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Employee and organizational wellbeing in the new normal: Implications for the post COVID-19 era

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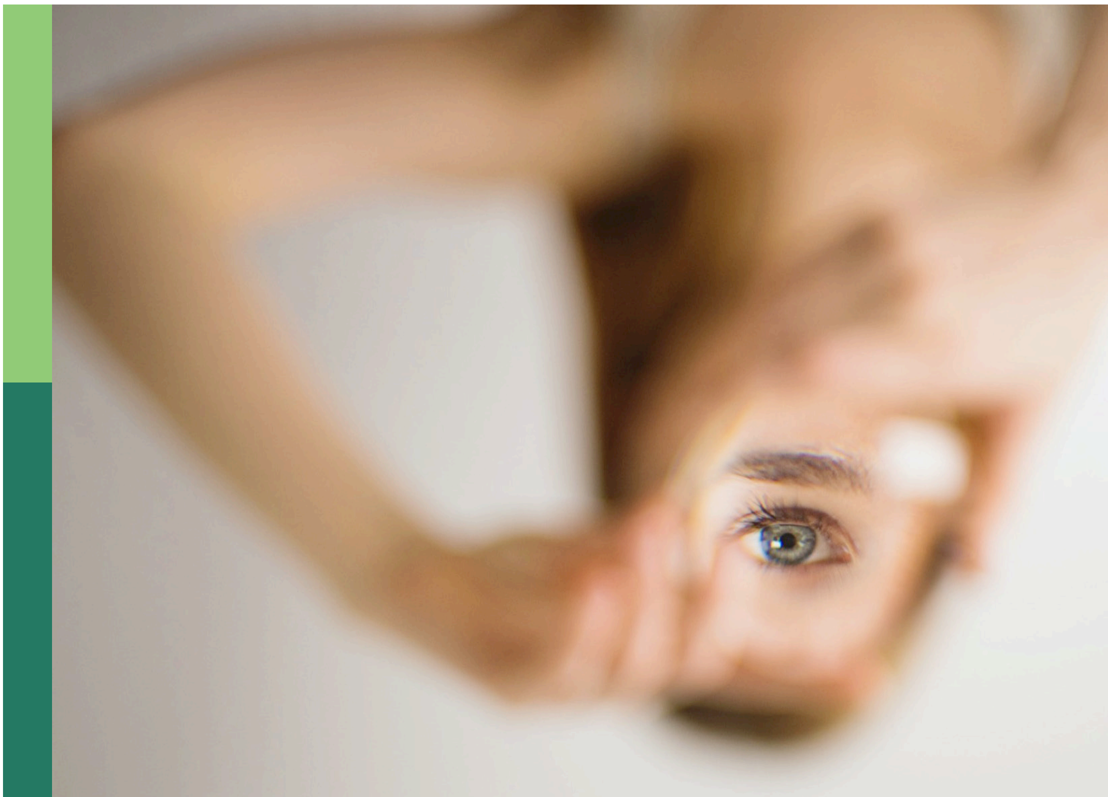

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Employee and organizational wellbeing in the new normal: Implications for the post COVID-19 era

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The dark side of leadership: How ineffective training and poor ethics education trigger unethical behavior?

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Introduction: The challenge of restricting unethical behavior requires public companies to reinforce ethical practices among leaders through various instruments. Previous research suggests that the (un)ethical behavior of leaders can be influenced by many situational factors. This study aimed to investigate the influence of ethics training and education on unethical leadership behavior in the Algerian public companies.

Methods: Data were collected through semi-structured interviews with 15 leaders from public companies in Algeria. Data analysis was facilitated using ATLAS. ti 8 qualitative analysis software.

Results: The findings show that public companies in Algeria suffer from several issues related to leaders' ethics training and education. The findings also indicate that some of these unethical leadership behaviors are the result of ineffective training programs and poor ethics education within public companies.

Discussion: The absence or ineffectiveness of ethics training and education within and outside organizational settings has a detrimental impact on leaders' ethical character. This study is the first to explore how public companies in Algeria engage in ethical training and leadership education. The different sectors of the Algerian business can use the findings as a point of reference to embed the appropriate ethical climate in their respective organizations.

KEYWORDS

ethics training, ethics education, leadership, unethical leadership, public companies, Algeria

Introduction

The continuous challenges in the business world, coupled with exponential growth in many sectors, require companies to employ skilled and competent individuals. This is particularly true regarding the quality of company leaders. One way to ensure organizations' long-term development is to implement dynamic training and development for members

(Barbosa and Sousa, 2020). Training is an indispensable system to reinforce learning and improve job performance. The key objective is to create sustainable changes in cognition and behavior for organizational members to acquire the competencies needed to perform their roles (Salas et al., 2012). Leadership development initiatives and programs in organizations have a crucial influence on culture, productivity, growth, market share, and profits (Hurt and Homan, 2005). Moreover, ethical awareness and the skills that enable leaders in all organizational settings to deal with complex ethical decision-making processes are at the core of current scholarly discussions (Shakeel et al., 2019). Hence, training and educating public sector companies' leaders to be able to address the increasing ethical implications of their decisions is as important as preparing them with technical and managerial skills.

The prevalent corruption and unethical practices in the public and private sectors have brought leadership ethics to the center of organizational studies (Romious et al., 2016; Holt et al., 2018). Thus, organizations have sought to restrict ethical deviations by instituting educational and training programs for leaders. Moreover, previous investigations have proved that organizations with higher ethical commitment engage in less earnings management, have better organizational performance and a higher market valuation, and achieve higher corporate financial performance (Ghazali, 2015). On the other hand, environments infiltrated with unethical behaviors have significant detrimental effects on the organization (Kirsten et al., 2017). Unethical leadership behaviors have a deleterious effect on employees and the entire organization (Brown et al., 2005; Erickson et al., 2007; O'Keefe et al., 2020). Specifically, unethical behavior has financial implications that directly contribute to corporate failure (Adeyanju, 2014). Therefore, the importance of leaders' ethics training and education cannot be stressed enough. Ethical training is perceived as a decisive factor in decision making (Teixeira et al., 2018), assisting in clarifying ethical dilemmas (Chaplais et al., 2016), and creating an adequate space for organizational members to reflect on particular situations that occur during regular work in organizations (Pliscoff-Varas and Lagos-Machuca, 2021).

Organizations tailor different training and educational programs to cultivate good behavior among members. In line with this, various studies have established the positive influence of leadership training across different industries, outcomes, and settings (Hasson et al., 2016). Among these training programmes, ethics training is decisive in developing leaders' ethical character (Beeri et al., 2013; Asencio, 2021). Ethical programs represent a set of processes and mechanisms by which organizations shape employees' behavior, explaining both ethical and unethical forms of behavior within the organizational environment. In addition, ethical programs enable managers to prevent unethical behaviors. These programs have the potential to shape the organizational culture and establish a sound ethical atmosphere concerning business activities (Remišová et al., 2019). Furthermore, any effort geared toward the development of ethical leadership is critical for achieving sustainable business outcomes in the current complex and hyperconnected business world (Kvalnes and Øverenget, 2012; Turner et al., 2018). However, the development of leaders is not something that a company can do in the spur of the moment. The process takes time, close consideration, and assessment of both individuals and the organization (Hurt and Homan, 2005). Effective organizations offer personalized development and training practices that help leaders translate the vision, mission, and strategy of the organization into actions (Holt et al., 2018).

In light of the aforementioned, this study investigates the influence of ethics training and education on unethical leadership behavior within Algerian public companies. The current situation of leaders' ethical performance and the ethical environment within public companies in Algeria is reflected in the ongoing issues of administrative corruption and unethical practices during the last three decades. One of the key factors contributing to the poor performance of the Algerian public sector organizations is widespread unethical practices among leaders and managers at the state level and different levels of the administration (Chama, 2019; Bennihi et al., 2021; Elsayed, 2021). Despite the importance of this issue and the proliferation of studies on leadership ethics in recent decades, research addressing leaders' ethical and unethical behavior remains an unmapped field within the Algerian context (Benlahcene and Meddour, 2020). The literature provides minimal evidence of the role and influence of leadership ethics training and education in Algerian public companies. Several studies have proposed that formal training in the multifaceted components of leadership is essential and should begin in the early career stages. Nevertheless, to date, the number of effective and thorough leadership training opportunities is inadequate at any career level (Sonnino, 2016; Flaig et al., 2020; Osuagwu, 2022). According to Pliscoff-Varas and Lagos-Machuca (2021), studies on the issue of ethics training are limited, not only in the context of the public sector but also in the private sector (Pliscoff-Varas and Lagos-Machuca, 2021). Similarly, Bellou and Dimou (2022) suggested that the destructive side of leadership has received growing interest over the years but the eveidence from public sector companies and institutions continues to be limited (Bellou and Dimou, 2022). Despite the progress made in integration and synthesis, and the increase in leadership studies, researchers continue to stress a wide range of gaps in our understanding of leadership. One prominent gap is understanding the influence of leadership development and training on organizational performance (Seidle et al., 2016). According to Akanji et al. (2019), most of the established body of knowledge on organizational leadership originates from studies from the Western world, with a distinct lack of similar research in developing countries with different cultural and institutional systems. This signals the nature of leadership concepts and constructs in non-Western contexts (Akanji et al., 2019). Consequently, a better understanding of the role of ethics training and education in influencing unethical leadership behavior is needed to improve the quality of leaders within public organizations in developing countries with different cultural and organizational settings.

This study takes a qualitative approach to explore the influence of ethics training and education on unethical leadership behavior in Algerian public companies. Although the antecedents of unethical leadership behavior are entangled in various organizational, social, and cultural factors (Ünal et al., 2012; Lašáková and Remišová, 2017; Braun et al., 2018), this study focuses on the potential role of ethics training and education. The study seeks to expand the literature on the antecedents of unethical leadership behavior and unethical leadership broadly by exploring how ineffective training programs and poor ethics education trigger unethical behavior among leaders. In doing so, this study investigates the effectiveness, content, and impact of leadership development programs on leaders' ethical conduct from the perspective and experience of individuals holding leadership positions in various public companies. For this study, the term leadership development describes all forms of training and education programs intended to improve leaders' ethical performance within Algerian public companies.

Materials and methods

An exploratory qualitative approach was adopted to investigate the influence of ethics training and education on unethical leadership behavior. Empirical studies on the different factors affecting leadership behavior in Algeria are scarce. Thus, using an exploratory qualitative approach helps uncover various unmapped issues related to unethical leadership behavior. This design is considered useful in examining issues and phenomena of a behavioral nature (Veal, 2005), and it is especially valuable for scrutinizing sensitive or personal issues (Creswell and Poth, 2016).

The target population comprised top managers and leaders from four Algerian public companies. The term "leader" here denotes individuals who are occupying or have occupied a formal leadership position, such as managers, supervisors, heads of departments, and directors. Purposive sampling was used to acquire reliable first-hand information when selecting the respondents. As noted by Guest et al. (2006), when the objective of the research is to explore or describe perceptions, behaviors, or shared beliefs among a relatively homogeneous group of respondents, a sample of 12 respondents will be satisfactory for the study. Nevertheless, researchers in this type of qualitative study should be flexible and field oriented. In addition, following Clarke and Braun (2018) conceptualization, the researchers decided that data saturation was reached in 15 interviews. Therefore, the interviewees numbered 15 leaders and top managers, including one female leader, with a mean age of 46.86 years. The primary criteria for selecting the participants were their years of experience, willingness to participate in the study, and role or position in a public company. The researchers purposefully selected participants that can best provide an understanding of the phenomenon under examination. The chosen participants that took part in the current study are leaders within Algerian public companies. Therefore, their knowledge, perspectives, and experiences are important in understanding the issue of the influence of ineffective ethics training and poor ethics education on unethical leadership behavior. Further details are provided in Table 1.

Semi-structured interviews were conducted to collect the relevant data. The researchers developed the interview questions based on the objective of the study. The questions were constructed in an open-ended form to elicit relevant and rich data and reflect participants' experiences and perspectives in their social world (Creswell and Creswell, 2017). The interview guidelines included opening remarks to explain the study's objective to the participants, key concepts, and the confidentiality of the information being collected. The interviews were face-to-face, and the average duration of each session ranged from 30 to 90 min, depending on the respondents' willingness to add further information. The researchers took notes to complement the voice recording device. Given the sensitivity of the issue under investigation, interviewees were informed that they were free to ask questions before the interview session began to clarify any concerns regarding the nature of the study. Although most respondents were slightly anxious about participating in the study, they were willing to

TABLE 1 Demographic data.

Respondents	Position	Years of company employment	Age	Gender
A1	HOD, HR	12	43	Male
A2	HOD, Finance	5	41	Male
A3	Former HOD, Finance	23	61	Male
A4	Head of Division, Environment Protection	/	46	Male
A5	New HOD, Administration and Logistics	5	32	Male
A6	Head of Sub-Department, BD	7	42	Male
A7	Chief of Services, TS	17	54	Male
A8	Supervisor of Department, Procurements	10/11	46	Male
A9	HOD, HR	21	50	Female
A10	HOD, Manufacturing	19	50	Male
A11	HOD, Finance and Accounting	12	42	Male
A12	HOD, Maintenance and Transportation	13	42	Male
A13	HOD, Operations	18	45	Male
A14	Chief of District	30	49	Male
A15	Former Deputy General Director	35	60	Male

HOD, Head of Department; HR, human resources; TS, transportation services; BD, business development.

participate after understanding the study's objective, purpose, and nature.

To interpret the interviewees' perspectives, the researchers adopted Braun and Clarke (2006) thematic analysis, a process for identifying, analyzing, and reporting themes within the data. The step-by-step guide suggested by Braun and Clarke (2006) was as follows: (1) transcribing, organizing, and reading the data thoroughly; (2) after reading and rereading the transcribed data, the researchers reflected and wrote down the initial codes and notes; (3) searching and forming themes; (4) reviewing and matching the themes to the general nature of the data; (5) defining, naming, and renaming themes; and (6) producing the thematic analysis's final report to provide a nuanced and detailed account of each theme. The process of transcribing, analyzing, and reporting was facilitated by the qualitative analysis software ATLAS.ti 8, which was used to organize the data and present the transcribed content as consistent and logical structures.

Results

What is the influence of ethics training and education on (un) ethical leadership behavior in Algerian public companies? Two themes related to this question emerged from analyzing the collected data, as shown in Figure 1. The first reported theme was ethics education, which included nurturing leaders' ethical values in educational institutions, families, and communities. This theme encompasses the impact of ethics education on the ethical character of leaders before their recruitment to their respective companies.

The second theme is training programs that address the ineffectiveness and inadequate focus on building leaders' ethical character in Algeria's public companies. In response to ethics training, most respondents reported their perceptions and experience of the lack of ethical and managerial training initiatives and programs to establish and improve leaders' ethical character within public companies in Algeria.

The perspectives and views of the respondents in this study suggest that there is inadequate ethics training and education for leaders. As expressed by the respondents, this situation has deprived leaders of proper ethical development and contributes to unethical behaviors within public companies. Moreover, most of the respondents opined that poor ethics education and the lack of training contributed to incompetence, unethical practices, and lack of skills that allow leaders to exhibit good organizational behavior. The reported themes and the respondents' perspectives are presented in the following sections.

Ethics education

The theme of ethics education represents respondents' experiences and perspectives on educating and nurturing leaders with the right ethical values, especially concerning the critical role of ethics education at an early stage. The respondents stated that companies alone could not instil the right ethical values into the character of organizational members. This task requires the collaboration of educational institutions, society, and families to prepare future leaders who can perform their organizational duties ethically. Based on respondents' perspectives and experiences, ethics education in the Algerian context is of poor quality and lacks effectiveness in forming ethical leadership behavior. Supporting the above view, Respondent A12 states:

> *"Organisations, laws, or regulations cannot alone prepare or make ethical people, and this task needs more involvement in the early stages of education. If we want to have ethical individuals or leaders, we must think of ethical values before these leaders come to the organisation. The unethical leader will bypass the laws and ethical guidelines to get what he wants. So basically, if you have leaders with a strong sense of responsibility and ethical awareness, you will have a prosperous organisation"* (Respondent A12).

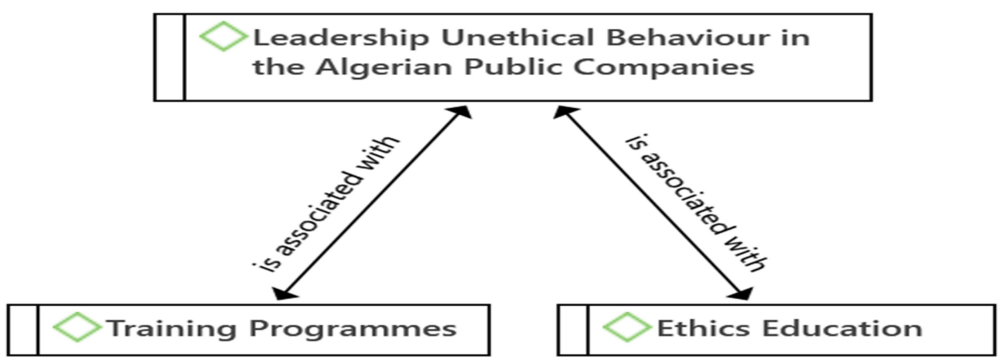

FIGURE 1
Leadership unethical behavior in the Algerian public companies.

It is axiomatic that one of the essential steps in any business venture or organization's success is to acquire well-educated and well-qualified individuals. The appointment of individuals with appropriate skills and values is important for organizations facing the compound challenges of the current business world. Accordingly, educational institutions, families, and other community entities are vital in forming individuals with a good character. However, the views echoed by the participants in this study imply that educational institutions and other social entities in Algeria do not play a pivotal role in preparing and nurturing future leaders with the appropriate ethical values. Furthermore, the struggle to prevent misconduct and unethical practices within organizational settings should begin at an early stage by equipping and nurturing individuals with ethical values. Responding to this issue, Respondent A3 demonstrated that organizational leaders should be educated in the right ethical values before their professional life.

> "*Organisations cannot create competent and ethical leaders in an unhealthy environment or in an unethical environment. If we want to have good leaders in terms of ethics or competencies, this must happen before the person joins the organisation. In other words, it is a process and this process of making good leaders starts from the family, educational system, and society*" (Respondent A3).

Likewise, Respondent A13 considered ethics education to play a decisive role in shaping the ethical character of leaders.

> "*I believe that the early ethical education and the ethical values which were adopted by the individual will lately determine what kind of leader he will be; that will decide if he is going to be an ethical or unethical leader and what to expect from him as an individual; this has a great effect on the moral conduct of leaders in Algeria*" (Respondent A13).

Despite differing views on the methods, models, and goals of ethics teaching, there is a general agreement that ethics can be taught. The usefulness and effectiveness of ethics education in improving ethical awareness, reasoning, and knowledge have been well established (Avci, 2017). In this study, the respondents' shared view was that organizational rules and guidelines were insufficient to instil and promote good ethical behavior among leaders. This task requires active involvement of educational institutions and other social entities. The respondents' statements suggest that the early stages of ethics education of prospective leaders are most likely to play a significant role in forming and predicting their ethical character in later stages. It is not easy to alter the ethical character of leaders once they are recruited as members of the organization.

Training Programs

In this theme, in their accounts of leadership training programmes, the respondents were unanimous in that training programs, workshops, learning sessions, and policies within Algerian public companies were ineffective in molding leaders' ethical character. They also indicated that Algerian public companies neglected the importance of training to improve leaders' ethical performance. Their views suggest an apparent lack of investment in training and development, both in technical and ethical skills. Referring to the issue of training, one respondent stated the following:

> "*There are programmes for development and training for leaders and employees as well, but the problem is that it is not implemented well, or the quality of these programmes is not really good. There is a huge lack of training and development regarding all types of training in the Algerian public sector. Human resource is the weakest point in the Algerian state-owned companies; we need more qualified, competent, and well-trained leaders and followers*" (Respondent A13).

Respondent A12 reported a lack of training and development programs for leaders in Algerian public companies.

> "*I would say that there is a lack in terms of training, in terms of management and leadership programmes, and career development, workshops which focus on important ethical issues and other technical issues*" (Respondent A12).

Organizations are prone to corruption and unethical practices if they do not apply necessary measures. Regular training of organizational members is one of the most effective tools for restraining corrupt practices. Training is considered useful in minimizing organizational members' possibility of becoming involved in unethical practices (Hauser, 2019). Hence, it is recommended that organizations implement ethics programs to reduce and prevent unethical practices (Kaptein, 2015; Hauser, 2020). However, participants' responses suggest that public companies' leaders require more training programs that can shape individuals' ethical characteristics. The respondents also lamented the quality of existing training programs. For example, respondent A11 stated:

> "*In order to equip our leaders with the right values for a better future we need more training and developmental programmes; actually, there are training programmes in the Algerian public organisation, but the quality of these programmes is not up to the expectations and challenges of this sector. They spend a lot on useless programmes!*" (Respondent A11).

Respondent A14 developed this position:

> "*We need more training for leaders, we also need to create programmes where leaders can learn from others whether from Algeria or foreigners, and to gain new skills and new perspectives*" (Respondent A14).

Respondent A10 also claimed that:

> *"During the last decade, there was a good improvement in terms of leaders' and managers' qualifications and skills. Yet, we are still suffering from the same ethical problems until this day. This is due to the lack of training regarding the importance of leadership and management ethics in public organisations"* (Respondent A10).

The respondents' statements above indicate that the current quality of leadership training programs in Algerian public companies is not adequately designed to address the ethical dimensions of leaders' roles at the organizational level. The purpose of training is to generate sustainable change in individuals' cognition and behavior to develop the necessary competencies to perform their roles effectively. However, as seen in the respondents' statements, training programs in Algerian public companies are not well-designed to positively change leaders' behaviors.

Discussion

Despite the practical importance of this issue, systematic studies on ethical and unethical leadership across sectors and cultures are rare (Eisenbeiß and Brodbeck, 2014). Research also points to the scarcity of empirical studies on the causes and consequences of unethical leadership behavior in public organizations (Hassan, 2019). This is particularly true in the context of Algerian public companies and other African countries. This exploratory study investigated the influence of ethics training and education on unethical leadership behavior based on leaders' experiences and perspectives to fill this knowledge void. This study was set out to explore the link between ethics training and education on the one hand and unethical leadership practices in Algerian public companies on the other. Broadly, the current study was conducted to partially address the existing knowledge gap regarding unethical leadership behavior in Algerian public companies. The importance of exploring leaders' ethical aspects stems from their decisive role in guiding organizational members toward the organization's objectives (Eisenbeiß and Brodbeck, 2014). One of the critical responsibilities of good leaders is to guarantee that organizational activities are conducted ethically (Haq, 2011). Thus, leaders' ethical deviance has a wider impact on the ethical culture of organizations and results in negative consequences for organizational performance.

Ethics training and education might not be the ultimate solution to leaders' unethical behavior, yet it is an indispensable factor that organizations cannot neglect, especially in organizational environments where corruption and misconduct are common. According to Kim (2021), using ethics programs is important and effective in reducing incidents of unethical conduct among organizational members within public companies (Kim, 2021). Moreover, leadership training and education are necessary components of organizational activities in the current complex and dynamic business environments (Berkovich and Eyal, 2020). Previous studies have shown that unethical behaviors are less frequent in organizations with ethics programs than in those without them (Kaptein, 2015). Previous research also suggests that many factors shape leaders' ethical conduct; among these factors, ethics programs and education play a crucial role in forming leaders' ethical behavior at the organizational level (Schwartz, 2013).

Most organizations pay more attention to ethics training because of its significance in enhancing organizational performance (Harun et al., 2019). In line with this, a pressing issue in Algerian public companies is widespread unethical practices among leaders and top managers (Benlahcene and Meddour, 2020). Algerian public companies have long suffered the consequences of unethical leadership behaviors. Investing in the development of effective and ethical leaders is one way to overcome these challenges within these companies. This situation requires companies to steer their efforts towards developing and improving the quality of leaders to minimize the destructive consequences of unethical leadership activities on organizational performance.

Although this research is small-scale and exploratory, two critical insights can be drawn from the findings. First, although many studies have suggested that training programs positively influence leaders' performance within organizational settings (Hasson et al., 2016; Riivari and Lämsä, 2019; Zhu et al., 2019), the findings of this study suggest that there is a lack of effective training programs for leaders within Algerian companies. Moreover, the respondents linked leaders' ethical failures to a lack of such training programs. Trevino (1992) posited that organizational members' ethical reasoning skills can be improved through effective training programs. This can be achieved by designing programs that contain practices in situational behaviors or moral role-taking, case studies, and group discussions to develop managers' ability to deal with composite moral issues (Zhu et al., 2019). Leaders can be developed or, more accurately, they can learn the behavioral habits of effective leaders. They can change in desired ways, but not without effort or intent. By extension, teams, organizations, communities, and even countries can change in the desired ways, but without purposeful desire, the changes may be slow or result in unwanted consequences (Boyatzis, 2008). Likewise, ethical training programs based on sound principles and tools can effectively prepare business leaders and others for the dilemmas they encounter in their everyday work settings (Kvalnes and Øverenget, 2012).

Previous studies have suggested that ethics training programs must be provided to organizational members to develop their understanding of ethical decision-making and enhance their awareness of ethical values to build their moral reasoning (Valentine and Godkin, 2016). However, based on the analysis of the respondents' perspectives, it appears that the absence of effective and well-structured ethics training programs for leaders negatively influences their ethical character and makes them more prone to ethical failure. Training is a valuable tool that can assist organizations in improving the ethical character of leaders.

Kish-Gephart et al. (2010) suggest that adults' moral development is generally stable, although it can continue to improve through training, practice, and learning.

