenation. The positive affect created by a mood of celebration, togetherness and joy becomes the cornerstone for exploring the subtle aspects of health and wellness. It is easy to be accommodating, adjusting and forgiving when the self is in such a state of elevated mood. At a subtle level these existential aspects get integrated with the physiological elements such as changes in lifestyle as per the traditions of Ayurveda and also behavioral dimensions of prosocial behavior. In this way, Indic festivals operationalize the Indian philosophical thought, that advocate an integrated approach of wellness wherein all the three levels of self are touched upon in a process of healing.

However to reach the deeper layers of self through the experience of festivals requires certain competencies to be present in an individual. These competencies have been identified in the Indian tradition as the Shat Sampatti or intellectual wealth. By identifying them as wealth the focus is on the fact that just as wealth allows us to survive and transact in this world, in the same way intellectual wealth is necessary to carry out the business of life. Shat Sampati or Intellectual wealth allows us to study, reflect and meditate about the deeper aspects of life. With such competencies in the backdrop, Indic festivals become occasions wherein individuals can experience awe, symbols, spontaneity and present centeredness.

It is pertinent to note that this paper has described Indic festivals in a purer sense wherein they are celebrated in an enlightened way. However, in their present form it can be argued that they are celebrated in a rigid, structured, overly commercialized manner which pushes the healing elements into the background. The purpose of this paper was to show that these are healing elements which are present in the backdrop and can still be accessed provided these exist a basic understanding of existential wisdom. When celebrated from this sensibility, Indic festivals have the potential to be relaxing, rejuvenating and recuperating.

CONCLUSION

It is evident that redefining the contours of the present discourse of mental health allows us to access those resources which otherwise lay untapped. Not only do these resources give individuals more options in their quest for positive mental health but they also provide some unique benefits which are not available from the mainstream methods. The importance of these

resources is further enhanced by the role they play in supporting the gains which are made by pursuing the mainstream modalities. These aspects need to be given due recognition and attempts should be made to incorporate them in the pursuit of mental health and wellness.

One of the ways in which these resources can be tapped is by accessing the sources of existential wisdom that lie embedded in culture. Usually, these resources are dormant and remain inaccessible because a basic understanding about the importance of existential aspects and their importance is not appreciated. This paper through the lived experience of Indic festivals shows the important role which existential wisdom can play in creating a solid foundation for mental health and wellbeing. It also highlights that once a basic grounding about the existential givens is developed, the individuals themselves become capable of accessing the existential wisdom which lies embedded in the culture of which they are a part of or have a fondness for.

Since such a search for existential wisdom is the journey of a lifetime and emerges from the lived experience of a person it is difficult to map it exhaustively. This may be regarded as a limitation of this study and future studies may try to address this gap. However, this paper argues that existential issues require a different kind of sensibility and therefore methodologies of addressing them should be different. For instance, developing a spirit for celebration and rekindling the ability to enjoy has been touched upon in the discussion on Indic festivals. It is important to note that clients who are diagnosed with Major Depressive Disorder show a loss of the ability to enjoy. If treatment proceeds primarily at a biological level through the use of antidepressants, then it may be not as effective and therefore current guidelines augment it with cognitive behavior therapy/interpersonal therapy (Major Depression, n.d.). This paper tries to show that if the existential aspects are also given some space in the treatment modalities then better results may be possible in the treatment of such disorders. However, unlike other modalities existential attempts are like a work of art wherein one proceeds with a sense of relish which gets disappeared when approached with a lot of focus on process and regimentation. They are best proceeded with a good understanding and sense of calm which is perhaps best captured by Viktor Frankl as follows:

"...Don't aim at success. The more you aim at it and make it a target, the more you are going to miss it. For success, like happiness, cannot be pursued; it must ensue, and it only does so as the unintended side effect of one's personal dedication to a cause greater than oneself or as the by-product of one's surrender to a person other than oneself. Happiness must happen, and the same holds for success: you have to let it happen by not caring about it. I want you to listen to what your conscience commands you to do and go on to carry it out to the best of your knowledge. Then you will live to see that in the long-run—in the long-run, I say!—success will follow you precisely because you had forgotten to think about it..." (Frankl, 1985, pg. 16).

AUTHOR CONTRIBUTIONS

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

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SYSTEMATIC REVIEW
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Mental Health Literacy Programs for Parents of Adolescents: A Systematic Review

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Introduction: Many mental illnesses begin during adolescence. Parents of adolescents need to have sufficient mental health literacy (MHL) to recognize mental health problems in their children and to assist them with help-seeking. Although several educational programs have been developed to enhance parental MHL, their effectiveness has not been established. This study provides a systematic review for the effectiveness of MHL programs in parents of adolescents.

Methods: PubMed, PsycINFO, CINAHL, ERIC and Web of Science were searched from the earliest date possible until February 2022; references of studies which met eligibility criteria were also screened. Studies that assessed quantitative change in at least one of the following components of parental MHL were included: knowledge of mental health/illnesses; stigma toward people with mental health problems; confidence in helping children with mental health problems, and intention, knowledge or behavior of helping children with mental health problems. Risk of bias (ROB) for each outcome within the included studies was rated using the revised Cochrane risk-of-bias tool for randomized trials for randomized controlled trials (RCTs), and the Risk of Bias Assessment Tool for Nonrandomized Studies for nonrandomized studies.

Results: Nine studies (four RCTs, three controlled before-and-after studies, and two case series), reported in 10 articles, were included. Mental health knowledge and/or confidence was significantly improved in several studies, while no studies observed significant improvement in stigma and/or intention/behavior of helping children. ROB was high in five out of nine studies (10 out of 18 outcomes) and unclear in the others.

Conclusions: A limited number of studies have evaluated effects of MHL program in parents and inconsistent quality contributes to difficulty in establishing their overall effectiveness. More studies with appropriate methods of recruitment, measurement and analysis, and transparent reporting are needed.

Systematic Review Registration: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020193072, Identifier: CRD42020193072.

Keywords: adolescents, children, mental health literacy, parents, program evaluation

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INTRODUCTION

The first onset of mental illness usually occurs during adolescence (1). However, adolescents may have difficulty in recognizing their own mental health problems (2), and even if they are aware of these problems, they may be reluctant to seek professional help (2). The majority of adolescents might think that family can help them with mental health problems (3) and ask for help from their family members when needed (4). Therefore, parents need to be able to assist their children in recognizing mental health problems and seeking appropriate help.

To assist their children with mental health problems, parents need good mental health literacy (MHL), which is knowledge and beliefs about mental disorders that aid in their recognition or prevention (5). MHL has several components such as: the ability to recognize mental disorders, knowledge of treatments available, attitudes that promote recognition of mental health problems and appropriate help-seeking, and skills to support others with mental health problems (5, 6). The ability to recognize mental disorders may be necessary to know when it is time to seek help. When it comes to seeking appropriate help, knowledge about professional help and treatments available will be useful (6). Since those who are experiencing a mental disorder may not be aware of their situation, people around them such as family members may need skills to listen to and support them to facilitate recognition and help-seeking (6).

A number of studies have assessed MHL in parents, finding that parental MHL is generally limited (7). Parents may not have adequate knowledge about the causes, symptoms (8, 9), and treatments (3) of mental health problems, resulting in difficulties recognizing mental health problems in their own children (10, 11). People who have strong stigmatizing attitudes about mental illness (9, 12) and low confidence in helping others with mental health problems (13) can be less likely to provide appropriate support (14, 15). In addition, by delaying recognition of mental health problems, inadequate MHL might be a barrier preventing parents from seeking help for their children (16, 17).

Parents may also need to have better knowledge of the MHL needs of their children. Recent work highlights these needs, which includes components such as knowledge of mental health professionals and of how to seek mental health information (18, 19). Also, reduction of stigma, and the ability to recognize common mental illness or changes in their own mental health are suggested to be important (18–20). Parents need to improve their own MHL while being aware that they are in a position to provide help and accurate information as trusted adults.

Thus far, several educational programs have been developed to improve MHL in parents of adolescents (21–23). Although each program has been evaluated, overall effectiveness of these programs has not been established. To date, one systematic review on parental MHL has been published mainly reviewing cross-sectional and qualitative studies investigating parental MHL levels (7), and including only a limited number of intervention studies investigating the effects of parental MHL programs. In the present study, we conducted a comprehensive systematic review of intervention studies which measured the effects of MHL programs in parents of adolescents in the general population.

Abbreviations: CBA, controlled before-and-after study; Con, control group; Int, intervention group; ROB, risk of bias; w, week; y, year.

METHODS

Protocol and Registration

The present systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines (24, 25). The review protocol was registered with the International Prospective Register of Systematic Reviews (PROSPERO) (CRD42020193072).

Eligibility Criteria

Inclusion Criteria

Our review included studies which examined the effectiveness of MHL educational programs in parents of adolescents (preteens and teenagers) in the general population, regardless of study design. Studies were included when they met both of the following two criteria.

(1) They implemented programs aimed at improving literacy about mental health problems which start to increase in prevalence during adolescence. Specifically, we included programs addressing mood and anxiety disorders or related problems, which are the two most prevalent types of mental illness (1), and schizophrenia or related problems, where severe aftereffects occur and longer untreated durations are found to predict poor outcomes (26);
(2) Quantitative change was assessed in at least one of the following four components of MHL in parents: (a) knowledge of mental health/illnesses and their treatments, (b) stigmatizing attitudes toward people with mental health problems, (c) confidence in helping children with mental health problems, and (d) intention, knowledge or behavior of helping children with mental health problems.

Studies with any comparison condition (e.g., no intervention, waitlist and other health education interventions) and studies using any measurement methods were included. Doctoral dissertations as well as studies from peer-reviewed journals were included, if they were written in English.

Exclusion Criteria

Studies were excluded when they met any of the following: (1) Baseline measurements were not conducted; (2) Studies that tested programs which exclusively targeted parents of adolescents suffering from physical illnesses or mental illnesses. Also, studies which tested programs exclusively for suicide prevention were excluded, because they have already been systematically reviewed (27).

Study Selection

PubMed, PsycINFO, CINAHL, ERIC and Web of Science were searched from the earliest date possible until February 2022. With the exception of PubMed and Web of Science, these databases were searched via EBSCO. Search terms included were: "parent",

"mental health", "literacy", "young people", "program evaluation" and other related terms as below. In addition, the reference lists of included studies were scrutinized to identify any relevant publications according to eligibility criteria.

Search terms: (parent* OR family) AND ("mental disorder" OR "mental health" OR "mental illness" OR depression OR "mood disorder" OR "affective disorder" OR "anxiety disorder" OR psychosis OR schizophrenia OR "substance abuse") AND (literacy OR belief* OR attitude* OR perception* OR stigma OR competen* OR abilit* OR capabilit* OR confiden* OR know* OR identif* OR aware* OR recogni*) AND (intervention* OR "health education" OR "training" OR "teaching") AND (adolescen* OR child* OR "young adult" OR "young people" OR teen* OR "young person") AND ("program evaluation" OR "program development" OR assessment OR test OR trial OR effective OR effic*).

Two reviewers (S.K. and S.Y.) independently screened the titles and abstracts, and excluded studies not relevant to the topic of interest. They independently reviewed the full-texts of the articles for final selection of included studies. A third reviewer (T.S.) was invited to resolve disagreements between the two reviewers.

Data Extraction

The first author (S.K.) extracted the following data from included studies: study design, country, comparison condition, sample size, timing of data acquisition, targeted age of children, participant baseline characteristics, details of intervention (i.e., delivery mode, contents of intervention, and schedule), outcome measures, outcome data and participation rates. We attempted to contact authors of included studies when they did not report all of this information. The second author (S.Y.) confirmed the extracted data. A third reviewer (T.S.) was invited to resolve any disagreements between S.K. and S.Y.

Risk of Bias in Individual Studies

Risk of bias (ROB) was rated for each outcome in each included study. The revised Cochrane risk-of-bias tool for randomized trials (RoB2) (28) was used to assess ROB for RCTs. The following five domains were rated as "low ROB", "some concerns", or "high ROB", for each outcome of each RCT: (1) randomization process; (2) deviations from intended interventions; (3) missing outcome data; (4) measurement of the outcome; and (5) selection of the reported result. An overall ROB was rated for each outcome across the five domains according to RoB2 (28) as follows: the overall ROB was rated as "low" when ROB in all domains were rated as "low"; the overall ROB was rated as "some concerns" when ROB in at least one domains was judged to have "some concerns", but not as "high ROB" in any domain; the overall ROB was rated as "high", when ROB in one or more domains were rated as "high", or when ROB in multiple domains were judged to have "some concerns" in a way that substantially lowers confidence in results.

The Risk of Bias Assessment Tool for Nonrandomized Studies (29) was used for nonrandomized studies. The following six domains were rated as "low", "high", or "unclear" for each outcome of each nonrandomized study: (1) selection of participants; (2) confounding variables; (3) measurement of exposure; (4) blinding of outcome assessments; (5) incomplete outcome data; and (6) selective outcome reporting. The overall ROB was rated for each outcome based on ROB in the 6 domains, according to the Risk of Bias Assessment Tool for Nonrandomized Studies (29).

Two reviewers (S.K. and S.Y.) independently rated these domains. When the judgment was different between the two reviewers, they discussed with the third reviewer (T.S.) to reach a consensus.

Calculation of Effect Size

Within-group effect sizes (standardized mean difference [SMD] for continuous variables, odds ratios for dichotomous variables) were calculated for each of the intervention groups and control groups as follows (30):

$$\frac{Mean_{post} - Mean_{pre}}{SD_{pre}}$$

In this calculation, the denominator is the standard deviation at pre-test, and numerator is the mean score at post-test minus the mean score at pre-test. When follow-up tests were conducted in the included studies, SMD was calculated by replacing mean score at post-test by mean score at follow-up test. Effect sizes are considered to be small, medium, and large, when SMD is between 0.2 and 0.5, between 0.5 and 0.8, and over 0.8, respectively (31).

Data Synthesis

We did not conduct a meta-analysis of results, because methodological and clinical heterogeneity was high across the included studies and no studies had low ROB (see results section). Publication bias was also not assessed. We instead present a narrative synthesis for each of the following four outcomes: (a) knowledge of mental health/illnesses and their treatments; (b) stigmatizing attitudes toward people with mental health problems; (c) confidence in helping children with mental health problems; and (d) intention, knowledge and behavior of helping children with mental health problems.

RESULTS

Study Selection

Figure 1 describes the flow of article selection in the present systematic review (24, 25). Electronic database searches yielded a total of 36,188 articles. After removing 10,739 duplicates, 25,449 articles remained. Of these, 25,398 articles were excluded after screening titles and abstracts. After assessing the full-texts of the remaining 51 articles, nine articles met the inclusion criteria. None of these met the exclusion criteria. The reference lists of these nine articles were screened, and one additional article which met the eligibility criteria was found. In total, 10 articles met the eligibility criteria.

Study Characteristics

Table 1 presents characteristics of the included studies. We attempted to contact seven authors for missing information; four of them responded. The 10 articles reported the results of nine studies; results of "knowledge" (23) and "stigma" (38) from

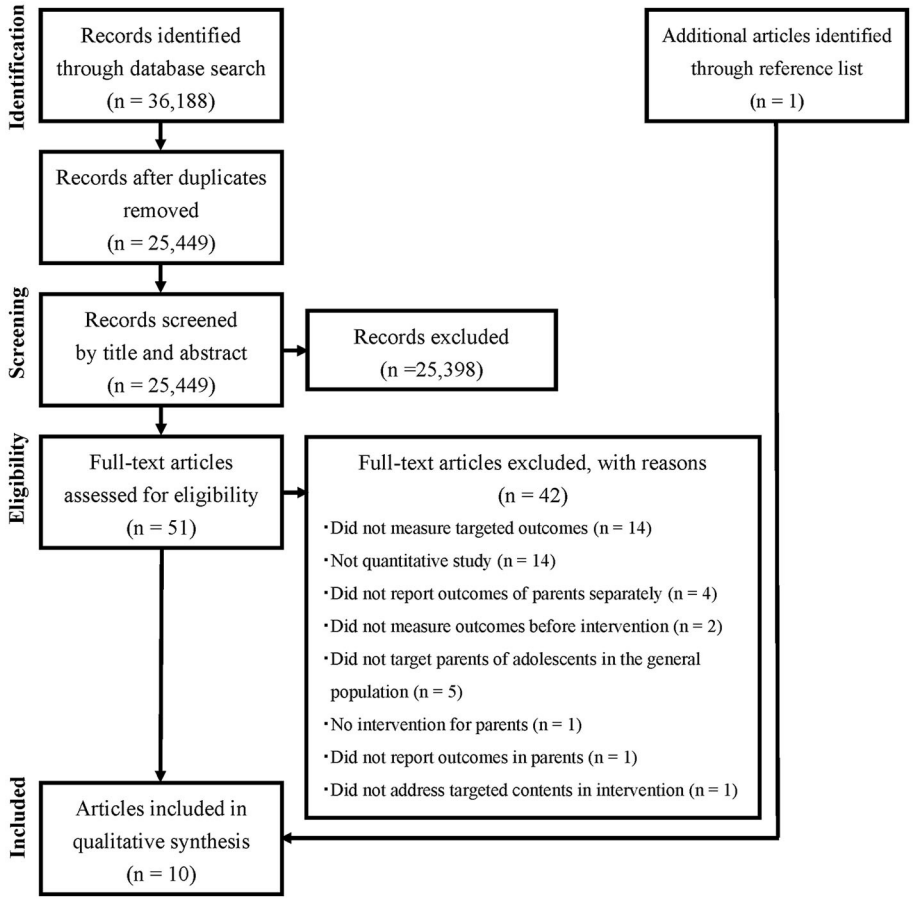

FIGURE 1 | Flow chart of article selection procedure.

a single study were reported in different articles; for another, results of the 1- and 2-year follow-up (33), and those of the 3-year follow-up (34) were reported in different articles. The nine studies investigated effects of eight different educational programs; two studies of the same program in different samples were reported in one article (23). Four studies were randomized controlled trials (RCTs) (21, 32–35), three were controlled before-and-after studies (CBAs) (22, 36, 37) and two were case series (23, 38).