Second, one of the most unexpected findings was the respondents' emphasis on the role of leaders' ethical education before their professional life. In addition to ineffective ethics training within public companies, the analysis of respondents' perspectives suggested that early ethical development is decisive in forming individual leaders' values, attitudes, and behaviors. This was evident in most of the respondents' answers, which stressed the need for families, educational institutions, and society to prepare individuals with good ethical character. Leadership development includes all forms of growth and stages of development during the life cycle that encourage, assist, and promote the expansion and improvement of the experience and knowledge necessary to enhance the performance of leader (Packard and Jones, 2015).

Respondents reported that a significant part of leaders' ethical development occurs before their recruitment into the organization. These findings suggest that early ethical development plays a decisive role in shaping and determining the ethical character of organizational leaders. The respondents echoed that the task of ethics training and education goes beyond the organizational environment to include the education system, families, and other entities within society. This study's analysis suggests that social and cultural environments play a significant role in shaping leaders' values, norms, and ethical awareness. In line with this, Day et al. (2014) stated that leadership development tends to begin at an early age and is partially influenced by parental modelling. It includes developing and applying a wide range of skills (e.g., creativity, intelligence, and wisdom), and is shaped by factors such as personality and relationships (Day et al., 2014).

From the findings of this study, it can be argued that the ethical development process of leadership is not the sole responsibility of organizational training and education. What is evident in the views and perspectives echoed by leaders of Algerian public companies is that the social environment (families and educational institutions) is the first platform where future leaders can be trained and educated in good ethical behavior. At the same time, the role of organizations is to establish and develop those values ingrained in leaders' character to prepare them for the professional world. Moreover, organizations often draw from the recruitment pool without considering the ethical character of leaders. Therefore, one way to improve the quality of individual leaders in organizational settings is to ensure that different social and educational institutions play a role in embedding good ethical values into future leaders' character.

Conclusion

This study called into question the role of ethics training and education in predicting unethical leadership behavior in Algerian public companies. It sheds new light on a practical issue that lacked previous empirical investigations in the Algerian context by using an exploratory qualitative design that proved valuable in unveiling unmapped organizational issues. The findings of this study show that the absence or ineffectiveness of ethics training and education within and outside organizational settings has a detrimental impact on leaders' ethical character. This implies that factors affecting leaders' ethical development extend beyond organizational settings to include families, educational institutions, and wider social environments.

The findings of this study suggest that leaders from Algerian public companies perceive that organizations alone cannot instil good ethical values into the character of leaders. This task requires comprehensive collaboration between organizations and educational institutions, business schools, and families. The ethical behavior of leaders is crucial in shaping organizational culture and exerting a positive influence on followers. Thus, it is essential to investigate the various factors that might induce leaders to go astray and become involved in practices that are harmful to organizations and followers. The dearth of studies on organizational leadership in the Algerian context, especially in public companies, deprives this sector of a significant opportunity to optimize the quality of its leaders.

The findings of this study have significant implications for ethical development of leaders and the struggle against unethical practices within Algerian public companies and companies in other African countries. First, the findings offer important insights that support the assumption that ethics training programs positively influence leaders' ethical character (Holt et al., 2018; Turner et al., 2018; Remišová et al., 2019). The findings propose that the absence of effective ethics training programs within organizational settings has a negative impact on leaders' ethical performance. Second, the findings demonstrate that ethical education and development of leaders must occur at an early stage. Educational institutions and families play an essential role in shaping leaders' ethical character. Third, these findings provide valuable insights for policymakers and organizational leaders seeking to promote and enhance the ethical performance of public companies' leaders. These findings have important implications for education institutions. Business schools must include professional and normative ethics in their curricula. This can help familiarize future leaders with the various ethical obligations of the professional domain.

The current study had several limitations. The first concerns the sensitivity of unethical leadership behavior. Hence, it is possible that respondents were cautious when expressing their views on the issue within public companies. Thus, genuine views of unethical behavior cannot be taken for granted. The second limitation relates to the generalizability of the findings, as similar studies in other contexts may generate different results. The peculiarities of Algerian public companies, shaped by different historical, cultural, and structural features, might have geared the current study's findings. Another limitation of this study is that female leaders were under-represented because of the dominance of male leaders within Algerian public companies. Despite these limitations, this study, by its exploratory nature, offers an in-depth examination of the link between ethics training and education and unethical leadership behavior in Algerian public companies. Therefore, further research should examine potential social and organizational antecedents of unethical leadership behavior in public companies, especially in the African context, where the rule of law is fragile and corruption ratios are high. Future studies should also investigate the implications of unethical leadership behavior on employees and public companies' performance.

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 SoG, Universiti Utara Malaysia. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

AB contributed to the design and implementation of the research, analysis of the results, and writing of the manuscript. OS took the lead in writing the manuscript. MJ provided critical feedback and helped to shape the research and analysis. AR and NA contributed to the discussion of the results and the final manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

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

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The study of mindfulness as an intervening factor for enhanced psychological well-being in building the level of resilience

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Background: By using a practice like mindfulness, people may become more adaptable and flexible in difficult situations, which lowers the levels of unfavorable experiences. Only a small number of research have examined the connection between mindfulness and resilience, with mindfulness as a source of PWB influencing millennials' resilience when faced with adversity. This study sought to close this gap by exploring the role that mindfulness practice plays in millennials' PWB and subsequent increases in resilience to adversity.

Methods: In this study, key components linked to mindfulness, PWB, and resilience are combined with a thorough literature assessment. Millennials who are active members of the Ti-Ratana Youth in Malaysia and the Buddhist Missionary Society of Malaysia (BMSM) Youth Section make up the study's sample population. Before completing the online survey form, each participant was instructed to engage in 4weeks of supervised mindfulness practice. To assure the validity of the data gathered, it was crucial to secure the youth's commitment. Only 231 of the 300 respondents who received the link to the online survey had replies that could be used for further research. To analyze the collected data and conduct hypothesis testing, Smart-PLS was used.

Results: Academic research has shown that factors, such as a heavy workload, time constraints, lengthy workdays, work-related home conflicts, and an unstable and uncertain environment all lead to a drop in PWB. According to the findings, the two most significant variables promoting resilience are mindfulness and positive PWB. The outcomes of this experimental study confirmed earlier findings that millennials' PWB and resilience are enhanced by mindfulness training.

Conclusion: The study's findings suggest that, in times of high uncertainty, mindfulness-based intervention programs should be expanded to include all young people. This study offers empirical support for the effectiveness of mindfulness-based interventions in raising PWB and resilience.

KEYWORDS

psychological well-being, mindfulness, adversity, resilience, millennials

Introduction

Resilient people are often optimistic, emotionally sensitive, socially sensitive, and able to face problems without losing perspective or the capacity to carry out daily chores (Babić et al., 2020). In other words, resilience is the ability to tackle obstacles head-on while remaining optimistic. Resilience, defined as the ability to remain buoyant, adjust flexibly, or perhaps grow in the face of pressures or adversity (Bogaerts et al., 2021), might be a protective element to help millennials in their daily employment. Many millennials lack the skills and resources necessary to thrive in today's challenging workplace (Nabawanuka and Ekmekcioglu, 2022).

When facing a difficult time, it is deemed that employees will be able to adjust to the rapidly shifting conditions. For example, to illustrate the ability to adapt to the shifting environmental needs, the World Health Organization (WHO) announced that the COVID-19 virus reached the pandemic level on March 11, 2020 (Kondratowicz et al., 2021; Weigelt et al., 2021). The rapid and complete relocation of one's life, both professionally and personally, to a more secluded location, was precipitated by concerns regarding the presence of an unidentified disease, as well as ambiguity, and governments in various countries have imposed movement's restrictions to control the outbreak (Wang et al., 2020; Xiong et al., 2020). Due to the movement restrictions imposed by various governments worldwide to prevent the spread of the disease, these restrictions have affected approximately 68% of the workforce worldwide. Their respective nations imposed pandemic limitations [International Labour Organization (ILO), 2020]. This unforeseen circumstance resulted in a reduction of almost 71% in people's levels of well-being (Kondratowicz et al., 2021). In their personal and professional life, people have experienced both positive and negative moments during these adverse situations. The existence of such uncertainty and adversity in the lives of humans is unavoidable.

The COVID-19 epidemic has a growing body of data suggesting it has a negative impact on the PWB of many people, according to Solomou and Constantinidou (2020) and Wang et al. (2020). An individual's PWB is related to the level of resilience and mindfulness (Friedman et al., 2022). According to Tan et al. (2021), PWB is an individual's capacity to maintain a healthy equilibrium among various ideas, feelings, and circumstances, solve problems, and react to uncertainty and adversity.

Resilience is a feature that many people possess. A process of adaptation is the ability to be resilient. Resilience is a learned pattern of behavior that one acquires over time; it is not the result of a personality attribute (Sabouripour et al., 2021). The second dependent variable is a psychological practice of deliberately focusing one's attention on the present moment known as mindfulness. One thing about these two variables is the same: they both involve a process (Li, 2021). All of these are processes that can be learned through practice. For these processes to be strengthened, the deliberate practice had to be reinforced by lifelong, dynamic learning, and experience (Friedman et al., 2022).

In the face of difficulty, trauma, tragedy, discomfort, threat, and other causes of stress, resilience and mindfulness are the processes of adaptation. Millennials may choose to intentionally consider ways to approach this pandemic outbreak by taking a different perspective, re-evaluating their assessment, and considering how it will affect their own lives and the lives of others (Kim, 2022).

Mindfulness practice involves bringing one's attention to the here and now while remaining non-reactive, non-judgmental, and open-hearted (Friedman et al., 2022). The levels of adverse experience can be reduced because of practicing mindfulness since it is a technique that enables them to be flexible and adaptive in challenging settings. Increased attention, awareness, flexibility (both cognitive and response), tolerance, and a decrease in preconception and misunderstanding are all benefits of practicing mindfulness. Because of this, employees can act professionally rather than react automatically (Linder and Mancini, 2021).

According to Ryff and Singer (2003), resilient people can preserve their physical and mental health and may recover more quickly from the effects of adverse experiences. In recent years, there has been increased interest in studying mindfulness theories and their relationship with PWB and resilience. As a result, this study investigates the relationship between mindfulness, PWB, and resilience. It was hypothesized that mindfulness might significantly correlate with PWB and resilience. Higher levels of mindfulness indicate higher PWB and greater resilience. In addition, it was anticipated that engaging in mindfulness activities would contribute considerably to an individual's overall level of resilience.

However, limited studies study the relationship between mindfulness and resilience, with mindfulness as a source of PWB affecting millennials' resilience when facing adversity. This paper aims to examine the relationship between mindfulness and PWB among millennials to be resilient when facing adversity.

Literature review

PWB

Psychological Well-Being (PWB) stands for all psychological elements that are thought to contribute to a person's overall quality of life (Kim, 2022). According to Tang et al. (2019), PWB promotes life satisfaction, and positive effects, and decreases negative effects. As a result, efforts should be made to improve the PWB of millennial workers who are under stress at work. A variety of factors, including mental, psychological, and social factors at the individual and organizational levels, could be used to explain the factors affecting the PWB.

Resilience

Resilience is the capacity to successfully adapt by acting flexibly in response to changing situational demands or by exercising appropriate self-control in a demanding setting. When faced with shifting settings, people with resilience can maintain or improve their equilibrium and respond flexibly to stressful situations (Shin, 2021). Additionally, it lessens the detrimental effects of risk factors on mental health, such as stress. By reassessing stress, improving their resilience to stress, regulating negative emotions, and harnessing good benefits, those with strong resilience can demonstrate a rapid recovery (Chang, 2021). As a result, millennial employees may be better able to deal with a variety of challenging environmental circumstances.

PWB and resilience

Ryff and Singer (2003) found that resilient people could safeguard their physical and PWB and recover from challenging situations based on a review of previous literature. According to Acciari et al. (2019), PWB and resilience levels were intertwined. According to Ryff and Singer (2003), resilient people are those who can handle pressures while keeping their bodily and mental health.

Mediating variable

Mindfulness

The state of increased awareness known as mindfulness is achieved by paying deliberate, non-judgmental attention to the present (Marenus et al., 2021). Exercise that combines kinesthesia and physical effort is known as mindful exercise (Mitchell, 2021). People who practice mindfulness appear more able to control unpleasant emotions and ideas, and they are better able to absorb and learn from their experiences without judgment (Kabat-Zinn, 1994; Sünbül and Güneri, 2019).

Mindfulness and PWB

According to the various systematic reviews and meta-analyses by these authors, Kong et al. (2015), Garland et al. (2017), McConville et al. (2017), Feller et al. (2018), Li (2021), Søvold et al. (2021), Tan et al. (2021), Mubarak et al. (2022), Su et al. (2022) and all these authors have suggested that therapies like mindfulness training may improve PWB. Similarly, it is mentioned that an enhanced level of mindfulness is shown to have a significant relationship with reducing depression and stress, leading to better self-control and a more positive outlook on life (Lo et al., 2018; Epel et al., 2019) Mindfulness-based training has been studied extensively for its potential to improve mental health and happiness. Mindfulness practices promote positive adaptation to adversity, which reduces psychological distress, raises happiness levels, and improves PWB (Jiga et al., 2018).

Mindfulness and resilience

The term resilience describes an individual's capacity for dealing with adversity, whether that adversity originates internally or externally (Zsido et al., 2022). PWB was favorably correlated with resilience, whereas psychological discomfort (such as depressive and anxious symptoms) was adversely associated with resilience (Arslan, 2019; Kwok et al., 2020).

Based on the study by O'Connor et al. (2021), the level of mindfulness is a crucial resource for building individual resilience levels in the face of adversity. It is an essential resource because practicing mindfulness can encourage the development of several traits, such as emotional control, healthy coping mechanisms, and a healthy sense of self-worth, that serve individuals well when facing life challenges and the environment.

This practice may aid in realizing that the adverse events that lead to psychological distress are merely a natural mental reaction and temporary or short-term when faced with adversity. The realization may improve one's ability to tolerate and positively cope with such adverse experiences. Multiple empirical studies have shown similar results that show a strong relationship between the constructs of mindfulness, greater life satisfaction, resilience, and significantly reduced levels of psychological distress in the general population, both adults and children (Hopkins et al., 2014; Van der Gucht et al., 2014; Bamishigbin et al., 2017; Lo et al., 2018).

With that, the effort to enhance resilience is gained through mindfulness practice and, in turn, will improve PWB. With that, the purpose of this study is to conduct a study among millennials and formulates the hypothesis that mindfulness practices are significantly correlated with the two constructs of PWB and resilience.

Research model

The study hypothesizes that practicing mindfulness can help improve a PWB. Those who engage in any mindfulness practice will experience increased levels of awareness and a significant increase in their resilience and PWB (Li, 2021). This positive change will enable one to better deal with uncertainty and adversity resulting from the challenging environment. The target population of this study is millennials, who may have to deal with various uncertain challenges from their work and family. Figure 1 presents the model that was used for the research.

The most common challenges are heavy job load and responsibilities, prolonged working hours, datelines pressure, the uncertainty of the changes in the business environment, and challenges related to a disruption in the work-life balance. The practice of mindfulness helps employees increase their awareness and improves their ability to observe and respond to situations more effectively (Friedman et al., 2022). This capacity allows employees to cope better in adverse conditions, improving their PWB.

The hypothesis

The hypotheses are formulated based on research that suggests that practicing mindfulness significantly lowers people's stress levels and raises their well-being and resilience.

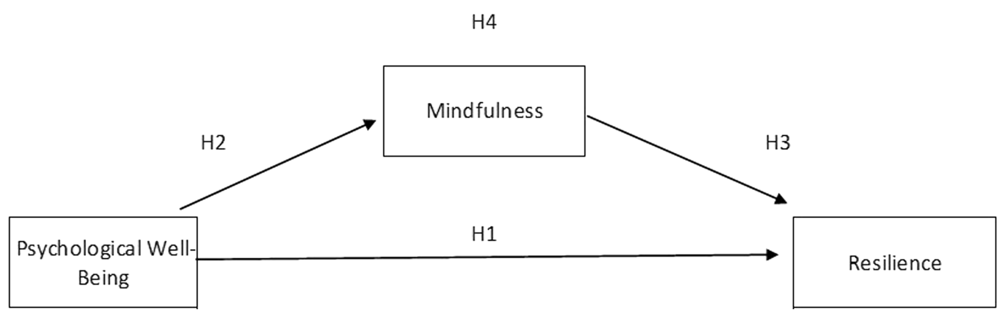

FIGURE 1
A research framework.

> *H1*: There is a significant correlation between PWB with resilience
>
> *H2*: There is a significant correlation between PWB with mindfulness
>
> *H3*: There is a significant correlation between mindfulness with resilience
>
> *H4*: The relationship between PWB and resilience is significantly mediated by mindfulness, which considerably impacts both constructs.

Methodology

A convenient sampling technique is used to collect the samples. Millennials who are active members of Ti-Ratana Youth and the Buddhist Missionary Society Malaysia (BMSM) Youth Section make up the samples. Both are local youth organizations with members in Malaysia that range in age from 18 to 40. The group's active members, the majority of whom are employed, and their awareness of mindfulness make them suitable participants for our study. The reason for incorporating the youth organizations is that the study's participants are required to engage in 4 weeks of supervised mindfulness practice. The young people had to daily engage in guided mindfulness exercises. Therefore, it is crucial to secure the youth's commitment to assure the validity of the data gathered. The participants actively participate in the youth group, which facilitates easy contact and study monitoring, to handle the commitment concerns. The 4 weeks of practice began after participants provided their informed consent to take part in the study. All participants were requested to complete a questionnaire that was given online after the 4 weeks of practice.

A total of 300 questionnaires were sent to the target respondents who fit the profile for this study. After the initial screening for any missing and invalid responses, a total of 231 responses ($N = 231$) were found valid to test the proposed conceptual model. Smart-PLS were utilized to analyze the gathered data and hypothesis testing which includes validating the measurement and structural models and testing the proposed hypotheses. In this study, evaluating the measurement model was carried out by taking into account various factors, including convergent validity, discriminant validity, internal consistency reliability, and indicator reliability (Henseler et al., 2015; Hair et al., 2019). Measures of multicollinearity, path co-efficient, coefficient of determination (R2), effect size (f2), and predictive relevance (Q2) were utilized in the process of evaluating the structural model (Hair et al., 2017). Every one of these procedures was carried out precisely as described. This analysis employs PLS-SEM because it permits a simultaneous investigation of the constructs and the structural model upon which they are based. It is helpful in exploratory and survey research (Hair et al., 2019). According to Ringle et al. (2015), PLS-SEM is the method of choice for evaluating path diagrams for latent variables when many indicators are involved. This is because PLS-SEM may simultaneously analyze formative and reflective models while maintaining possible advantages over linear regression models.

Measures

Mindfulness

Mindful Attention Awareness Scale, often known as the MAAS, examines mindfulness as a characteristic that involves what its creators consider to be the two fundamental aspects of consciousness: awareness and attention. The MAAS measures the awareness of the level of attention to present-moment events and experiences. It contains 15 items for the respondents to rate based on a scale ranging from 1 (almost always) to 6 (almost never) based on the frequency with which the respondents engage in the described activities. In this particular research, the scale demonstrates a high degree of internal consistency (Cronbach's α =0.906; refer to Table 1).

PWB theory

A person's PWB level can be evaluated using the Scale of PWB (SPWB), developed by Ryff (1989). Positive functioning is an alternative and multi-model of PWB that originates from theoretical talks on how normal personality development takes place. This served as the foundation for Ryff's model, which he founded on this concept. The model provides a comprehensive explanation of what mental health entails. On the scale of PWB, there are a total of six elements, and each of those aspects is comprised of 18 items. It was devised to gage independence, environmental dominance, constructive connections with others, personal development, life objectives, and self-acceptance. A reverse scoring item is included in the list of questions to determine whether respondents are giving consistent answers. The respondents were to rate based on a scale ranging from 1 (strongly agree) to 7 (strongly disagree) based on the respondent's opinion on their level of PWB. The internal consistency shows a high degree of the outcome (Cronbach's α =0.854; refer to Table 1).

Resilience

Using the CISS framework of the Coping Inventory for Stressful Situations to test the level of resilience and the ability to cope with stressful situations. The initial version of the instrument, which consists of 48 questions, was designed to gauge the various strategies used by participants to deal with stressful events in their life (Masten and Barnes, 2018). The CISS-SFC consists of 21 items measuring three aspects of coping: task-oriented, emotion-oriented, and avoidance-oriented. To identify which coping methods, the participants employ for various stressful situations. The participants must rate each item on a five-point Likert scale, with 1 (not at all) and 5 (very much). The internal consistency of this scale shows a moderate degree outcome (Cronbach's α = 0.677; refer to Table 1).

TABLE 1 Cronbach's alpha, composite reliability, and AVE of the measures.

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
MF	0.906	0.919	0.651
PWB	0.854	0.880	0.589
RES	0.677	0.770	0.526

Results

Preliminary analyses

Table 2 presents the demographic characteristics of the respondents recruited to provide their survey opinion for this study. The majority of the respondents, or 55.8%, are female, while the remaining proportion (44.2%) are male ($N = 231$ for male and female respondents combined). When broken down by age group, the most significant proportion of respondents fell into the 26–30 age bracket (34.7%), followed by the 36 and older age group (30.6%). Regarding the level of education, most respondents held a bachelor's degree (54.2%). The following demographic is the occupation category, and most of the people who filled out the survey were employed in managerial positions (26.4%), followed by administrative functions (33.3%). Finally, regarding the number of years of service, the majority have been working for more than 5 years (40.3%).

Measurement model assessment

The initial step of the PLS-SEM process was analyzing the measurement model. This would ensure the authenticity and credibility of the model. To be considered reliable, Cronbach's alpha and composite reliability (CR) should be more than 0.70, as Hair et al. (2017) stated. It was determined that a value of less than

TABLE 2 Demographic profile of the respondents.

	Frequency	Percentage		Frequency	Percentage
Gender					
Male	102	44.2			
Female	129	55.8			
Total	231				
Age			**Occupation**		
21–25 years old	29	12.5	Operational (work floor)	48	20.8
26–30 years old	80	34.7	Administrative	77	33.3
31–35 years old	51	22.2	Supervisor (Middle Management)	45	19.4
36 and above	71	30.6	Manager (Upper Management)	61	26.4
Total	231		Total	231	
Education			**Years of Service**		
Diploma	6	2.8	< 1 year	29	12.5
Bachelor degree	125	54.2	1–3 years	51	22.2
Master degree	80	34.7	3–5 years	58	25
Doctoral degree	20	8.6	> 5 years	93	40.3
Total	231		Total	231	

or equal to 0.50 for the Average Variance Extracted (AVE) was necessary for a convergent validity check. According to Lam (2012), in the event, the AVE is less than 0.5 and the CR is higher than the 0.6 thresholds, the result is accepted. The Cronbach's alpha values for all the constructs of this study ranged from 0.677 to 0.906, while the CR values were between 0.770 and 0.91. The AVE values range from 0.526 to 0.651. Table 1 displays the results of the reliability and validity measurements for each construct, all of which are within the predetermined threshold.

The Heterotrait Monotrait Ratio (HTMT) was then used to test the model's discriminant validity (Dijkstra, 2014). According to Hair et al. (2017), the HTMT value must be less than 0.90 for it to be statistically significant. Based on the fact that none of the values in Table 3 were greater than 0.90, it can be deduced that the respondents were aware of the distinction between the constructs; hence, discriminant validity has been established.

Structural model assessment

Based on Hair et al. (2019), it is advisable for researchers to first and foremost analyze the structural model assessment by measuring the predictive power. R2, Q2, and f2 were measured to achieve this. To be considered significant, the R2 value must be at least 0.25 (Hair et al., 2017). A relevant number for Q2 would be greater than zero. However, for f2, the bare minimum would need to be less than 0.02 for the value to be meaningful. All of the values in this study were within the necessary threshold.

Verifying the proposed hypotheses

In the process of examining the validity of the hypothesized association between the variables, T-Statistics were employed. The bootstrapping technique examines the construct's compatibility with the data. By implementing this technique, the real sample size is raised to 5,000, as proposed by Hair et al. (2017). Please refer to Figure 2 and Table 4 for the structural model's results. Since this was a one-tailed study, a T-statistic of 1.65 or less was considered statistically significant (Hair et al., 2012). When looking at the direct correlations, the data confirmed hypotheses 1, 2, and 3. T-Stats = 2.358; $p = 0.019$ supported the hypothesis that mindfulness practice increases resilience. There were also statistically significant benefits of mindfulness on PWB (T-Statistics = 7.052; $p = 0.000$). Finally, it was discovered that PWB significantly affected resilience (T-Statistics = 7.369; $p = 0.000$). Based on the analysis on the mediation model, it was found that mindfulness mediated the connection between psychological health and fortitude (T-Statistics = 2.098; $p = 0.036$). With that, H4 is also confirmed and considered statistically significant.

TABLE 3 Discriminant validity—Heterotrait-Monotrait ratio (HTMT).

HTMT	MF	PWB
PWB	0.541	
RES	0.609	0.815

Discussion

According to the findings of this study, mindfulness shows a significant relationship in mediating both PWB and the resilience of millennials. The outcomes of the analysis show that a mindful individual reported a high level of PWB and low levels of psychological distress. These findings are consistent with the conclusions drawn from a study by Whitehead et al. (2018), Li and Hasson (2020), and Klainin-Yobas et al. (2021).

When confronted with challenges, those who practice mindfulness have a more optimistic outlook on their lives and are less likely to struggle with mental health issues. This may be one of the reasons why mindfulness preserves the well-being of millennials. It is necessary to conduct additional research on the subfactors of mindfulness engaged in safeguarding the millennial's well-being. Mindfulness techniques were shown to be the medium that enabled the association between PWB and the capacity of individuals to thrive in an environment fraught with adversity and uncertainty. Therefore, the current study's findings regarding the relationships between the constructs provide evidence as the basis for the association between mindfulness and millennials' PWB when faced with adversities.

According to the findings of this research, mindfulness has a strong relationship with resilience. Resilience was discovered to have a positive association with PWB and a negative association with the negative experience of psychological distress. These findings are consistent with those obtained from a variety of earlier studies, both theoretical and empirical, which were carried out in the past (Whitehead et al., 2018; Li and Hasson, 2020; Klainin-Yobas et al., 2021). This supports the idea that teaching millennials to develop their inner strength by practicing mindfulness may be one strategy to help them become more resilient in the face of the many daily stresses they face.

Consequently, this can encourage a more optimistic assessment of their current living situation and lessen the severity of adverse psychological effects. People who practice mindfulness are more likely to have a healthy relationship with the challenges they face, which contributes to the fact that they are better able to cope with the challenges brought on by adversity and uncertainty. Benevene et al. (2020), found that people who regularly practice mindfulness are more likely to use optimistic coping strategies (like positive thinking and maintaining a positive outlook) when facing adversity. They are more likely to view the long-term outcomes of their current situation with optimism (Moss et al., 2017). If today's millennials take on such a positive and optimistic outlook in the face of hardship, they may see it as a chance to grow and improve (Xi et al., 2015). This may aid their capacity to adapt to adverse conditions, enhancing their chances of survival.

People dealing with difficult circumstances may benefit from practicing mindfulness since it may prevent them from

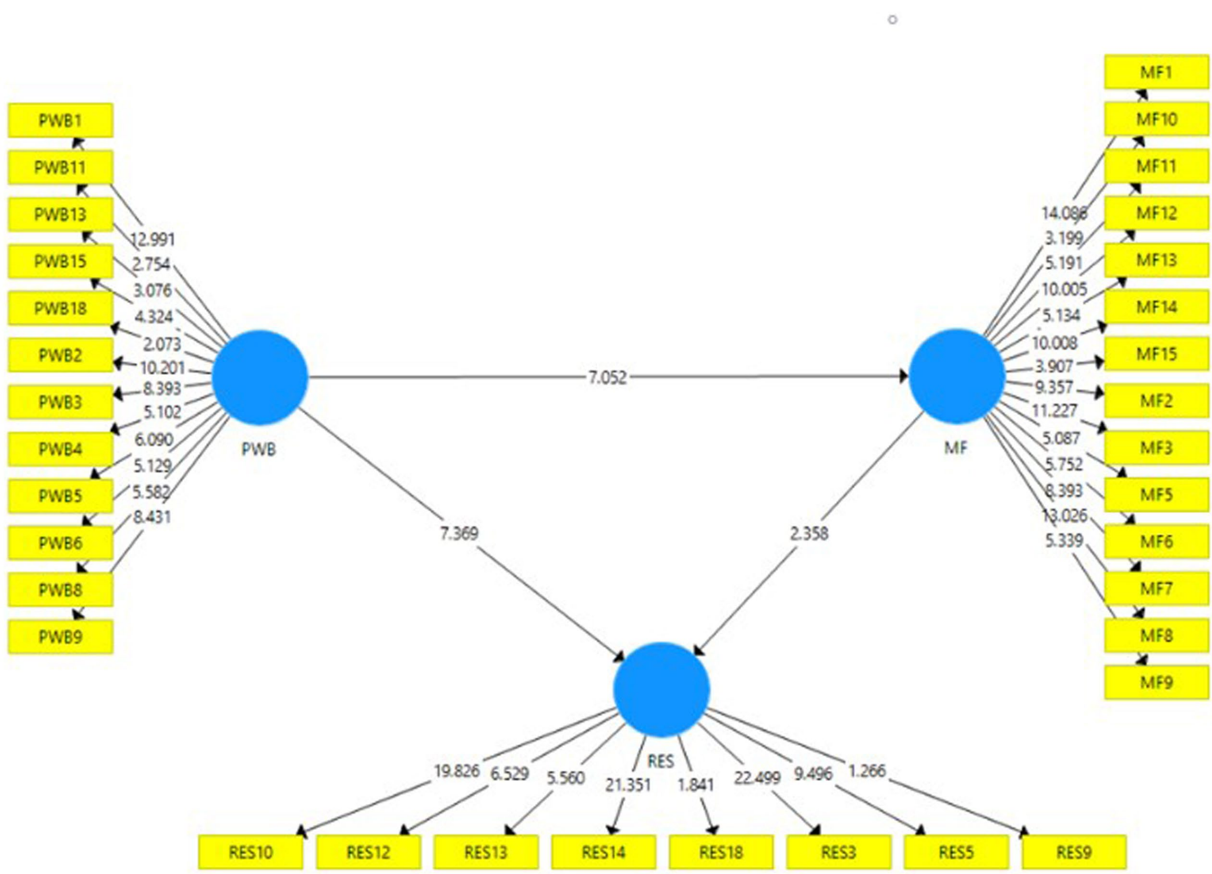

FIGURE 2
Structural model of the study.

TABLE 4 Total effects.

	Original sample	Sample mean	Standard deviation	T statistics	*P*-values
MF - > RES	−0.235	−0.238	0.100	2.358	0.019
PWB - > MF	0.555	0.595	0.079	7.052	0.000
PWB - > RES	−0.612	−0.617	0.083	7.369	0.000
PWB - > MF - > RES	−0.131	−0.141	0.062	2.098	0.036

overgeneralizing their precarious life circumstances, which will, in turn, protect PWB. The findings of this study demonstrate that mindfulness substantially impacted the millennials' PWB and directly affected their resilience level. This supports the hypothesis that mindfulness training can help people become more resilient and less stressed. Mindfulness has been shown to preserve health by lowering stress and increasing resilience (Sünbül and Güneri, 2019). This supports the idea that the processes that lead to greater resilience and the link between mindfulness and PWB are related.

According to Zhu et al. (2019) when considering the effects of extreme adversity that befall an individual from a psychological and social point of view; one of the most important considerations to consider is stress. Based on one similar study undertaken by Li (2021) based on this finding, a person who manages successfully bounces back from adversity is more likely to have an optimistic outlook on the world. By increasing one's resiliency in the face of adversity, mindfulness may make it possible for a person to have a more optimistic subjective view of the challenging situation (Li, 2021). This is particularly relevant for millennials who live in a world that is full of challenges. With that, the mediation role of mindfulness as an intervention factor will improve PWB and increase resilience, leading to a reduced level of negative mental issues. This firmly explains the relationship between the constructs whereby mindfulness has significant positive influences on the PWB and increased level of resilience of the millennials.

Conclusion

Mindfulness techniques that are practiced regularly appear to be an essential internal resource that can assist millennials in adjusting to the life circumstances they are currently facing. A mindful person is less prone to experience adverse PWB due to the influence of their surroundings. This is likely, due to the ability to regulate their focus. Mindful individuals are more successful at adapting to the adverse situation they experience. With that, their thoughts and emotions are observed and regulated. Thus, they are less adversely affected by negative influences. As a result, the level of the PWB of more mindful individuals will experience less likelihood of being threatened by uncertainty and environmental-related adversities. Based on the result presented in this study, it is possible to conclude that engaging in regular mindfulness activities helps preserve the PWB of the millennials. It is essential that the many tools and programs that make it easier for millennials to begin mindfulness practices be available. This will allow for more significant improvements in the overall resilience that millennials possess when confronted with future challenges. Accordingly, this study can offer insights into how to deal with such difficulties and disturbances through appropriate tactics and can help create a relaxing environment where working millennials can work happily and perform at a higher level. Additionally, businesses can provide mindfulness exercises to millennial employees and design a mindfulness learning environment that will increase employee engagement and motivation.

Research limitation

More qualitative and long-term studies could be conducted in the future to better understand how mindfulness can be put in place to support the level of resilience of working millennials. By including more participants from other nationalities in the sample size for subsequent research, the results might be more broadly applicable.

Suggested future research

In this current study's similar methodology, that mainly focuses on the working millennials with the three variables (PWB, Resilience, and Mindfulness) and has neglected the view of other possible categories of the population. With that, for further or future researchers, it can be recommended to consider conducting comparable studies that incorporate the viewpoints of the other categories of populations. In another aspect of this study, PWB is the emphasis that has received more attention in this study's variables as compared to mindfulness and resilience of working millennials. Therefore, as another suggestion, researchers are encouraged to investigate these two variables (mindfulness and resilience) with other identified factors by other similar research. The factors such as interpersonal communication behaviors, self-efficacy, happiness, and optimism could play an important part in providing further understanding of the millennials.

Another suggestion to further explore the study of PWB, mindfulness, and resilience, is to take into consideration the influence of demographic elements, such as age, working experience, academic level, income level, gender, and others. This current study has neglected and did not take into consideration the demographic aspects of the participant of this study, as can be seen from reading the connected studies in this study area. These are all the elements that are lacking which can be a potential element for consideration for future studies and it is evident that this field of study is still in its early stages and requires additional research.

Data availability statement

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

Author contributions

VO designed the study. VO and NP collected the data. VO and AS analyzed and interpreted the data. VO and NP drafted the manuscript. VO and AS revised the manuscript critically for important intellectual content. All authors agreed to be accountable. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.1056834/full#supplementary-material

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Analyzing the role of family support, coping strategies and social support in improving the mental health of students: Evidence from post COVID-19

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Background: The COVID-19 pandemic and the multifaceted response strategies to curb its spread both have devastating effects on mental and emotional health. Social distancing, and self-isolation have impacted the lives of students. These impacts need to be identified, studied, and handled to ensure the well-being of the individuals, particularly the students.

Aim: This study aims to analyze the role of coping strategies, family support, and social support in improving the mental health of the students by collecting evidence from post COVID-19.

Methods: Data was collected from deaf students studying in Chinese universities of Henan Province, China. A survey questionnaire was designed to collect data from 210 students. Descriptive statistics were calculated using SPSS 21 while hypothesis testing was carried out using Mplus 7.

Results: The results demonstrated that family support was strongly positively linked to mental health and predicted coping strategies. The direct relationship analysis showed that coping strategy strongly predicted mental health. Furthermore, coping strategies significantly mediated the relationship between family support and mental health. Additionally, the results highlighted that PSS significantly moderated the path of family support and coping strategies only.

Conclusion: Family support and coping strategies positively predicted mental health, whereas, family support was also found to be positively associated with coping strategies. Coping strategies mediated the positive association between family support and mental health. However, perceived family and other support only moderated the relationship between family support and coping strategies.

KEYWORDS

coping strategies, family support, social support, mental health, COVID-19

1. Introduction

Mental health has become a topic of increased concern in recent years in COVID-19. Numerous studies have provided evidence suggesting heightened levels of psychological distress in this community compared to the general population. This psychological strain of COVID-19 among teenagers has brought severe and long-lasting consequences of mental health, which lead to poor physical health outcomes, such as the rise of cardiovascular disorders, and poor mental health (MH) outcomes. Teenagers struggle more than adults do with the mental burden of this influence since they lack the adult's coping mechanisms and physiological development (Rawat and Sehrawat, 2021). Teenagers who already have MH problems face even more MH issues during times of crisis (Gavin et al., 2020).

The Director General of the World Health Organization, on the recommendation of the Emergency Committee, declared the novel Corona virus also known as COVID-19 a Public Health Emergency of International Concern, and the virus has had devastating effects on the economy, education, and society (Priya et al., 2021). From the very beginning of the outbreak, health officials devised a multifaceted response strategy to stop the spread of COVID-19. A key component of the plan was self-isolation or home quarantine. Social isolation is one of the steps the governments have taken to curb the virus's spread. Social isolation can have an impact on MH, escalating signs of stress, anxiety, and depression (Robb et al., 2020). In recent years, colleges and universities have seen an increase in the number of students experiencing psychological distress. The underlying cause might be the inexperience of college students, who frequently struggle to cope with stress, particularly when faced with academic, interpersonal, and career-related problems. Numerous studies have indicated that students from both eastern and western China have displayed symptoms of depression in the wake of COVID-19 (Chen et al., 2021; Zhang et al., 2021; Zhao et al., 2021).Numerous studies continue to place a strong emphasis on the MH of college students, particularly when it comes to identifying the underlying causes of psychopathological symptoms. Studies have also looked at how students' transition to university is impacted by academic stress. These research found that undergraduate students were already more stressed, anxious, and depressed than the overall population (Guo et al., 2021). The already poor prospects for these students' MH were further aggravated by the stress and worry associated with COVID-19.

These factors are connected to distinct socially isolating situations, such as classroom distractions, the use of particular teaching techniques that are socially isolating, and the overwhelming uncertainty that resulted from precautionary measures to stop or slow the spread of the virus have also added to the severity of the situation. The general public along with particular circumstances that may be having various effects as a result of the actions performed during this time, amplifying its magnitude, has been studied in various studies undertaken in the pandemic context (Covan, 2020; Scharmer et al., 2020; Bakioğlu et al., 2021; Wu et al., 2021).The majority of studies conducted with undergrads during the disease outbreak have concentrated on MH; understanding of knowledge and traits associated with the pandemic; and how educational strategies were crafted to cope with the challenge (Gavin et al., 2020; Liang et al., 2020; Pfefferbaum and North, 2020; Budimir et al., 2021; Saltzman et al., 2021). Other research has noted the rise in stress, sadness, and anxiety symptoms as well as the coping mechanisms of undergrads (Kobbin et al., 2020). Undergraduate students may experience new or increased stress due to the COVID-19 pandemic, which can be upsetting and result in a variety of MH issues.

The general lack of clarity surrounding the pandemic, the abrupt switch to and participation in online classes, and COVID-19's effects on the lives of students were frequent causes of heightened stress and worry (Rodríguez-Hidalgo et al., 2020). According to a study, the COVID-19 outbreak puts students at a greater risk of acquiring depression and suicidality (Sinyor et al., 2021). After university campuses closed, students continued to perceive their academic future as having relatively dim prospects. The situation was rendered even more precarious for students by social isolation and a lack of sufficient and efficient MH support. Due to these variables, young people who are attending college are now even more at risk of developing MH problems (Li X. et al., 2021).

Social support is defined as the provision of practical assistance by members of extended family, friends, and coworkers (Bjørlykhaug et al., 2021). Likewise, it is defined as "support made available to an individual through social relationships to other people, groups, and the greater community" (Heaney and Israel, 2008). There are multiple ways to measure social support, however, one of the most commonly used indexes of social support has been perceived social support (PSS). It is not only easy to measure the PSS but the accuracy aspect is also of utmost importance as it depicts a relatively precise state of MH. Numerous studies have shown how PSS improves MH in stressful circumstances (Wang and Eccles, 2012). Signs of deteriorating MH have been observed in people who receive less or no social support when they are stressed and depressed (Li F. et al., 2021). PSS also has an impact on the course of depression and is crucial to recovery from affective disorders. Coping is the term for people's ways of thinking and acting to deal with the internal and external pressures of stressful situations (Kobbin et al., 2020).

Studies have demonstrated how various groups adopt coping mechanisms, a central idea in psychology research, with particular attention to the issue at hand (Budimir et al., 2021).People with a high intolerance for uncertainty were more likely to perceive the pandemic as dangerous and to employ coping techniques that centered on emotions during prior epidemic occurrences, such as the H1N1 pandemic in 2009. This was revealed by research on stress management in epidemic events (Vogel et al., 2022). Research with university students during the SARS pandemic in 2003 highlights the importance of coping as a defense mechanism against the damaging effects of stressors on overall perceived health (Blume et al., 2021). Additionally, research revealed that in response to stressors connected to SARS, people used less active coping strategies (focused on problems) and more avoidable coping mechanisms (focused on emotions; Bai et al., 2004). Adaptive strategies in the wake of the pandemic can be explored, particularly with regard to the educational setting, such as the substitution of distant activities for on-site activities. A key factor influencing depression symptomatology is social support. Numerous studies have demonstrated that people who are depressed experience considerable, persistent psychosocial challenges.

Particularly, lower levels of social support are linked to higher levels of depression symptoms (Wang and Eccles, 2012). The standard of emotional support offered by others is referred to as PSS. Additionally, studies reveal that levels of PSS are strongly linked to metrics of lowered stress and mental distress along with enhanced well-being (Wang et al., 2018). However, the majority of studies on adolescents' social support focus on their families, and very few studies look at their peers' social support (Oktavia et al., 2019). Our study takes into account how family, friends, and significant others are seen in terms of social support. According to a study of the literature and research, social support (particularly as perceived by adolescents) has been examined both separately as a psychological and social risk factor for depression and in conjunction with other factors to moderate the relationship between life events and depression, or as a moderator variable, as it is in this study. One of them is the buffering model, which holds that support shields people from the potentially harmful consequences of stressful situations (MulejBratec et al., 2020). This study sought to ascertain whether there is a connection between students' coping mechanisms during social withdrawal brought on by the pandemic and MH based on the gap in current knowledge. The research also looked at how family support (FS) and PSS (PSS) are associated with the mental health (MH) of the students. Furthermore, it investigates the mediating role of coping strategies and moderating role of PSS. It is anticipated that the findings of this inquiry will advance understanding in these areas.

Even though there have been numerous studies in the field of MH, however, the literature gap regarding the roles and relationships of coping strategies and PSS, as well as their mediating and moderating behaviors still exists. The goal of this research is to create a framework for concurrently examining the roles and interactions of the variables. The following research questions are the focus of the study.

How does FS influence the MH of the students after COVID-19? How FS is associated with coping strategy? How do coping strategies influence the MH of students post-COVID-19? What role is played by coping strategies between FS and MH? How does PSS from friends and others affect the relationship between FS and MH? How does PSS from friends affect the relationship between FS and coping strategy?

After an extensive review of available relevant literature, it was found that studies have been done to investigate coping strategies and MH related but no study has been done until now to know the answers to these research questions using a single framework. Thus, from the available literature, the current study firstly assumes FS positively influences MH and is positively associated with a coping strategy. The study further assumes that coping strategy positively influences MH and it positively mediates the relationship between FS and MH. It is also hypothesized in the current study that PSS from friends and others positively moderates the relationship between FS and MH and PSS from friends and others positively moderates the relationship between FS and coping strategy.

The following are the potential contributions of the study: Firstly, in accordance with the stress-health theory, the study offers a thorough and systematic analysis of the ideas of coping mechanisms, FS, and MH. Secondly, the study makes a contribution through its creative and distinctive approach, which suggests and examines the connections between PSS and coping mechanisms. Thirdly, the research adds to the integrated analytical framework that examines the connection between familial support, coping mechanisms, and MH by incorporating PSS from friends and other people. The theoretical perspective is explicated in an original form by the study's framework. Additionally, the work has both applied as well as theoretical implications. Following is a summary of the remaining section of the current study: The overview of the literature was offered in Section 2 of this research study. In Section 3, actual techniques and analyses have been presented. The statistical analysis and empirical findings were reported in the following section. The debate, findings, and theoretical and practical ramifications have all been condensed at the end.

2. Literature review and hypotheses development

2.1. Theoretical support and background

According to the conservation of resource theory, stressful situations could lead to difficulties with a person's physical or MH (Mao et al., 2021). The COVID-19 pandemic's primary characteristics as a novel infectious illness are that it is extremely contagious and dangerous, developing quickly, and has no effective medications for either prevention or therapy. Students' MH during the pandemic outbreak was impacted by a number of stressful pandemic-related factors, such as personal daily routine disruptions and individual physical health under threat from the COVID-19 sickness.

Mental illness is a result of social exclusion and ongoing worry about contagion. The COVID-19 situation has had significant negative effects on people's health (Pfefferbaum and North, 2020). However, researchers are concentrating more on how this quickly developing worldwide catastrophe may affect the MH of the aging population. The psychological impact of COVID-19 on teenage MH has gotten very little consideration (Rawat and Sehrawat, 2021). The psychological strain of COVID-19 among teenagers should be a prominent aspect in the COVID-19 study due to the severe and long-lasting consequences of MH, which lead to poor physical health outcomes, such as the rise of cardiovascular disorders, and poor MH outcomes. Teenagers struggle more than adults do with the mental burden of this influence since they lack the adult's coping mechanisms and physiological development (Rawat and Sehrawat, 2021). Teenagers who already have MH problems face even more MH issues during times of crisis (Gavin et al., 2020).

2.2. Relationship between coping strategy, family support and mental health

The effects of COVID-19 on family well-being include a quarantine that restricts movement, financial difficulty, decreased income, a lack of job, obesity, and worsening non-communicable diseases. Nature and range of risks that have emerged after COVID-19 have expanded and increased. The risks involve physical as well as psychological aspects such as the risk of hospitalization or even losing one's life, failing to access food, vulnerability related to family, and psychological health problems. Furthermore, the chances of maltreatment of children also increased in the wake of social isolation (Rapoport et al., 2021). A survey revealed increased instances of child treatment during school breaks, summer, and amid natural disasters (Rapoport et al., 2021). The only seemingly beneficial aspect of COVID-19 might be the benefit of having more family time that one could spend as the restrictions on the movement either slowed down or stopped the mobility of people confining them to their residences.

Additionally, family interactions have also been severely affected by COVID-19(Pan, 2020). In difficult times like COVID-19, a family's ability to manage difficulties and deal with risks, stress, and crises is referred to as family support. The capacity to not only survive but also recover from the negative impact of any troublesome situation can be referred to as FS. Some key factors in developing this capacity of FS are adaptation, acceptance, and management in the wake of untoward incidents (Shin et al., 2021). Parents are essential in building the family's resilience during a widespread public health crisis. Children's and teenagers' resilience is influenced by parents' resilience, including how well they look after their extended family members while still being able to take care of themselves.

Children can adapt well to the epidemic if their parents do so in a positive way. It's critical to have parental assistance available to lessen the effects of COVID-19. Support from family members during the epidemic may lessen concerns about depression and anxiety (Yang et al., 2020). According to studies, a large number of people experience tension and worry while there are extended lockdowns because of the pandemic (Budimir et al., 2021). The level of concern in people regarding contracting COVID-19 themselves is lower than this apprehension for their family members (Gavin et al., 2020). In addition, elderly people tend to experience less anxiousness.

Anxiety lessens with an increase in age. Core reasons lie in the fact that coping mechanisms become more and more effective with an advance in age, moreover, better financial stability also plays its part (Drentea, 2000). Adjustment, social integration, greater communication, and proper financial management are significant FS factors. Maintaining family resilience requires flexibility, which is the ability to pay attention to changing circumstances and adjust one's approach to meet those demands.

Due to school closures caused by the COVID-19 pandemic, students now take their classes online. Physical activity, travel, and other logistical stresses may be lessened as a result of home learning. On the other hand, stress can also result from home education. Some students may find home learning to be very difficult owing to scholastic issues, limited internet connection, and insufficient resources (Soetisna et al., 2021). During the pandemic, families might lack the tools and information necessary to manage at-home education. In addition, parents struggle to raise their children while juggling domestic chores, working remotely in the wake of economic insecurity, and fear of loss of work. Parents struggle to achieve a work-life balance and contend with several shifting circumstances while engaging in physical distance, which increases stress (Dinh, 2020).

Families experience distress when schools are closed. To boost children's and parents' readiness to accept homeschooling during the epidemic and ensure that kids get good grades, families have to be better educated on how to assist one another. Households with special needs children have to cope with additional stress during a pandemic. Children with special needs spend all of their time living with family members as a result of the closure of the school. Children have little time for social activities outside of their homes during the pandemic. The need for an easy environment at home becomes even more important and pertinent particularly for the family which has special needs child. In order to create a setting that fosters family resilience, parents must learn to control their stress and obtain social support. The pandemic has drastically changed the family routines that affect both physical as well as MH of family members (Ameis et al., 2020). The family can deal with the pandemic together, though, by creating routines and engaging in activities that involve all members, such as scheduling mealtimes together, participating in household chores together, fostering effective communication, engaging in thrilling activities, getting regular physical workouts, being vigilant regarding cleanliness, and developing good sleep habits, which is crucial, particularly in the wake of COVID-19.

These habits may enhance the family's capacity to care for each other and provide better support to one another. Families are better able to help one another when there are protective factors (which foster the capacity for adaptation or recovery in times of crisis) and recovery variables (which assist in development growth; Semenov and Zelazo, 2019). These factors may make the family more competent to deal with the crisis and struggle as a unit. The main factors in FS are a wholesome amalgamation of useful and healthy family activities that help a family create and maintain a strong trust-based bond enabling all family members to sustain during adverse circumstances (Semenov and Zelazo, 2019). From all the above research findings about FS, MH, and coping strategy it is assumed that FS has a positive relationship with coping strategy and MH.

> *H1*: Family support is to positively influence the mental health.
>
> *H2*: Family support is positively associated with coping strategy.

How people handle stress has a significant psychological impact on how stressful life events like COVID-19 affect people's MH. The broad definition of coping is the mental and behavioral strategies people use to control their stress (Obbarius et al., 2021). When faced with challenging circumstances, like the pandemic, it is typical to use coping mechanisms or behaviors that encourage adjustments and solutions to the problems being faced. People employ a variety of coping mechanisms to deal with difficult situations or times (Budimir et al., 2021). The two types of coping models, according to Folkman and Lazarus, are the problem-and emotion-focused models (Obbarius et al., 2021). When faced with a stressful scenario, both coping mechanisms are employed, however, their efficacy varies. Self-distraction, stress management, exclusion, medication, moral support usage, keeping informed, and behavioral adjustments are just a few of the many coping mechanisms that have been proven extremely effective. However, the question of whether one strategy is better than another is hotly contested. More successful than other methods for reducing the effects of stress and promoting MH can be those that include addressing and resolving stresses (Nshimyiryo et al., 2021).