Studies where parents of adolescents participated in interventions were included. They covered information about, or skills to recognize the signs/symptoms of mental health problems/mental illness (21–23, 32–38). Some programs also covered information on treatment (21–23, 32, 37, 38) or skills to assist adolescents to get appropriate professional help as early as possible (33, 34). Regarding the illnesses, depressive disorders and/or related problems were addressed in six programs (six studies) (21, 22, 32–34, 36, 37), and anxiety disorders and/or related problems were addressed in five programs (five studies) (22, 32–35, 37). Schizophrenia (or psychosis) was dealt with in two programs (three studies) (23, 33, 34, 38). Of these eight programs, four programs, studied in two RCTs (33–35) and two CBAs (22, 37), were delivered "face-to-face" and supplemented by take home reading materials (22, 33–35, 37); two of these four programs included workshops with a group discussion about prevention of mental health problems in adolescents (22, 37). The other four programs, studied in two RCTs (21, 32), one CBA (36) and two case series (23, 38), were delivered online. Specifically, one was a multimedia rich, narrated and interactive program (32), while the others used media files including a didactic session and video (36), slides with narration (23, 38), or text messages only via mobile phone short message service (SMS) (21). The total length of face-to-face programs ranged from a single 1-h session (22, 37) to four 3.5-h sessions run over 2 days (33, 34), while online programs ranged from a single 13-min session (23, 38) to four 20-min sessions (36). Teaching modalities and schedules of interventions were varied across the programs, except for the two programs by the same group (22, 37).

Timing of data acquisition was also varied; one out of the nine studies measured outcomes before (pre-test) and immediately after (post-test) the intervention (32). Pre- and follow-up tests were conducted in six studies (22, 23, 33–35, 37, 38), and pre-, post-, and follow-up tests were conducted in two studies (21,

TABLE 1 | Characteristics of included studies.

Author (year) [country]	Comparison condition	Sample size	Parental age (Mean [SD])	Female proportion (%)	Targeted age of children	Details of intervention			Reported outcomes[a]			
						Delivery mode (face-to- face or online)	Teaching modalities	Schedule (intervention period and/or program length)	Knowledge	Stigma	Confidence	Help
Randomized controlled trial (RCT)												
Chu et al. (2019) (21) [New Zealand]	No intervention[b]	pre: 221 post: 211 2 mo: 201	NR	96.8	10–15	Online	Text message	4 weeks[c]	+	−	−	−
Deitz et al. (2009) (32) [NR]	Waitlist	pre: 99 post: 96	Total: 42 [NR]	45.5	5–21	Online	Multimedia rich, fully narrated, and interactive modules	2 weeks[d]	+	−	+	−
Morgan et al. (2019) (33, 34)[e] [Australia]	Red Cross Provide First Aid[f]	pre: 322 1 y: 208 2 y: 178 3 y: 149	Int: 45.2 [5.54]; Con: 45.1 [5.69]	88.2	12–15	Face-to-face	[g,h]	2 days (3.5 hours ×4 sessions in total)	+	+	+	+
Seibert (2001) (35) [USA]	No intervention	pre: 51 2 w: NR	NR	≥ 84.3[i]	Grade 4–6	Face-to-face	Didactic session[h]	85 min	+	−	−	−
Controlled before-and-after study (CBA)												
Choi et al. (2016) (36) [Korea]	Healthy diet intervention	pre: 214 post: 114 1 mo: 93	Int: 43.2 [3.1]; Con: 43.9 [4.2]	88.8	11–16	Online	Didactic session, video, assignment, feedback[j]	4 weeks (20-min media file per week[k])	+	−	+	−
Hurley et al. (2018) (37) [Australia]	No intervention	pre: 66 1 mo: 55	Total: 44.9 [5.2]	77	Adolescents	Face-to-face	Group discussion, video[h]	1 hour	+	+	−	−
Hurley et al. (2021) (22) [Australia]	No intervention	pre: 540 1 mo: 284	Total: 47.4 [5.3]	59.4	Adolescents	Face-to-face	Group discussion, video[h]	1 hour	+	+	−	+
Case series												
Yoshii et al. (2011) (23, 38)[l,m] [Japan]	–	pre: 2,690 1 w: 2,465	Total: 45.9 [4.7]	48.7	Junior and senior high school students	Online	Slides with narration	13 min	+	+	−	−
		pre: 735 1 w: 628	NR	47.1					+	−	−	−

Con, control group; Int, intervention group; mo, month; NR, not reported; SD, standard deviation; w, week; y, year. Knowledge, knowledge of mental health/illnesses and their treatments; Stigma, stigmatizing attitude toward people with mental health problems; Confidence, confidence in helping children with mental health problems; Help, intention, knowledge and behavior of helping children with mental health problems.

[a] *+: measured, –: not measured.*

[b] *Control group could access alternative services (no details described).*

[c] *Intervention group daily received a text message (≤160 characters).*

[d] *Participants were encouraged to watch the program as often as possible.*

[e] *The 3 y follow-up data in Morgan et al. (2020) (34).*

[f] *Red Cross Provide First Aid is a 15-hour training for knowledge and skills to sustain life until professional help arrives.*

[g] *Youth Mental Health First Aid, a course for adults caring for adolescents (no details described).*

[h] *Supplemented by reading materials.*

[i] *Consisted of 84.3% mothers, 7.8% fathers, and 7.8% guardians.*

[j] *Participants received feedback from research staff after submitting assignment and questions.*

[k] *One media file on mental health problems among adolescents, and others on their development and parent-child relationship.*

[l] *Effects on "Knowledge" and "Stigma" were reported in Yoshii et al. (2011) (23) and Ling et al. (2014) (38), respectively.*

[m] *Another study of the same program in different samples was also reported.*

36). Two studies (22, 37) by the same group used the same questionnaire. Other studies each used different questionnaires (21, 23, 32–36, 38). Some studies did not indicate whether the questionnaires had been validated in regular people (21–23, 32, 35, 37). Due to high methodological and clinical heterogeneity, we did not compare outcome data between the studies. In addition, participation rates were not reported in eight (21–23, 33–38) out of the nine included studies. Among these, six studies (21–23, 33, 34, 36, 37) did not describe the number of people who received information on recruitment of the study participants, which is needed to calculate the participation rate. Also, the presence/absence of adverse events was described only in one study, which observed no such event (33, 34).

Risk of Bias

Risk of Bias of RCTs

ROBs in the four included RCTs are summarized in **Table 2**, for the five domains and the overall ROB, of the four outcomes. ROB for the 1st domain was rated as "some concerns" in three RCTs (21, 32, 35) and "low" in the other (33, 34). ROB for the 2nd domain was "high" in one RCT (35), because whether the analysis was by intention-to-treat or not was not clearly described. ROB for the 3rd domain was "high" in three RCTs (21, 32, 35), because the authors did not use statistical methods to avoid bias due to missing outcome data (21, 32) or whether the authors used such methods was not stated (35), and also because participants' levels of MHL might have affected whether they answered questions (21, 32, 35). ROB for the 4th domain was "high" in all 4 RCTs (21, 32–35) because the participants were aware of the group they were assigned to (intervention or control), and this awareness may have influenced responses to the self-report questions (21, 32–35). Internal consistency of the questionnaires were reported as low in some studies [Cronbach's alpha = 0.43 (35), Omega = 0.46 and 0.56 (33, 34)]. ROB for the 5th domain was "some concerns" for all outcomes (21, 32–35). Overall ROB was rated as "high" for all studies (21, 32–35), because ROB was "high" in at least one domain for each study.

Risk of Bias of Nonrandomized Studies

Table 3 summarizes ROBs for six domains and overall ROB in nonrandomized studies (three CBAs and two case series). ROB for the 1st domain was rated as "high" in two studies (22, 37), because participants of intervention and control groups were from different areas. ROB for the 2nd domain was "high" in three studies (23, 37, 38), because no confounding variables were controlled for in the analyses. ROB for the 3rd and 4th domains was "high" in all five studies (22, 23, 36–38), because the participants were aware of the group they were assigned to, and this awareness may have influenced responses to the self-report questionnaires. ROB for the 5th domain was "high" in two studies (36, 37) because retention rate markedly differed between intervention and control groups. ROB for the 6th domain was "high" in one study (36), because statistical results were not clearly reported. Overall ROB was rated as "high" in one study (37), and as "unclear" in the others (22, 23, 36, 38), according to the criteria of the Risk of Bias Assessment Tool for Nonrandomized Studies (29).

Effects on Outcomes

Effects on Knowledge of Mental Health/Illnesses and Their Treatments

Table 4 summarizes effects of programs on knowledge of mental health/illnesses and their treatments. Knowledge was significantly improved immediately after the intervention in one (32) out of two RCTs (21, 32). At the follow-up test, knowledge was significantly improved in two (33–35) out of three RCTs (21, 33–35), and one (37) out of three CBAs (22, 36, 37). In the CBA (36) and two case series (23) which measured effects immediately after the intervention and/or at follow-up, effects were uncertain due to unclear reporting. Recognition of the disease name was measured in vignette cases of depression, social phobia, psychosis and eating disorder in 1 RCT, without significant improvement (33, 34).

Regarding the mode of delivery, knowledge was improved in three [two RCTs (33–35), one CBA (37)] out of four face-to face programs (22, 33–35, 37) at follow-up. This improvement was also observed in one [RCT (32)] out of three online programs (21, 32, 36) immediately after the intervention.

Effects on Stigma Toward People With Mental Health Problems

Table 5 summarizes effects of programs on parents' stigma toward people with mental health problems. Three types of stigma were measured at follow-up in the total of four studies in five articles (22, 33, 34, 37, 38), with no significant improvement observed. The three types of stigma were as follows: (1) unwillingness to have contact with a person with mental health problems ("social distance"), (2) personal negative attitudes toward a person with mental health problems ("personal stigma"), and (3) beliefs that most people would look down on or discriminate against psychiatric patients ("perceived devaluation-discrimination"). Social distance and personal stigma were measured in 1 RCT (33, 34) and two CBAs (22, 37), which were face-to face programs, while perceived devaluation-discrimination was measured in one case series (38), an online program.

Effects on Confidence in Helping Children With Mental Health Problems

Table 6 summarizes effects of programs on parents' confidence in helping children with mental health problems. Confidence was measured immediately after the intervention in one RCT, with significant improvement observed (32). Confidence was measured at follow-up in another RCT, with significant improvement observed at 1-year follow-up (33), but not at 2-year (33) and 3-year follow-up (34). Confidence was also

TABLE 2 | ROB in the five domains and overall ROB for 4 outcomes in randomized controlled trials.

Study	Outcome	Domain					Overall ROB
		1) Randomization process	2) Deviations from intended interventions	3) Missing outcome data	4) Measurement of the outcome	5) Selection of the reported result	
Chu et al. (2019) (21)	Knowledge						
Deitz et al. (2009) (32)	Knowledge						
	Confidence						
Morgan et al. (2019) [a] (33, 34)	Knowledge						
	Stigma						
	Confidence						
	Help						
Seibert (2001) (35)	Knowledge						

"High risk of bias," "Some concerns" and "Low risk of bias" are shaded dark gray, gray, and light gray, respectively.
[a]Results of the 3-year follow-up was reported in Morgan et al. (2020) (34).

TABLE 3 | ROB in the six domains and overall ROB for 4 outcomes in nonrandomized studies.

Study	Outcome	Domain						Overall ROB
		1) Selection of participants	2) Confounding variables	3) Measurement of exposure	4) Blinding of outcome assessments	5) Incomplete outcome data	6) Selective outcome reporting	
Choi et al. (2016) (36)	Knowledge							
	Confidence							
Hurley et al. (2018) (37)	Knowledge							
	Stigma							
Hurley et al. (2021) (22)	Knowledge							
	Stigma							
	Help							
Yoshii et al. (2011)[a] (23, 38) 1st survey	Knowledge							
	Stigma							
Yoshii et al. (2011) (23) 2nd survey	Knowledge							

"High risk of bias," "Unclear risk of bias" and "Low risk of bias" are shaded dark gray, gray, and light gray, respectively.
[a]Effects on "stigma" were reported in Ling et al. (2014) (38).

measured in one CBA (36), with uncertain results due to unclear reporting.

Regarding the mode of delivery, confidence was improved in one face-to-face program at 1 year follow-up [RCT (33)]. This improvement was also observed in one [RCT (32)] out of two online programs immediately after the intervention, while the other online program [CBA (36)] had uncertain effects.

Effects on Intention, Knowledge and Behavior of Helping Children With Mental Health Problems

Table 7 summarizes effects of programs on parents' intention, knowledge and behavior of helping their children with mental health problems. Knowledge and behavior of helping children with the problems were measured in 1 RCT in two articles (33, 34), with significant improvements observed only for knowledge at 1 year follow-up (33). Intention to help children with the problems was measured in 1 CBA (22), without significant improvement. Both programs were delivered "face-to-face" (22, 33, 34).

DISCUSSION

We searched studies which examined the effectiveness of MHL educational programs in parents of adolescents and identified a limited number of programs (eight programs in ten articles). Six programs addressed depressive disorders and/or related problems (21, 22, 32–34, 36, 37), and five addressed anxiety disorders and/or related problems (22, 32–35, 37). Schizophrenia/psychosis was addressed in two programs (23,

TABLE 4 | Effects on knowledge of mental health/illnesses and their treatments.

Author (year)	Knowledge	Score range	Group	Knowledge score [mean (SD)]				Effect size (SMD)
				Pre-test	Post-test/Follow-up			
Knowledge quiz								
RCT								
Chu et al. (2019) (21)	Knowledge of symptoms and treatment of depression, and related problems[a]	0–7	Int	5.5 (1.2)	Post:	5.7 (1.2)	ns	0.17
			Con	5.6 (1.3)		5.6 (1.3)		0.00
			Int		2 mo:	5.9 (1.1)	ns	0.33
			Con			5.7 (1.2)		0.08
Deitz et al. (2009) (32)	Knowledge of							
	-Anxiety	NR	Int	5.1 (1.4)	Post:	5.6 (1.4)	*	0.36
			Con	4.7 (2.0)		4.6 (2.0)		−0.05
	-Depression	NR	Int	4.0 (1.8)	Post:	4.6 (1.7)	**	0.33
			Con	2.8 (1.8)		2.8 (1.7)		0.00
	-Treatment option	NR	Int	3.5 (1.4)	Post:	4.3 (1.9)	*	0.57
			Con	2.8 (1.6)		3.1 (1.7)		0.19
Morgan et al. (2019) (33) (2020) (34)	Knowledge of symptoms and treatments of mental illnesses, and how to respond children with the illnesses[b]	0–18	Int	10.3 (2.7)	1 y:	11.9 (2.4)	***	0.59
			Con	9.8 (2.8)		10.0 (2.8)		0.07
			Int		2 y:	11.8 (2.4)	*	0.56
			Con			10.3 (2.5)		0.18
			Int		3 y:	12.0 (2.1)	**	0.63
			Con			10.0 (2.6)		0.07
Seibert (2001) (35)	Knowledge of anxiety[a]	0–10	Int	8.0	2 w:	9.3	***	NA[d]
			Con	7.7		7.5		
CBA								
Choi et al. (2016) (36)	Knowledge of adolescent development and mental health problems	0–17	Int	10.1 (2.5)	Post:	13.0 (1.8)	NA[e]	1.16
			Con	10.1 (2.8)		10.5 (2.6)		0.14
			Int		1 mo:	12.6 (1.9)		1.00
			Con			11.1 (2.4)		0.36
Hurley et al. (2018) (37)	Knowledge of symptoms and treatments of							
	-Depressive disorder[b]	0–13	Int	9.8 (2.3)	1 mo:	11.2 (1.7)	*	0.61
			Con	NR		NR		NA
	-Anxiety disorder[b]	0–13	Int	8.7 (2.8)	1 mo:	10.1 (2.1)	*	0.50
			Con	NR		NR		NA
Hurley et al. (2021) (22)	Knowledge of symptoms and treatments of							
	-Depressive disorder[b]	0–13	Int	8.8	1 mo:	9.9	ns	NA[f]
			Con	8.5		9.0		
	-Anxiety disorder[b]	0–13	Int	7.4	1 mo:	8.5	ns	
			Con	6.9		7.4		
Case series				[Proportion of correct answer]				
Yoshii et al. (2011) (23) 1st survey	Knowledge of symptoms, causes, treatment and prevalence of schizophrenia[a,g]			77.0%	1 w:	80.0%	NA[h]	NA
2nd survey				76.2%	1 w:	78.9%		

(Continued)

TABLE 4 | Continued

Author (year)	Knowledge	Score range	Group	Knowledge score [mean (SD)]				Effect size (SMD)	
				Pre-test	Post-test/Follow-up				
Problem recognition of vignette characters									
RCT									
Morgan et al. (2019) (33) (2020) (34)	Recognition of symptoms of mental illnesses[a]	0–1	Int	0.66 (0.31)	1 y:	0.75 (0.30)	ns	0.29	c
			Con	0.63 (0.35)		0.66 (0.35)		0.09	
			Int		2 y:	0.77 (0.28)	ns	0.35	
			Con			0.67 (0.33)		0.11	
			Int		3 y:	0.86 (0.23)	ns	0.65	
			Con			0.76 (0.28)		0.37	

CBA, controlled before-and-after study; Con, control group; Int, intervention group; mo, month; NA, not applicable; NR, not reported; ns, not significant; RCT, randomized controlled trial; SD, standard deviation; SMD, standardized mean differences; w, week; y, year.

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

[a] *Questionnaire items were reported in the article.*

[b] *Questionnaire items were obtained by contacting the study authors.*

[c] *Cohen's d was 0.43, 0.26, 0.31 for knowledge quizzes, and 0.11, 0.12, and 0.07 for problem recognition of characters in vignettes (1 y, 2 y, and 3 y follow-up, respectively; change in control groups was considered).*

[d] *We did not calculate effect size, because SD was 1 order smaller although the sample size was smaller than in other studies.*

[e] *Significance levels of statistical results were not reported.*

[f] *SD was not reported.*

[g] *The scoring method of questions to measure ability to discriminate schizophrenia symptoms was not described in the article, so results of the questions were not listed on this table.*

[h] *Unclear report of employed statistical analysis method.*

33, 34, 38), and only one program addressed all three mental health problems (33, 34). We did not perform a meta-analysis due to high ROB for observed in included studies, and high clinical and methodological heterogeneity across studies. Several studies found significant improvements in knowledge of mental health/illnesses and confidence and/or knowledge in helping children with mental health problems, while no studies found significant reduction in stigma toward people with mental health problems.

Quality of Studies

Risk of Bias

ROB was "high" in the majority of included studies and "unclear" or "some concerns" in some others, for the following reasons. First, some of the descriptions of methods and results appeared to be unclear or lacking (21–23, 32–36, 38), and were not always clear enough to judge whether or not the outcomes were improved. More transparent reporting of the methods and results is needed. Second, measures such as likelihood-based methods, multiple imputation, and sensitivity analysis were not employed to reduce bias due to missing outcome data in the statistical analyses (21, 32). Third, no confounding variables were controlled for in the analyses in nonrandomized trials (23, 37, 38). Future studies could include covariates such as age, gender, and educational background (23, 39). In addition, intervention and control groups were from different areas in some studies (22, 37), which should be avoided. Finally, participants appeared to be aware of their assignment to intervention or control groups (21–23, 32–38). This also elevated ROB, according to the criteria (28, 29), but might be impossible to avoid in studies of education programs, unlike in tests of medications.