Avoidant tactics may be effective in lowering short-term stress, but they are typically viewed as damaging in the long run since they do not directly address the stressor, exposing people to high levels of stress over extended periods. A person's stress response may have an impact on their health over time. It is therefore likely that coping with COVID-19-related trauma inappropriately may lead to MH issues in the future. To improve family wellbeing, it's critical to establish a regular appreciation practice. To foster a sense of community, loyalty, harmony, and happiness among family members, it is critical that the members maintain open lines of interaction and find enjoyable activities to do regularly.

Additionally, when parents or other family members ask for assistance, forming positive reinforcement with them is crucial. Examples of these people include siblings, acquaintances, extended families, and colleagues. Technology use for support networks and interaction amid social isolation is crucial (SayinKasar and Karaman, 2021). Utilizing technological tools to avail social support helps keep friends and family connected and supportive of one another through a trying time. Resilience during the pandemic is positively impacted by supportive families, good parenting, and effective coping mechanisms. During a severe disruption scenario like a pandemic, family activities are crucial for greater well-being (Petersen et al., 2021). The above-mentioned facts from the available literature help us devise our hypotheses 3 and 4 as coping strategy influences MH positively and mediates the relationship between FS and MH.

> *H3*: Coping strategy is to positively influence the mental health.
>
> *H4*: Coping strategy to mediate the relationship between family support and mental health.

2.3. Social support and mental health

Social support is defined as "support made available to an individual through social relationships to other people, groups, and the greater community" (Heaney and Israel, 2008). There are multiple ways to measure social support, however, one of the most commonly used indexes of social support has been PSS. It is not only easy to measure the PSS but the accuracy aspect is also of utmost importance as it depicts a relatively precise state of MH. Numerous studies have shown how PSS improves MH in stressful circumstances (Wang and Eccles, 2012).

Though PSS and received social support are entirely distinctive from each other, however, it is generally believed that the relationship between these otherwise distinct supports should be high, particularly in scenarios when the demanded support is equivalent to the provided support (FasihiHarandi et al., 2017). Similar to this, other authors contend that the recollection of helpful behaviors displayed can be used to gauge perceived support (Özmete and Pak, 2020). We believe that social support received by an individual during the COVID-19 pandemic equals the required social support by an individual, therefore, we measured that the received social support reflected the level of PSS. However, social support and social support resources may not be mistaken as similar but they should be understood as distinct.

According to a study one's subjective perceptions of the availability of social support from other users on social networks are represented by perceived support (Noret et al., 2020). According to various studies, perceived support quality is more closely correlated with MH than real personal network structure (Kandeğer et al., 2021). Numerous factors have an impact on people's MH. Previous research has established that the availability of social support along with effective coping strategies helps maintain good MH (FasihiHarandi et al., 2017). A correlation between social support provided by the family and stress symptoms related to post-trauma was found. However, no such correlations were found when social support was provided by the friends. In a different study, peer social support was found to be more effective at preventing psychological distress than social support provided by family members (Özmete and Pak, 2020).

Recently, there has been a rise in interest in new approaches such as latent profile analysis (LPA) for studying the many types of networks of social support (Mai et al., 2021). Furthermore, some scholars utilized cluster analysis to analyze typologies of the social network, however, these analyses are based on different notions. More significantly, the studies that have already been published showed that various support profiles would have varying relationships with outcomes related to MH (Wang et al., 2018). In particular, one study used LPA and discovered that four different profiles of social support have different correlations to elder migrants' well-being (Burholt et al., 2018).

According to one study, older persons who participated in the social support profile that was locally integrated had a lower risk of dementia than those who participated in the social support profile that was family-dependent (Yang et al., 2020). Researchers discovered different patterns of relations between different profiles of social support and outcomes of MH. The susceptibility of the youth was found to be higher vis-à-vis pessimism and stress irrespective of sources of social support. Social support particularly from family and friends plays a significantly important role in managing MH menaces such as anxiety and depression. LPA directly estimates the membership probability from the model, making it more plausible to examine the outcomes of individual clustering than the conventional method of clustering. LPA being a person-centric strategy helps specifically in identifying different subgroups of people who have similar social support behaviors (Mai et al., 2021). A regression mixed model can be constructed using the LPA model and additional outcome variables to confirm the association between profiles and results. In order to investigate the profiles of sources of social support and the association between these profiles and MH in this study, we did an LPA and used the regression mixture model (BCH technique).

According to research, social support serves as a buffer against depression or the unfavorable consequences of stress (Wilson et al., 2020). It also serves as a buffer between stressful life events and depression. Keeping in view the above facts from the literature the current study assumes that PSS from friends and others positively moderates the relationship between FS and MH it is also hypothesized that PSS from friends and others positively moderates the relationship between FS and coping strategy.

> *H5*: Perceived social support from friends and others is to positively moderate the relationship of family support and mental health.
>
> *H6*: Perceived social support from friends and others is to positively moderate the relationship of family support and coping strategy.

Research framework

3. Methodology

3.1. Sample and data collection procedures

The prospective respondents were the students studying in various universities of China. We selected the Henan province of China for this purpose and 10 large universities of the province were the main target. Because of Covid, it was expected that most of the students stayed at their homes and with their families faced some short of mental disorders. Therefore, to collect data about the study variables, we used a validated survey questionnaire which was circulated to the selected universities' help desks/information desks for anonymous self-rated responses. As the data collection was related to highly sensitive and personal matters, i.e., MH, family/friends support and coping strategies, and because the population was unknown, we opted for a combination of snow ball and purposive sampling technique (non-probability sampling). In addition to this, for identifying the target respondents, we also sought help from the staff of student affairs.

We targeted 350 deaf students from the concerned universities as the exact no. of students in the target universities remained unknown and not confirmed by the concerned authorities. We therefore, followed the guidelines of various scholars; for example, recommended that "each item should be represented using 5 samples," who suggested that "sample of 300 will be considered as good," proposed that "the size of the sample should be 20 times greater than the expected factors" (if factor analysis is to be conducted) and for conducting SEM, $N = 100–150$ is acceptable (Anderson and Gerbing, 1988). Keeping in view the recommendations from these researchers and an average response rate (if any) we determined a sample size of 350 out of which 260 questionnaires were filled and 210 turned out to be valid (response rate 60%). These questionnaires were used for further analysis.

3.2. Measurement

All the scales used in this study were adapted from previous researches and were already validated by the scholars. Family support was adapted and its sample item was "I get the emotional help and support I need from my family." The scales of coping strategies and were adapted from Hamby, and its sample item was "When dealing with a problem, I try to see the positive side of the situation." The questions of perceived support from friends were adapted, and its sample item was "I can count on my friends when things go wrong." Likewise the scale items of other's support were adapted the study of, and its sample item was "There is a special person in my life who cares about my feelings." Moreover, the measurement questions of MH and its three dimensions, i.e., cognitive, emotional, psychology were adapted and its sample item was "I've been feeling optimistic about the future." All the items were measured at 7 Point Likert scale.

3.3. Analysis strategy

To analyze the data, SPSS 21 was used for calculating basic and descriptive statistics while Mplus 7 was applied for hypothesis testing. But prior to moving toward hypothesis testing, we have examined the measurement model in order to ensure the reliability and validity of the constructs, the details of which are discussed in the next section.

4. Results

4.1. Assessment of measurement model

First of all, researchers analyzed the measurement model keeping in view the requirements of "convergent validity and discriminant validity," while structural model was assessed in the next step (Anderson and Gerbing, 1988). This research applied Mplus 7, a frontline software which has the potential to handle both normal and non-normal data (Van Der Linden et al., 2017). Mplus 7 output provides the following model fit indices, i.e., "Chi-square," "root mean square error of approximation (RMSEA)," "comparative fit index (CFI)," "Tucker Lewis index (TLI)" and "standardized root mean square residual (SRMR)" which were used to determine the model fitness. Accordingly, the criterion for model fit indices given by Hu and Bentler (2009) in Table 1 and it can be observed that all the values are lesser than the threshold levels.

According to Hair (2009), convergent validity is assessed taking into account the standardized loadings of all the items of the construct/scale. It is important for the scale items to have STDYX >0.5, which is this case. Moreover, the research instrument had 34 items in total and the standardize loadings of all the items ranged from 0.694 to 0.894, which signals the existence of convergent validity (see Figure 1). Additionally, to ensure the internal consistency, convergent validity of the scale, we calculated CR and AVE of the constructs. As the study conducted confirmatory factor analysis, that's why it was important to compute to these values. However, according to the criteria, for a construct to have internal consistency, it is recommended that the values of CR to remain at least 0.7 or greater, while the values of AVE should at least pass the minimum threshold level of 0.5 (Fornell and Larcker, 1981). The results in Table 2 confirmed that the scale met the criteria of internal consistency.

TABLE 1 Model fitness.

Model	χ^2	χ^2/df	CFI	TLI	RMSEA	SRMR
Quality criteria	>0	<5	>0.9	>0.9	≤0.8	≤0.8
Model	**761**	**761/512 = 1.4**	**0.956**	**0.952**	**0.048**	**0.067**

χ^2, Chi square value, df, Degree of freedom.

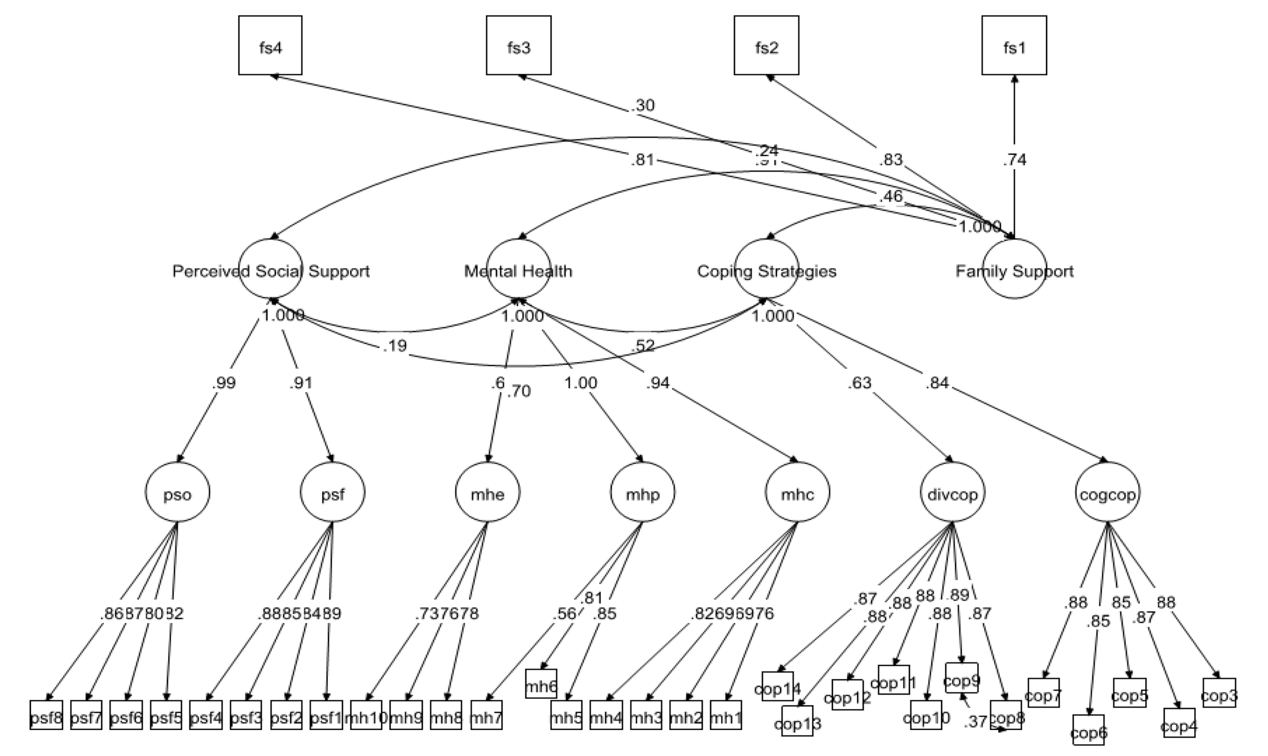

FIGURE 1
Confirmatory factor analysis.

TABLE 2 Factor loadings, composite reliability and convergent validity.

Latent variable	π	CR	AVE
Family support by		**0.89**	**0.68**
FS1	0.773		
FS2	0.834		
FS3	0.910		
FS4	0.809		
Cognitive coping strategy by		**0.93**	**0.75**
COGCOP1	Deleted		
COGCOP2	Deleted		
COGCOP3	0.878		
COGCOP4	0.873		
COGCOP5	0.850		
COGCOP6	0.846		
COGCOP7	0.878		
Diversion coping strategy		**0.95**	**0.77**
DIVCOP1	0.866		
DIVCOP2	0.894		
DIVCOP3	0.879		
DIVCOP4	0.878		
DIVCOP5	0.876		
DIVCOP6	0.881		
DIVCOP7	0.873		
Mental health by (Cognitive)		**0.83**	**0.55**
MHC1	0.758		
MHC2	0.694		
MHC3	0.695		
MHC4	0.825		
Mental health (Psychological)		**0.79**	**0.56**
MHP5	0.849		
MHP6	0.806		
MHP7	0.555		
Mental health (Emotional)		**0.80**	**0.57**
MHE8	0.775		
MHE9	0.761		
MHE10	0.726		
Friends support		**0.92**	**0.75**
PFS1	0.889		
PSF2	0.838		
PSF3	0.850		
PSF4	0.878		
Others support		**0.90**	**0.70**
PSO1	0.825		
PSO2	0.797		
PSO3	0.871		
PSO4	0.860		

$N = 210$, AVE, average variance extracted; π, standardized loadings; FS, Family support; COGCOP, cognitive coping; DIVCOP, diversion coping; MHC, cognitive aspect of mental health; MHE, emotional aspects of mental health; MHP, psychological aspects of mental health; PSF, perceived social support from friends; PSO, perceived social support from others. The bold values indicate the results for corresponding statistics for the whole variable.

4.2. Determining correlation and discriminant validity

In order to determine whether the scale has discriminant validity or not, comparing the squared root of the AVE with the correlation coefficient was essential (Fornell and Larcker, 1981). For this purpose, diagonal bolded values were compared with the off-diagonal values in Table 3. It can be observed that the diagonal values remained greater than the correlation coefficients, which depicted a strong evidence of validity.

In addition to this, we calculated variance inflation factor to test the existence of multicollinearity. The analysis of the multicollinearity showed that the VIF values were <3 which confirmed the model did not have the issue of multicollinearity.

4.3. Measuring descriptive statistics

The variability of the data was assessed by analyzing the mean values and standard deviation from the mean. The analysis presented in Table 4 revealed the MEAN values of the variables and their standard deviation.

The mean scores of the variables ranged from 5.01 of FS to 6.38 of PSS whereas the standard deviation ranged from 0.587 of COP to 1.023 of FS. The values of standard deviation remained well within prescribed range and the data was found to be good to enough to be handled using Mplus (Van Der Linden et al., 2017). To compliment this, we also calculated Skewness/Kurtosis to make assessment about the normality of the data. It was found that the values of both the statistical measures were well within acceptable range. Table 4 placed above provides variable specific details about normality and data variability.

TABLE 3 Correlation and discriminant validity.

Variables	FS	COP	MH	PSS
FS	**0.825**			
COP	0.464	**0.744**		
MH	0.241	0.521	**0.88**	
PSS	0.303	0.703	0.1 92	**0.97**

All values are significant $^{**}p < 0.05$; FS, Family support; COP, Coping strategies; MH, Mental Health; PSS, Perceived social support from others and friends.

TABLE 4 Mean and standard deviation.

Variables	Mean	Std.
Family support (FS)	5.01	1.023
Coping strategies (COP)	5.17	0.587
Perceives social support from friends and others (PSS)	6.38	0.819
Mental health (MH)	5.63	0.930

Std., standard deviation of the construct; FS, family support; COP, coping strategies.

4.4. Test of spurious correlation/(CMV)

As the researcher collected survey data at a single point of time and from the same students who suffered some sort of MH issues during COVID-19, therefore, it was important to make sure that the correlation between the said variables was not spurious. For this purpose, Harman's single-factor was applied to assess the values of CMV. As shown in the Table 5, the single factor explained 33.269% of variance, which was far below the standard limit of 49%. If the result demonstrate that less than half (50%) of the variance is explained by the factor, then it is believed that CMB is not a cause of concern.

4.5. Hypothesis testing

The Following section presents the results of direct association, indirect association and the role of the moderator, respectively.

Table 6 contains information about the hypotheses of direct relationship. As pointed out by Henseler et al. (2009), the standardized coefficients are the same as the regression coefficients, that's why, the decision about the hypothesis were made based upon the standardized coefficients and their significance (value of ps) provided in Mplus 7 output. The results demonstrated that FS was strongly positively linked to MH with $\beta = 0.236$ and was significant at 0.00. Therefore, H1 was supported (see Figure 2).

TABLE 5 Common method variance analysis.

Factor	Initial eigen values			Extraction sums of squared loadings		
	Total	Variance	Cumulative	Total	Variance	Cumulative
1	12.641	33.269%	33.269%	12.642	33.269%	33.269%

TABLE 6 Hypothesis testing for direct relationship.

Hypothesis	Β-value direct	Value of *p*	Outcomes
H1: Family Support—Mental Health	0.236	0.001	Supported
H2: Family Support—Coping Strategy	0.520	0.000	Supported
H3: Coping Strategy—Mental Health	0.534	0.000	Supported

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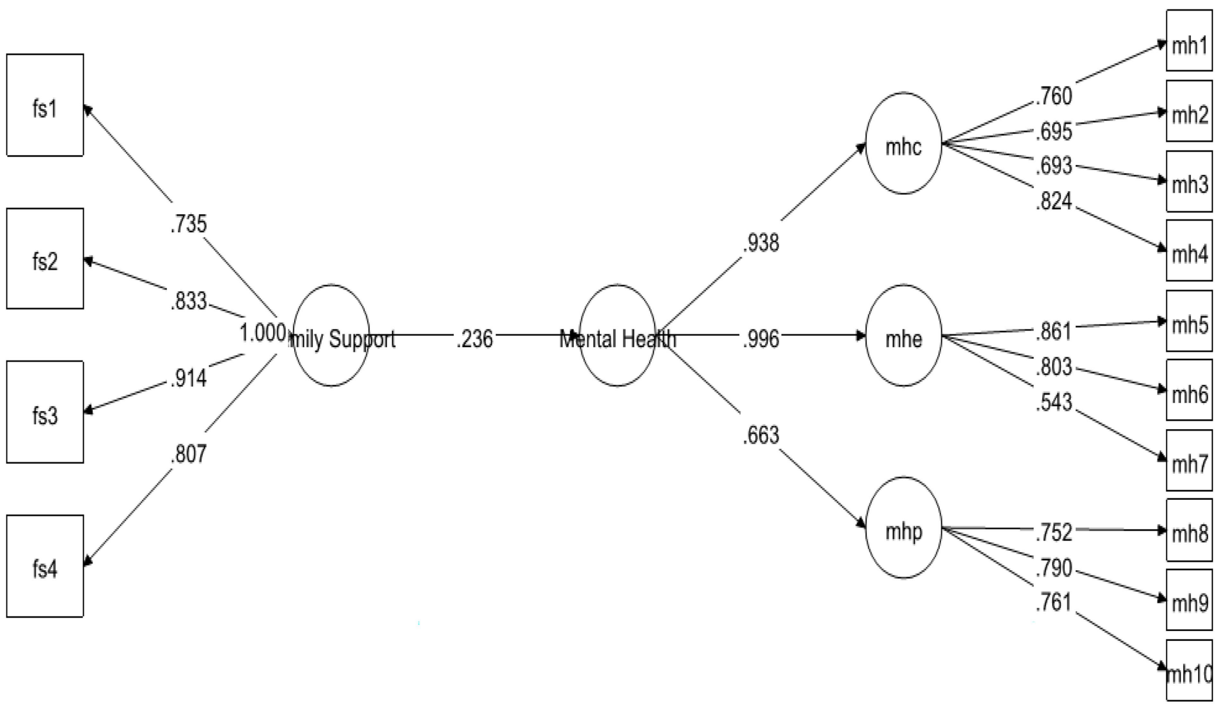

FIGURE 2
Direct relationship between FS and MH.

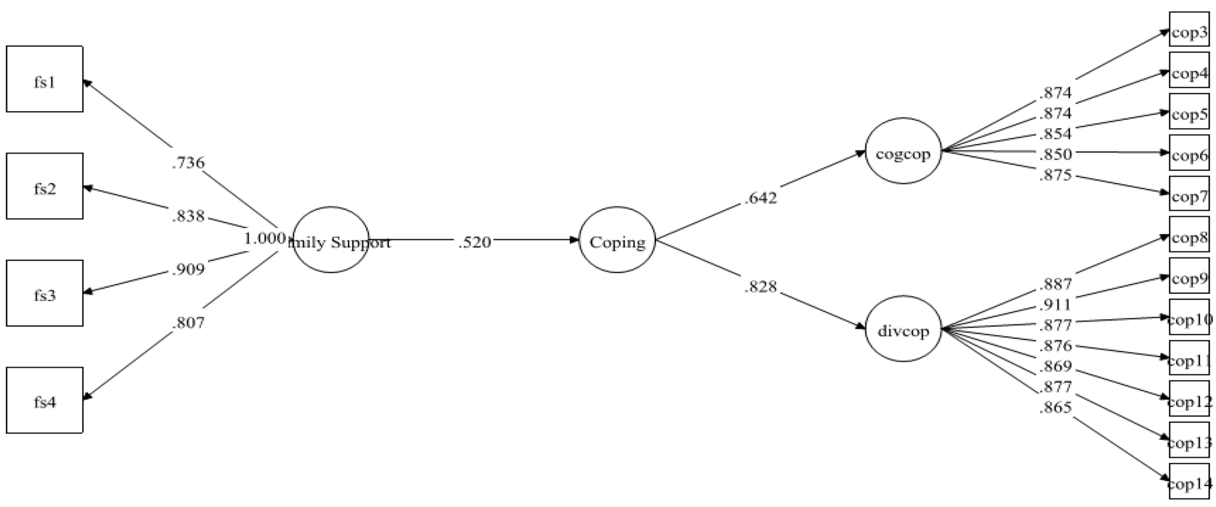

FIGURE 3
Direct relationship between FS and coping strategy.

Likewise, H2 examined the relationship between FS and coping strategies. The results exposed that FS positively predicted coping strategies with $\beta = 0.520$ and p-value 0.00. Hence H2 was also found to be supported (see Figure 3). Finally, for direct relationship, the link between coping strategy and MH was also determined. The researcher found out that "coping strategy" strongly predicted MH with $\beta = 0.534$ and p-value 0.000. Therefore, H3 was supported as per the prediction of the researcher (see Figure 4).

Results in Table 7 were about H4 which was related to the mediation analysis. As per the requirement, mediation analysis was performed to confirm whether the intervening/mediating variable (MV) enhanced the impact of IV to the DV (Hair, 2011). The researcher opted for, "bootstrapping procedures" to test the significance of the mediation path (Preacher and Hayes, 2004; Preacher et al., 2010). The analysis revealed that specific indirect effect was significant at 0.05. The STDYX of SIE (specific indirect

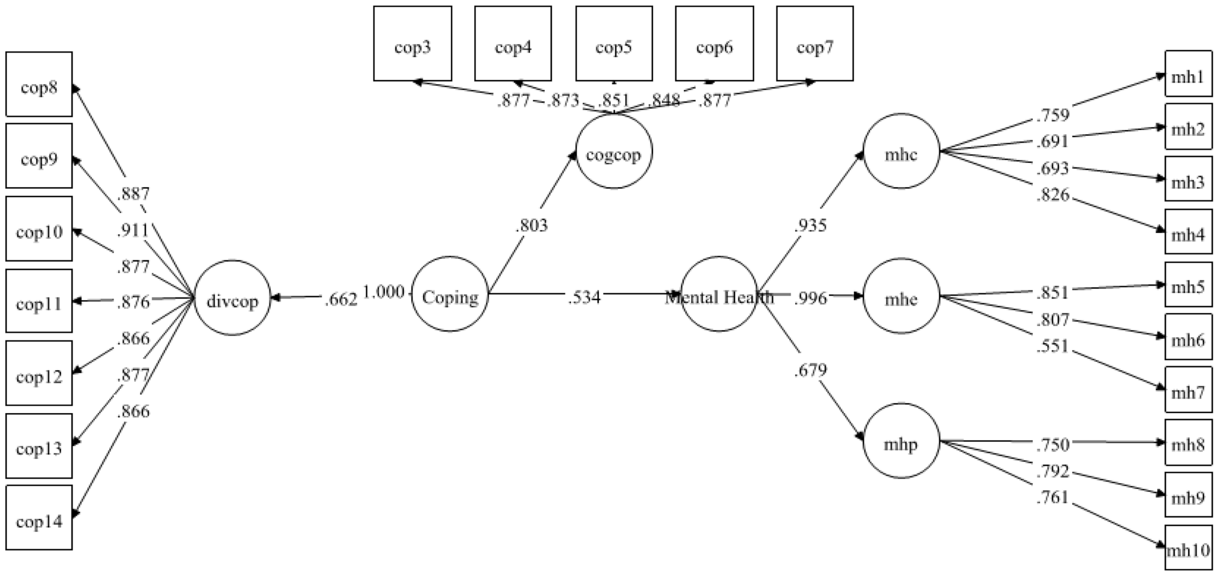

FIGURE 4
Direct relationship between coping strategy and MH.

TABLE 7 Hypothesis testing for mediation.

Hypothesis	β-value SIE	95% SIE	Outcome
H4: Mediation of COP between FS—MH Relationship	0.301 (0.00)	0.154–0.448	Supported

All values are significant $^{**}p<0.05$. SIE, specific indirect effect; Stdyx, standardized beta coefficient; CI, confidence interval; COP, coping strategies; MH, mental health; PSS, perceived social support from others and friends.

effect) was $\beta=0.301$ and ($p=0.00$) with a 95% CI [0.154–0.148]. Because the upper CI and lower CI values did not include zero, therefore, it was confirmed that "coping strategies" positively and significantly mediated the relationship of "family support" and "MH." Thus H4 was supported (see Figure 5).

Fore investigating the moderating role of PSS, the study first examined its role on the relationship of FS and MH. Therefore, in order to proceed with the analysis, researcher applied "Xwith" technique for creating the interaction term between concerned IV-MV (Van Der Linden et al., 2017) and for assessing the effect of interaction term (see Figures 6, 7). These results exposed that H5 was not supported as the Table 8 indicated that the interaction effect of PSSXFS (moderating variable * IV) was $\beta=0.147$ ($p=0.228$) with a 95% CI [−0.054 to 349].

In Hypotheses 6, it was predicted that PSS will positively moderate the relationship of FS and COP. The results in Table 8 indicated that the direct effect of FS on COP was $\beta=0.263$ ($p=0.00$) and its 95% CI [0.135–0.391], the direct effect of moderating variable PSS on COP was $\beta=0.695$ ($p=0.00$) with 95% CI [0.536–0.855] and the interaction effect of FSXPSS (moderating variable * IV) was $\beta=0.357$ (0.002) with a 95% CI [0.171–0.544] (see Figure 8). Additionally, Simp-Slope analysis revealed that this moderation effect was greater when the values of PSS were higher and positive, whereas, the effect was lower and positive when the values of PSS were lower. These values implied that H6 was supported (see Figure 9).

5. Discussion

Around the world, 10%–20% of teenagers experience MH issues. The vulnerability of teenagers during the COVID-19 epidemic is likely to have an impact on this figure. Poor MH leads to negative outcomes such as suicidal tendencies, behavioral issues, and emotional abnormalities, therefore, the need for research in this regard to eliminate or lessen the impact of poor MH is paramount. As the MH of young people has already been in tattered shape globally, COVID-19 has made the case even more precarious. The need to conduct quality research to combat MH issues in the wake of a pandemic of COVID-19's size has increased manifolds. Keeping in view these facts, we identified our research topic, research questions and including coping strategies and their relationships with post COVID-19 MH of the students.

The current article discussed the literature on family and PSS and MH of the individuals after COVID-19 pandemic keeping in view the stress-health theory. The literature review gave us an insight into the research that has already studied coping strategies for MH. The studies have shown that the pandemic and the factors related to it like quarantine, social distancing, and travel restrictions have been proven stressful for the students and other communities. The stress and anxiety produced by the situations like school closures, unemployment, insufficient health facilities, and uncertainties related to study, work, and personal life have

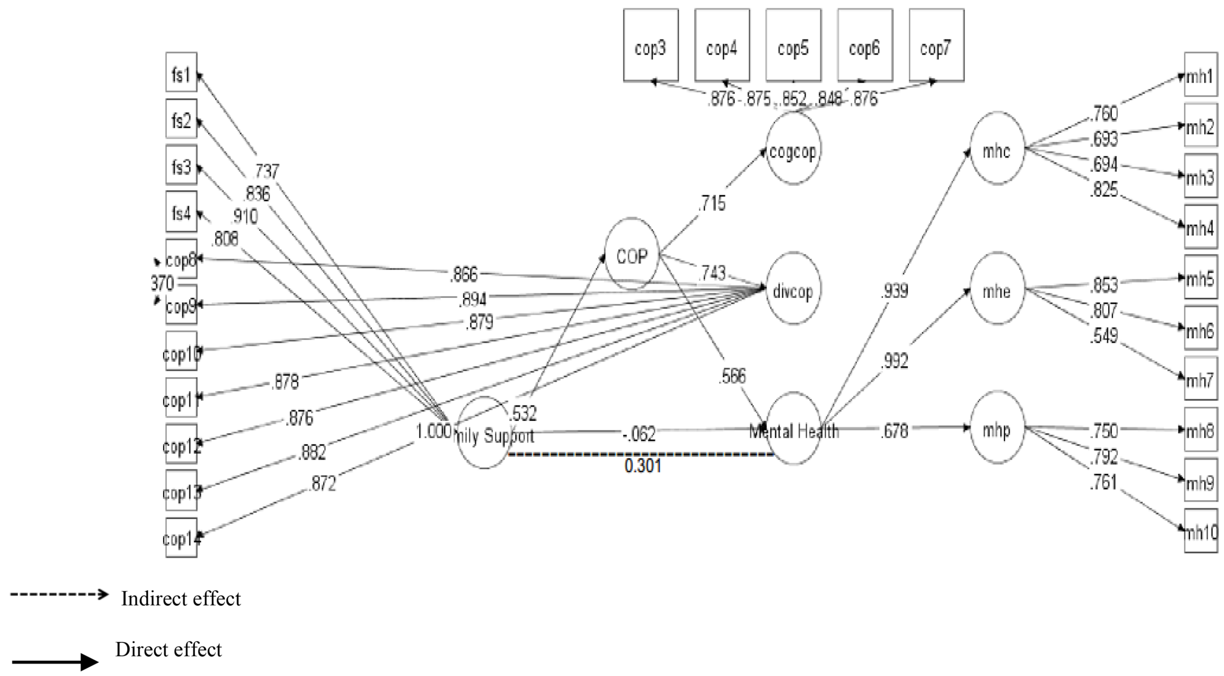

FIGURE 5
Mediation of coping strategy between FS and MH.

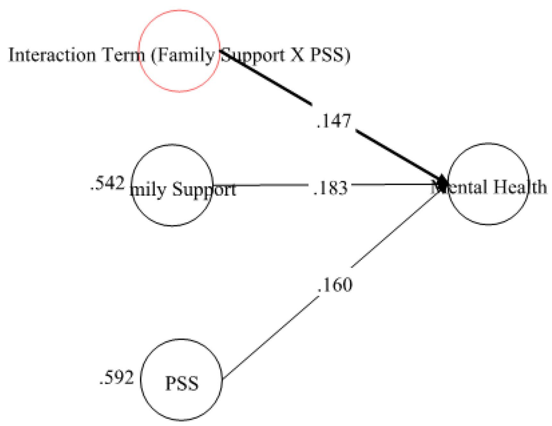

FIGURE 6
Theoretical model for mediation of coping strategy between FS and MH.

negatively affected the MH and physical well-being of the people (Pfefferbaum and North, 2020).Keeping in view the importance of coping strategies after the pandemic we selected a framework that could serve the literature both theoretically and practically.

Previous studies on coping strategies and PSS have not studied their roles as mediators and moderators in a single framework. The current study fills this literature gap and first of all, it assumed that FS is positively associated with MH. The data analysis showed that FS is significant and strongly positively linked to MH with $\beta = 0.236$, thus supporting the H1 (see Figure 2). Likewise, H2 examined the relationship between FS and coping strategies. The results revealed significant values for both of these variables thus H2 has been accepted as well (see Figure 3). Finally, for a direct relationship, the link between coping strategy and MH was determined. The researcher found out that coping strategy strongly predicted MH by showing significant values, the prediction of the researcher was supported by the results of the analysis, and H3 was accepted (see Figure 4). The mediation analysis was done to check the acceptance or rejection of H4. It has been explained in the results section earlier that mediation analysis was performed to confirm whether the intervening/mediating variable (MV) enhanced the impact of IV to the DV. The analysis was done by using "bootstrapping procedures" which showed that the upper CI and lower CI values do not include zero, therefore, it is confirmed that "coping strategies" positively and significantly mediated the relationship of "FS" and "MH." The results supported the acceptance of the H4 (see Figure 5). The analysis to investigate H5 was carried out further, and the moderating role of PSS "Xwith" technique was used. The results obtained from the analysis have shown that H5 was not accepted, the analytical values for H5 have been explained in the results section. One of the plausible reasons for this insignificant moderation effect could be the either lesser social support received by the students in the times COVID-19 from friends and others. Secondly, due to social restrictions, no one from the social circle of the students would have been willing to extend their support for their friends who faced MH issue. Thirdly, students struggled with MH placed more value on FS and remained open to it instead of relying on the support of friends and others. Similarly, the

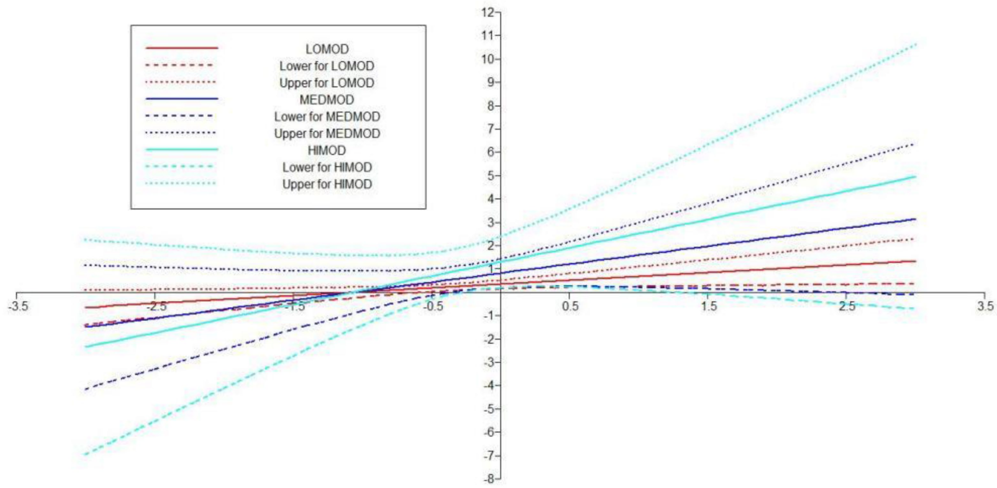

FIGURE 7
Interaction plott showing the moderating effect of PSS on FS—MH relationship.

TABLE 8 Hypothesis testing for moderation analysis.

Hypothesis	Direct relationship	Moderation (Interaction effect)	95% CI	Outcomes
H5: PSS positively moderates the relationship of family support and mental health	FS—MH = 0.183 (0.020)	0.147 (0.228)	[−0.054 to 349]	Not supported
	PSS—MH = 0.160 (0.054)			
H6: PSS positively moderates the relationship of family support and coping strategies	FS—COP = 0.263 (0.00)	0.357 (0.002)	[0.135 to 0.391] [0.536 to 0.855]	Supported
	PSS—COP = 0.695 (0.00)		[0.171 to 0.544]	

FS, family support; COP, coping strategies; MH, mental health; PSS, perceived social support from others and friends; Stdyx, standardized beta coefficient; CI, confidence Interval.

results in Table 7 showed the values for the direct effect of FS on COP and the values for the direct effect of moderating variable PSS on COP (H6). Additionally, Simp-Slope analysis was carried out to reveal the moderation effect of PSS, the results of which indicate that H6 was accepted (see Figure 9).

Our research findings show that the hypotheses H1, H2, H3, H4, and H6 were accepted which means that FS positively influences MH and is positively associated with coping strategy. Then the findings show that coping strategy positively influences MH and it mediates the relationship between FS and MH. Further, our finding has shown that PSS positively moderates the relationship of FS and coping strategy which is consistent with the research findings which revealed that PSS mitigates the negative effects of stress and fosters psychological (Huang and Zhang, 2021). However, our findings do not accept that PSS positively moderate the relationship of FS and MH.

6. Conclusion

The COVID-19 pandemic and the multifaceted response strategies to curb its spread both have devastating effects on mental and emotional health. Social distancing, and self-isolation have impacted the lives of students. These impacts need to be identified, studied, and handled to ensure the well-being of the individuals, particularly the students. Therefore, current study aimed to analyze the role of coping strategies, family support, and social support in improving the MH of the students by collecting evidence from post COVID-19. Data was collected from the students studying in Chinese universities. A survey questionnaire was designed to collect data form 210 students. Descriptive statistics were calculated using SPSS 21 while hypothesis testing was carried out using Mplus 7. The results highlighted that the coping strategy a person uses to deal with challenging or complicated unfavorable situations is crucial since it will have an impact on their psychosocial outcomes, especially their MH. Positive and negative coping are opposites of one another. People who used mostly constructive coping mechanisms had less emotional disturbance than those who used destructive coping mechanisms (Budimir et al., 2021). Additionally, the study highlighted the significant role of family members and how they can support the fight against mental disorders. Results have also exposed the fact that students not only need FS but also the support from friends and others in order to develop effective

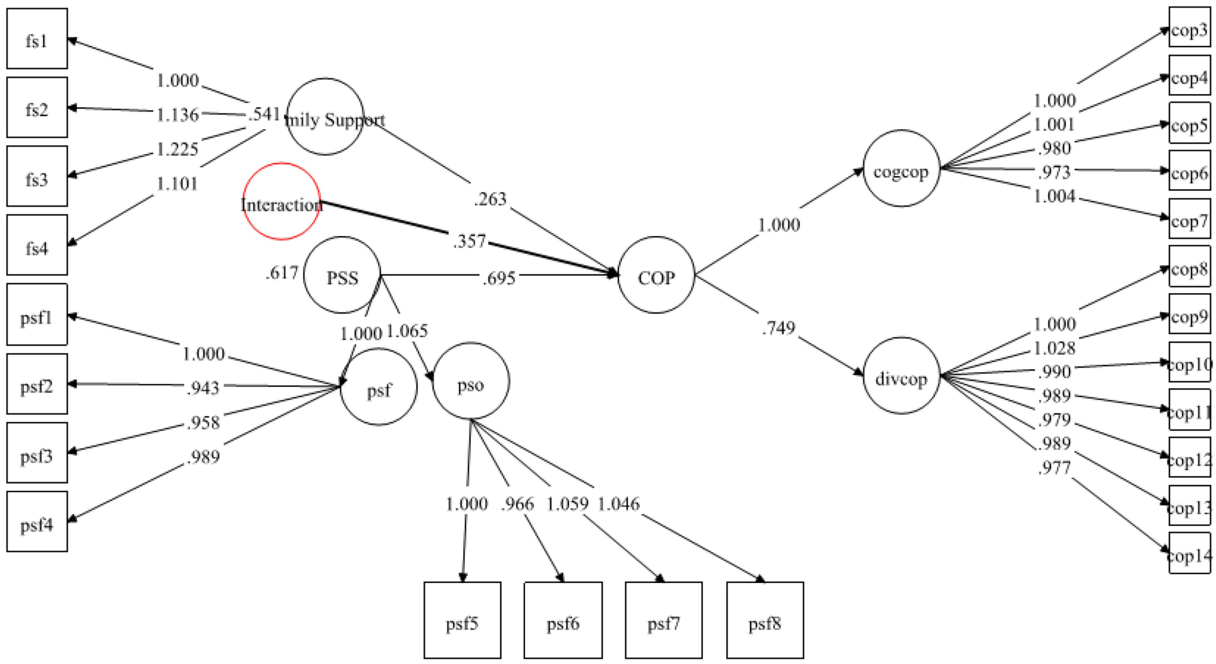

FIGURE 8
Moderating effect of PSS on FS—COP relationship.

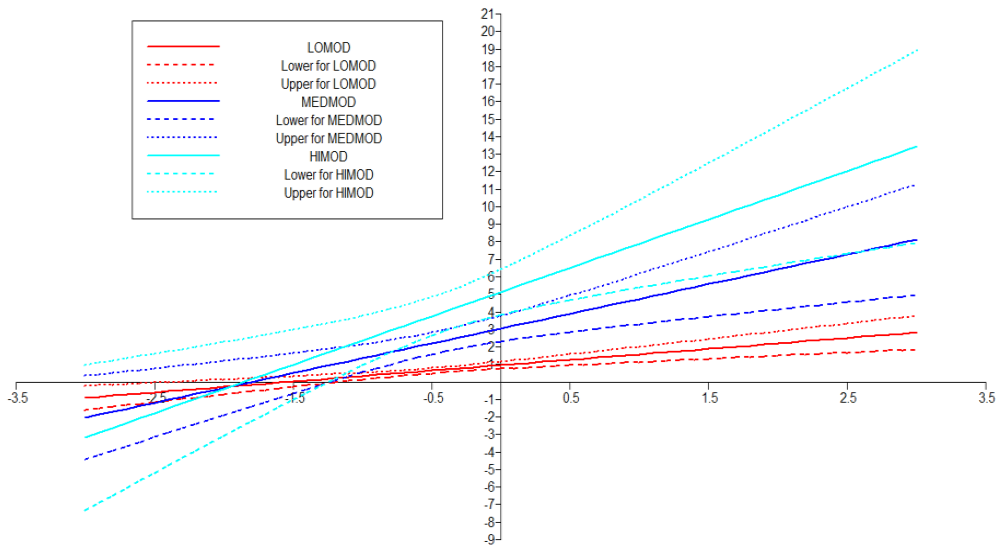

FIGURE 9
Interaction platt showing the moderating effect of PSS on FS—COP relationship.

coping strategies to deal with the MH issues stress caused by various factors. Therefore, in the future, we propose to investigate the rationale for expanding the model of cognitive vulnerability by including PSS. Resulting in fresh questions about the potential and necessity of moving forward not only toward an integrated model but also etiological models as well as novel opportunities for research and practical applications.

7. Implications

Our research has significant ramifications for medical practice, research institutions, and health policy. Academic institutions should first become more aware of any additional needs and any MH issues that their students may have. Future studies should involve participants from other nations and ethnic groups because

COVID-19 control strategies and the scope of outbreaks varied among nations. The coping techniques we incorporated in the survey were chosen in a way that students might find interesting to engage with, but the list was not comprehensive, and well-liked techniques may not always be the best ways to guard against negative effects on MH. A wider range of coping mechanisms should be the subject of more research to determine their effectiveness. In conclusion, the effects of COVID-19 on students' MH have been underappreciated. We enjoin teachers, higher education institutions, and specialists in MH to give their pupils the proper support during the pandemic.

Giving students instruction to help them develop self-efficacy and providing them with useful skills to cope with challenges may assist them in better managing the heightened stress that entails COVID-19. As it has been noticed that strong and effective coping strategies were highly useful in helping students manage their stress. The role of MH practitioners needs to be recognized by the administrators so that they can help those students that require MH assistance. Students' ability to cope with stress and build social support may help them avoid the negative effects of the corona virus epidemic on their mental and psychological health. As a result, by implementing theory-tested interventions or programs, families, friends, and educators should promote psychological resilience and strengthen positive coping mechanisms among students. These interventions could be offered in creative methods, such as webinars, online seminars, and on-demand movies, due to limits like social isolation and lockdown measures.

Students' endurance and confidence are improved through inter professional, debriefing programs and online cognitive behavioral therapy (Schmutz, 2022). Additionally, enhancing social support may provide people a feeling of greater mental stability, lowering their worries and anxieties and allowing them to operate normally during the epidemic. Students' morale will rise and their MH will be maintained if they are encouraged to openly discuss their experiences and difficulties in their education following COVID-19.

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, the Department of Educational Psychology and Counselling, Faculty of Education, University of Malaya, Kuala Lumpur, Malaysia. The patients/participants provided their written informed consent to participate in this study.

Author contributions

CY and HG worked on conceptualization. NW and QW worked on data collection. YL and EW worked on writing the draft. The authors read and agreed to the submitted version of the manuscript.

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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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Exploring the generic skills required for the employability and professional wellbeing of Pakistani Millennials: The employers' perspective

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Introduction: This study aims to elucidate the employers' perspectives on the key generic employability skills which would enable them to seek graduate jobs and will ensure their professional wellbeing once they enter the job market after acquiring a University degree.

Methods: In order to pursue this objective, an exploratory qualitative inquiry was deployed which involved two panel-based discussions. The respondents of each panel discussion were invited through the platforms of the Bahawalpur Chamber of Commerce and Industry (BCCI), and the Chamber of Commerce Rahim Yar Khan. These respondents represented Pharmaceuticals, Agrichemical manufacturers (fertilizers, pesticides), Livestock, Cotton, textiles, and apparel industry which are the main industries in Southern Punjab, Pakistan.

Results and discussion: For the purpose of analysis, a thematic analysis was done in the context of grounded theory. Resultantly, the findings of the study reveal an employers' perspective on 10 key generic employability skills as must-have for a Pakistani Millennial graduate including various soft and hard skills, such as-Emotional Intelligence, Flexibility and Adaptability, Multitasking, Computer Literacy and Digital Skills, Information Literacy and Data Analytics, Oral and Written Communication in English and Urdu, Critical Thinking, Positive Politics, Work Ethics and Professionalism, and Commercial awareness. Hence, the study produces implications for the employability stakeholders, including government and academia for a much needed shift from a mere subject-based curriculum to a skill-oriented curriculum and training in the Universities, particularly in the region of Southern Punjab, and all across Pakistan as well.

KEYWORDS

generic employability skills, Pakistani Millennial graduates, professional wellbeing, thematic analysis, hard/technical skills, soft skills

Introduction

In Pakistan, a lot of policy level discussions are directed at Youth Employability for the fact that the country is at the critical juncture of the "youth bulge" which contributes to a favorable position of demographic dividend in the country. About 64% of the population comprises the Youth (15–29 years), among which 41.6% represent the total labor force of the country (Nadeem, 2021). According to the report of the Planning Commission of Pakistan, the "youth bulge" in the country is predicted to rise by 2045 (Planning Commission Ministry of Planning Development and Reform, Government of Pakistan, 2017). Regarding it as a window of opportunity, numerous reports (like that of USAID) have emphasized an urgency for catering the mechanisms for human capital development, so that the country can reap the maximum benefits of this "demographic dividend." Therefore, the strategic concerns for the country's policies lie around what will be the future of new job incumbents (Arif and Chaudhry, 2008), and what can be done to make them market-ready and ensure their professional wellbeing and sustainable employment.

Presently, what makes "Employability" a matter of concern lies in the fact that Pakistan's unemployment rate increased in 2020 to 4.65%. The recent United Nations Development Program Labor Force Surveys portray that the age bracket which remains most prone to unemployment includes the ones from 19 to 34 years (Nadeem, 2021). Which, according to Shaikh et al. (2021a,b) generational classification of the Pakistani workforce, comprises Pakistani Millennials/generation Y (born in 1982–2001; current age 21–40 years as of 2022). Normally, in Pakistan, it is ∼21–22 years of age when a graduate completes their 16 years of education from the Universities. Thus, the UN figures of the age range for unemployed youth make it evident that a majority of qualified university graduates fail to seek employment in Pakistan after completing their university degrees.

As a matter of fact, most employers in Pakistan have accused universities of being unable to upskill and produce market-ready/job-ready/employable graduates and complain about skill deficits. This difference between employers' expectations and employees' abilities is viewed as a skill gap in the eyes of employers (Bano and Vasantha, 2019; Tan et al., 2022). Butt (2020) quoted a 2019's survey report to highlight that 78% of employers in Pakistan posit dissatisfaction with the skill set of fresh graduates.

The employers' concerns about skill deficit are reported on various forums for the fact that they compete in a dynamic external business environment where there is a constant flux in socio-economic conditions (Kuzminov et al., 2019), new political and strategic drivers (Blackmore, 2015), organizational shifts and enterprises (De Jager, 2004), diversification, globalization (Buntat et al., 2013; Mansour and Dean, 2016), fast-paced technological advancements (De Jager, 2004; Bano and Vasantha, 2019) such as automation (Chitra et al., 2021), business re-engineering (Herbert et al., 2020) and the pressures resulting from business re-modeling in post-COVID era (Mahajan et al., 2022). Certainly, they have induced an impact on labor market trends, work practices, and industrial employment patterns (Herbert et al., 2020; Mainga et al., 2022). Having faced the repercussions of these risky, complex, and turbulent circumstances (McCabe, 2010; Mainga et al., 2022), the employers of today have grave concerns about the new skill sets which will be beneficial for them (Bano and Vasantha, 2019), particularly in the era of "new normal."

Nonetheless, the debate for upskilling Pakistani Millennial graduates is not as simple as it seems. Malik and Ameen (2021) have asserted that the professional landscape of Pakistan in both public and private sectors is evolving with the new nature of jobs. This has caused employers to view soft or generic skills as equally important as that other occupational skills (Buntat et al., 2013; Mansour and Dean, 2016; Sharma, 2018). Therefore, we have surpassed the era when the debate on the in-demand portfolio of skill sets was limited to hard or technical/occupational skills (Mansour and Dean, 2016).

A few generic skills are reported in the study conducted by Raza and Naqvi (2011) which portrayed the dissatisfaction of Pakistani employers (from sectors including banking; sugar; cement; food; auto; synthetics; leasing; IT; glass and ceramics; paper and board; oil and gas; and tobacco sectors of the economy) on the areas of personal development skills, intellectual development skills, social development skills, and professional development skills. These areas were inclusive of specific skills, such as intellectual development skills which refer to analytical ability, evaluation, knowledge development, diversity management, problem-solving, critical thinking, assessment, knowledge management, learning, and decision-making. Personal development skills (PERDS) include communication, teamwork, confidence, interpersonal affairs, information literacy, compare and contrast ability, workplace behavior, personality development, and information and communication technology. Professional development skills (PRDS) comprise forecasting, conflict management, customer service, fairness, leadership, job preparedness, professionalism, subject knowledge, and social development skills including ethics, socialization, and citizenship.