Other Issues

Participation rates were unknown in most studies (21–23, 33, 34, 36, 37). Most of these studies recruited some or all of their participants from online communities (e.g., via social media and website pages), and did not report the number of people who received information or were asked to participate in the study, which is needed to calculate the participation rate (21, 22, 33, 34, 36, 37). The following methods could help count the number of people who received the information: recruiting participants from parents at workplaces (32) or asking parents of students at schools to participate in the study. Next, some studies did not indicate whether the assessment questionnaires had been validated in regular people (21–23, 32, 35, 37). Lastly, sample sizes were small, for example, $n < 100$ in several studies (32, 35, 37). Larger studies will be needed in the future to draw more robust conclusions.

The Effectiveness of MHL Programs

Although the evidence level for effectiveness of the MHL programs was low due to inconsistent quality, improvements in each outcome may be summarized as follows. Several programs might improve knowledge of mental health/illnesses (32–35, 37), and confidence and/or knowledge in helping children with mental health problems (32, 33). However, effect sizes in those studies were small to moderate (32–34); further studies are needed to confirm these effects. No programs appeared to reduce stigma toward people

TABLE 5 | Effects on stigma toward people with mental health problems.

Author (year)	Stigma	Score range	Group	Stigma score[a] [mean (SD)]				Effect size	
				Pre-test	Follow-up				
Social distance[b]									
RCT								SMD	
Morgan et al. (2019) (33) (2020) (34)	Social distance from adolescents in the psychosis vignette	1–4[c]	Int	1.9 (0.6)	1 y:	2.1 (0.6)	ns	0.33	d
			Con	1.8 (0.7)		2.0 (0.6)		0.29	
			Int		2 y:	2.1 (0.5)	ns	0.33	
			Con			2.1 (0.7)		0.43	
			Int		3 y:	2.2 (0.6)	ns	0.50	
			Con			2.1 (0.7)		0.43	
CBA								SMD	
Hurley et al. (2018) (37)	Social distance from someone with a mental illness	5–25	Int	20.5 (3.5)	1 mo:	21.2 (3.0)	ns	0.20	
			Con	NR		NR		NA	
Hurley et al. (2021) (22)			Int	18.7	1 mo:	19.5	ns	NA[e]	
			Con	19.1		19.5			
Personal stigma[f]									
RCT								SMD	
Morgan et al. (2019) (33) (2020) (34)	Stigma toward an adolescent with psychosis in vignette								
	-Perception that the adolescent is dangerous and unpredictable	1–5[c]	Int	2.6 (0.6)	1 y:	2.6 (0.6)	ns	0.00	d
			Con	2.5 (0.5)		2.5 (0.5)		0.00	
			Int		2 y:	2.7 (0.5)	ns	0.17	
			Con			2.6 (0.5)		0.20	
			Int		3 y:	2.7 (0.6)	ns	0.17	
			Con			2.7 (0.6)		0.40	
	-Beliefs that the adolescent is weak, not ill, could control their behavior and should be avoided	[Proportion of respondents who had low stigma[g]]						OR (follow-up vs. pre)	
			Int	56.6%	1 y:	60.9%	ns	1.2	h
			Con	57.6%		61.1%		1.2	
			Int		2 y:	66.3%	ns	1.5	
			Con			70.0%		1.7	
			Int		3 y:	81.4%	ns	3.4	
			Con			74.2%		2.1	
CBA								SMD	
Hurley et al. (2018) (37)	Attitudes that promote recognition or appropriate help-seeking behavior	9–45	Int	40.4 (5.4)	1 mo:	40.9 (4.5)	ns	0.09	
			Con	NR		NR		NA	
Hurley et al. (2021) (22)			Int	38.8	1 mo:	39.0	ns	NA[e]	
			Con	38.6		37.8			
Perceived devaluation-discrimination[i]									
Case series								SMD	
Ling et al. (2014) (38)	Beliefs that most people would devalue or discriminate against people with schizophrenia	12–48[c]		15.2 (4.4)	1 w:	15.2 (4.4)	ns	0.00	

CBA, controlled before-and-after study; Con, control group; Int, intervention group; mo, month; NA, not applicable; NR, not reported; ns, not significant; OR, odds ratio; RCT, randomized controlled trial; SD, standard deviation; SMD, standardized mean differences; w, week; y, year.

[a] *Higher scores indicate lower stigma.*

[b] *Unwillingness to have contact with the person with mental health problems.*

[c] *Original scores were reversed, so that higher scores indicate lower stigma.*

[d] *Cohen's d was 0.18, −0.12, and −0.05 for "social distance," and 0.15, 0.22, and −0.09 for "personal stigma" (1 y, 2 y, and 3 y follow-up, respectively; positive values indicating improvement by intervention; change in control groups was considered).*

[e] *SD was not reported.*

[f] *Personal negative attitudes toward a person with mental health problems.*

[g] *1 y and 2 y follow-up data were obtained by contacting the study authors (not included in the original papers).*

[h] *ORs were 0.94, 0.59 and 1.06 (1 y, 2 y, and 3 y follow-up, respectively; change in control groups was considered).*

[i] *Beliefs that most people would look down on or discriminate against psychiatric patients.*

TABLE 6 | Effects on confidence in helping children with mental health problems.

Author (year)	Confidence	Score range	Group	Confidence score [mean (SD)]				Effect size[a] (SMD)	
				Pre-test	Post-test/Follow-up				
RCT									
Deitz et al. (2009) (32)	Confidence to handle a mental health problem in their children	NR	Int	2.6 (0.6)	Post:	2.9 (0.6)	**	0.50	
			Con	2.6 (0.5)		2.6 (0.5)		0.00	
Morgan et al. (2019) (33) (2020) (34)	Confidence to help an adolescent with mental health problems in vignette	1–4[a]	Int	1.6 (0.6)	1 y:	2.0 (0.6)	*	0.67	b
			Con	1.8 (0.7)		1.9 (0.7)		0.14	
			Int		2 y:	1.8 (0.6)	ns	0.33	
			Con			1.8 (0.7)		0.00	
			Int		3 y:	1.9 (0.6)	ns	0.50	
			Con			1.9 (0.7)		0.14	
CBA									
Choi et al. (2016) (36)	Confidence in identifying and responding to mental health issues of their children, and in managing parent–child interactions	16–112	Int	82.1 (15.0)	Post:	86.0 (12.8)	NA[c]	0.26	
			Con	82.2 (16.0)		84.3 (14.6)		0.13	
			Int		1 mo:	87.8 (12.0)		0.38	
			Con			86.9 (14.3)		0.29	

Con, control group; CBA, controlled before-and-after study; Int, intervention group; NA, not applicable; NR, not reported; mo, month; ns, not significant; RCT, randomized controlled trial; SD, standard deviation; SMD, standardized mean differences; y, year.

$^{*}p < 0.05$, $^{**}p < 0.01$.

[a]*Original scores were reversed, so that higher scores indicate higher confidence.*

[b]*Cohen's d was 0.26, 0.23 and 0.01 (1 y, 2 y and 3 y follow-up, respectively; change in control groups was considered).*

[c]*Significance levels of statistical results were not reported.*

with mental health problems (22, 33, 34, 37, 38). Intention (22) / behavior (33, 34) of helping children with mental health problems were investigated in few studies. Future studies need to investigate these outcomes to clarify whether MHL programs have any actual impact on these parental behaviors.

No findings of reduction of stigma toward people with mental health problems in the included studies could be partly related to use of indirect measurement tools (38) or floor effects (22, 37). In one study (38), the extent to which an individual believes that most people would look down on or discriminate against people with schizophrenia was measured as stigma (38, 40); it may be difficult to change this kind of belief about others' stigmatizing attitudes through this kind of intervention. Assessments better matching to the purpose of interventions should be used. In two other studies (22, 37), personal stigma in the parents was low at baseline, with little room for the measured scores to improve.

When stratified by delivery mode, most face-to-face programs (33–35, 37) had a significant effect on knowledge of mental health/illnesses. However, effects were not clear for the online programs, due to unclear reports of the statistical results (36) and of the methods of statistical analyses (23). The effects of delivery mode on confidence were also not clear due to the limited number of studies (32–34, 36) or unclear reporting (36). Further comprehensive studies are needed to evaluate the effects of online programs, as well as face-to-face programs.

Recommendation for Future Research

Educational settings may be the ideal place to implement MHL programs for parents. Implementing the programs at schools would enable sharing of the understanding of adolescent mental health, given that both schools and parents can play an important role in meeting the MHL needs of adolescents (19). Through this shared understanding, parents may more easily initiate a conversation with the school about any mental health concerns they have for their child; the reverse is also true. Schools may additionally provide informational resources for adolescents and their parents, as well as arrange access to professional care through school counselors or health centers, lowering barriers to help-seeking.

In future programs, a focus on family-based approaches may be beneficial. Sharing of attitudes toward and knowledge of mental health between parents and children could reduce barriers to treatment, and development of programs that they can participate in together should be considered. In addition to improvements in studies of parental MHL programs, concerted efforts need to be made by researchers, as well as policy makers, to raise awareness of the importance of MHL for both parents and their children. For example, researchers could reach out to educational institutions as well as educational ministries/boards to encourage collaborative development of MHL programs. Considering the increasing prevalence of mental illnesses, and the high burden on youth and their caregivers (parents), health care systems, as well as society at the whole, these are issues must be given urgent attention.

TABLE 7 | Effects on intention, knowledge and behavior of helping children with mental health problems.

Author (year)	Intention, knowledge and behavior of helping	Score range	Group	Intention, knowledge and behavior score [mean (SD)]				Effect size (SMD)	
				Pre-test	Follow-up				
Intention to help children with mental health problems									
CBA									
Hurley et al. (2021) (22)	Intention to seek help for their children								
	-from personal sources	1–7	Int	5.2	1 mo:	4.3	ns		NA[a]
			Con	5.2		4.2			
	-from professional sources	1–7	Int	5.1	1 mo:	5.2	ns		
			Con	5.2		5.5			
Knowledge about helping children with mental health problems									
RCT									
Morgan et al. (2019) (33) (2020) (34)	Knowledge about appropriate help toward their children with mental health problems	0–12	Int	2.3 (0.7)	1 y:	2.6 (0.8)	*	0.43	b
			Con	2.2 (0.6)		2.2 (0.8)		0.00	
			Int		2 y:	2.7 (0.9)	ns	0.57	
			Con			2.3 (0.8)		0.17	
			Int		3 y:	2.6 (0.8)	ns	0.43	
			Con			2.3 (0.8)		0.17	
Helping behavior toward children with mental health problems									
RCT									
Morgan et al. (2019) (33) (2020) (34)	Appropriately helping their children with mental health problems	0–12	Int	2.4 (1.2)	1 y:	2.5 (1.0)	ns	0.08	b
			Con	2.6 (1.2)		2.3 (1.1)		−0.25	
			Int		2 y:	2.8 (1.5)	ns	0.33	
			Con			2.6 (1.1)		0.00	
			Int		3 y:	2.8 (1.3)	ns	0.33	
			Con			2.3 (1.0)		−0.25	

CBA, controlled before-and-after study; Con, control group; Int, intervention group; mo, month; NA, not applicable; ns, not significant; RCT, randomized controlled trial; SD, standard deviation; SMD, standardized mean differences; y, year.

$^{*}p < 0.05$.

[a]SD was not reported.

[b]Cohen's d was 0.22, 0.15 and 0.09 for knowledge about helping children, and 0.17, 0.16 and 0.38 for quality of actual helping behavior (1 y, 2 y and 3 y follow-up, respectively; change in control groups was considered).

Limitations

First, studies from sources other than scientific databases such as non-profit organizations and governments may have been overlooked. Second, relevant studies not written in English were also not examined. Third, although we tried to obtain information that was missing or unclear in the included studies, not all authors were available. Finally, publication bias was not assessed, given inadequate amounts of comparable data due to the variety of measurement tools used in the included studies.

CONCLUSIONS

The quality of the literature assessing effectiveness of previously developed MHL programs in parents of adolescents was inconsistent. Therefore, it remains unclear whether the programs overall were truly effective in improving parental MHL. However, significant positive effects were shown in several studies. It appears useful and worthwhile to develop educational programs to support parental MHL, although higher quality studies with clearer and more transparent reporting are needed. For example, in-depth description of details such as participation rates, methods, statistical analyses and outcomes are necessary. The effects on actual helping behavior in parents need to be measured in more studies.

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/s.

AUTHOR CONTRIBUTIONS

SK and TS designed the study, and wrote the review protocol with SY, JF, and FT. SK and SY carried out the study selection and the assessment of risk of bias. SK also conducted the data

extraction, and SY confirmed the extracted data. TS was the third reviewer to help the study selection, the assessment of risk of bias and the data extraction. SK drafted the study, and TS, FT, JF, and SY revised the draft. All authors approved the final manuscript.

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Help-Seeking and Help-Outreach Intentions of Healthcare Workers—The Role of Mental Health Literacy and Stigma in the Workplace

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Due to the demanding work environment, healthcare workers are often affected by mental health problems. Besides negative effects on individual wellbeing, mental health problems can reduce professional effort and increase turnover rates in healthcare. Those who develop mental health problems often receive necessary treatment with a great time delay. Two reasons for this are low mental health literacy and stigma. However, empirical investigations regarding the role of workplace mental health literacy and stigma on help-seeking and help-outreach intentions of healthcare workers in the workplace are currently missing. To bridge this gap, survey data was collected among trainees of different healthcare professions in Germany. The variables of interest were measured separately with the help of two times of measurement to avoid common method bias and to strengthen the causal interpretability of the hypothesized model. The response rate of the questionnaire was 21% (N_{t1} = 525, N_{t2} = 112). For measuring subjective mental health literacy at the workplace the MHL-W-G was used. Results of the structural equation modeling (SEM) indicate that workplace mental health literacy increases workplace help-seeking intention and help-outreach intention significantly. Further, it indicates that workplace mental health literacy decreases self-stigma and that personal stigma decreases overall workplace help-outreach intention. In order to uncover underlying mechanisms of the relationship between the mental health literacy and workplace help-seeking intention and help-outreach intention, the mediation of mental health stigma was tested, but could not be confirmed. The present study reduces the lack of empirical information regarding mental health help-seeking and help-outreach in the workplace. Therefore, the research contributes to the relevance of social contacts in the working context as potential gatekeepers to professional mental health support. Further, the study provides important insights into the way that mental health help-seeking and help-outreach intentions at the workplace are affected by mental health literacy and into the role of personal and self-stigma in healthcare profession. The results are of particular importance in light of the increased need for healthcare workers and the rising prevalence of mental diseases.

Keywords: mental health literacy, workplace, help-seeking, help-outreach, stigma, healthcare, mental health literacy tool for the workplace, MHL-W-G

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INTRODUCTION

Over the last years, job demands and job complexity in the healthcare sector have increased (Uchiyama et al., 2013; Mehta and Pandit, 2018), which has additionally elevated during the COVID-19 pandemic (Barello et al., 2020; Mahmud et al., 2021). Healthcare workers in care and nursing functions (e.g., nurses, midwives, and surgical assistants) are frequently confronted with conflicts, role ambiguity and patient aggression (Lim et al., 2010). Accordingly, working in a healthcare profession increases the relative risk of developing an affective or stress-related disorder compared to other branches (Wieclaw et al., 2006; Gärtner et al., 2010). Due to the demanding work environment, healthcare workers often report mental health problems such as anxiety, depression and burnout (Gärtner et al., 2010; Perry et al., 2015; O'Connor et al., 2018). Along with mental health problems of healthcare workers, the risk for healthcare associated errors, patient mortality (Gärtner et al., 2010; Dyrbye et al., 2017a) and turnover rates increase (Aiken et al., 2012; Dyrbye et al., 2017a). Therefore, the protection and promotion of mental health in the healthcare profession is of high importance for individuals, organizations and society.

With the current global public health crisis due to the COVID-19 pandemic, the mental health of healthcare workers received particular attention in research and the media. Global reviews and meta-analyses indicate, that the current emergency situation increases the existing high job demands of healthcare workers further and adds new ones such as the fear of infection/infecting others, ethical dilemmas, and the exposure to much higher numbers of death (Benzinger et al., 2021; Cordoba, 2021; Leo et al., 2021). As a result, the prevalence of anxiety, depression, burnout, sleep disorders, and stress level among healthcare workers has been rising (Sampaio et al., 2020; Leo et al., 2021; Mahmud et al., 2021).

Although the mental health of healthcare workers is an issue of major importance, addressing mental health problems in the working context is complex (Moll et al., 2013; Hudson et al., 2021). As two sides of the same coin, seeking help when suffering from mental health problems and reaching out for people who are in need, are described as the two "key mental health access behaviors" for early prevention (Moll et al., 2015, p. 2). Surprisingly, seeking help and offering help to others is as challenging for healthcare workers as for anyone else, even though they have professional knowledge (Wang et al., 2005; Gärtner et al., 2010). As a consequence, affected individuals hesitate to address formal or informal sources for help (Wang et al., 2005). Therefore, only few affected individuals receive necessary treatment within a timely manner (Wang et al., 2007; Rickwood et al., 2012). This delay leads to a progression of the mental health problem (Kessler et al., 2003; World Health Organization [WHO], 2017) and reduces the chances of recovery (Wang et al., 2005).

Mental health help-seeking in the workplace can be a dilemma across all occupational groups. On the one hand, revealing mental health problems at work is often associated with a violation of privacy and can affect career prospects as well as job security due to stigmatization (Wheat et al., 2010; Brohan et al., 2012; Hastuti and Timming, 2021). On the other hand, disclosing a mental health problem in the working context can increase the self-esteem of affected people and help them to cope better with the disease (Rüsch et al., 2005; Brohan et al., 2012; Hastuti and Timming, 2021). For healthcare workers further challenges occur, as a recent review assembled (Hudson et al., 2021): Firstly, healthcare workers could face licensing issues, when disclosing a mental health problem at the workplace. Secondly, healthcare workers may feel that their professional identity is threatened if they disclose a mental health problem at the workplace, which is critical as the occupation is associated with high responsibility. Last but not least, healthcare workers are especially worried of letting their team down with regard to high workloads in healthcare professions. To sum it up, there are reasonable disadvantages of seeking help for a mental health problem in the workplace, which is why many healthcare workers remain silent (Moll et al., 2013).

Most studies on mental health help-seeking and help-outreach and their antecedents focus on the private environment investigating the role of informal sources, such as family and friends, as well as formal sources, such as psychiatrists (Rossetto et al., 2016; Jung et al., 2017; Schnyder et al., 2017; Benuto et al., 2020; Thompson et al., 2022). The working context, covering colleagues and supervisors as sources of help, has rarely been studied. Due to their proximity and daily interaction, colleagues and supervisors might recognize changes in mental health even before family or friends. And—despite all disadvantages of disclosure mentioned—they can offer valuable social support at the workplace in challenging times (Schug et al., 2021). As affected people are more likely to seek help if suggested by others (Cusack et al., 2004; Vogel et al., 2007a), help-outreach by colleagues as well as supervisors could play a central role in early prevention at the workplace (Kunyk et al., 2016; Moll et al., 2017; Geuijen et al., 2020) and lower the economic and social burden of mental health problems on companies and society (Aiken et al., 2012; Rebscher et al., 2016; Dyrbye et al., 2017a).

To gain a better understanding of help-seeking and help-outreach behavior for a mental health problem, it is necessary to consider their antecedents. Two major barriers are discussed in the literature, which decrease help-seeking and help-outreach behavior for a mental health problem: On the one hand, poor mental health literacy (Corrigan, 2004; Rickwood et al., 2005; Smith and Shochet, 2011), which is defined as "knowledge and beliefs about mental disorders" (Jorm et al., 1997, p. 182), keeps individuals from recognizing mental problems in themselves and others. On the other hand, mental health stigma, defined as the process of labeling affected people with negative stereotypes (Corrigan, 2000; Link and Phelan, 2001), is discussed as another major barrier (Schnyder et al., 2017; Stolzenburg et al., 2018). Although these barriers are described in the literature, research regarding mental health literacy (Moll et al., 2015, 2017, 2018) and stigma (Ross and Goldner, 2009; Verhaeghe and Bracke, 2012) of healthcare workers is limited. Surprisingly, few studies examined the impact of mental health stigma on the willingness to seek or provide help for mental health problems among healthcare workers in the working context (for exceptions see Moll et al., 2015; Moll et al., 2018). Further, most research

examined mental health literacy and mental health stigma separately instead of investigating the relationship of both in order to predict help-seeking and help-outreach behavior (for an exception see Cheng et al., 2018 and Wang et al., 2019). Without the understanding of the relationship between these two major barriers, it remains unclear which mechanism underlies the help-seeking and help-outreach behavior of healthcare workers.

Studies revealed mixed results regarding the relationship of mental health literacy and stigma (Jung et al., 2017; Moll et al., 2018). In fact, some empirical results indicate that there is no relationship between mental health literacy and stigma (Cheng et al., 2018), whereas others showed a decrease in stigma for better mental health literacy (Milin et al., 2016; Morgan et al., 2018; Schomerus et al., 2018). Regarding healthcare workers, the relationship of the constructs becomes even more complex. Due to their profession, healthcare workers tend to have high mental health literacy but are not necessarily low in stigmatizing attitudes (Bourget and Chenier, 2007). The present study contributes to a better understanding of help-seeking and help-outreach behavior in the healthcare profession and, therefore, also supports the protection and promotion of mental health of professionals and their patients (Wiederkehr, 2012). This is particularly critical with regard to the increasing demand for the health workforce as well as the rising prevalence of mental diseases (Aiken et al., 2012; Dyrbye et al., 2017a; Kuhlmann et al., 2018).

Against this background, the aim of this study is to examine the role of mental health literacy and stigma on help-seeking and help-outreach intentions of healthcare workers in the workplace.

CONCEPTUAL BACKGROUND AND DEVELOPMENT OF HYPOTHESES

Help-Seeking Behavior and Help-Outreach Behavior

Research on help-seeking for mental health issues has been of great interest as it is the key to break the vicious circle of silence and untreated mental health problems. There are different conceptualizations of help-seeking behavior (Cauce et al., 2002; Rickwood et al., 2005; Cornally and McCarthy, 2011). A commonly shared definition described it as a "complex decision-making process instigated by a problem that challenges personal abilities" (Cornally and McCarthy, 2011, p. 280). Further, help-seeking when facing a mental health problem requires to interact and to communicate with others in order to get support "in terms of understanding, advice, information [and] treatment" (Rickwood et al., 2005, p. 4). Cauce et al. (2002) introduced a model for mental health help-seeking, which has originally been intended to explain adolescents' pathways into mental health services. The model includes three interrelated phases: (1) problem recognition, (2) decision to seek help and (3) service selection (Cauce et al., 2002). Based on that model for mental health help-seeking, it is crucial that: (1) an individual recognizes changes in mental health or first symptoms of a mental health problem in order to be able to seek help. If the problem is (2) defined as undesirable and prolonged, the individual plans to seek help and (3) decides which informal or formal sources should be approached.

The mental health help-seeking process is shaped by different factors that facilitate or reduce the progression of the process (Cauce et al., 2002; Rickwood et al., 2005). One major barrier is individual's mental health literacy (Corrigan, 2004; Rickwood et al., 2005; Smith and Shochet, 2011), which refers to the ability to recognize mental health problems, knowledge and attitudes that contribute to the prevention, detection, and treatment, as well as skills, to support others who are displaying symptoms of mental illness (Jorm et al., 1997; Jorm, 2011). Research has shown that high mental health literacy significantly promotes help-seeking (Jorm et al., 2000; Rüsch et al., 2011; Bonabi et al., 2016) and help-outreach (Hadlaczky et al., 2014; Rossetto et al., 2016), as it facilitates the initial problem recognition (Cauce et al., 2002). If mental health literacy is high, individuals are able to recognize mental health problems both in themselves and in others and respond adequately (Moll et al., 2015, 2017, 2018). In general, healthcare workers are expected to have a high level of mental health literacy (Moll et al., 2015). However, mental health knowledge and skills can vary among healthcare workers due to their different training backgrounds and varying degree of contact with mental disorders. According to Moll et al. (2015), high mental health literacy significantly promotes help-seeking and help-outreach behavior in the workplace as it enables individuals to recognize changes in own mental health and those of others. Further, people with high mental health literacy can assist affected people with the service selection. As a proxy for help-seeking behavior, intentions to seek help can be used (Rüsch et al., 2011; Angermeyer et al., 2013; Ando et al., 2018). Accordingly, hypothesis 1a is formulated as follows:

> H1a: Mental health literacy is positively associated with help-seeking intention in the workplace of healthcare workers.

Affected individuals may not always recognize or acknowledge their own evolving or manifested mental health condition or may lack information about how to access professional support. Therefore, social contacts like friends, family or colleagues could be of great value in the mental health help-seeking process (Langlands et al., 2008; Moll et al., 2015; Rossetto et al., 2016). Social contacts' help-outreach behavior is a form of limited, non-professional support until "appropriate professional help is received or the crisis resolves" (Langlands et al., 2008, p. 435). Based on the idea of "mental health first aid" (Langlands et al., 2008, p. 435), social contacts could provide useful help along the mental health help-seeking process. Initially, help-outreach supports the awareness of changes in mental state by addressing and informing affected individuals in the recognition phase (Jorm et al., 2010; Moll et al., 2015). Further, social contacts support affected individuals during the decision to seek help and in the service selection by referring them to professional support, employee assistance programs, self-help groups or even offer their own support during a crisis (Jorm et al., 2010; Moll et al., 2015). For example, a review by Kunyk et al. (2016) shows that especially colleagues appear to be a source of help for healthcare workers with an addiction. However, social contacts could only

function as gatekeeper to professional support when they have the necessary knowledge, mindset and skills to provide appropriate help. As mentioned above, intention to offer help can be used as a proxy for help-outreach behavior (Rüsch et al., 2011; Angermeyer et al., 2013; Ando et al., 2018). Accordingly, hypothesis 1b is formulated as follows:

H1b: Mental health literacy is positively associated with help-outreach intention in the workplace of healthcare workers.

The Role of Stigma for Help-Seeking Behavior and Help-Outreach Behavior

The public tends to stigmatize people suffering from a mental disorder, e.g., depression or psychosis, more than people with a physical disorder (Corrigan et al., 2001). Stigma has various pathways through which it can develop and interfere with the lives of affected individuals. For that reason, mental health stigma is discussed as a key barrier to the mental health help-seeking process. The decision to seek help is shaped by the extend of one's mental health stigma (Cauce et al., 2002; Cheng et al., 2018). Also, the potential support of colleagues depends on their levels of mental health stigma (Moll et al., 2017). Mental health stigma refers to the "process of objectifying and dehumanizing a person known to have or appearing to have a mental disorder" (Mendoza et al., 2015, p. 209) by labeling affected people with negative stereotypes (Corrigan, 2000; Link and Phelan, 2001). Those negative stereotypes or prejudices of mentally ill are rooted in the performance-oriented values of societies (Parsons, 1951; Siegrist, 2005) and can be found in most modern cultures (Arboleda-Flórez, 2002). A particularly strong and harmful stereotype portrays people with mental disorders as perilous and unpredictable. From a behavioral perspective, negative stereotypes or pejudice on the mentally ill can manifest as discrimination against affected people in forms of withdrawal and avoidance (Corrigan and Bink, 2016). As a part of the socialization process, most stereotypes are learned by the individual in the first years of life (Link and Phelan, 2013). During life course, individuals have the chance to reflect on learned stereotypes and prejudices, increase their mental health knowledge and gain their own experiences in contact with affected people (Aronson et al., 2014). Even though stereotypes and stigmatizing attitudes are difficult to change, negative stereotypes can be modified (Weber and Crocker, 1983) and mental health stigma can be reduced (Holmes et al., 1999).

Although mental health stigma of the public is a social burden that must be addressed, research shows that internalized prejudice and stigmatizing attitudes toward oneself have the biggest impact on mental health help-seeking (Eisenberg et al., 2009; Schomerus et al., 2009; Vogel et al., 2013; Schnyder et al., 2017). Self-stigma "is the reduction of an individual's self-esteem or self-worth caused by the individual self-labeling herself or himself as someone who is socially unacceptable" (Vogel et al., 2006, p. 325). According to the Modified Labeling Theory, negative collective beliefs about people with mental health problems could have a negative impact on the self-esteem of people facing a mental health problem (Link et al., 1987). Personal stigma describes "personal attitudes toward members of a stigmatized group and can find a behavioral expression in the desire for social distance" (Schnyder et al., 2017, p. 261). According to a meta-analysis, personal stigma reduces the willingness to interact with affected people and is negatively associated with help-outreach behavior (Schnyder et al., 2017). However, Jung et al. (2017) showed in a sample of public employees, that self-stigma predicted attitudes toward mental health help-seeking, whereas personal stigma did not.

Mental health stigma is a common phenomenon even among healthcare workers. In contrast to the general public, healthcare workers tend to have a more negative point of view regarding the course of mental disorders, long-term outcomes and the likelihood of discrimination (Jorm et al., 1999; Hugo, 2001; Magliano et al., 2004). This is explained by their increased contact with chronically ill people. Stigmatizing attitudes regarding mental illness of healthcare workers can have a negative impact on their own mental health help-seeking behavior (Ross and Goldner, 2009; Knaak et al., 2017; Søvold et al., 2021) as well as their mental health help-outreach behavior toward affected colleagues (Moll et al., 2015; Knaak et al., 2017). An increased perception of mental health stigma in healthcare comes along with higher self-stigma as affected healthcare workers often attribute their mental illness to personal weakness or character defects (Smith and Hukill, 1996). Based on their professional self-conception on helping others they might feel guilt or shame (Davidson et al., 2018), which discourages affected healthcare workers to seek help from a colleague (Knaak et al., 2017). Further, research shows that personal stigma of healthcare workers also turns against affected colleagues in the workplace (Ross and Goldner, 2009; Knaak et al., 2017). As personal stigma finds expression in the desire for social distance (Link and Phelan, 2001), the help-outreach behavior to affected colleagues can be reduced. Same results can be found for the medical profession (e.g., physicians) (Chew-Graham et al., 2003; Adams et al., 2010; Wallace, 2012).

Prior research on mental health help-seeking mainly examined mental health literacy and mental health stigma separately instead of focusing on the relationship and potential interplay of both in order to predict help-seeking and help-outreach behavior (for an exception see Cheng et al., 2018 and Wang et al., 2019). The scarce research on the interplay of mental health literacy and mental health stigma shows heterogeneous results. Direct effects are reported, such as a lack of knowledge regarding mental health help could increase personal and self-stigma (Jorm et al., 2010; Milin et al., 2016; Morgan et al., 2018; Schomerus et al., 2018). However, Cheng et al. (2018) and Wang et al. (2019) found no interaction between mental health literacy and stigma in the prediction of help-seeking of college and high school students.

Following Cauce et al. (2002), high mental health literacy promotes the recognition and identification of one's own mental health problem as the first step of the mental health help-seeking model. However, the decision to actually seek help for that problem in the workplace can be reduced by fears of rejection and low self-esteem caused by self-stigma. Since individual mental health literacy may also help to protect from self-stigma, it can make seeking help for a mental health problem more likely. Hence, the second hypothesis to be tested is:

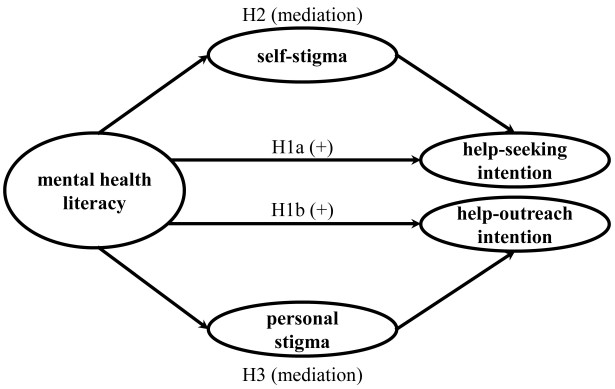

FIGURE 1 | Illustration of conceptual model.

H2: The positive association between mental health literacy and help-seeking intention in the workplace of healthcare workers is mediated by self-stigma.

Along with the previous explanations, it is conceivable that the positive relationship between mental health literacy and help-outreach behavior could be diminished by the presence of personal stigma. More precisely, high mental health literacy promotes the recognition and identification of changes in a colleague's mental health condition (Cauce et al., 2002), but the decision to actually offer help to a colleague in the workplace can be lowered by the desire for social distance as an expression of personal stigma (Schnyder et al., 2017). Since individual mental health literacy may also help to reduce personal stigma, reaching out to help affected people is more likely. Therefore, it is hypothesized:

H3: The positive association between mental health literacy and help-outreach intention in the workplace of healthcare workers is mediated by personal stigma.

The full research model is displayed in **Figure 1**.

MATERIALS AND METHODS

Participants and Procedure

On account of country-specific differences (Ridic et al., 2012; Rafferty et al., 2019), the healthcare setting and the education of healthcare workers in Germany will be briefly outlined. The healthcare system in Germany is divided into outpatient and inpatient care. Inpatient treatment is provided by 1,914 hospitals (Destatis, 2022a). In 2021, Germany's bed capacity (7.9 hospital beds per 1,000 population) was the highest in Europe (OECD, 2021). Also the number of nurses and physicians for its population is high compared to other EU-countries. Currently 5.7 million people work in healthcare in Germany, the majority is female (75.6%) (Destatis, 2022b). Given the high number of beds, the nurse to bed ratio is among the lowest in the EU (OECD, 2021). Since 1990 the German hospital sector has been restructured and privatized (Schulten, 2006), which led to a reduction of healthcare workers in hospitals. The demographic change is an additional factor that further aggravates the growing demand for care in Germany (Rafferty et al., 2019). Although different reforms were implemented to fight the shortage of skilled health workers (OECD, 2021), Germany is facing a tremendous shortage of healthcare workers just as other countries nowadays (Oulton, 2006; World Health Organization [WHO], 2016; Rafferty et al., 2019).

The debate about the shortage of skilled health workers highlights the need for attracting and training young professionals. The dual vocational training in Germany is a combination of on-the-job training and vocational school. Trainees attend the theoretical training in nursing schools mostly on the hospital campus, while practical training takes place at different hospitals wards. In Germany, the focus of healthcare workers' training lies on practical work experience. Within the 3 years of apprenticeship, trainees complete 2,500 hours of practical work in hospital, which is more than in most other EU countries (Rafferty et al., 2019). Therefore, healthcare trainees gain work experience early in their careers while sharing the same challenging working conditions as their registered co-workers (Lim et al., 2010; Wazqar et al., 2017; Guo et al., 2018). With the new Nurse Professions Reform Act implemented in 2020, the qualification of healthcare professionals is recognized by other EU states (Rafferty et al., 2019).

In order to test the hypotheses, survey data was collected among trainees of different healthcare professions in six German hospitals from autumn 2018 to spring 2019. The variables of interest were measured separately at two points of measurement to avoid common method bias (Podsakoff et al., 2003) and to strengthen the causal interpretability of the hypothesized model (Maxwell and Cole, 2007).

The first measurement (t1) was carried out as a paper-pencil-questionnaire in the classrooms (N_{t1} = 525). The paper-pencil-questionnaire included measures of the independent variable and was distributed by the instructed schoolteachers. Additionally, participants were asked to provide their email addresses in a separate form to contact them for the second measurement. The second measurement (t2) was conducted via an online-questionnaire 2 weeks after t1 (response rate of 21%). The online-questionnaire included measures for the mediator and dependent variables among others. In order to match the data of t1 and t2, a self-generated identification code for participants was used. The final sample consists of participants who filled out both the paper-pencil-questionnaire and the online-questionnaire (N_{t2} = 112).

The participants of the final sample were mostly enrolled in healthcare and nursing (59.8%). According to the occupational group studied, the majority of participants were female (12.5% males). The average age was 24.02 years (*SD* = 6.35). At the time of the online-questionnaire (t2), most participants were in their third and last year of training (50.9%), although 25.9% were in their second year and 23.2% in their first year. The mean of work experience (including apprenticeship) was 4.19 years (*SD* = 5.27). In total, most of the sample hold a higher school certificate (67%, German "Abitur"), although 17.9% an intermediate secondary school certificate (German "Realschulabschluss"), 5.3% a general secondary school certificate (German "Hauptschulabschluss"),

TABLE 1 | Descriptive statistics for study sample (n = 112).