Therefore, nowadays, the acquisition of generic skills has turned out to be equally important as that of specific skills for the graduates' professional wellbeing in their careers (Selvadurai et al., 2012) and sustainable employment (McCabe, 2010).

Nonetheless, in Pakistan, the educational institutes responsible for fostering these skills have overlooked the industrial trends and requirements for skills (Kemal, 2005). Consequently, despite having university educational degrees, graduates face hurdles in seeking employment opportunities due to skill deficits. Certainly, it posits a question mark for if university-based education instills skills in graduates of today. If so, are the graduates trained on such market-centric skills which guarantee them a smooth market penetration, professional wellbeing, and sustainable employment. In order to address these concerns and facilitate universities, it study explores the local markets' skill requirements so as to dwell on local jobs.

For this purpose, Yorke and Knight (2006) have pointed out a dire need for "need analysis" which must be conducted by Higher Education providers in order to find out the skills that make students employable and how these can be embedded in the curricula, to achieve desired employability. This has also been emphasized by several researchers such as De Jager (2004), Jonck (2014), Mikalef et al. (2018), and Zhao and Kularatne (2020), who have asserted that without a clear understanding of the skill requirements of the industry, it would be nearly impossible to bridge the gap between the education delivered at universities and skills required by the market. In other words, bringing an industry-based perspective through proper need analysis will highlight the missing skillsets which might be overlooked by the supply side of employability i.e., Universities (De Jager, 2004; Jonck, 2014).

Already, the research employability literature is deficient in the context of Pakistan regarding the employers' perspectives on the skill sets (Sarfraz, 2020) which are needed to be inculcated in the Higher Education Curricula so as to align the work capacity of the labor force with the job market so that they may have a better opportunity of sustainable employment and professional wellbeing. Hence, the study was designed with the aim of market-based need analysis of employability skills by eliciting the employers' perspective on the generic skill set of graduates in field reality, so as to reflect on the industrial requirements of the various soft and hard skill elements of generic skills which would make a graduate employable and professionally equipped.

Owing to this gap, a project was fashioned to train the university graduates belonging to the Pakistani Millennial generation (born in 1982–2001) on the key generic skills (both hard and soft skills) which would ensure their employment and professional wellbeing in entry-level graduate jobs. As a part of this project, this study was designed as an initial market-based need analysis phase for determining the employers' needs for employability skills for entry-level graduate jobs. With reference to this, the research question for this study was formulated as:

RQ. What are the key generic employability skills which are required by employers for entry-level graduate jobs in the job market?

Concerning this question, this study obtained the perspective of the employers through a panel-based exploratory qualitative inquiry which focused upon the investigation of the employers' perspective on key generic skills that must be possessed by Pakistani Millennial graduates. Regarding this, the Chamber of Commerce of Bahawalpur and Rahim Yar Khan in Punjab, Pakistan were utilized as a platform to invite the employers/recruiters for this project-based study. The analysis of this study was based upon thematic analysis of the transcribed interviews and identification of key themes. The six themes emerging from this analysis led to the identification of 10 market-based generic skills (hard and soft skills) which are required in the local market, in the post COVID era of the "new normal."

Literature review

Theoretical background of the study

The theoretical debate on employability is centered on the Human Capital Theory since it encompasses education and skills acquisition as an enabler for economic prosperity and the wellbeing of graduates. Thus, human capital is known for the quality of knowledge, skills, health, and finances of employees (Islam and Amin, 2021). Certainly, for an individual to be regarded as a quality "human capital," it is important for one to constantly acquire, adapt, and enhance personal attributes and skills (Oliver, 2015). The inclination of individuals to acquire skills related to career prospects requires a long-term strategy, with a particular focus on professional wellbeing (Hojda et al., 2022). Van Horn et al. (2004) endorsed that an employee's professional stature and occupational wellbeing rest on their professional competence. Therefore, the focus of this study was directed at soliciting the skill sets which enable a graduate to be more competent and assure their sound professional wellbeing.

The role of soft and hard generic skills in employability

Employability is mostly conceptualized in two ways, (i) individual employability and (ii) institutional employability. However, most of the definitions conceptualize employability as more of an individual attribute. Hillage and Pollard (1998) comprehensively define it as "having the capability to gain initial employment, maintain employment and obtain new employment if required." Herbert et al. (2020) stated that an employee's employability potential is delivered by the competence in delivering a task is accompanied by certain behavioral dispositions and skills.

Kuzminov et al. (2019) asserted that the skill sets of employable human capital comprise Generic and Specific Skills, both. They described that Specific skills are developed by seeking focused education and work experience in a specific domain over years. For example, the certifications which are opted for specific jobs, such as Microsoft Certified Professional (MCP), are an indicator of the occupational qualification of a person. Other researchers such as Harvey (2001) and Yorke and Knight (2006) have emphasized more on such skills, knowledge, abilities, and other competencies which are company-specific, sector-specific, and discipline-specific.

On the other hand, the generic skills are usually referred to in the literature with numerous titles such as transferable skills, generic capabilities, basic skills, essential skills, soft skills, work skills, enabling skills, key skills, and core competencies (Lauder, 2013; Messum et al., 2015; Caraivan, 2016), and hence are mostly attributed with graduate attributes. Barrie (2004) defined generic skills as "the skills, knowledge and abilities of university graduates, beyond disciplinary content knowledge, which are applicable to a range of contexts."

Categorizing Generic Skills into three categories of General Human Capital, Kuzminov et al. (2019) described that General Human Capital 1 includes generic skills which are universal in nature, such as critical thinking, creativity, organization, and the ability to learn and work with others. Furthermore, they attributed non-cognitive traits such as Big-five personality traits, including Extraversion, Conscientiousness (awareness, responsibility, ability to follow and execute a plan), Agreeableness (ability to make consensus, friendliness), Emotional Stability (ability to make rational decisions during stressful situations), and Openness to Experience as part of the General Human Capital 2. Finally, they referred to the General Human Capital 3 with generic skills such as an individual's entrepreneurial ability which empowers one to form connections and collaborate with others for making the world a better place; also, it includes an individual's ability to transform institutions and social structures.

The researchers such as Yorke and Knight (2006) and Little and McMillan (2014) contend that although technical/disciplinary knowledge would provide an immediate entry into the workforce, generic skill sets pave a path for a lifelong career in the real world. For example, while technical skills such as knowledge and skills and qualifications related to social work, law, and engineering may determine an individual's work readiness; other generic skills and attributes such as organization, teamwork, and communication (Rowe and Zegwaard, 2017), networking (Bridgstock, 2017) and professional identity (Zegwaard et al., 2017) are conducive to finding requisite employment and sustaining it. Hence, a good combination of generic and specific skills is a requirement of the modern era (Mansour and Dean, 2016). Nonetheless, the focus of this study remained specifically on generic skills only.

It is worth mentioning here that generic skills further fall into two categories, soft skills, and hard skills. Zhao and Kularatne (2020) illustrated that Soft Skills are cognitive and interpersonal in nature which assures successful social integration in the workplace. Whereas, hard skills involve IQ and cognitive functioning in order to technically regulate various processes and tools. Therefore, Sharma (2018) regarded that as long as hard skills portray an individual's technical acumen, soft skills complement the technical skills by bringing in a people-oriented aspect. Hence, the exploration through this study involved both soft and hard skills which were generic in nature and were commercially in demand by employers.

Materials and methods

Research design

In order to delve into the generic skill sets (hard and soft skills) that may make a Pakistani Millennial graduate more employable and assure them professional wellbeing in the job market of the post-COVID era, an exploratory qualitative inquiry opted for this study. In order for it to be executed systematically, a grounded theory research design was undertaken. Although the grounded theory has been advocated for theory integration and development (Creswell, 2007; Chapman et al., 2015), however, the purpose of deploying this method was limited to yielding an industrial profile of skills. As, Strauss and Corbin (1998) advocate that grounded theory can also be used for systematic exploration, description, or conceptual ordering, rather than for a purpose of theory building only.

Population

The study's population consisted of the employers/owners/recruiters from medium to large scale private enterprises/businesses, from two different cities of Southern Punjab, Bahawalpur and Rahim Yar Khan, belonging to Pharmaceuticals, Agrichemical manufacturers (fertilizers, pesticides), Livestock, and Cotton, textiles, and apparel industry.

Sampling technique and sample size

The two panel-based discussions were joined by 26 respondents whose responses sufficed the point of saturation, which is endorsed by Creswell (2007), who asserted that for research based on grounded theory design, it is usually between 20 and 30 interviewees that the data starts saturating, the repetition starts, and no new themes emerge from the data. Out of these 26 respondents, a majority of 14 were from Agrichemical manufacturers; the Livestock industry was represented by three respondents, and nine respondents joined from the Cotton, textiles, and apparel industry.

These industrialists/employers/recruiters were contacted *via* the Chamber of Commerce of their respective cities. For example, the researchers collaborated with the secretaries of the presidents of the two Chambers of Commerce, and they facilitated providing the contact details of the business owners who had registered their businesses with them. This way, the business owners who provided their consent for availability and time were invited to the panel discussions. Hence, a convenience sampling technique was deployed for this study.

Data collection

For the exploration of the employability skill sets, although the inquiry was initiated with the research question and objective of this study, following Chowdhury and Miah (2016) and Chowdhury and Miah (2019) approach to identifying employability skills, the employability skills were first sorted through the literature. Later, with the discussion of Recruitment and Selection Experts (who were mostly owners or businessmen of the enterprises' understudy), these skill sets were initially screened to a list of 36 important employability skills. All of these skill sets were incorporated in the interview protocol which was based on open-ended questions that mainly addressed the employers' preferences and expectations regarding the commercially relevant skills which are fundamental to the employability of Pakistani graduates' in entry level graduate jobs (Appendix 1). It is to be noted that the subject of discussion was limited to the employability skills of the "Pakistani Millennials/Generation Y" (born in 1982–2001) (as categorized by Shaikh et al., 2021a,b).

Findings and discussion

The qualitative data was analyzed through thematic analysis which followed the steps suggested by Braun and Clarke (2006) and Maguire and Delahunt (2017). Accordingly, the data items were first identified from the verbatim transcripts which were produced on the pattern of audio-recordings of the panel discussions. Later, in order to formulate codes, the transcripts were reread several times to locate distinct patterns in the data. Accordingly, a set of codes similarly depicting a pattern were placed in one sub-theme. This also involved the compilation and segregation of sub-themes according to the nature of the soft or hard skill. Subsequently, the sub-themes depicting soft and hard skill elements relevant to one theme were collated under the titles of distinct themes. Later, each theme was analyzed and defined. Finally, this led to the generation of the following six themes (1) self-management and organization, (2) information handling and management, (3) interpersonal communication skills, (4) problem solving, (5) social development and interaction, and (6) industrial competence. Altogether, these themes discussed 10 employability skills, which are required by Pakistani employers, as mentioned in Figure 1 of the study.

Figure 2 portrays a thematic map which depicts how codes were assimilated into sub-themes, which then led to distinct themes depicting their associated employability skills.

Below is the analysis of each theme under separate heads:

Theme 1. Self-management and organization

The first theme emerging from the thematic analysis depicted the employers' perspectives on self-management and organization skills which must be displayed by the graduates who have recently undertaken a university degree. Although, the employability studies have mentioned several other skill elements as fundamental to self-management abilities, such as punctuality, grooming, empathy, commitment, dependability, abiding by the rules, planning and organizing, emotional intelligence, and the ability to take initiative (Fraser et al., 2019), cooperation with others, self-reliance, overcoming shyness, ability to take learning initiatives, experimenting, independently executing tasks, staying updated about general knowledge (Selvadurai et al., 2012). However, the emphasis of the panel's respondents was restricted to the discussion over soft skill elements of Emotional intelligence and Multitasking. Furthermore, the respondents stressed flexibility/adaptability as a key soft skill essential for people to self-organize and embrace change.

Emotional intelligence

The first skill highlighted in the panel discussion turned out to be "Emotional Intelligence" (EI). The literature documents Emotional Intelligence encompasses several socio-emotional competencies such as self-awareness, regulation of emotions, motivation, empathy, and social skills which are essential for the workplace wellbeing of an employee (Aloui and Shams Eldin, 2020; Tolbert, 2020). Almost all of these competencies were highlighted in various comments of the respondents, which portrayed that a majority of the employers favored the candidature of graduates for employability who possess a high degree of emotional intelligence competencies. As one respondent opined:

> *"…I strongly believe that a candidate with a strong EI quotient comes up with better guts of situational awareness, self-awareness, and regulation of emotions. All of these traits contribute to better interpersonal functioning in groups and project teams…"* (Employer/Recruiter K)

About three-fourth of the respondents prioritized Emotional Intelligence as an essential skill complementing the ability to manage stress. Portraying the perspective on how Emotional quotient depicts the emotional wellbeing of an employee in stressful scenarios, work overloads, and conflicts, an interviewee opined:

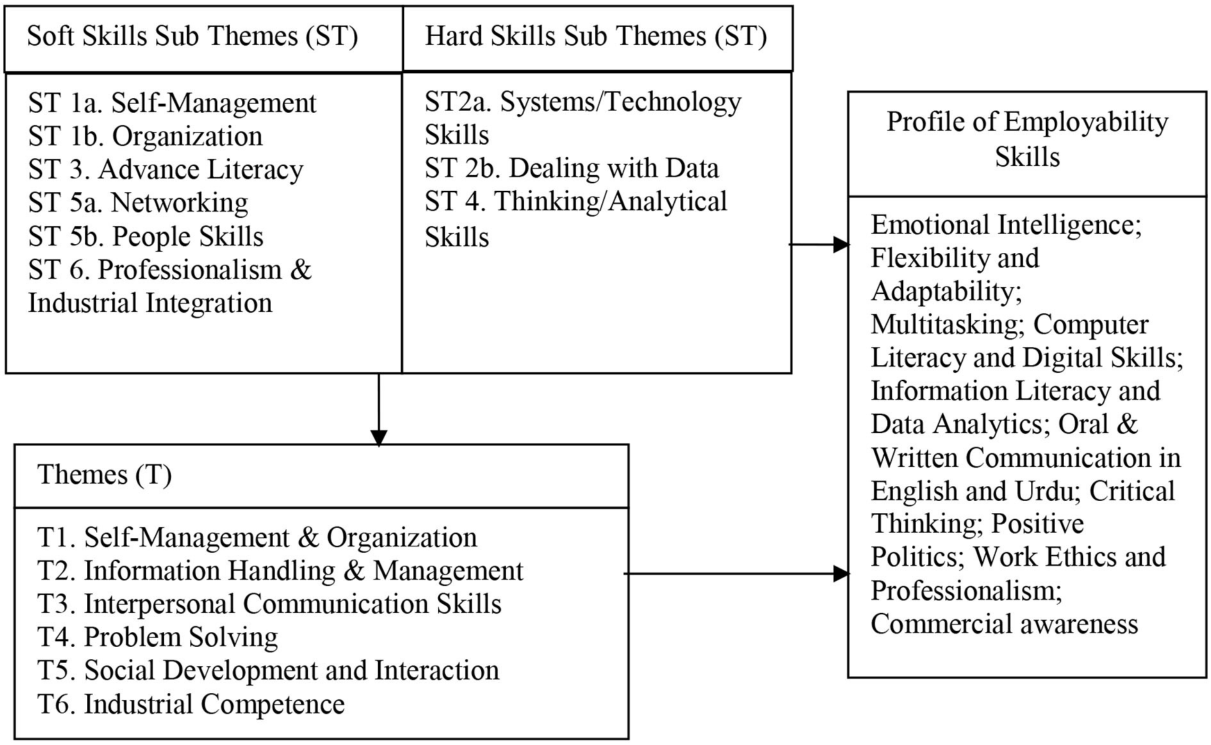

FIGURE 1
Conceptual framework exhibiting the relationship between generic skills' themes, sub-themes, and profile of hard and soft employability skills.

> *"... The stress triggers vary from person to person, it can be overwhelming work, negative politics in the organization, peer pressure or any other thing. As such, all of these situations require a sound internal appraisal to develop a coping mechanism which certainly requires a sound Emotional Quotient..."* (Employer/Recruiter B)

The discussion further revealed how interviewers expected that university education and socialization should build a sound Emotional quotient of a fresh candidate. This was highlighted by a respondent who quoted from his experience as a selection interviewer:

> *"... While we expect a university education, socialization, and group work experiences should build a sound Social Intelligence and Emotional Quotient in a graduate. Yet, most of the candidates mishandle situational which are emotionally charged. And if these candidates have ever been selected, they are found weak in dealing with teams, colleagues, senior management, managers, external clients, etc., and take time to learn and emotionally adjust with them..."* (Employer/Recruiter A)

Altogether, the responses portrayed that emotional intelligence is viewed as the employees' ability to be emotionally self-aware and emotionally resilient in stressful situations of conflict and work overload so as to perform with better People and Relationship Management skills.

Flexibility and adaptability

The next skill nominated by panelists was "Flexibility and Adaptability" which was viewed as a much-needed skill for framing long-term and sustainable careers for entry level graduates.

When asked about the experience of working with fresh graduates, the respondents opined their concerns about the lack of flexibility and resilience in the Pakistani Millennial generation. They demonstrated a majority of arguments regarding how a graduate, being a novice, fails to realize the importance of resilience and steadfastness in their early careers. Portraying this concern, an employer commented:

> *"...I was unaware of how stringently employees lose morale in economic downturns and work pressure till I had to lay off the individuals exhibiting no resilience attitude at all..."* (Employer/Recruiter H)

For an explanation of what kind of flexibility and resilience was required by the industry, a recruiter opined:

> *"...It must be understood as a coping mechanism which has a lot to do with your mental strength. It requires one to understand the things in a broader perspective, reorganize oneself and reframe things for good..."* (Employer/Recruiter J)

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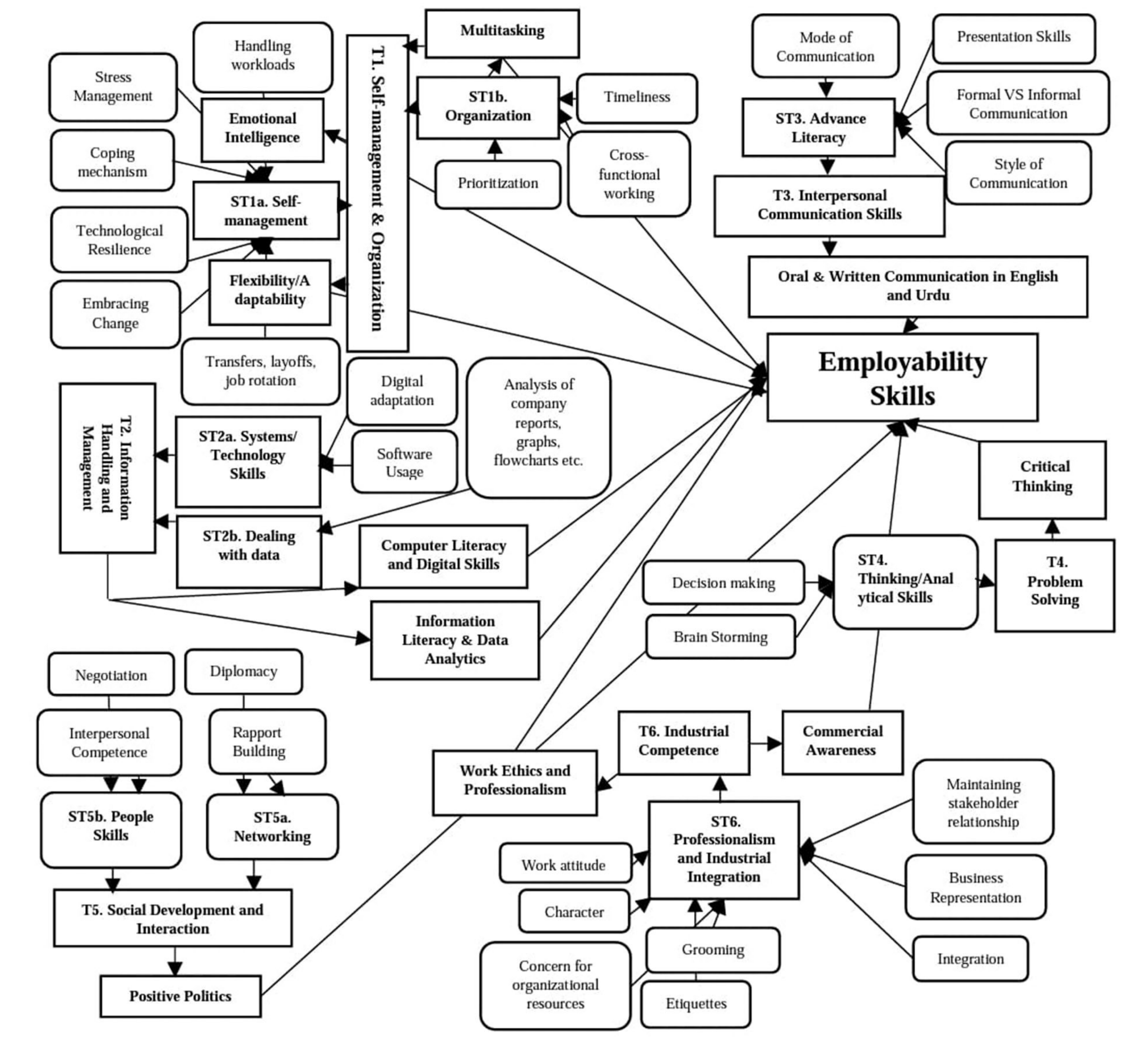

FIGURE 2
Thematic map illustrating the key codes under each sub-theme which are then compiled under distinct themes, thus each theme then directs to its associated employability skills.

In the wake of the modern employment era, when most graduates face the hurdle of person-job fit and person-organization fit, another group of panelists collectively opined:

> *"...In most situations we observe employees have to opt for jobs that have no direct relevance to their interest or degree domains, so in such cases also one can only learn and grow with flexibility..."* (Employer/Recruiter I)

Another majority of the respondents regarded flexibility as a must-have trait for one's adjustment to organizations that have their own established cultures. For that too is regarded to vary from organization to organization (Nair and Mukherjee, 2015). One response in this regard was observed:

> *"...Practically, every organization has its protocols, values, attitudes, and beliefs, including the way they celebrate different events, practice collegiality, and perform in communities of practice. This culture develops with the passage of time. So, having flexibility will be quite useful for the prospective graduates to adapt to new environments and do networking with new people with diverse set of values, norms, and beliefs ..."* (Employer/Recruiter H)

In general, the respondents of this study viewed it from the perspective of the cultural competence of an individual. With reference to this, one respondent considered that a graduate needs sound social intelligence for successful integration into the workplace's communities of practice. This was notified by an employer as:

> *"...I think employees have to re-establish themselves after they enter a workplace. There is an organizational culture one is informed about on orientation day, and then one gets to experience it through exposure and social commitments. Certainly, it takes time as there is a constant evolution in the form of learning and unlearning ..."* (Employer/Recruiter No. D)

In addition, employers voice their belief that the University's Extracurricular activities provide a medium for the development of flexibility and adaptability in graduates. Linking it explicitly to extracurricular activities, a respondent stated:

> *"...Flexibility is not taught, it is a learned trait...In educational setups, Extracurricular activities are the best way to polish this trait. Once learned, it facilitates the job incumbent to adapt with unexpected changes of circumstances like transfers, relocation, change of job roles and work teams, etc. ..."* (Employer/Recruiter F)

Thus, the key abilities associated with flexibility were found to be closely in line with Fraser's et al. (2019) study, who defines flexibility as an individual's ability to flexibility adjust in varying circumstances while keeping up a spirit of resilience.

Multitasking

The next skill highlighted by the panelists was "the ability to multitask." Although, the ability to multitask has been quoted in the literature with two different points of view, where one view states it as a sign of efficiency in the contemporary era, while the other point of view regards it as a sign of distraction, disintegration, or ineffectiveness (Lin et al., 2012). Nonetheless, the discussion portrayed that a majority of employers in the panels contended that the modern world of work requires subject-matter specialist cum generalist roles. Most of them attributed it to the ability to be an "all-rounder performer" and considered it an essential requirement for most of the work-based scenarios of modern businesses. As one respondent elaborated:

> *"...We do not underestimate the value of specialization, but we also cannot afford to overlook the modern job roles which require a knowledgeable individual with a broad array of expertise. This is why many organizations, nowadays, have a 'Management Trainee Program' that involves a yearlong inter-departmental rotation before designating a department to the employee. This polishes the general skill sets of an individual, as such, these individuals simultaneously stretch on various tasks and roles ..."* (Employer/Recruiter E)

This portrayed an essential aspect for the freshers who may regard themselves as proficient in a particular skill or discipline, yet an employer may feel that they are not capable to demonstrate the desired level of performance due to their inability to perform as allrounders. Nonetheless, those who the panelists believed were allrounders, also complained about the freshers' lack of ability to prioritize things, schedule, and manage them well in time.

> *"...The work impression of a fresh job incumbent is also gauged by effective time management skills and control over tasks. Which I believe is quite possible to be done in modern technological era, where one can utilize various tools and gadgets to organize themselves by setting reminders, making online Gant charts etc. Often, we witness that Millennials would fail to make a tradeoff in various tasks according to the nature of resources required, urgency, importance, or they would lose focus on other things while working for one particular task..."* (Employer/Recruiter H)

Altogether, the respondents emphasized multitasking as an ability to be an allrounder who prioritizes, schedules, and executes tasks according to the need of urgency, importance, and resources; handles pressure in times of crisis; controls multiple tasks simultaneously, and uses tools and technology to manage time.