Characteristics	*n*	%
Sex		
Male	14	12.5
Female	98	87.5
Age		
18–21	34	30.4
22–25	58	51.8
26–29	10	8.9
> 30	10	8.9
Education		
General secondary school certificate ("Hauptschulabschluss")	6	5.3
Intermediate secondary school certificate ("Realschulabschluss")	20	17.9
Higher school certificate ("Abitur")	75	67.0
Professional qualification	8	7.1
University degree	3	2.7
Year of training		
1	26	23.2
2	29	25.9
3	57	50.9
Type of apprenticeship		
Geriatric care	10	8.9
Pediatric care	13	11.6
Healthcare and nursing	67	59.8
Nursing assistance	4	3.6
Midwifery	2	1.8
Physiotherapy	13	11.6
Surgical technical assistance	3	2.7
Work experience in years		
<2	29	25.9
3–5	66	59.0
6–8	8	7.1
>9	9	8.0
Contact		
Direct experience (personal)	29	25.9
Indirect experience (family and close friends)	59	52.7

7.1% completed another vocational training and 2.7% have a university degree. More than 25% of the participants reported direct experience with mental health problems and approximately 53% indicate indirect experience though family and close friends. See **Table 1** for detailed sample characteristics.

Throughout the study, the ethical standards of the American Psychological Association (2022) were followed and a written informed consent was given. As an incentive, four online shopping vouchers of 25 euro each were raffled among the participants of the second measurement.

Measurements

Workplace Mental Health Literacy

In this study, the German Version of the mental health literacy tool for the workplace (MHL-W-G, Wulf and Ruhle, 2020) was used to measure workplace mental health literacy (t1). MHL-W-G is a subjective, vignette-based tool with 16 items measuring the perceived mental health competence in the work context. Rather than measuring the correct classification of a mental disorder (Wei et al., 2015), workplace mental health literacy refers to the self-assessment of individual mental health competence in the working context (Moll et al., 2017). Therefore, the four vignettes describe job-related situations with colleagues who struggle with a potential mental health problem. After having read the vignettes participants were asked to rate their competence on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) regarding (a) the assessment of the described situation, (b) risk factors and prevention, (c) handling the situation, and (d) helpful sources and interventions (Moll et al., 2017). Higher sum scores indicate higher levels of mental health literacy. Cronbach's alpha was 0.89.

Self-Stigma

To measure self-stigma, the German translation by Drabek (2010) of the Self Stigma of Seeking Psychological Help Scale (SSOSH) (Vogel et al., 2006) was used (t2). Participants were asked to rate their attitudes toward psychological help-seeking if needed with 10 items (sample item: "I would feel inadequate if I went to a therapist for psychological help.") on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Five items were reverse coded. Higher sum scores indicate higher levels of self-stigma. Cronbach's alpha was 0.84.

Personal Stigma

To measure personal stigma, the German translation of the Social Distance Scale (SDS) (Link et al., 1987) by Angermeyer and Matschinger (1997) was used (t1), which consists of seven items. Good psychometric properties have been reported for this scale, capturing attitudes toward the mentally ill (Angermeyer and Matschinger, 2003). Participants were asked, if they would accept the person described in the situation rated on a five-point Likert scale (1 = in any case to 5 = not at all; sample item: "To what extent would you be okay with having someone with a mental health problem as a neighbor?"). Higher sum scores indicate higher levels of personal stigma. Cronbach's alpha was 0.87.

Help-Seeking Intention

The help-seeking intention for a mental health problem from different sources was measured (t2) with the German translation of the General Help-Seeking Questionnaire (GHSQ) (Wilson et al., 2005) by Hanschmidt (2018). As suggested by the authors of the GHSQ, help sources were modified for the purpose of the study (Wilson et al., 2005). Participants were asked to rate the likelihood of seeking help from different sources in the private environment, workplace and professional services on a seven-point Likert scale (1 = extremely unlikely to 7 = extremely likely, 8 = does not apply). Cronbach's alpha in this sample was 0.71. Beside the GHSQ, one self-developed item measured the overall workplace help-seeking intention when facing a mental health issue on a seven-point Likert scale (1 = extremely unlikely to 7 = extremely likely; sample item: "to what extent would you seek help in the working context in case of a personal or mental health problem?").

Help-Outreach Intention

The measurement of help-outreach intention was based on a modified behavior-list of the mental health first aid (MHFA) training (Jorm et al., 2010) described by Moll et al. (2015). For the purpose of this study, the English items were translated into German and back-translated into English by two independent persons. The 13 items (t2) cover general (e.g., "time to listen") as well as work context-specific help-outreach behaviors (e.g., "offer support with job task fulfillment"). Participants were asked to rate the likelihood of performing each behavior on a seven-point Likert scale (1 = extremely unlikely to 7 = extremely likely). Cronbach's alpha for this study was 0.82. Additionally, one self-developed item measured the overall workplace help-outreach intention on a seven-point Likert scale (1 = extremely unlikely to 7 = extremely likely), "to what extent would you offer help regarding a personal or mental health problem in the work context (e.g., an affected colleague)?"

Control Variables

Demographic data were gathered in both times of measurement (gender, age, education, healthcare profession, year of training, and work experience). Also, the contact with people facing mental health problems was measured in t1, as it can shape attitudes toward them (Stadler, 2010). Lacking a standardized measure to operationalize contact to mentally ill people, participants were asked to rate their direct (personal) and indirect (family and close friends) experience with mental health problems on a dichotomy scale (1 = yes and 2 = no).

Statistical Analyses

For data preparation and the calculation of frequencies, means, standard deviations, Cronbach's α, correlations, distribution characteristics and *t*-tests, IBM SPSS Statistics 25 was used. Factor analyses for each construct were tested with IBM SPSS AMOS 25, as, due to the small sample size, it was not possible to examine all variables at once.

Prior of testing hypotheses, two analysis steps were conducted: First, Pearson correlations of the variables were calculated. Second, factor structure of main study variables was validated. In order to test the proposed research model, SEM was applied and alternative SEM models were compared to test the mediation hypotheses (Anderson and Gerbing, 1988). The assessment of the model fit was based on χ^2 difference tests and fit indices including CFI, GFI, TLI, RMSEA, AIC, and BIC (West et al., 2012). Adequate model fit is described by Schermelleh-Engel et al. (2003) with: CFI > 0.95, GFI > 0.90, TLI > 0.95, RMSEA < 0.08 and the lowest values for BIC and AIC.

Due to the small sample size, it was not possible to include all measures as latent variables. Thus, the mean sum scores for self-stigma and personal stigma were used to test and estimate the proposed research model. Referring to Wulf and Ruhle (2020), the second-order structure of workplace mental health literacy was added to the model as latent variable. Regarding the robustness of the results it can be reported, that there are only minor changes in the results when using latent variables for the mediator variable and a mean sum score for workplace mental health literacy.

RESULTS

Responder Analysis

In order to control for non-response bias in the second measurement, socio-demographic and occupational characteristics of participants reported at t1 were compared by independent samples *t*-tests (for continuous variables) and chi-square tests (for categorical variables). No statistically significant differences were found according to age, education, healthcare profession, work experience, contact (direct/indirect), and workplace mental health literacy. However, participants who took part in the paper-pencil and online-questionnaire are in higher years of training (M = 2.30, SD = 0.86, n = 112) than trainees (M = 1.98, SD = 0.82, n = 525) who only took part in the paper-pencil questionnaire in the classroom, $t(525) = -3.62$, $p < 0.000$. The effect size of d = 0.44 was calculated referring to Lenhard and Lenhard (2016) and can be described as medium according to Cohen (1988, p. 25–26). Also, less men took part in t2 than women (t1 and t2: M = 0.88, n = 112, only t1: M = 0.79, n = 525), χ^2 = 3.958, p = 0.047. The effect size is small with Cramer's V w = 0.087 (Cohen, 1988). To sum it up, the used sample seems not to be inflated by non-response bias as the means of the independent variable (workplace mental health literacy) are statistically equal between participants and non-participants of t2.

Descriptive Statistics

Workplace Mental Health Literacy

Participants' answers to the workplace mental health literacy scale ranged from 36 to 80 with a mean of 56 (SD = 9.47, n = 112). In comparison with other study results the participants of this study had on average a slightly higher workplace mental health literacy value: Wulf and Ruhle (2020) reported for a working convenience sample M = 54 (SD = 9.74, n = 317). Moll et al. (2017) reported M = 52 (SD = 12.40, n = 192) before and M = 66 (SD = 8.77, n = 192) after a mental health literacy-related intervention for experienced healthcare workers.

Help-Seeking Intention

Participants indicated that they would most likely seek help from someone in the private environment or contact a professional service for help (for full list see **Supplementary Table 1**). In the working context, the source of first choice were colleagues. The likelihood of not seeking any help for a mental health problem was rather high (M = 5.31, SD = 1.73, n = 90).

Help-Outreach Intention

Based on a list of different behaviors participants rated their intention to provide help to a colleague with a mental health problem (for full list see **Supplementary Table 1**). Participants would most likely spend time listening to a colleague's problem. Participants were less likely to report talking to him/her about possible suicidal thoughts. Further the likelihood of not offering help to an affected colleague was rather low (M = 1.37, SD = 0.92, n = 112). Overall, participants were more likely to offer help to their colleagues than to ask for help themselves.

Correlations Between Variables

Table 2 shows the means, standard deviations and correlations for all relevant variables of the two measurements. The data refers to the participants who took part in both questionnaires. Both overall workplace help-seeking intention and outreach-behavior intention measures showed that the corresponding scales of GHSQ and MHFA were positively and significantly related to them. As expected, workplace mental health literacy also correlated positively and significantly with both overall intention measures. As anticipated, the two stigma measures were not correlated with each other, indicating distinct constructs. Further, self-stigma, and personal stigma were negatively correlated with workplace mental health literacy, but only the correlation with self-stigma was statistically significant. Surprisingly, self-stigma was only negatively and significantly associated with overall workplace help-outreach intention, whereas personal stigma was negatively and significantly correlated with overall workplace help-seeking intention and overall workplace help-outreach intention.

Factor Analysis

Prior to hypothesis testing, CFA was performed with main study variables (MHL-W-G, SSOSH, SDS, GHSQ, and MHFA) in order to test the factorial structure of the constructs (Byrne, 2016). For the independent variable workplace mental health literacy, the second order structure as described by Wulf and Ruhle (2020) could be replicated in AMOS with an adequate model fit: $\chi^2(76, n = 112) = 99.393$, $p = 0.037$, CFI = 0.970, GFI = 0.901, TLI = 0.953, RMSEA = 0.053 [90% confidence interval (CI):0.014,0.079]. However, both CFA of the dependent variables GHSQ and MHFA showed inadequate model fits. For this reason, in the next analysis step the one-item measures, determining overall workplace help-seeking intention and help-outreach intention, were used as dependent variables instead of the whole scale of GHSQ and MHFA.

Path Model and Hypothesis Testing

Table 3 shows the test of different models, including all measures as noted above: In comparison to alternative models, the measurement model 1 indicates good model fit: $\chi^2(140, n = 112) = 149.518$, $p = 0.276$, CFI = 0.988, TLI = 0.984, GFI = 0.883, AIC = 289.518, BIC = 479.813, RMSEA = 0.025 [0.000,0.053]. Model 1 explained $R^2 = 0.09$ of variance in overall workplace help-seeking intention and $R^2 = 0.11$ of variance in overall workplace help-outreach intention. The standard coefficients of the model displayed in **Figure 2** show that workplace mental health literacy increases the overall workplace help-seeking intention and help-outreach intention significantly. These results provide support for hypothesis H1a and H1b. Further, it indicates that workplace mental health literacy decreases self-stigma and that personal stigma decreases overall workplace help-outreach intention. In the final model, further variables of interest (age, education, job tenure, healthcare profession, and personal experience with mental health problems) were included but showed no effect. Therefore, those variables were excluded in the described analyses.

TABLE 2 | Means, standard deviations and correlation.

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
Sex	0.88	0.33	–										
Age	24.02	6.35	0.04	–									
Workplace mental health literacy	3.50	0.59	0.01	−0.10	**0.89**								
Overall workplace help-seeking intention	3.72	1.53	0.11	−0.04	0.26**	–							
Overall workplace help-outreach intention	5.63	1.33	0.08	−0.08	0.23*	0.15	–						
General help-seeking questionnaire (GHSQ)	3.70	1.04	−0.01	0.39**	−0.02	0.38**	−0.06	**0.71**					
Mental health first aid (MHFA)	5.24	0.85	0.08	0.05	0.04	0.13	0.27**	−0.02	**0.82**				
Personal stigma	2.64	0.76	−0.01	0.13	−0.15	−0.20*	−0.23*	0.05	−0.20*	**0.87**			
Self-stigma	2.58	0.67	−0.03	−0.09	−0.21*	−0.15	−0.21*	−0.43**	−0.09	0.16	**0.84**		
Contact (family and close friends)	1.47	0.50	−0.07	−0.08	−0.23*	−0.01	−0.12	0.07	−0.01	0.13	0.21*	–	
Contact (personal)	1.74	0.44	−0.04	0.07	−0.10	0.09	−0.03	0.35**	−0.14	0.16	0.08	0.32**	–

*n = 112; bivariate correlation; Cronbach's α in the diagonal (bold). *p < 0.05; **p < 0.01; sex: 0 (male) and 1 (female); age in years; contact 1 (yes) and 2 (no).*

TABLE 3 | SEM results.

Model	H	CFI	TLI	GFI	RMSEA 90% CI RMSEA	AIC	BIC	χ^2	df		$\Delta\chi^2$(Δ df)
1	H1a/b, H2, H3	0.988	0.984	0.883	0.025 [0.000,0.053]	289.518	479.813	149.518	140	–	–
2	H2	0.983	0.978	0.879	0.029 [0.000,0.055]	291.127	475.985	155.127	142	1 vs. 2	5.609 (2)
3	H3	0.981	0.974	0.877	0.031 [0.000,0.056]	293.173	478.031	157.173	142	1 vs. 3	7.655**(2)
4	No mediation	0.976	0.969	0.873	0.034 [0.000,0.058]	294.669	474.090	162.669	144	1 vs. 4	13.151** (4)
5	Full-mediation	0.975	0.967	0.875	0.035 [0.000,0.059]	297.582	482.440	161.582	142	1 vs. 5	12.064*** (2)

*n = 112; GFI, goodness of fit index; CFI, comparative fit index; TLI, Tucker-Lewis index; RMSEA, root mean square error of approximation; AIC, Akaike information criterion; BIC, Bayesian information criterion; 90% CI RMSEA, 90% confidence interval for RMSEA; **p < 0.01; ***p < 0.001.*

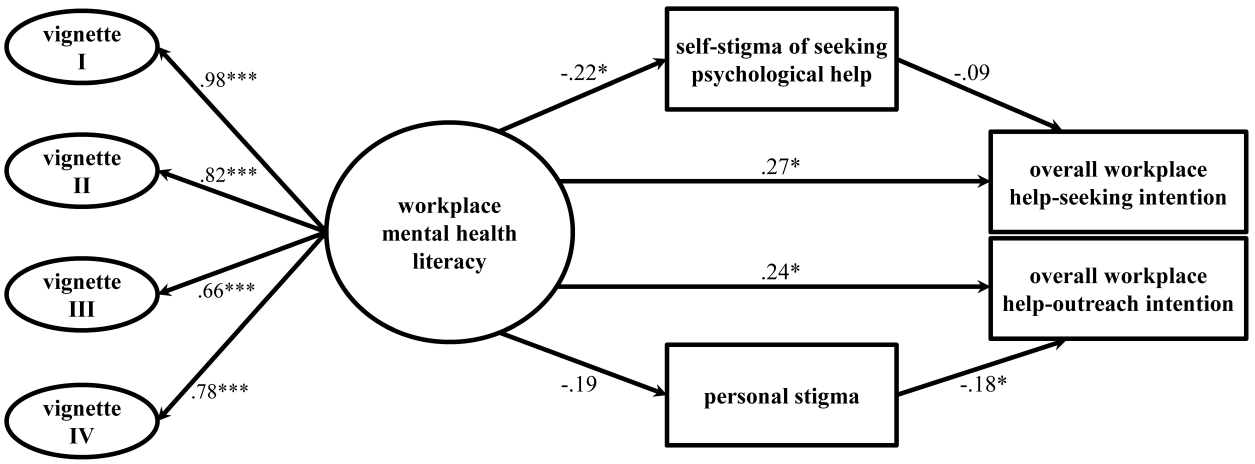

FIGURE 2 | Workplace mental health literacy as predictor of overall workplace help-seeking intention and help-outreach intention. n = 112, path model with standardized beta coefficients and without error terms. *p< 0.05; **p < 0.01; ***p< 0.001.

Additionally, the mediation hypotheses 2 and 3 were tested via the comparison of the standardized total effect with the standardized indirect effect of the dependent variables (see **Table 4**). The standardized indirect effects due to self-stigma and personal stigma were almost equal to the standardized total effects of overall workplace help-seeking intention and overall workplace help-outreach intention. Thus, hypotheses 2 and 3 can be rejected.

DISCUSSION

Theoretical Implications

The aim of the study was to examine the role of mental health literacy and stigma on help-seeking and help-outreach intentions of healthcare workers in the workplace. Study findings indicate that the mental health help-seeking and help-outreach intentions of healthcare workers in the working context increases with mental health literacy. Therefore, the first hypothesis was confirmed, which is in line with Moll et al. (2015, 2018). In contrast to mental health help-seeking, offering support for a mental health problem has hardly been addressed in previous studies. This especially applies to the working context of healthcare workers. Hence, study results contribute to a broader understanding of the workplace as a relevant setting for early prevention of mental health problems. With regard to the healthcare profession, the young employees of the present study indicated higher mean scores for offering help to an affected colleague than for seeking help at the workplace themselves in case of a mental health problem. This result can be compared to findings of private networks, which are known to positively influence the individual's decision to seek help for a mental problem (Cusack et al., 2004; Vogel et al., 2007a). A review revealed that a pivotal event typically initiates the help-seeking process of healthcare workers for severe substance use disorders (Kunyk et al., 2016). As self-reporting for most addicted individuals is uncommon, being addressed by colleagues is more likely to lead healthcare workers into treatment (Kunyk et al., 2016). Beside this, people with a mental health problem tend to have limited sources in their private network to ask for help, therefore, their social network in the working context may sometimes be the only access point to social support (Simmons, 1994). For this reason, the present study emphasizes the importance of colleagues as potential sources for help in the workplace. Affected individuals have the opportunity to receive initial support, for example, by colleagues who listen and provide emotional encouragement or in terms of support in job task fulfillment.

In general, participants reported high mean scores of not seeking help in case of a mental health problem. This is in line with previous studies, which showed that most people do not seek help or do so rather late (Wang et al., 2007; Rickwood et al., 2012).

TABLE 4 | Results of the mediation analysis.

Hypothesis				Estimates[a]
	Total effect			
	Workplace mental health literacy	→	Overall workplace help-seeking intention	0.292
	Workplace mental health literacy	→	Overall workplace help-outreach intention	0.277
	Direct effect			
H1a	Workplace mental health literacy	→	Overall workplace help-seeking intention	0.272
H1b	Workplace mental health literacy	→	Overall workplace help-outreach intention	0.242
	Workplace mental health literacy	→	Self-stigma	−0.233
	Workplace mental health literacy	→	Personal stigma	−0.190
	Self-stigma	→	Overall workplace help-seeking intention	−0.087
	Personal stigma	→	Overall workplace help-outreach intention	−0.183
	Indirect effect			
H2	Workplace mental health literacy	→	Overall workplace help-seeking intention	0.019
H3	Workplace mental health literacy	→	Overall workplace help-outreach intention	0.035

n = 112. [a]*Standardized.*

Regarding the different sources of help, participants indicated that they would prefer seeking help in the private environment or contact a professional source rather than asking for help in the working context. Recently, Hastuti and Timming (2021) come to a similar result in their interdisciplinary review, which focusses on mental illness disclosure in the workplace across all occupations. Revealing mental health problems at work can have negative consequences on chances of getting hired, career prospects, job security and therefore prevent seeking help (Wheat et al., 2010; Brohan et al., 2012; Hastuti and Timming, 2021). This especially applies for occupations such as healthcare profession with strict occupational regulations (Hastuti and Timming, 2021). In fact, nursing and medical staff are refusing to seek help for a mental problem out of fear of consequences regarding receiving or renewing their license (Chew-Graham et al., 2003; Dyrbye et al., 2017b; Brower, 2021; Weston and Nordberg, 2021). According to national legislation, these concerns are justified, as the disclosure of mental health problems in healthcare may result in restrictions, obligatory surveillance and evaluation of mental health status and (temporary) loss of license (Hudson et al., 2021). For young employees the situation is even more complicated, as they need to apply for a permanent job at the end of their apprenticeship. In Germany, trainees are often given the chance to be taken on by the company providing the apprenticeship directly after graduation (Schönfeld et al., 2020). Therefore, young employees will think twice about disclosing mental health problems in order not to affect future job opportunities negatively. This may also help to explain why the participants in the present study indicate that they rather aim to seek help from colleagues than from the employer side.

Further, participants indicate that they would less likely approach institutions like the employee representation and labor union, which are less favored sources for seeking mental help. That could be explained by the fact, that at the beginning of the professional career young employees hardly know representatives of these institutions, which makes it more difficult to ask for help than in the immediate working environment. Additionally, the distant relationship with those institutions is associated with higher expectations of stigmatization and represent the left hand distribution of the u-shaped relationship between stigma and familiarity (Corrigan and Nieweglowski, 2019). In summary, colleagues seem to be a potential source of help for affected people, as their relationships tend to not be as close as those with family members but also not as distant as those with institutions in the working context and therefore less mental health stigmatization can be expected.

Regarding the second and third hypothesis, no mediating effect of either self-stigma or personal stigma on the association between mental health literacy and help-seeking intention in the workplace could be confirmed. These results could be explained with regard to other types of stigma, e.g., the perceived stigma from others (Pedersen and Paves, 2014; Jennings et al., 2015; Schnyder et al., 2017), which could also have an impact on the relationship between mental health literacy and help-seeking and help-outreach behavior in the workplace. For personal stigma, social distance measures are widely used in the help-seeking context (Jung et al., 2017), but as research regarding help-outreach behavior is scarce, it is possible that other stigma types, which were not included in this study, could also play a role. Regarding self-stigma, prior studies reported that self-stigma of seeking psychological help is of greater importance in the mental health help-seeking process than other stigma types (Vogel et al., 2006, 2007b; Cheng et al., 2018; Wang et al., 2019). Against this background, one possible explanation regarding the missing association between self-stigma and overall help-seeking intention refers to the small sample size and statistical power. Complex models, like the present model, require larger sample sizes (>200) in order to be able to test efficiently for indirect effects on the generally accepted probability level of 0.05% (Hoyle and Gottfredson, 2015).

Even though no mediating effects of stigma could be found in this study, direct effects are reported. There was a negative direct effect of personal stigma on overall help-outreach intention,

thus help-outreach intentions of healthcare workers decrease with personal stigma in the working context. This result is in line with prior research: In a vignette study, Jorm et al. (2005) showed that adults over 18 years, who are high in personal stigma, report less mental health first aid responses (e.g., listening, talking and supporting). In contrast, Mason et al. (2015) found only small negative effects of personal stigma on mental health first aid intentions in high school students with an average age of 16. In this study, personal stigma was identified as an important barrier to help-outreach intention in the workplace of young employees, although the direct effect of personal stigma was not as strong as the direct effect of mental health literacy on help-outreach intention in the workplace.

From previous studies, it is known that young employees are particularly vulnerable for mental health problems (Kessler et al., 2005; Rickwood et al., 2005; Patel et al., 2007) as first work experience is an important life event and socialization process, which can be extremely stressful. This especially applies to young employees in jobs as physically and emotionally demanding as the healthcare profession (Frögéli et al., 2019). For example, younger age of nurses was found to be a predictor of professional burnout in a meta-analysis (Gómez-Urquiza et al., 2017). At the same time, as participants of the present study recently started to work, their contact with chronically mentally ill patients has been limited and as a result stigmatizing attitudes may not be as severe as in employees with more work experiences (Jorm et al., 1999; Hugo, 2001). Besides this, it is plausible to assume, that especially young employees hold a high level of professional self-conception in their first working years, in the sense of helping and caring for those in need. Therefore, the mental health help-seeking process of young employees may be less dependent on their (lower) mental health stigma than on their newly acquired knowledge. This assumption can be supported by the fact that the participants of the present study reported a medium level of self-stigma and personal stigma, contrasting the generally high level of stigma in healthcare found in other studies (Jorm et al., 1999; Hugo, 2001). This is in line with DeBord et al. (2019), who found low levels of self-stigma of seeking mental healthcare for a psychological problem in a sample of nursing students (18–29 years).

Practical Implications

The findings of the present study offer several implications for current practice. Firstly, the main implications relate to mental health literacy building. In line with World Health Organization [WHO]'s (2019) call for action, mental health education is key to enable employees to address the topic of mental health at the workplace. As study results indicate colleagues as preferred sources of help in the workplace, training content should cover what to say when noticing that a colleague is in need, as well as giving an overview of local service offers and professional services. The MHFA training serves all of the points mentioned and is already implemented in over 24 countries (MHFA, 2022). A recent review showed small to moderate effects of the MHFA training on knowledge improvement, the recognition of mental health problems and help-outreach intentions (Morgan et al., 2018). A MHFA program was also recently launched in Germany (Zentralinstitut für Seelische Gesundheit Mannheim, 2022).

Secondly, it can be noted, that even though the curriculum of healthcare workers regularly includes knowledge about the development and treatment of mental health disorders, it is maybe not applicable to the workplace of healthcare workers. Combined with the fact that experienced healthcare workers generally tend to be high in mental health stigma, interventions aiming to increase mental health literacy could be a promising way to improve the mental health help-seeking and help-outreach behavior of a strongly exposed occupational group. Therefore, trainings in healthcare should not only focus on patients' mental health, but also on professionals' mental health conditions and those of colleagues. Given the early onset of most mental disorders and the provided evidence of the present study, the mental health education of health professionals should preferably start early in working life. In Germany, young employees learn by example of experienced healthcare workers in the practical part of the vocational training. This also applies for handling mental health problems in the working context. Thus, specific trainings for registered nurses are equally relevant.

Thirdly, with the first application of the MHL-W-G in a German sample of healthcare workers, the study supports the development of a robust, multi-lingual tool measuring subjective mental health literacy (Wulf and Ruhle, 2020). Therefore, the vignette-based questionnaire might be of use in organizations for measuring the need for mental health education and the success of trainings in the workplace. Further, the present study provides the opportunity to compare the results across countries as so far, the majority of studies regarding healthcare workers were conducted in Canada and United States (e.g., Moll et al., 2017, 2018; DeBord et al., 2019).

Last but not least, the mental health of healthcare workers should receive special attention due to the particularly high job demands in the COVID-19 pandemic. Even though this study refers to the situation of healthcare workers before the pandemic, the relevance of social support in the workplace provided by colleagues and supervisors becomes even more evident in the current emergency situation (Greenberg and Tracy, 2020; Schug et al., 2021). Hence, colleagues and supervisors should be particularly sensitive to psychological distress and be aware of early warning signs of mental health problems in themselves and their co-workers. Given the pandemic-related limitations of professional services for people with mental health problems and the decrease in private contacts due to, for example, imposed contact restrictions, the role of colleagues and supervisors in the mental health help-seeking process might become even more relevant.

Limitations and Future Research

The participants in this study were a convenience samples of trainees of different healthcare professions. Therefore, these sample may not be representative of healthcare workers in general. The young employees were mostly at the beginning of their professional careers, even if they already had work

experience in the hospital sector and the majority had already had direct or indirect experiences with mental health problems.

The data of the present study was collected on two measurement points in order to avoid common method bias (Podsakoff et al., 2003) and to strengthen the causal interpretability of the tested model (Maxwell and Cole, 2007). However, a common limitation of plural measurements is a high drop-out rate (Bortz and Döring, 2016), which was also a limitation in the present study. One explanation for the high drop-out rate is that the paper-pencil-questionnaire (t1) was carried out during working hours, while the online-questionnaire (t2) was conducted outside of working hours. Also, the loss of participants can possibly be explained by the relatively small incentive (raffled vouchers).

Another limitation concerns the inadequate model fits of the measures of workplace help-seeking intention (GHSQ; Wilson et al., 2005; Hanschmidt, 2018) and help-outreach intention (MHFA; Jorm et al., 2010; Moll et al., 2015). An explanation for these findings lies in the adaption of the items for the purpose of the present study without proper validation before application. As a result, both scales showed the lowest reliability of all used scales. Accordingly, the one-item measure of overall help-seeking and overall help-outreach intentions were used in the SEM. One-items measures for overall attitudes toward help-seeking for a mental health problem have already been used in previous studies (Britt et al., 2011; Jennings et al., 2015). Nevertheless, a need for validated scales in the German language to measure workplace help-seeking intention and help-outreach intention can be identified.

Even though in this study female participants reported on average the same mental health literacy value as male participants, future studies should examine possible gender differences. This relates to previous studies, which show that women tend to recognize mental illness better than men (Pescosolido et al., 2008; Wulf and Ruhle, 2020). Additionally, women are more willing to use professional help for a mental problem than men (Rüsch et al., 2014; Cheng et al., 2018). Therefore, more empirical research focusing on gender differences in the evaluation of mental health problems, as well as help-seeking and help-outreach tendencies is needed.

Conclusion

The present study reduces the lack of empirical information regarding mental health help-seeking and help-outreach in the workplace, which was noted at the beginning. As most studies focus on social contacts in the private environment and formal sources (Rossetto et al., 2016; Jung et al., 2017; Schnyder et al., 2017), the study contributes to the relevance of social contacts in the working context as potential gatekeepers to professional mental health support. Further, the study provides important insights into how mental health help-seeking and help-outreach intentions at the workplace are affected by mental health literacy and into the role of personal and self-stigma in healthcare profession. The results are of particular importance against the increased need for healthcare workers and the fact of the rising prevalence of mental diseases in this group.

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the Local Legislation and Institutional Requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

IW was responsible for the conception and design of the study as well as the implementation of the research, performed the statistical analysis, and drafted the manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2022.856458/full#supplementary-material

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The Mental Health of Patients With Psychotic Disorder From a Positive, Multidimensional and Recovery Perspective

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Positive mental health (PMH) and mental illness are distinct, yet interrelated, constructs. However, this relationship has yet to be adequately established. We aimed to evaluate the level of PMH and its relationship with sociodemographic and clinical determinants as well as to explore the relationship between PMH and the positive constructs of recovery, subjective wellbeing (SWB), insight and functioning in patients with psychotic disorder. A multicenter, descriptive, cross-sectional and correlational study with a sample of 347 patients with psychotic disorder was conducted. The following assessment instruments were used: Positive Mental Health Questionnaire, Maryland Assessment of Recovery in Serious Mental Illness scale, Insight Scale, Personal Wellbeing Index-Adult version (PWI-A), Overall Life Satisfaction (OLS) and Global Assessment of Functioning scale. The mean global level of PMH was 116.16 (range of 39–156, SD = 19.39). Significant differences were found in PMH in relation to sociodemographic (sex, civil status and employment situation) and clinical variables (family history of mental disorders, number of prescribed antipsychotics, treatment with anxiolytics, treatment with antidepressants and suicide attempts). PMH was significantly and positively correlated with recovery ($r = 0.760$), SWB (PWI-A: $r = 0.728$ and OLS: $r = 0.602$) and functioning ($r = 0.243$), and negatively with insight ($r = -0.335$). These results can lead to a major change in mental health care. If actions are taken to increase PMH, then recovery, SWB and functioning will also increase. At the same time, interventions should be carried out to boost insight, since increasing PMH could decrease insight, all resulting in better quality of life for patients with psychotic disorder.

Keywords: positive mental health, recovery, subjective wellbeing, insight, psychotic disorder

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INTRODUCTION

According to the World Health Organization (2005), mental health is a "state of wellbeing in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community." This definition has its foundation in positive mental health (PMH), a construct first proposed by

Jahoda (1958), who described PMH as individuals' attitudes toward themselves and the environment and their ability to adapt to situations.

Mental health and mental illness are traditionally conceptualized as being on opposite ends of the same continuum. However, evidence indicates that they represent two distinct, yet interrelated, dimensions. Therefore, the absence of the disorder does not guarantee the presence of health, and *vice versa* (Keyes, 2013). Based on this belief, people with mental disorders can experience at the same time positive emotions, form close relationships, have a purposeful life and function well by relating to PMH. This means that a patient suffering from a mental disorder will require not only a clinical assessment of the disease process, but also special care from a positive perspective. The positive aspect of mental health is currently considered in mental health care systems (e.g., Forsman et al., 2015; Wahlbeck, 2015).

In this respect, the PMH construct has been studied for years based on Lluch-Canut's Multifactor PMH model (1999), made up of six interrelated factors: F1-Personal Satisfaction (F1), F2-Prosocial Attitude (F2), F3-Self-Control (F3), F4-Autonomy (F4), F5-Problem-Solving and Self-Actualization (F5), and F6-Interpersonal Relationship Skills (F6). To evaluate this multifactorial model, the author created the Positive Mental Health Questionnaire (PMHQ), which is described in detail in the Methods section. Lluch-Canut's PMHQ (1999) has been used in various studies and settings: in patients with schizophrenia (Miguel, 2014); in chronic patients (Lluch-Canut et al., 2013; Puig-Llobet et al., 2020); in carers of patients with schizophrenia (Albacar, 2014), and in university students (Roldán-Merino et al., 2017; Sequeira et al., 2020). The questionnaire has also been translated into Portuguese (Sequeira et al., 2014) and Turkish (Teke and Baysan Arabaci, 2018). Although there is increasingly more research on PMH, it has been little researched in people with psychotic disorder (Miguel, 2014; Jeyagurunathan et al., 2017; Na and Lim, 2020), and only one study (Miguel, 2014) uses the PMHQ. It is therefore important to assess PMH and its factors in people with mental illness, as it will help health professionals in better understanding these individuals' specific needs and also in implementing both health promotion and prevention activities to improve their mental health.

Following this line of research, we set out to study PMH supplemented with other positive constructs, such as recovery, subjective wellbeing (SWB), insight and functioning, and in this way characterize the relationship between them. We briefly describe below some highlights in the scientific literature on the use of these constructs.

Recovery research focusing on people with mental disorders is still relatively recent. However, in the last few years, the concept of recovery has experienced significant momentum both at clinical and policy level, being incorporated into health policies in various countries (e.g., Burgess et al., 2011). The Substance Abuse Mental Health Services Administration (2005) defined mental health recovery as "a journey of healing and transformation, enabling a person with a mental health problem to live a meaningful life in a community of his or her choice while striving to achieve his or her full potential" (p. 1), this being one of the most widely used and accepted definitions.

SWB can be defined as a normally positive state of mind that involves the whole life experience. One of the models proposed to explain how SWB works is the Homeostatic Theory and stems from the idea that SWB, under normal conditions, is managed by a psychological, homeostatic system in such a way that people are usually satisfied with their life and this does not tend to change substantially over time (Cummins, 2010).

In recent decades, the term "insight" has aroused great interest in the field of mental health due to the relationship it has been shown to have with numerous variables, which have an important impact on mental disorders. Insight refers to the degree of awareness that the individual has of their disease. It is considered a multidimensional construct that affects different areas with different intensity and may be present in some areas, but not in others (David, 1990).

Functioning is the individual's ability to effectively carry out the activities of daily living (World Health Organization, 2001). By definition, psychotic disorders involve suffering and impaired functioning (American Psychiatric Association, 2013).

Evidence exists of a link between recovery, SWB, insight and functioning and mental disorders (Cannavò et al., 2016; Chan et al., 2018; Widschwendter et al., 2018; Yu et al., 2020). However, no previous studies have been known to address the innovative PMH construct and its correlation with this set of positive measures. It is important to manage as many positive measures as possible in order to develop multi-component intervention programs. This is the reason why we have conducted this study. Its objectives are to evaluate the level of PMH and its relationship with sociodemographic and clinical determinants as well as to explore the relationship between PMH and the positive constructs of recovery, SWB, insight and functioning in patients with psychotic disorder being treated in mental healthcare facilities in Catalonia (Spain).

Although this is a descriptive and exploratory study, the main hypothesis that has guided the analysis of the data collected is defined as follows. Specifically, the level of PMH in people with psychotic disorder is thought to correlate positively with recovery, SWB and functioning, and negatively with insight.

MATERIALS AND METHODS

Design

Multicentre, cross-sectional, descriptive, correlational study.