Theme 2. Information handling and management

The second theme arising from the panel discussions turned out to be "Information handling and management." Under this theme, a couple of hard skill elements including computer literacy, digital skills, information literacy, and data analytics were portrayed as key skill sets.

Computer literacy and digital skills

The findings further portrayed the importance of Information Literacy and Data Analytics as advanced skill sets which are viewed as valuable in the eyes of employers to meet the requirements of the organizational data. Altogether, the employers' perspective was aligned with the assertion of Bejaković and Mrnjavac (2020) who posited that digitization has caused polarization in the job market, where all the opportunities are for employees with digital proficiencies rather than the ones who are low-medium skilled and possess manual work proficiencies. This is particularly true in the case of

Pakistan which earlier used to export cheap low skilled labor, but now is transitioning from the status of a middle-income country to a sustained production-based economy (Martinez-Fernandez and Choi, 2013). Hence, the new set of job roles requires more computer and digital proficiency.

When asked for it, a majority of the employers were focused on their viewpoint that they required a job incumbent with more than basic computer usage. They opined that graduates lacked hands on experience with software that they deployed in the industry. Similarly, one response was portrayed as:

> *"...In Post-Covid era, we live in phygital workspaces where we largely incorporate digital solutions at our workplace, be it be HR softwares like Harmony, SAP, Orange HR, or any Customer Relationship Management Software or another. So, we would prefer for one to be acquainted with the usage..."* (Employer/Recruiter A)

Another employer put it as follows:

> *"...We are living in a digital E-world. I do not see survival in the traditional job mindset because technology, the internet, and related fast-paced changes have revolutionized the work patterns and job dynamics. Here...we need workers possessing digital competency with advanced levels of digital skills. For example. Nowadays it has become mandatory for everyone to learn virtual collaboration skills so that they could manage meetings and collaborations via Zoom, Microsoft teams or any other software..."* (Employer/Recruiter I)

In addition, some of the respondents of this study did make some stipulations regarding the ever-evolving nature of technological revolutions which posits the requirement for updating computer and digital skills, from time to time. This has already been made evident by Pirzada and Khan (2013) that in the modern e-world, the professional employment of fresh Pakistani graduates depends upon how quickly they equip themselves with new ICT devices, and generic software tools, and keep up with the pace of upgradation in applications. Mainga et al. (2022) attributed it to one's propensity for technological resilience which would require one to keep updated with advanced technological trends.

Information literacy and data analytics

It was deduced from the discussions that in the modern era of a knowledge-driven economy and information revolution, it is nearly impossible to exist without having the skill to deal with technological gadgets. Malik and Ameen (2021) also asserted that in Pakistan, the future professional landscape will require a lot of information workers. The research literature also quotes this skill set as essential to cope with the requirements of megatrends like the fourth industrial revolution. This would involve employers seeking furnished skill sets to deal with Mechanization, Artificial Intelligence, Big Data, Automation, Data Analytics, Data Integration, Quantum Computing, etc. (Chitra et al., 2021).

The significance of "Information literacy and Data Analytics Skill" was stated in the panel discussion as follows:

> *"...We live in an information-based, data-oriented, and knowledge-driven economy. Here, we need data scientists who use relevant scientific, technological, and mathematical knowledge to read and interpret manuals, portray information through visuals like graphs, and have the skills to transform data into actionable insight. Such individuals have the most expensive and in-demand skillset in the contemporary era..."* (Employer/Recruiter D)

A similar comment in this regard appeared on probing:

> *"...Analytics acts is a quick tool to analyze facts and processes and generate solutions, make decisions and predict future. This involves a lot of designing and maintenance of data systems and databases..."* (Employer/Recruiter J)

Overall, it was demarcated as the ability to acquire data from primary and secondary sources, utilize statistical techniques for analyzing patterns and trends in data, provide reports with meaningful insights, and develop and maintain databases. However, it is worth mentioning here that only two fourth of the employers endorsed this skill as an essential competency for the starting phase of individuals' careers.

Theme 3. Interpersonal communication skills

The third key theme addressed was interpersonal communication skills, which Williams et al. (2019) considered as a composite feature of rapport building, collaboration, and honesty, as essential for interaction with authorities, subordinates, peers, customers, and other stakeholders. However, the panelists limited their discussion to soft skill elements of Oral and Written Communication in English and Urdu. Several other researchers like Sharma (2018) also considered it an indispensable element in contemporary formal and informal work environments. The panelists of this study discussed it as follows:

Oral and written communication in english and urdu

Although language and eloquent communication are recognized as the first modality to qualify for a job (Caraivan, 2016), it was discovered through the results that employers struggled with seeking graduates with proficiency in the communication domain.

Overall the employers remained in the argument about the dual-language status of the country's official language. Although the English language gets much recognition in the country for being a symbol of status, quality of education, modernization, and socio-economic and cultural predominance (Shamim, 2011; Umrani and Bughio, 2017; Zaidi and Zaki, 2017); nonetheless, the respondents viewed the English language as the main hindrance in the communication skills of the graduates. A response made in this regard is stated as follows:

> *"…Although we recognize both Urdu and English as official languages, nonetheless, unfortunately, our graduates cannot converse smartly in any of the two languages. Often, we find that the graduates fail to make good first impressions in various screening interviews, group discussions, presentations, etc. just because of English language constraints. While, for Urdu language, I have observed that the struggle is limited to written official correspondence, mainly…"* (Employer/Recruiter C)

However, the literature does not regard Urdu Language proficiency as a major issue because for official correspondence English dominates several domains such as legal services and proceedings of courts (Ahmad et al., 2020), science and technology, information, and across several other industrial and business sectors. Even that, the provincial and federal civil service examinations, and civil and military bureaucracy are carried out in English (Haque, 1982 as cited in Umrani and Bughio, 2017).

In addition, a few responses highlighted that the graduates remained ignorant of the intricate requirements of formal and informal communication. Such as they highlighted that graduates were not accustomed to the communication styles required in formal and informal situations and various cultures. In another research literature study, Nair and Mukherjee (2015) also realized that many business communication and meeting agendas fail if employees are not accustomed to the cultural norms and cultural variances across the organizations (Nair and Mukherjee, 2015).

All of these aspects were highlighted in several comments, one of which is stated as follows:

> *"…It is very likely for a graduate to get into difficult conversations in convincing stakeholders (boss, client, peers), feedback meetings, and especially while communicating bad news. Most of the freshers do not realize the value of message tone, the significance of communication hierarchy which must be followed and the language of the message which should be tailored according to the stakeholder addressed in the message…"* (Employer/Recruiter B)

Similarly, concerning written communication, the employers quoted numerous places in which loopholes in written communication were observed with regard to grip over language, vocabulary, grammar, and sentence structures while formulating business proposals, report writing, and email writing. In this regard, an employer voiced his dissatisfaction regarding email communication through one comment, which is stated as follows:

> *"…I have witnessed numerous incidents where the professional image of the sender is discredited in email communication when one forgets to use salutations or may commit other errors like the too formal or too informal tone of the message which distorts the purpose and impression; other than this typo, use of emojis or abbreviations and other such mistakes have made us lose our clientele several times…"* (Employer/Recruiter K)

Whereas, a majority of the comments with regard to oral communication were noted pertaining to presentation skills. Selvadurai et al. (2012) regarded that employers seek individuals with effective presentation skills which include the ability to deliver complex concepts in a simplified manner as per the requirements, needs, and interests of the concerned parties. Hence, an effective presenter utilizes a good combination of verbal and non-verbal cues to tailor content and make it understandable to the audience. Elaborating on a question regarding presentation skills, for if graduates could demonstrate it on degree completion, a respondent explicitly stated:

> *"…At times we need to present information and company reports to the board. Here, we need employees with strong abilities to present information in a simplified manner, with visually appealing content. Then we need their persuasion skills in order to obtain positive responses from the stakeholders. Sometimes we need to convince them on our progress that we are striving for perfection; other times we need to convince them to modify standards, rules, and procedures. This also requires the character and credibility of the presenter. Whatever the case is, we need good presenters…"* (Employer/Recruiter A)

This response regarding proficiency in communication as the ability to persuade, exhibit empathy, and the ability to illustrate complex concepts in the form of simple and understandable has also been illustrated in the study of Ahmad Tajuddin et al. (2022).

Another respondent attributed communication skills to the ability to communicate technical knowledge and make it understandable to the stakeholders. It was comprehensively reported in a comment as follows:

> *"…In a Service Industry, unlike that of mechanical procedures of manufacturing industries, socially mature individuals are required who are apt at communication and presentation skills. We need employees with a sound technical*

> *acumen, who present our services by understanding/reading the customer, exhibit empathy, tailor tones of the messages and generate a deal with the help of their persuasion power...*" (Employer/Recruiter D)

The findings are closely aligned with the assertion of Sharma (2018) who contended that besides being able to effectively communicate, there are numerous other complementing factors essential for closing commercial/business transitions including attributes like good customer rapport, business, and social etiquette, conversational skills, adaptability, credibility, and reputation.

When asked about the reason for the aggravation of language issues in graduates, a respondent highlighted:

> "*...Language as a skill has been completely overlooked by Pakistani graduates. The technological advances and communication over mobile phone texts and emails involves a lot of usage of Roman English and short hand which has caused a deterioration in basic language ...*" (Employer/Recruiter J)

Altogether, the discussions were quoted with several instances where the poor oral communication of graduates was observed by them in the workplace, including, occasions when a new job incumbent makes phone calls, delivers presentations, convinces stakeholders, writes emails, conducts face-to-face and online meetings, conference calls, negotiates with clients, and impromptu speaking situations in seminars. Whereas, with regard to written communication, the reservations were noted in the broader areas such as Resume Writing, Note Keeping, Email Etiquette, Memorandums, Instructions writing, Report Writing, Press release Writing, and Minutes Writing. On discussing this issue, an employer voiced his concern:

> "*...We expect that a CV should speak for the graduate. S/he must be apt at writing minutes of the meetings and all the basics of email communication must be known prior to joining a workplace, and that too in English and Urdu (whatever correspondence language is used in the organization) ...*" (Employer/Recruiter H)

In summary, proficiency in oral and written communication in Urdu and English was illustrated as the ability to professionally communicate by using appropriate language, communication style (formal vs. informal), and structuring message tone according to communication mode (verbal, written, e-mail, online, face-to-face meetings) and stakeholder addressed (clients/peers/superiors). Nonetheless, it was observed that although, literature portrays "listening" as a fundamental attribute of effective communication in addition to oral and written communication skills (as mentioned in Rasul et al., 2013), however, the findings of this study did not explore any such aspect.

Theme 4. Problem solving

According to Fraser et al. (2019), problem-solving is defined as the ability to make an intelligent choice among alternative solutions to a problem, monitor the consequences of each alternative, sourcing resources, and helping to resolve a problem. Therefore, being regarded as a systematic process (Norshima, 2011), the respondents of this study considered good critical thinking as an essential prerequisite of problem-solving.

Critical thinking

Researchers such as Pearl et al. (2019) and Pardo-Garcia and Barac (2020) have stated that critical thinking is viewed as a higher-order thinking ability that allows one to self-reflect and systematically solve problems by critically analyzing the components of an issue and choosing an optimal alternative. Overall, the employers from the panels have regarded critical thinking as a highly sought-after quality among graduates for problem-solving. Regarding how the respondents of this study stated that they evaluated the reasoning ability of a prospective employee through interview questions, a comment was noted as follows:

> "*...In order to evaluate a prospective employee on this highly sought-after employability marker, we often as interview questions like 'Give me an example of a project that undertook in your student life. And then we talk through bits like 'What happened when it went wrong?...*" (Employer/Recruiter F)

Portraying the dissatisfaction with the critical thinking skills of freshers, an employer accused the education system of failing to inculcate thinking skills in students and stated:

> "*... The graduates lack the Value judgment call or critical thinking ability. The concept of critical thinking lies in the fact that anything can be true or untrue based upon the observer's experience, it would depend upon the reference point which is the observer's experience for if he/she believes in it or not...*" (Employer/Recruiter I)

A majority of the responses portrayed that employers did not find a correlation between formal education and the development of critical thinking skills. The respondents' view was conclusively put up by one interviewee as follows:

> "*... Our intellectual criteria are dictated by the reasoning ability and reflective thinking of employees. We need people who are apt at analyzing problems from multiple dimensions, evaluating alternatives, weighing risks, interpreting and concluding solutions and future directions. Nonetheless, university education has failed to promote thinking skills in*

> *students. Even the students who have had numerous case study discussions, fail to critically evaluate the things and reproduce new solutions…"* (Employer/Recruiter G)

Portraying the reason for the lack of critical thinking ability in Pakistani graduates, a respondent stated:

> *"…In Pakistan, most of the students obtain their degrees and pass their exams in the information duplication mode, and to internalize the information and critically reflect on it. It is similar to the situation like we would often listen people talk about constitution but no one actually knows about it. So, students remain in a duplicity mode even with our subjects. All they care is that we have to pass the subjects without critically analyzing the facts taught…"* (Employer/Recruiter G)

Further exploration revealed the loopholes in the university education which was considered a vital reason why graduates fail to exhibit critical thinking ability, as an employer stated in this regard:

> *"…In our company, we have the KPI based performance evaluation. For each task, i.e. quality surveillance, hygiene documentation, cost related to sub-suppliers, and rebates etc., in order to achieve these KPIs, each objective needs to be comprehensively broken down into smaller chunks/principals and each task later involves critical thinking for making interpretations and judgments of the data. This is how when an employee thinks critically, he makes tradeoffs and chooses the best alternatives, and it leads to the successful achievement of KPIs. So, critical thinking is must-have for fresh graduates to become successful…"* (Employer/Recruiter K)

In light of these findings, critical thinking was also counted as an advanced-level employability skill that dictates an individual's ability to think critically and creatively, solve problems, reflect on options, and make sound decisions through proper reasoning.

Theme 5. Social development and interaction

This theme addressed all of the specific skill sets which are needed for a graduate's social development and interaction. Employers nominated graduates' networking abilities, cultural intelligence, leadership skills, and negotiation ability as sub-elements of the skill, titled, "Positive Politics"; and the other skill identified in this theme was "team working."

Positive politics

The first key skill in this theme was discovered as "Positive Politics." The thematic analysis revealed that employers were categorized according to their opinion and views on the need for political skills in the workplace. Mostly, the discussion was loaded with numerous incidents of negative political behaviors which were notified by the employers as detrimental to the psychological and physical health of the employees and the organization. This has also been documented in the literature that politics is often practiced negatively in organizations. Therefore, to counter these negative political behaviors, the panelists emphasized the need for recruiting employees with positive political behaviors, which according to Ferris et al. (2007) further comprises attributes like "social astuteness, interpersonal influence, networking ability, and apparent sincerity."

Most of the interviewees lodged their complaints regarding academia's failure to polish positive political behaviors and orientation in their graduates. One response in this regard was made as follows:

> *"…See, political jockeying is inevitable in organizations since there is a power and resource game at the workplace. Organizations undergo continuous reorganizations in the form of downsizing, new teams and bosses, employee transfers in and transfers out. So, at the time of the interview, we calculate the person-organization fit of an employee based on his views and attitudes. In my experience, I have witnessed that too much-opinionated employees are inclined to become part of employee union groups and coalitions, bring in their bargain power over agendas, manipulate information, and are more prone to have derogatory views for the other party. We simply cannot afford employees who may tarnish the organizational image…"* (Employer/Recruiter I)

Similar to this, another eminent respondent quoted that graduates are unfamiliar with positive political skills like "good diplomacy," a response referring it was noted as follows:

> *"…In our career, we have realized that graduates have a vague idea about positive political skills which they would require in the starting phase of their careers. Like diplomacy is political skill which is required in leadership role which require decision making, evaluation of risks, providing reinforcements and resolving conflicts…"* (Employer/Recruiter G)

Furthermore, the panelists considered that graduates who are good at political skill can negotiate well and resolve conflicts. It was elaborated by a respondent as:

> *"…We have witnessed that negotiation skills assure better relationships, deliver lasting and quality solutions to reach agreement and mutual satisfaction. For every negotiation style, whether it is competing, collaborating,*

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> *avoiding or compromising, or accommodating, the main characteristics are credibility and influence. So even if graduates do not master negotiation, they should at least bring a caliber to influence and deal things with integrity..."* (Employer/Recruiter No. I)

Thus, negotiation was also nominated as an effective positive political skill which was considered an essential ability to reach agreements on bargainable topics by effective communication and persuasion and creating optimum value for all of the concerned parties.

Quoting a couple of other instances where positive political behaviors are needed, one respondent commented:

> *"...People with the mastery of positive political skill make deals out of conflicts by understanding the informal processes of conflicts, negotiating, adapting behaviors, successfully liaising, forming working relations with competitors, and understanding of cultural norms, values, customs, and beliefs of various groups and coalitions. In addition, they master the art of publicizing one's accomplishments and complimenting others for their efforts..."* (Employer/Recruiter G)

Whereas another popular response which was agreed upon by a majority of panelists was regarding how influence, compassion, and relationship building can be practiced as a positive political attitude, especially with regard to collaboration between senior and junior employees of an organization, this comment appeared as follows:

> *"...In the modern era, our youth shows up excellent digital and computer skills, therefore, at times we educate our seniors through the process of reverse mentoring. In such situations, very young employees with little experience have to act as a mentor and coach the older ones who are less Tec savvy. This situation requires different nature of political skills like influence, compassion, and relationship building..."* (Employer/Recruiter A)

Altogether, the discussion with the respondents unveiled that respondents with positive political behaviors create a positive organizational image and achieve individual and organizational benefits by using power, forming networking, social linkages, and coalitions (this coincides with the findings of Waggoner, 2020).

Theme 6. Industrial competence

The sixth and last theme of this study uncovered how employers defined industrial competence as an essential skill of an ideal employable persona. Yet, most of the employers felt that graduates were not meeting the industrial requirements in some areas such as Work Ethics and Professionalism; and Commercial Awareness.

Work ethics and professionalism

Another key employability element, reported by the employers included Work ethics and Professionalism. Professionalism, in general, refers to organizational protocols, behaviors, and expectations regarding work (Williams et al., 2019), however, the panelists discussed it primarily with regard to work ethics - morally good and bad behaviors in a profession. The literature also portrays evidence for how work ethics is viewed as synonymous with professionalism (which coincides with the finding of Asio et al., 2019). Some studies have denoted it by an array of other attributes such as honesty, integrity, work ethics, and independent decision-making (Little and McMillan, 2014). Others have attributed it to basic business etiquette which includes how individuals look, dress, speak, and behave in work settings (Nair and Mukherjee, 2015). However, employers from the panel discussions limited it to the aspects of ethical and moral awareness, ethical reflection, punctuality, character, integrity, cooperation, respect, self-discipline, and professional code of conduct only. A few comments depicting these attributes are portrayed in a comment as follows:

> *"...Despite possessing academic excellence, our Graduates come up with a major soft skills gap due to which they appear less professional for real-time work practices. Our industry requires a strong professional attitude, especially in the areas of punctuality, work ethics, casual work attitude, cooperation with fellow workers, and character ..."* (Employer/Recruiter I)

Viewing grooming as fundamental to the work ethic practice in an organization, a respondent commented:

> *"... The organizational image is dictated by the grooming, etiquettes, character, and ethics of its employees in formal and informal circumstances. Like, a sound social etiquette can be observed through the salutations used while employees address their fellow workers. Then, another ethical behavior can be the employees' concern for organizational resources, uplifting coworkers in difficult times, using power to get things done and other similar circumstances ..."* (Employer/Recruiter H)

Commercial awareness

The employers collectively viewed commercial awareness as a defining skill to get entry into the job market, employee promotability, and career growth. Regarding sound commercial awareness, researchers contend that one has to step beyond the disciplinary realm and bring sound exposure to current issues and social market dynamics (Selvadurai et al., 2012); along with this, one needs to bring active citizenship, professional identity, and networking (Rowe and Zegwaard, 2017; Tan et al., 2022). Such as, this defines how adaptable, resourceful, and knowledgeable one can be while interacting with industrial communities (Selvadurai et al., 2012).

When asked about the importance of commercial awareness, a respondent elaborated:

> *"...Commercially aware people are proactive thinkers and valuable assets for the company. They build the business by bringing in clientele through better stakeholder and customer relationships. At times they drive businesses forward through new ideas for process reengineering, spot opportunities for resources and product development, and help reduce business risks. Certainly, this adds to the efficiency, effectiveness, and competitive advantages of the businesses. This is why it's such an important skill and in-demand by almost every organization..."* (Employer/Recruiter J)

Thus, it was explored that this skill was considered to be complementary to the "Business Skills" of the individuals, which according to Nagarajan and Edwards (2014) is defined as the knowledge of work procedures and business operations, ability to make products and service promotions, and maintenance of stakeholder relationships.

However, it was also highlighted through the discussions that the reason for the lack of exposure to the market-based realities is the university-industry lack of collaboration, it was documented as follows:

> *"...In Pakistan, the industry and academia have been working in SILOS and producing their yield in their own frames. This is the reason why graduates lack in exposure to the realities of the job market, emerging trends, and fast-paced changes..."* (Employer/Recruiter J)

In this regard, the employers viewed summer internships as essential since they facilitate initial exposure to real-life work experiences. Complaining about the aptitude of fresh graduates toward commercial awareness and integration, one respondent commented:

> *"...As a matter of fact, University graduates lack awareness of businesses regarding real-time scenarios and the practical knowledge of organizational environments. Whereas, in the industry, we seek graduates with strong commercial awareness so that we could add on to our competitive intelligence..."* (Employer/Recruiter A)

Similarly, another comment appeared as:

> *"...If a Customer Relationship Manager does not have a background knowledge of the customers' cultural origin or their cultural communication styles...Then, he/she would not be able to deploy an appropriate Customer Relationship Management Strategy. Therefore, Commercial awareness, networking and liaisons in the market is an individual's social capital which is valued by the organizations..."* (Employer/Recruiter I)

From the above-stated comments and other relevant discussions, it was deduced that by commercial awareness the respondents meant the knowledge of the business operations, market dynamics, and industry in which business competes. They also referred it to as keeping oneself updated about organizational operations, micro and macro environmental challenges, competitors, and other stakeholders.

Conclusion

This study provides useful insight for the political discourses, reports, and papers questioning and urging the need to focus on the employability skills of Pakistani Youth so as to reap the benefits of the country's strategic position of demographic dividend. Doing so, this study presents 10 skills that are the preference of employers across the region of Bahawalpur and Rahim Yar Khan, South Punjab. Although some of these skills resonated and overlapped with the other themes or skills mentioned under other themes, the study sorted out the skills, in the simplest manner, through six themes, which emerged from conducting the thematic analysis: (1) Self-management and Organization, (2) Information handling and management, (3) Interpersonal Communication Skills, (4) Problem Solving, (5) Social Development and Interaction, and (6) Industrial Competence.

As for the final list of the 10 skill sets covered under the six themes, they included a combination of various hard and soft skills' elements, such as Emotional Intelligence, Flexibility and Adaptability, Multitasking, Computer Literacy, Digital Skills, Information Literacy and Data Analytics, Oral and Written Communication in English and Urdu, Critical Thinking, Positive Politics, Work Ethics and Professionalism, and Commercial awareness. Nonetheless, these skills were not ranked in the order of importance or preference by employers from various sectors.

Implications

The identification of employability skills, with the help of employers, for entry-level graduate jobs, serves as an important ground for the unemployed Millennial youth (born between

1982 and 2001) of Pakistan to overcome their employability skills deficit by acquiring these skills which are in demand by the employers, particularly in the post-COVID times of "new normal." Surely, this would not only assist their market penetration in the local and global markets but also, would be beneficial for their professional wellbeing and sustainable employment. As such, the findings of this study further lay implications for the universities across the country to devise a direct intervention for skills-specific education and training instead of the old "one size fits all" curriculum-based study.

Limitations

The expansion of geographical scope, with a larger coverage of respondents from various industries, is suggested so as to obtain a generalized set of skills across different industries at the national level. This can also be continued conducted with a consideration of sector-specific skill sets that employers seek in the graduates since researchers such as Hinchliffe and Jolly (2011) posited that the perspective and understanding of the graduates' identity and employability varies from sector to sector. Furthermore, the scope of the study can be expanded with a specific focus on occupational skill sets; this would lead to an understanding of the professional wellbeing of employees more clearly.

Data availability statement

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

Ethics statement

The studies involving human participants were reviewed and approved by University Research Ethics Committe-The Islamia University of Bahawalpur; Approval no. 450/AS&RB. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

JI: conceptualization, supervision, and project administration. AS: writing-original draft preparation and formal analysis. WJ: supervision, review, and editing. KA: funding acquisition and arrangements of panel discussions. RR: analysis and investigation. SK: resources and investigation. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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

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Appendix 1

Interview protocol

1. Other than the discipline-specific knowledge, are there any other criteria which you seek in the prospective employees during their selection interviews at your organization?
2. Do the fresh graduates which you recruit have adequate skills to perform in the current jobs?
3. Do you believe that soft skills are just as important as hard skills/technical skills?
4. Do you think your prospective employees are apt at self-management and organization skills?
5. In the modern era of competition, how important is it for a fresher to manage themselves well during the time of stress?
6. Do you think that for some positions it is crucial to hire a person with a good EI quotient?
7. How often do you experience that a good emotional quotient could help people overcome difficult situations?
8. Do you believe that ability to think outside of box is important in todays' dynamic and volatile business environment?
9. How do you believe "openness to experience" trait adds value to the worth of a fresh job incumbent?
10. In your view, is resilience and quick adaptation essential in the modern world when businesses transition unpredictably?
11. Do you encourage an all-rounder-multitalented employee who performs various organizational functions?
12. How important is for a job seeker to keep him/herself updated about the technologies related to a job role which one aspires for?
13. Do you feel that graduates fail to understand technological systems, and fail to correct problems in technological operations of the job, when newly hired?
14. Do you believe that organizing, maintaining, interpreting and communicating information with apt data analytical skills using computers is a key technical skill?
15. Do you face difficulty as an employer if the graduates are not well-versed at written and oral communication skill?
16. Do you think having being able to locate, understand and interpret information in company documents such as minutes, manuals, reports, graphs, and flowcharts, an important requirement of the industry?
17. What are the key attributes of a good presenter which you look for in your prospective employees?
18. In what ways do you consider critical thinking helps employees in finding solutions and making better decisions?
19. What political behaviors would you encourage or discourage at the workplace?
20. Do you find that employees getting involved in positive politics is the requirement of modern workplace?
21. Does it matter to you to hire a graduate who is commercially aware of the surrounding market and competition?
22. Do activities that may include conducting market surveys, researching the market for new references, and establishing linkages with the industry stakeholders, are a key requirement of current business survival?
23. Do you consider entrepreneurial ability as a key skill for freshers in particular?
24. To what extent do you believe that professionalism of employees adds on to the organizational character?
25. In your opinion, how important is it for a job incumbent to demonstrate integrity/honesty and choose ethical courses of action?
26. Do you think that it is a need of the time for one to be professional in working with teams with people from diverse backgrounds?
27. Can you exemplify some of the traits you particularly regard important for professionalism in the modern era?