Participants

The sample was made up of 347 patients diagnosed with a psychotic disorder from four healthcare institutions in Catalonia (Spain): the Healthcare Institute (IAS), the Mar Health Park, the Benito Menni Mental Healthcare Complex, and the Sant Joan de Déu Health Park. The sample size calculations were based on the expectation of finding a clinically relevant medium-effect size in primary outcomes with a two-sample t-test, while also taking into consideration a three- or four-group design. A minimum sample size of 200 would be needed for a significance level of $\alpha = 0.05$ (two-sided), power of $1–\beta = 80\%$ and an expected attrition rate of 10%. Moreover, with this sample size, a relevant simple correlation ($r \geq 0.25$) can be

detected. Subjects were selected by non-probability sampling between February 2015 and May 2016, using the following inclusion criteria: adults with a DSM-5 (American Psychiatric Association, 2013) diagnosis of psychotic disorder; patients in the stabilization or recovery phase of psychotic disorder, and with knowledge of Spanish or Catalan. Exclusion criteria included: patients diagnosed with intellectual disability or any type of organic mental disorder, such as dementia (DSM-5); patients diagnosed with substance- or medication-induced psychotic disorder, psychotic disorder due to other medical conditions, delusional disorder, schizophreniform disorder or schizoaffective disorder (DSM-5), and patients in an acute phase at the time of assessment.

Measures

The study variables were the following: (a) sociodemographic variables, (b) clinical variables, (c) PMH, (d) recovery, (e) SWB, (f) insight, and (g) functioning. The instruments used are described in the following sections.

Positive Mental Health Questionnaire

PMH was assessed using the Positive Mental Health Questionnaire (PMHQ) (Lluch-Canut, 1999). This questionnaire is composed of 39 items, distributed among 6 factors that make up the PMH Multifactor Model: F1-Personal Satisfaction, F2-Prosocial Attitude, F3-Self-Control, F4-Autonomy, F5-Problem-Solving and Self-Actualization, and F6-Interpersonal Relationship Skills. The items have been formulated as (positive or negative) statements and the response to each item is assessed on a 4-point scale on frequency: "always or almost always," "quite often," "sometimes," and "never or almost never." The scores enable us to obtain a PHM value as a single measure (including all the items in the questionnaire) and also specific values for each factor. The psychometric analyses of the original PHMQ conducted with a sample of nursing students were favorable (Lluch-Canut, 1999). In this study, Cronbach's α on the global scale was 0.93, and by factors: F1 = 0.85; F2 = 0.60; F3 = 0.82; F4 = 0.78; F5 = 0.83; F6 = 0.78.

Maryland Assessment of Recovery in Serious Mental Illness

To evaluate the recovery variable, the Maryland Assessment of Recovery in Serious Mental Illness (MARS) (Drapalski et al., 2012) was used. The MARS is a self-administered instrument made up of 25 items and uses a 5-point Likert-type response scale: "not at all," "a little," "somewhat," "quite a lot," and "a lot." This measure was developed based on the SAMHSA definition of recovery and assesses six domains: empowerment, holistic recovery, non-linear recovery, strengths-based recovery, a sense of responsibility, and hope. The instrument provides an overall score (the sum of scores for all items) of the person's ability to recover, ranging from 25 (low) to 156 points (high). The psychometric analyses of the MARS were favorable (Drapalski et al., 2012, 2016). The Spanish and Catalan versions was validated for this study, obtaining favorable psychometric results, both in terms of reliability [Spanish version: Cronbach's α = 0.96; interclass correlation coefficient (ICC) = 0.96; Catalan version: Cronbach's α = 0.95; ICC = 0.95] and (convergent and construct) validity. Convergent validity showed a high correlation between the MARS and the PMHQ ($r = 0.76$), the PWI-A ($r = 0.70$) and the OLS ($r = 0.65$). Construct validity showed a good fit for a single-factor model.

Personal Wellbeing Index-Adult Version

SWB was evaluated using the Personal Wellbeing Index-Adult Version (PWI-A) (Cummins et al., 2003; International Wellbeing Group, 2013). The PWI-A is a 7-item, self-administered scale that measures satisfaction with different life domains: standard of living, health, life achievements, personal relationships, personal safety, community connectedness, and future security. The items are rated on a scale ranging from 0 ("no satisfaction at all") to 10 ("completely satisfied"). The final score is obtained by calculating the mean score of the items and converting them to a 0–100-point scale format. The original version of the domains included in the PWI-A and their back translation into Spanish and Catalan were carried out by Casas et al. (2008). As a result of this adaptation, the community connectedness domain was replaced by satisfaction with the groups the respondent belongs to. The normative range for Western populations is 70 to 80 points. The authors have assured the instrument has good psychometric properties (International Wellbeing Group, 2013). In this study, Cronbach's α was 0.88.

Overall Life Satisfaction

The Overall Life Satisfaction (OLS) (Campbell et al., 1976) was also used to evaluate SWB. This is a single-item scale that evaluates overall life satisfaction on a scale ranging from 0 (extremely dissatisfied) to 10 (extremely satisfied). The formulation in the most common Spanish version (Casas, 2010, p. 92) is: Overall, how satisfied are you with your life these days?". Campbell et al. (1976) suggested supplementing OLS with scales for evaluating specific life domains. The IWG also recommends including OLS to evaluate overall life satisfaction, even though it is not part of the PWI-A (International Wellbeing Group, 2013).

Insight Scale

The Insight Scale (IS) (Birchwood et al., 1994) was used to measure insight. This is a self-administered scale that assesses insight from a multi-dimensional perspective. It is composed of 8 items that assess three domains: D1-awareness of having symptoms (D1), D2-awareness of having a mental illness (D2), and D3-awareness of the need for treatment (D3). The scale provides an overall insight score as well as specific values for the three dimensions. The maximum score is 12 points (high level of insight) and the minimum score is 0 (lack of insight). A score of 9 points or above is considered adequate insight. The instrument was validated in Spanish by Camprubi et al. (2008) and displayed satisfactory psychometric properties. In this study, Cronbach's α on the global scale was 0.84, and by domains: D1 = 0.67, D2 = 0.61 and D3 = 0.85.

Global Assessment of Functioning Scale

The GAF (American Psychiatric Association, 2002) was used to assess functioning. This instrument provides a multiaxial

TABLE 1 | Sociodemographic and clinical characteristics, PMH on a global level and by factors, recovery, SWB, insight and functioning (*N* = 347).

Variable	Mean (SD)	*N* (%)
Age	41.29 (11.29)	
Sex		
Man		232 (66.9)
Woman		114 (33.1)
Civil status		
Single		261 (75.2)
Married		47 (13.6)
Separated/ divorced/ widowed		39 (11.2)
Level of education		
No formal education / primary education not completed		28 (8.1)
Primary education		148 (42.6)
Secondary education		134 (38.6)
Higher education		37 (10.7)
Employment situation		
Active worker		39 (11.2)
Inactive worker		48 (13.8)
Disabled		198 (57.1)
Others		62 (17.9)
People they live with		
Alone		66 (19.0)
With others		281 (81.0)
Evolution of the psychotic disorder in years	12.57 (10.17)	
Family history of mental disorders		
Yes		164 (47.3)
No		183 (52.7)
Number of hospital admissions	3.37 (3.79)	
Medical history		
Yes		164 (47.3)
No		183 (52.7)
Number of prescribed antipsychotics		
1 antipsychotic		190 (54.7)
2 antipsychotics		120 (34.6)
3 or more antipsychotics		37 (10.7)
Treatment with anxiolytics		
Yes		123 (35.4)
No		224 (64.6)
Treatment with antidepressants		
Yes		99 (28.5)
No		248 (71.5)
Suicide attempts		
Yes		86 (24.8)
No		261 (75.2)
Overall PMH	116.16 (19.39)	
F1- Personal satisfaction	24.95 (5.18)	
F2- Prosocial behavior	15.66 (2.78)	
F3-Self-control	14.55 (3.51)	
F4-Autonomy	14.36 (3.60)	
F5-Problem-solving and self-actualization	27.44 (5.28)	
F6-Interpersonal relationship skills	19.20 (4.46)	
Recovery	91.63 (19.26)	
SWB		
PWI-A	60.20 (19.11)	
OLS	6.41 (2.91)	
Total insight	8.83 (3.06)	
D1-Awareness of symptoms	2.99 (1.32)	
D2-Awareness of illness	2.45 (1.28)	
D3-Need for treatment	3.39 (1.07)	
Functioning	61.46 (12.30)	

M, mean; OLS, overall life satisfaction; PMH, positive mental health; PWI-A, Personal Wellbeing Index-Adult; SD, standard deviation; SWB, subjective wellbeing.

assessment of a person's global functioning. It consists of a single-item rated on a scale ranging from 100 (superior functioning in a wide range of activities) to 1 (persistent danger of severely hurting self or others or persistent inability to maintain minimal personal hygiene or serious suicidal act with clear expectation of death). This scale was developed for clinical use and was also incorporated as Axis 5 in versions III-TR, IV and IV-TR of the DSM (American Psychiatric Association, 2002). This scale has been used in diverse populations, regardless of their diagnosis. It has good psychometric properties.

Procedure

Once the study protocol had been approved by the Clinical Research Ethical Committee of the Healthcare Institute of Girona, the Benito Menni Mental Healthcare Complex, the Mar Health Park and the research committee of the Sant Joan de Déu Health park, data collection began. Subjects were selected using the inclusion and exclusion criteria described above, in consultation with the referring psychiatrist to corroborate the state of stabilization of the mental disorder. The researchers responsible for the study informed the participants about the study by giving them a "User Information Sheet," which contained the relevant information necessary for the patient to decide whether or not to participate in the study. Prior to data collection, the researchers responsible for the study clarified all doubts with the participants and allowed them to ask any questions they considered appropriate, and, in accordance with the regulations in force, obtained the subject's written informed consent. Once the informed consent had been signed by the participant, data collection for the different instruments began. First, the researcher collected the sociodemographic and clinical variables, then the participant self-completed the following instruments: the PMHQ, the PWI-A, the OLS, the MARS and the IS. The GAF was provided by the referring psychiatrist. The approximate duration of data collection was 30–45 mins.

Statistical Analysis

Descriptive analysis based on central tendency and dispersion measures was conducted for quantitative variables, and on

absolute and relative frequencies for categorical variables. The Pearson correlation coefficient between two quantitative variables was calculated. The relationships between a quantitative and a qualitative variable were analyzed using the Student's t test or a factor analysis of variance (ANOVA), depending on the response modalities of each variable. Finally, a multiple linear regression analysis was performed using the explanatory variables (recovery, SWB including satisfaction with specific life domains and overall life satisfaction, insight, functioning and socio-demographic and clinical variables) on the response variable (global PMH). The confidence level was taken as 95% and the difference between variables was considered significant when the level of statistical significance was less than, or equal to 0.05. For descriptive, univariate and bivariate analyses, IBM SPSS version 25 was used. Finally, multivariate analysis was carried out with STATA, version 13.1.

RESULTS

Subjects' Characteristics

It was observed that the mean age of the 347 patients that made up the sample was 41.29 years, the majority were men (66.9%), single (75.2%), with a primary or secondary school level of education (81.2%), disabled (57.1%), and living with someone (81.0%). Regarding the clinical variables of the sample under study, the mean number of years of evolution of the psychotic disorder was 12.57 years, 47.3% had a family history of mental disorders, the mean number of hospital admissions since the onset of the disorder was 3.37, 46.1% had a history of organic pathologies, with a higher prevalence of patients taking oral medication (49.2%), 35.4% taking anxiolytics and 28.5% on antidepressants, and 24.8% had attempted suicide (**Table 1**).

As for positive health measures, the mean global level of PMH was 116.16, with a minimum value of 62 and a maximum of 154. The level of recovery was 91.63, with a minimum value of 43 and a maximum of 125. The mean PWI-A score was 60.20, and 6.41 for the OLS. The patients' mean insight score was 8.83. Forty-five-point three percent of the subjects presented adequate insight ($\geq$9 points). Finally, the mean level of functioning was 61.46, with a minimum value of 35 and a maximum of 95 (**Table 1**).

Relationship Between Level of PMH and Sociodemographic and Clinical Variables

Table 2 shows the relationship between PMH and the sociodemographic and clinical variables. Statistically significant differences were found in two factors regarding sex: F2 ($p < 0.001$) and F6 ($p = 0.001$). Women reported having greater prosocial behavior as well as more interpersonal relationship skills.

Significant differences were observed in four factors regarding marital status: F2 ($p < 0.001$), F4 ($p = 0.015$), F5 ($p = 0.024$) and F6 ($p = 0.041$), and at a global level ($p = 0.036$). Separated, divorced and widowed subjects had greater overall PMH and autonomy. On the other hand, subjects that were married reported greater prosocial behavior, problem-solving and self-actualization, and interpersonal relationship skills. In contrast, single men and women had the lowest scores.

Statistically significant differences were observed between employment status and three factors: F2 ($p = 0.002$), F5 ($p = 0.002$) and F6 ($p = 0.010$) and overall PMH ($p = 0.006$). Specifically, active workers had the highest scores. On the contrary, patients with some type of disability had lower scores in prosocial behavior, problem-solving and self-actualization and global PMH. Inactive workers reported lower interpersonal relationship skills.

Regarding the people they lived with, there was a significant correlation in relation to F4 ($p = 0.017$). Subjects who lived alone showed greater autonomy. No significant differences were detected between the level of PMH and other sociodemographic variables.

On the other hand, a negative and significant, but low, relationship was found between the years of evolution of the psychotic disorder and factor F5 ($p = 0.049$).

There was a significant correlation in factor F3 ($p < 0.001$) and in global PMH ($p = 0.031$). Subjects with a family history of mental disorders showed a lower capacity for self-control and lower global PMH.

Significant differences were found between prescribed antipsychotics and the global level of PMH in all the factors it is made up of, except F2. Specifically, patients on three or more antipsychotics had lower scores.

Significant differences were found regarding treatment with anxiolytics in four factors: F3, F4, F5 and F6 and in global PMH. Patients taking prescribed anxiolytics had a lower score.

Statistically significant differences were observed in treatment with antidepressants and global PMH and in all the factors it is made up of, except F2. Patients being treated with antidepressants had lower scores.

Finally, statistically significant differences were found between suicide attempts, the global level of PMH and four factors: F1 ($p < 0.001$), F3 ($p < 0.001$), F4 ($p = 0.008$), F5 ($p < 0.001$). Patients who had attempted suicide had lower scores. No significant differences were identified between the level of PMH and other clinical variables.

Relationship Between Levels of PMH and Recovery, SWB, Insight and Functioning

A strong and significant correlation was obtained between the PMH constructs and recovery ($r = 0.760$). In the positive sense, the correlation indicated that the higher the global level of PMH, the greater the capacity for recovery. **Table 3** shows that all the PMH factors correlated positively and significantly with recovery, ranging from 0.439 (F2) to the highest correlation, 0.716 (F5). Strong and significant correlations were obtained between PMH and SWB, evaluated *via* the PWI-A and the OLS; overall, they were 0.728 and 0.602, respectively. The correlation between global PMH and insight was low, but significant ($r = -0.335$). In the negative sense, the correlation indicated that the higher the global level of PMH, the lower the sense of insight. When analyzing the relationship between the specific PMHQ factors and the three dimensions of IS, it was observed that all the factors/dimensions correlated negatively and significantly.

TABLE 2 | Relationship between global PMH and by factors and sociodemographic and clinical variables.

Variable	F1-Personal satisfaction		F2-Prosocial attitude		F3-Self-control		F4-Autonomy		F5-Problem-solving and self-actualization		F6-Interpersonal relationship skills		Global PMH	
	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r
Age		0.01		0.03		0.09		0.09		−0.06		0.02		0.03
Sex														
Man	25.00 (5.09)	0.26	15.29 (2.72)	−3.62***	14.65 (3.47)	0.81	14.24 (3.47)	−0.88	24.27 (5.18)	−0.86	18.65 (4.47)	−3.31**	115.10 (19.36)	−1.45
Woman	24.85 (5.38)		16.42 (2.75)		14.33 (3.60)		14.60 (3.84)		27.79 (5.47)		20.30 (4.24)		118.10 (19.36)	
Civil status														
Single	24.78 (5.18)	0.78	15.27 (2.80)	10.84***	14.46 (3.50)	0.30	14.24 (3.54)	4.22*	27.00 (5.23)	3.78*	18.85 (4.40)	3.23*	114.62 (19.38)	3.37*
Married	25.81 (4.86)		17.02 (2.31)		14.79 (3.55)		14.74 (3.81)		28.81 (5.36)		20.34 (4.44)		120.51 (17.75)	
Separated / divorced / widowed	25.05 (5.60)		16.59 (2.46)		14.82 (3.57)		15.85 (3.44)		28.77 (5.14)		20.13 (4.62)		121.20 (20.15)	
Level of education														
No formal education	24.75 (6.08)	0.66	15.93 (3.25)	0.74	14.04 (4.11)	0.30	14.32 (4.06)	0.40	28.29 (4.21)	1.88	18.43 (5.34)	0.87	115.75 (19.73)	0.88
Primary education	24.57 (5.15)		15.48 (2.71)		14.49 (3.41)		14.16 (3.54)		26.68 (5.37)		18.93 (4.22)		114.31 (18.35)	
Secondary education	25.43 (4.97)		15.64 (2.80)		14.69 (3.49)		14.62 (3.52)		28.04 (5.17)		19.46 (4.39)		117.90 (19.80)	
Higher education	24.95 (5.18)		16.29 (2.60)		14.68 (3.57)		14.24 (3.83)		27.68 (5.80)		19.86 (4.92)		117.59 (21.71)	
Employment situation														
Active worker	26.44 (4.71)	1.63	16.85 (2.68)	5.04**	15.67 (3.09)	2.15	14.54 (3.73)	0.82	30.15 (4.42)	4.90**	21.26 (4.48)	3.80*	124.90 (17.85)	4.17**
Inactive worker	25.06 (5.47)		15.65 (2.77)		14.62 (3.25)		14.87 (3.68)		27.81 (5.01)		18.65 (4.42)		116.67 (18.30)	
Disabled	24.52 (5.29)		15.24 (2.69)		14.21 (3.56)		14.11 (3.51)		26.74 (5.31)		18.80 (4.36)		113.62 (19.10)	
Others	25.31 (4.80)		16.27 (2.87)		14.87 (3.67)		14.64 (3.75)		27.71 (5.38)		19.60 (4.48)		118.40 (20.55)	
People they live with														
Alone	25.21 (4.79)	0.45	15.94 (2.62)	0.90	15.26 (2.97)	1.83	15.30 (3.58)	2.39*	27.94 (4.84)	0.85	19.65 (4.14)	0.92	119.30 (17.42)	1.46
With others	24.89 (5.28)		15.60 (2.82)		14.38 (3.61)		14.13 (3.57)		27.33 (5.38)		19.09 (4.53)		115.42 (19.78)	
Evolution of psychotic disorder in years		−0.01		−0.05		−0.03		−0.05		−0.11*		−0.05		−0.05

(Continued)

TABLE 2 | Continued

Variable	F1-Personal satisfaction		F2-Prosocial attitude		F3-Self-control		F4-Autonomy		F5-Problem-solving and self-actualization		F6-Interpersonal relationship skills		Global PMH	
	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r	M (SD)	t/F/r
Family history of mental disorders														
Yes	24.38 (5.47)	−1.95	15.47 (2.98)	−1.23	13.85 (3.69)	3.55***	14.10 (3.80)	1.24	26.86 (5.56)	1.94	19.12 (4.89)	−0.29	113.80 (21.13)	2.16*
No	25.46 (4.87)		15.84 (2.58)		15.17 (3.22)		14.58 (3.40)		27.96 (4.97)		19.26 (4.04)		118.28 (17.47)	
Number of hospital admissions		0.08		0.00		0.05		0.02		0.01		0.01		0.04
Medical history														
Yes	24.58 (5.28)	−1.24	15.69 (2.80)	0.19	14.39 (3.55)	−0.79	14.47 (3.80)	0.53	27.19 (5.11)	−0.84	19.18 (4.42)	−0.06	115.50 (18.67)	−0.59
No	25.27 (5.09)		15.64 (2.77)		14.68 (3.48)		14.26 (3.43)		27.66 (5.42)		19.21 (4.50)		116.73 (20.02)	
Number of prescribed antipsychotics														
1 antipsychotic	25.14 (5.06)	11.91***	15.89 (2.70)	11.60	14.74 (3.49)	6.28**	14.50 (3.69)	4.83**	27.63 (5.47)	4.85**	19.65 (4.21)	3.86*	117.55 (20.05)	8.34***
2 antipsychotics	25.80 (4.55)		15.47 (2.86)		14.83 (3.21)		14.65 (3.34)		27.92 (4.64)		19.01 (4.53)		117.65 (16.45)	
≥3 antipsychotics	21.24 (6.22)		15.13 (2.86)		12.65 (4.01)		14.65 (3.56)		24.95 (5.69)		17.49 (5.09)		104.11 (20.97)	
Treatment with anxiolytics		−1.72		−1.27		−2.13*		−2.23*		−2.91**		−2.08*		−2.72**
Yes	24.31 (5.58)		15.41 (2.86)		14.01 (3.38)		13.78 (3.80)		26.34 (5.54)		18.53 (4.57)		112.37 (20.13)	
No	25.31 (4.93)		15.80 (2.73)		14.84 (3.55)		14.67 (3.45)		28.05 (5.04)		19.56 (4.36)		118.24 (18.69)	
Treatment with antidepressants														
Yes	23.50 (5.63)	−3.34**	15.82 (2.74)	0.66	13.62 (3.51)	−3.16**	13.38 (3.69)	−3.23**	26.10 (5.37)	−3.03**	18.39 (4.50)	−2.13*	110.82 (20.20)	−3.29**
No	25.53 (4.88)		15.60 (2.80)		14.92 (3.44)		14.75 (3.49)		27.98 (5.15)		19.52 (4.41)		118.29 (18.67)	
Suicide attempts														
Yes	22.93 (5.89)	−3.84***	15.23 (2.75)	−1.66	13.30 (3.26)	−3.87***	13.46 (3.90)	−2.68**	25.73 (5.33)	−3.52***	18.57 (4.76)	−1.50	109.23 (20.45)	−3.90***
No	25.62 (4.75)		15.80 (2.78)		14.96 (3.49)		14.65 (3.45)		28.01 (5.15)		19.40 (4.34)		118.44 (18.51)	

F, one-way ANOVA; M, mean; PMH, positive mental health, SD, standard deviation; SWB, subjective wellbeing; t, independent t test+.

**p < 0.05.*

***p < 0.01.*

****p < 0.001.*

TABLE 3 | Pearson's correlation between global PMH and by factors, recovery, SWB, insight and functioning.

	F1-Personal satisfaction	F2-Prosocial attitude	F3-Self-control	F4-Autonomy	F5-Problem-solving and self-actualization	F6-Interpersonal relationship skills	Global PMH
Recovery	0.709**	0.439**	0.496**	0.489**	0.716**	0.574**	0.760**
SWB							
PWI-A	0.724**	0.429**	0.509**	0.463**	0.604**	0.570**	0.728**
OLS	0.637**	0.302**	0.424**	0.374**	0.541**	0.415**	0.602**
Total insight	−0.311**	−0.194**	−0.274**	−0.242**	−0.258**	−0.259**	−0.335**
D1-Awareness of symptoms	−0.171**	−0.117*	−0.191**	−0.136*	−0.160**	−0.145**	−0.199**
D2-Awareness of illness	−0.394**	−0.232**	−0.310**	−0.293**	−0.283**	−0.318**	−0.399**
D3-Need for treatment	−0.206**	−0.132*	−0.177**	−0.171**	−0.200**	−0.180**	−0.234**
Functioning	0.221**	0.236**	0.168**	0.133*	0.180**	0.201**	0.243**

OLS, overall life satisfaction; PMH, positive mental health; PWI-A, Personal Wellbeing Index-Adult; SWB, subjective wellbeing.
*$p < 0.05$.
**$p < 0.01$.

Finally, a low but significant correlation was obtained between PMH and functioning ($r = 0.243$).

Multivariate Analysis of Factors Associated With Positive Mental Health

The results of the multiple linear regression analysis are presented in **Table 4**. It can be observed that recovery ($\beta = 0.47$; $p < 0.001$), SWB [PWI-A: ($\beta = 0.38$; $p < 0.001$)], functioning ($\beta = 0.11$; $p = 0.45$), age ($\beta = 0.16$; $p = 0.04$) and being separated, divorced or widowed ($\beta = 5.18$; $p = 0.008$) showed a statistically significant and positive association with global PMH. In contrast, insight ($\beta = -0.46$; $p = 0.031$) and having a family history of mental disorder ($\beta = -2.63$; $p = 0.029$) showed a statistically significant and negative association with global PMH.

DISCUSSION

The participants in our study presented lower levels of PMH than sample populations without mental disorders who had responded to the PMHQ (Lluch-Canut et al., 2013; Albacar, 2014; Roldán-Merino et al., 2017; Puig-Llobet et al., 2020; Sequeira et al., 2020). However, results were similar to findings in a study on patients with schizophrenia (Miguel, 2014). These results are a cause for concern and reinforce the importance of developing services and interventions aimed at improving PMH in patients with psychotic disorder.

The level of recovery was similar to that of a sample of patients with severe mental disorder (Drapalski et al., 2016). In contrast, it was lower than in a sample of patients included in an early intervention program (EIP) in psychosis (Bhullar et al., 2018). These results demonstrate the effectiveness of EIP programs in terms of recovery.

The PWI-A score for SWB was low (M = 60.20) compared to the normative range within Western populations, which is between 70 and 80 points (International Wellbeing Group, 2013). One study conducted in Israel on patients with severe mental disorder obtained similar results (Werner, 2012). Cummins et al. (2014) argued that SWB may decrease in response to adverse events, but these deviations are generally temporary thanks to the action of a homeostatic mechanism. However, when normal feelings of wellbeing disappear, they are replaced by depression (Cummins, 2010). The most plausible hypothesis put forward is that psychotic disorder and the life experience that accompanies severe mental illness may affect this population's SWB.

No studies were found in the literature in which OLS had been administered to patients with psychotic disorder. The data we obtained were consistent with the study by Fervaha et al. (2016), which showed that patients with schizophrenia were less happy in general than healthy controls.

The level of insight in the sample was generally low (Birchwood et al., 1994), although 45.3% of the patients presented adequate insight. This finding is consistent with a literature review in which it was estimated that between 50 and 80% of patients with schizophrenia partially, or totally, lacked awareness of their mental illness (Raffard et al., 2008).

The mean GAF score was similar to that of other studies in European populations (Gaite et al., 2005) and in the Spanish population (Al-Halabí et al., 2016). Scientific evidence has shown that diagnosis and an EIP could significantly improve therapeutic results and enhance the effectiveness of established treatments (Arango, 2015).

When analyzing PMH and sociodemographic and clinical variables, some aspects of interest were found that are relevant for discussion. Single patients presented a lower level of global PMH than married, separated or widowed subjects. These data are similar to findings in other studies conducted on patients with mental disorders (Vaingankar et al., 2013; Sambasivam et al., 2016), which used other instruments to measure PMH. In contrast, patients in active employment reported higher global PMH, in line with other research (Sambasivam et al., 2016; Na and Lim, 2020), although the PMHQ was not used.

As in other studies in which the PMHQ was used, with regard to factor F2, women reported having greater prosocial behavior (Lluch-Canut et al., 2013; Albacar, 2014). These results also coincided with other studies conducted on patients with mental disorders (Vaingankar et al., 2013; Sambasivam et al.,

TABLE 4 | Multivariate regression analysis of factors associated with PMH.

	Crude model			Adjusted model		
	β	SD	95% CI	β	SD	95% CI
Recovery	0.76	0.04	0.70–0.83***	0.47	0.05	0.37–0.56***
SWB						
PWI-A	0.74	0.04	0.67–0.81***	0.38	0.05	0.29–0.47***
OLS	5.10	0.36	4.38–5.81***			
Total insight	−2.12	0.32	−2.75 to −1.49***	−0.46	0.21	−0.87 to −0.04*
Functioning	0.38	0.08	0.22–0.55***	0.11	0.53	0.003–0.21*
Age	0.05	0.09	−0.13 to 0.22	0.16	0.06	0.05–0.27**
Sex						
Man	Ref					
Woman	3.19	2.21	−1.15 to 7.53			
Civil status						
Single	Ref			Ref		
Married	5.89	3.05	−0.12 to 11.89	−0.36	1.76	−3.83 to 3.12
Separated/divorced/widowed	6.58	3.31	0.08–13.08*	5.18	1.95	1.34 to 9.01**
Level of education						
No formal education	Ref					
Primary education	−1.44	4.00	−9.30 to 6.42			
Secondary education	2.15	4.03	−5.78 to 10.07			
Higher education	1.84	4.86	−7.71 to 11.40			
Employment situation						
Active worker	Ref					
Inactive worker	−8.23	4.12	−16.34 to −0.12*			
Disabled	−11.28	3.35	−17.87 to −4.69**			
Others	−6.49	3.91	−14.18 to 1.19			
People they live with						
Alone	Ref					
With others	−3.88	2.65	−9.09 to 1.33			
Evolution of psychotic disorder in years	−0.07	0.10	−0.27 to 0.13			
Family history of mental disorders						
Yes	Ref			Ref		
No	−4.48	2.07	−8.56 to −0.40*	−2.63	1.20	−4.98 to −0.27*
Number of hospital admissions	−0.09	0.28	−0.63 to 0.45			
Medical history						
Yes	Ref					
No	4.86	2.74	−0.53 to 10.26			
Number of prescribed antipsychotics						
1 antipsychotic	Ref					
2 antipsychotics	0.12	2.21	−4.23 to 4.48			
≥ 3 antipsychotics	−13.44	3.41	−20.16 to −6.73***			
Treatment with anxiolytics		−1.72				
Yes	Ref					
No	−5.87	2.16	−10.11 to −1.63*			
Treatment with antidepressants						
Yes	Ref					
No	−7.48	2.27	−11.95 to −3.01***			
Suicide attempts						
Yes	Ref					
No	−9.21	2.36	−13.86 to −4.56***			

OLS, overall life satisfaction; PMH, positive mental health; PWI-A, Personal Wellbeing Index-Adult; SD, standard deviation; SWB, subjective wellbeing; 95% CI, 95% confidence interval.
$^{*}p < 0.05$.
$^{**}p < 0.01$.
$^{***}p < 0.001$.

2016; Jeyagurunathan et al., 2017). Single patients reported lower prosocial behavior compared to those who were married, separated, divorced or widowed. The data we obtained were consistent with the study by Sambasivam et al. (2016) conducted on patients with mental disorders, although the PMHQ was not used. In contrast, in the study carried out by Miguel (2014), single patients presented greater prosocial behavior. Similarly, patients in active employment reported greater prosocial behavior, whereas patients with some type of disability had the lowest scores. These results are in line with other studies that show lower levels of PMH among the unemployed or people who have unstable jobs (Sambasivam et al., 2016), although the PMHQ was not used.

It was found that patients with the highest score in factor F4 were those who lived alone and those who were separated, divorced or widowed. In contrast, single patients showed more autonomy. These results are consistent with the study by Sambasivam et al. (2016), where single people reported lower levels of autonomy, although the PMHQ was not used.

With regard to factor F5, higher values were observed among patients who were married or active workers. In contrast, single and disabled patients showed a lower capacity for problem-solving and self-actualization. These data are similar to other studies (Vaingankar et al., 2013; Sambasivam et al., 2016) that used other instruments to measure PMH.

Finally, women obtained higher scores in interpersonal relationship skills than men with regard to the F6 factor, coinciding with other studies (Lluch-Canut et al., 2013). However, married patients were found to have greater interpersonal relationship skills. These data are similar to other studies (Sambasivam et al., 2016), although the PMHQ was not used. Patients in active employment reported greater interpersonal relationship skills, coinciding with similar results in other studies (Vaingankar et al., 2013; Sambasivam et al., 2016) in which the PMHQ was not used.

Based on the literature, few research studies have related the level of PMH measured with the PMHQ and the clinical variables used in this study among patients with psychotic disorder. Patients with a family history of mental illness, those prescribed three or more antipsychotics, those being treated with anxiolytics, and also those who had attempted suicide reported lower levels of PMH. Similar data were obtained in the study carried out by Lluch-Canut et al. (2013), which used the PMHQ to show that polymedicated patients presented lower overall PMH levels. These results can be explained by the prevalence of comorbidity of anxiety and depressive disorders in schizophrenia, which is significantly higher than in the general population (Buckley et al., 2009; Kiran and Chaudhury, 2016). Epidemiological studies have shown that polypharmacy is extremely common in schizophrenia, although evidence of its benefits remains scant (Ballon and Stroup, 2013).

When analyzing specific PMH factors and clinical variables, results in the F1 factor showed that patients prescribed three or more antipsychotics, those being treated with antidepressants, and those who had attempted suicide reported lower personal satisfaction, although no studies with similar results were found. In factors F3, F4 and F5, it was observed that patients prescribed three or more antipsychotics, those being treated with antidepressants, and those who had attempted suicide reported less self-control, autonomy and capacity for problem-solving and self-actualization. Similar data were obtained in Lluch-Canut et al. (2013), showing that polymedicated patients presented lower levels in these three factors. Moreover, it was found in factor F3 that patients with a family history of mental illness showed less capacity for self-control. Regarding factor F5, it was observed that patients with fewer years of evolution of the psychotic disorder reported a lower capacity for problem-solving and self-actualization. Finally, regarding factor F6, patients prescribed three or more antipsychotics and those being treated with anxiolytics or antidepressants reported lower interpersonal relationship skills.

Regarding the relationship between PMH and recovery, it was observed that both the global levels of PMH and the PMHQ factors correlated positively with the MARS. One study on patients with mental disorders had similar results, although different instruments were used (Iasiello et al., 2019). The results have indicated that PMH can be an important resource for patients to recover from a mental disorder and stay mentally healthy. Similarly, based on the analysis of the relationship between PMH and SWB, it would appear that global PMH levels and PMHQ factors correlated positively with the PWI-A and the OLS. Several studies can be found with similar results, although different instruments were used (Seow et al., 2016; Vaingankar et al., 2016). Based on these results, it can be asserted that mental health is directly related to SWB.

As for the relationship between PMH and insight, it was observed that both global levels of PMH and PMHQ factors correlated negatively with the overall level and dimensions of insight. However, no studies exist linking these two constructs. Similarly, a relationship was found between terms related to PMH (wellbeing, quality of life, etc.) and insight in patients with psychotic disorder, associating high levels of insight with poorer quality of life and wellbeing (Lien et al., 2018; Davis et al., 2020).

Finally, a positive correlation was obtained between PMH and functioning. Accordingly, several studies on patients with mental disorders have shown a similar association (Seow et al., 2016; Vaingankar et al., 2016), although other measurement instruments were used.

The present study reveals that PMH is significantly positively associated with recovery, SWB, functioning, age and being separated, divorced or widowed. In contrast, insight and having a family history of mental disorder showed a significant and negative association with global PMH. However, according to the literature consulted, no studies are available that have analyzed this set of variables that may favor the level of PMH in patients with psychotic disorder.

Various interventions to improve PMH exist in a variety of modalities, including individual, group and online formats, but targeting the general population (Bolier et al., 2013; Teixeira et al., 2019; Eisenstadt et al., 2021). However, no evidence-based intervention research on PMH in the psychotic disorder population has been found. However, there are possible interventions that could provide substantial benefits to PMH in this population, such as cognitive remediation (Vita et al., 2021),

progressive muscle relaxation (Melo-Dias et al., 2019) or social cognition training (d'Arma et al., 2021).

Limitations

The cross-sectional nature of this study did not allow conclusions to be drawn about the causal relationships between the variables that were shown to be related. In this respect, patient follow-up could be of interest. Moreover, the sample was not randomly selected, but consecutive sampling was used, which is considered the best form of non-probability sampling because all available subjects are included.

CONCLUSION

This study contributes to increasing the scant existing knowledge of PMH in patients with psychotic disorder. It also helps us to identify the variables, and the relationships between them, which have the greatest impact on mental health. Accordingly, they can be considered when designing interventions, strategies and programs for this type of population. Specific interventions should be made to improve PMH since levels are lower in patients with psychotic disorder than in the general population.

Relevance for Clinical Practice

Results regarding the PMH profile of patients with psychotic disorder have shown that it is necessary to take the sociodemographic and clinical characteristics of each individual into account in order to carry out specific interventions to reinforce, enhance or maintain PMH levels.

If actions are taken to increase PMH, recovery, SWB and functioning will also increase. At the same time, interventions should be carried out to boost insight, since increasing PMH could decrease insight in people with psychotic disorder.

These data on the needs of patients with psychotic disorder, based on a positive approach to mental health, can be useful for professional practice. They can help guide programs and interventions carried out in the different mental healthcare facilities.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary files, further inquiries can be directed to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Clinical Research Ethics Committee at the Healthcare Institute (Reference Number: S041-1094), the Benito Menni Mental Healthcare Complex (Reference Number: PR-2015-19), the Mar Health Park (Reference Number: 2015/6303/I), and by the Research Committee at the Sant Joan de Déu Health Park. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MB-B, MG-C, and ML-C conceptualized the study. MB-B, MG-C, DJ-C, and ML-C contributed to the preparation of the final draft and study protocols. MB-B collected data, conducted initial data analysis, and wrote the first draft. All authors contributed to the article and approved the submitted version.

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