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The role of facilities management in fighting COVID-19 outbreak: Evidence from Malaysian public hospitals

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The aim of this study is to provide a holistic review of the fight against COVID-19 in developing countries, particularly Malaysia. Specifically, the study aims to determine how facilities management delivery in public hospitals can be improved to ensure readiness in handling COVID-19 cases. We conducted a review of the literature and reliable media updates on COVID-19 and services management. A critical synthesis of COVID-19 information was conducted to scrutinise the technical aspects and highlight how facilities management can be improved to ensure hospital readiness in managing COVID-19 cases. The data and information used in the present study were collected up to the time of writing this paper, which leaves a room for further studies. Nonetheless, this study's recommendations are useful for understanding the present and future pandemics. This study is a first attempt to summarise the data on facilities management in relation to the COVID-19 pandemic in the Malaysian context. The study's findings are suitable for the developing countries in managing healthcare management practices in the fight against COVID-19. This study aims to highlight current issues in order to provide a more objective assessment of facilities management to ensure hospital readiness in handling COVID-19 cases.

KEYWORDS

Malaysia, COVID-19 pandemic, healthcare, facilities management interventions, public hospitals

Introduction

The novel coronavirus pandemic took the world by surprise and spread rapidly throughout the world in the end of 2019 and early 2020. This novel coronavirus is known as "SARS-CoV-2" and officially named COVID-19. Initially, a few COVID-19 cases were reported in Wuhan, China. The mass scale of its spread has led the World Health Organization (WHO) to declare it as a global pandemic. To date, about 164 million people have been infected, causing 3.4

million deaths in 216 countries. Governments across the world are making efforts to handle the COVID-19 pandemic to save and treat their populations from the virus while at the same time safeguarding their economies (Goniewicz et al., 2020). The pandemic severely hit many countries in different parts of the world, particularly Italy, Spain, the United Kingdom (UK), the United States of America (USA), and Brazil. The Asian region, including Malaysia, is at the top of COVID-19 statistics with 47,204,344 cases (refer to Figures 1, 2).

Malaysia has recorded a total of 558,534 COVID-19 cases and roughly 8,000 new cases per day since 30 May 2021, with a death toll of more than 2,650 cases. The Star News (2021) reported that millions of lives are at risk due to delays and a lack of access to COVID-19 diagnosis tests, self-protective equipment, and vaccinations. Most of the vaccine supplies have been procured by developed countries, with rich countries receiving more than 87% of the total available vaccines of 700 million doses and developing nations receiving only 0.2% as of mid-April 2021. One-third of the population of the former have been vaccinated in contrast to 1 in 500 of the latter. By mid-May 2021, less than 12 percent of the world population have been vaccinated with ten rich countries receiving 4 out of 5 vaccines. The vaccines produced by Pfizer are mostly supplied to the world's rich countries despite the pledge by the company's CEO Alberto Bourla to those poorer countries will have the same access as the rest of the world. WHO statistics have confirmed that Pfizer has done very little for poor countries. By May 2021, patients assessed as having low chances of survival were no longer transferred to intensive care units (ICUs) throughout Malaysia, according to Kedah State Health and Local Government Committee Chairman Datuk Dr. Mohd Hayati Othman. The COVID-19 pandemic has put immense pressure on Malaysia's healthcare system (Robbins et al., 2020).

By 31st May 2021, more than one million COVID-19 cases had been recorded and Malaysia became the country with the highest number of cases in Asia even surpassing India (Our World in Data, 2021). These statistics indicate the possibility of recording even higher numbers of daily cases in the country in the future if effective actions are not taken. Scholars and experts have alerted the need to vaccinate every eligible individual to curb the spread of the virus. They have also raised various concerns regarding Malaysia's readiness in fighting the pandemic, painting a gloomy picture of Malaysia's healthcare system. Malaysia as a developing country experiences a shortage of healthcare practitioners, faces consistent pressure on the present infrastructure and material due to increased utilisation over the years, has low application of information and communications technology (ICT), and faces the issues of low service quality and poor motivation among healthcare workers (Shah et al., 2020; Amir et al., 2021; Hamzah et al., 2021; Hashim et al., 2021). Many of the country's doctors have moved to developed countries after completing their formal education. Malaysia's healthcare budget is still below international standards. *Per capita* income is low, restricting the people's ability to comply with international precautionary measures such as adhering to a complete lockdown, purchasing costly medicines, and wearing face masks.

The Edge Market (2021) reported that the Malaysian government launched the national COVID-19 immunisation programme on 24 February 2021. The government used multiple platforms such as the radio, television, and social media to create awareness and encourage Malaysians to register for vaccinations. On the first day of the campaign, more than half of the country's population registered for vaccination *via* a dedicated app for vaccination known as MySejahtera. By 19 April, about 9.05 million Malaysians had registered for vaccination but only a few had received notifications for vaccination injections. According to Our World in Data, 451,237 people were completely vaccinated as of 19 April, and most of them were frontliners. Another 275,174

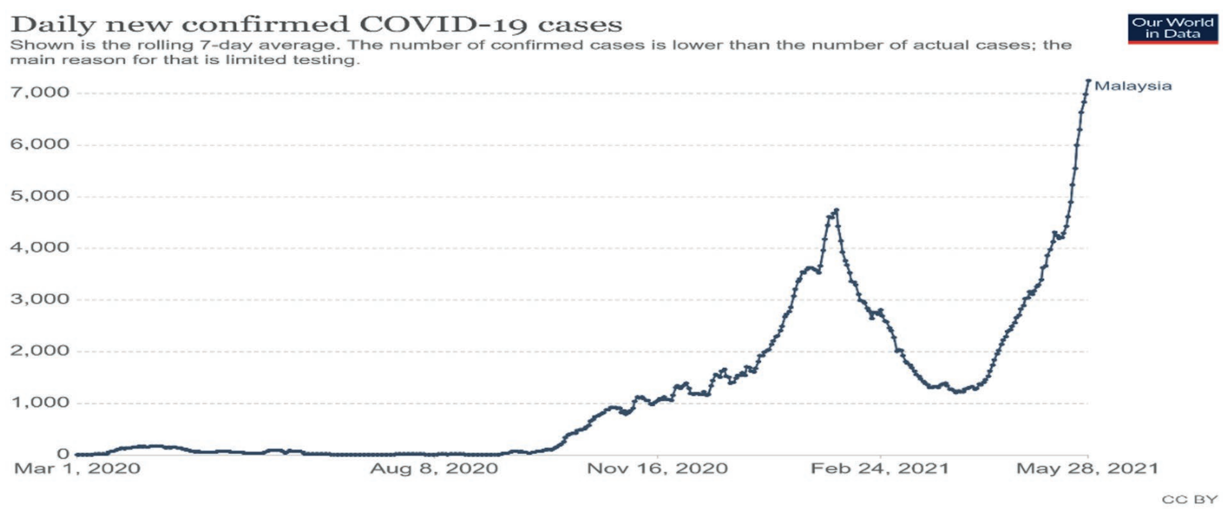

FIGURE 1
Reproduced under CC-BY-4.0. Our World in Data, COVID-19 Data Explorer - Our World in Data.

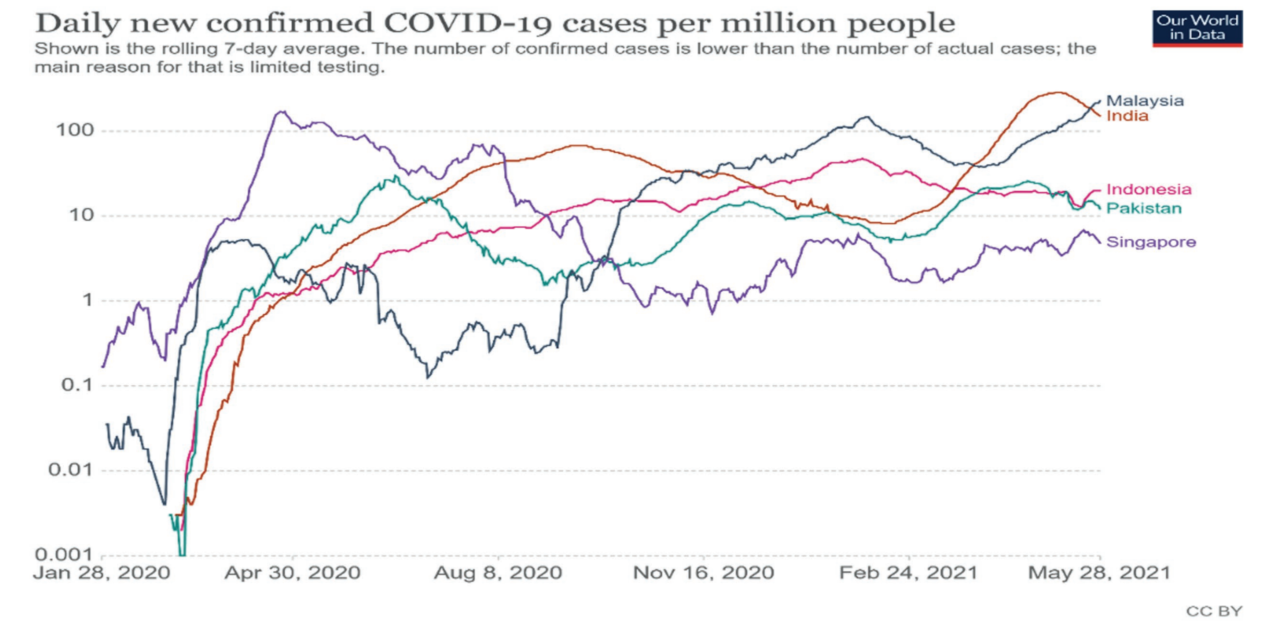

FIGURE 2
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people had been administered with one dose, giving a total of about 1.2 million doses administered (the Pfizer vaccine requires two doses per person for full vaccination). In comparison, 23% of the population of the neighbouring country, Singapore, had received at least one dose, which is substantially higher than the 2 and 4% recorded by Malaysia and Indonesia, respectively. The rates are much higher for developed countries such as the US (40%), the UK (49%), Canada (25%), and European Union (19%), while the average for Asia is only 3.6% (refer to Figure 3). According to experts and officials, Malaysia's progress in handling the COVID-19 pandemic as evidenced by the high rates of severe stage patients and deaths, vaccination uncertainty, and distrust in governmental bodies has caused uncertainty regarding the potential success of internationally funded public health programmes in the country.

The high infection rates and low vaccination rates have led to concerns regarding hospitals' readiness to handle COVID-19 cases given the present overutilisation of the healthcare system. In the viewpoint of hospital facilities management, the basic function of it is to support and add up the value to the hospital's main activity of executing medical and clinical diagnosis. For the National Health Service (NHS) of UK, healthcare facility management provides satisfying attention and various soft services that provide for the primary clinical operations of hospitals (NHS, 1998). Healthcare surroundings affect the quality of care provided, patient satisfaction, and sometimes the time taken to recovery. Hospital admirations should ensure continued compliance and consistent preparedness in maintaining a properly operated physical environment that supports the main healthcare services (Lucas et al., 2013). Unstable economic performances and poor healthcare mechanisms in most countries have led to inadequate investments in healthcare systems. This situation has caused concerns regarding the readiness of the healthcare setting in most developing countries in handling this pandemic. Since COVID-19 is a highly transmissible disease, it brings to light the importance of facilities management services in hospitals during the prevalence of the disease (Pinheiro and Luís, 2020). Non-clinical hygiene is related to facilities management practices in waste management, cleaning, and maintenance (Njuangang et al., 2016). Deterioration in facilities management services can cause virus transmission in hospitals through environmentally mediated ways (Dietz et al., 2020). For example, all those individuals using hospital services including visitors, patients, and other users can be exposed to the virus as a result of close-contact with abiotic surface (Rothan and Byrareddy, 2020). The healthcare system is a key component in fighting against COVID-19. However, environmentally mediated pathways for COVID-19 transmission put a danger to hospitals worldwide. This situation is even more relevant in emerging countries such as Malaysia where the hospitals are congested, healthcare facilities are unsanitary, and staff are in severe shortages (Amir et al., 2021; Hashim et al., 2021). These factors increase the likelihood of COVID-19 spreading in healthcare facilities in developing countries. In addition to the non-healthcare mechanisms implemented by the government such as social distancing and closure of areas with high occupancies like schools and workplaces, the authorities should also consider the aspects of facilities management to counter infections in hospitals. Hospital facilities management service has a significant role in establishing public health procedures and lowering the risk of infection. Most

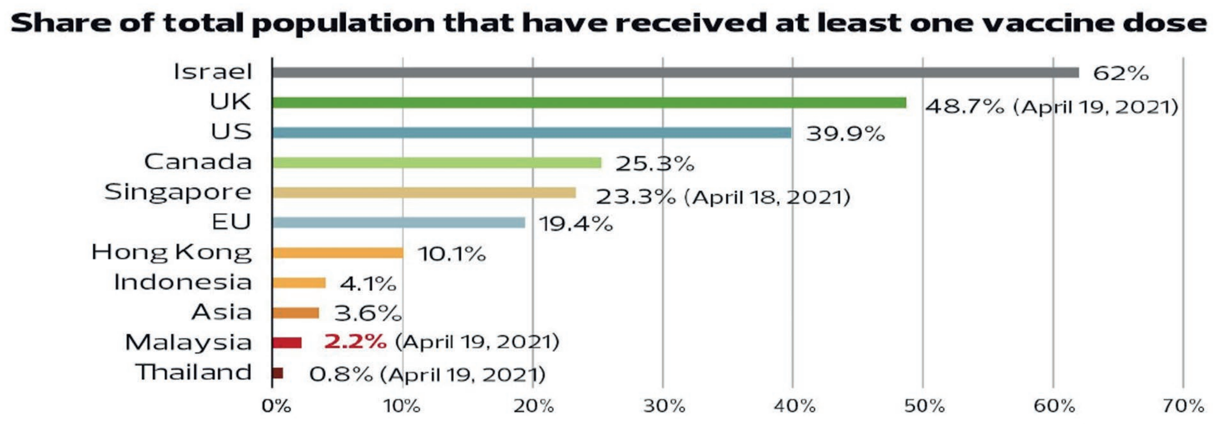

FIGURE 3
Share of the total population that have received at least one vaccine dose. Reproduced under CC-BY-4.0. Our World in Data, Share of people who received at least one dose of COVID-19 vaccine (ourworldindata.org).

of the studies on facilities management interventions do not add much value to the intervention decision-making process for policymakers and managers. Although many studies considered multiple interventions, such as ventilation and occupant density controls, a systematic analysis of interventions' combined effects is required. Additionally, the cost-effectiveness of various interventions and combinations was not thoroughly investigated in the previous literature (Zhang et al., 2022). Motivated by these issues, this paper offers a conceptual review of how facilities management services can be improved in Malaysian hospitals to protect healthcare workers and manage the COVID-19 pandemic with the assistance from WHO, which is helping by providing equipment for the diagnosis of COVID-19 cases. The Malaysia government has also established a relief fund to collect donations for the welfare of the public as Malaysians place considerable value on human relationships, concern for others, support, and the quality of life (Noor et al., 2018). Henceforth, the outline of extent to better facilities management practices are helpful to reduce risk of infection from COVID-19. This paper contributes to the literature and policymakers by providing a comprehensive review of the interventions and readiness to handle the COVID-19 pandemic by focusing on a highly affected country, i.e., Malaysia. The study also outlines practical measures to improve the facilities management services provision in Malaysian public hospitals. Improving the role of facilities management will enhance the quality and effectiveness of services, which are central towards creating n virus free environment and antivirus established milieu to counter the present pandemic and prevent future virus outbreaks (Megahed and Ghoneim, 2020).

This research is important in a number of ways. Firstly, it gives a perspective of the comprehensive review of the COVID-19 fight in the developing country like Malaysia. Second, this research seeks to investigate how facilities management delivery in public hospitals may be enhanced to assure efficiency in dealing with COVID-19 cases, since facilities management is becoming more important. Third, this research provides ways to improve the performance of facilities management in the healthcare industry.

In addition, this research differs from the previous literature in several ways. First, the comprehensive review related to the fight against COVID-19 offered by this research is noteworthy since it has not been investigated in earlier studies. Second, facilities management is a prevalent concern in the health-care industry since hospital facilities management services play an important part in developing public health procedures and minimising infection risk. However, most research on facility management interventions do not contribute much value to policymakers' and managers' intervention decision-making processes. Furthermore, the prior research did not extensively evaluate the cost-effectiveness of facilitation management interventions (Zhang et al., 2022). Third, this research contributes to the literature on facility management in Malaysia.

Materials and methods

Due to the risk associated with collecting primary data from hospitals, this study presents a vital review of the prominent literature on facilities management and COVID-19 based on credible news and previous studies on facilities management in Malaysian public hospitals. We reviewed and analysed the previous studies on COVID-19, especially those that addressed the issues of virus free environment. Additionally, different government addresses and reports as well as reliable organisational updates and news feeds from WHO and the Ministry of Health Malaysia were used. The aim of this research is to capture the interventions and experiences as they happened. However, since experiences change quickly over time, some statements and interventions reviewed in this paper are case driven.

Previous literature on healthcare facilities management and COVID-19

The previous literature is reviewed in two different segments. The first section provides a rapid review of healthcare facilities management, and the second section inspects Malaysia's responses and readiness to counter the COVID-19 pandemic. The first section is important to inform readers on healthcare facilities management as it establishes the extensive and theoretical interests of the study. The second section is geared towards assessing the present interventions to determine whether the relevant authorities pay attention to facilities management. This is to meet the first goal of the study, following which proper interventions to develop facilities management delivery are then drawn.

Brief review of healthcare facilities management

The NHS describes healthcare facilities' management as 'the process by which NHS trust creates and sustains a caring environment and delivers quality services to meet clinical needs at best cost' (NHS, 1998). Healthcare facilities management is considered one of the most multifaceted and challenging tasks to accomplish due to the need to provide efficient service every time. The slightest error may lead to complications, even resulting in death. Generally, hospital facilities management services encompass a combination of both soft and hard services, where soft services management deals with waste management, cleaning, landscaping, and safety. Rodríguez-Labajos et al. (2018) acknowledged the increasing importance of facilities management and other aspects of healthcare administrations. Facilities management impacts the quality and efficiency of healthcare services by being responsible for maintaining hospital structure and services. Facilities management has also become a significant aspect of healthcare management due to innovations in healthcare, development of facilities management, expenditures and budgetary hurdles, and epidemiological problems that require hospital infrastructures and services to react to such situations (Shohet and Nobili, 2017). Resources complexities, such as treating facilities management and properties as cost centres, have led to neglecting this aspect of healthcare provision in many parts of the developing world (Amos et al., 2020). Currently, facilities management faces numerous issues. Among them are irresponsive facilities management practices, unstable policy and strategies, non-existing building maintenance manuals, insufficient funding, a lack of guidance, and socio-cultural barriers (Koleoso et al., 2017). Such issues have led to healthcare remedial environment with inefficient facilities, resulting in hospital-acquired infections (Amankwah et al., 2019). Hospital performances are also reported in terms of the ability to handle problems during the time of infectious disease spread as they have the responsibility to treat and save their patients. The difficulty to practise social distancing measures in the healthcare setting under the current circumstances underlines the importance of facilities management provision.

The role of facilities management in strategies to combat COVID-19

This section attempts to provide an overview of the readiness to handle the COVID-19 pandemic with a special focus on the Malaysian population. WHO has reported that the COVID-19 pandemic is a serious danger to the social dynamics, financial growth, and safety of Malaysia (World Health Organization, 2020). COVID-19, which first appeared in China, reached Malaysia within 2 months and caused panic to the people. Initially, Asian countries handled the pandemic relatively well but due to weak management, inadequate resources, and a lack of awareness, the countries' situation worsened over time. Since April 2021, many countries have banned the entry of travellers from high-risk countries, and Malaysia is also included in the high-risk countries list. In the Asian region, the new COVID-19 cases reported by Malaysia are close to those reported by India, Pakistan, and Bangladesh. Moreover, Malaysia has comparatively low testing capabilities and experiences delays in detecting positive COVID-19 cases. The Malaysian government's strategic response to manage COVID-19 is focused on:

- Consolidating regional coordination with global and national organisations.
- Establishing membership capability.
- Strengthening public knowledge by way of communication.
- Accelerating research and development for doctor-patient, vaccine development, and diagnosis.
- Continuous monitoring and forecasting (WHO, 2020).

The Malaysian government handles the pandemic by focusing on six areas: diagnosis in laboratories, observation involving screening at the point of entrance and cross-border activities, prevention of infection and quarantine in healthcare facilities, medical treatment of people with severe COVID-19 symptoms, communication, and supply chain management. On 23 April 2020, WHO, as a worldwide online event was arranged; where it is able to increase USD595 million to counter the spread of COVID-19.

Malaysia's readiness has improved with the funding from WHO amounting to USD595 million, which is used to increase testing capabilities, support the training of medical staff, establish labs, and purchase personal protection equipments (PPEs). The International Monetary Fund (IMF) has also provided financial assistance of USD1.4 billion to Malaysia to assist with building capacities for the fight against COVID-19. Moreover, several other countries such as China and Russia and organisations such as Pfizer and Oxford-AstraZeneca have contributed vaccines to Malaysia.

In the country's effort to control the spread of the pandemic, Malaysia has taken some drastic actions including closing schools, forbidding eating out as restaurants and social gatherings, shutting down markets, allowing only specific types of shops to open, i.e., medical, food, and essentials, and limiting the number of people per vehicle. Despite these measures, the numbers of new and active cases continue to rise over time, putting extensive pressure on the country's healthcare system.

The healthcare sector in most Asian countries including Malaysia was overstressed even before the pandemic. The healthcare industry in Malaysia contributes 10% to the gross domestic product (GDP; Shahzad et al., 2020). There is no proper allocation for healthcare expenses, and these countries often allocate relatively small budgets on healthcare. Besides, health insurance is not popular in this region, which means that most people are paying for healthcare expenditures from their pockets. For example, in Malaysia, 65% of the healthcare expenditures are paid out of pocket due to unstable institutional healthcare assurance. The Malaysia healthcare system is also experiencing serious issues such as staff shortage, poor healthcare settings, low financial budgets, low *per capita* income, and poor law and order with weak institutions. Consequently, Malaysia faces problems in treating COVID-19 patients. Many Malaysians cannot afford to buy face masks or adopt other precautionary measures. Hence, COVID-19 cases continue rise and overload the country's healthcare system. Additionally, regarding to the high number of cases and deaths, the pandemic has imposed unprecedented pressure on the present healthcare structure. As a result, temporary quarantine centres have been established, with numerous empty buildings, public centres, and schools transformed into quarantine centres in Malaysia and other Asian countries. Noticeably, the healthcare structure in Asian countries, particularly Malaysia, is still not ready to deal with the pandemic. There seems to be inadequate effort and information on healthcare facilities management. Current intervention measures seem to focus on financial and non-healthcare mechanisms such as social distancing. While monetary and social interventions are important to assist the vulnerable groups, it is imperative to establish an anti-free-virus healthcare environment due to hospitals' core responsibility to treat and care for patients. Furthermore, there needs to be a balance between social, economic, and healthcare facilities management aspects to generate a robust healthcare system that can deal with the present and future pandemics.

Way forward

The COVID-19 pandemic and other potentially new outbreaks require a holistic perspective in order to find feasible solutions. Undoubtedly, one of the most fundamental changes is in healthcare environment. Given the persistent increase in infection cases that may further pressure the already strained healthcare settings, is necessary to introduce interventions to improve the facilities management performance in the long term. This paper provides some recommendations for these interventions.

Lower physical proximity of the staff of facilities management through work scheduling

The major concern currently is the appointment and readiness of the hospital staff, comprising both medical and non-medical facilities staff, to show up at work and expend the effort (Goniewicz et al., 2020). The coronavirus is infectious and easily transmissible, and awareness about how the virus spreads is still emerging. As per previous researchers, every tangible surface in hospitals that treat COVID-19 patients are contaminated (Sizun et al., 2000). Additionally Ong et al. (2020) provided evidence of rooms where COVID-19 patients were quarantined showing widespread environmental contamination. Therefore, hospital staff face a high risk of getting infected by the virus on site or when executing their tasks. Also, it has been found that close contact during meetings is a major source of virus transfer (Dietz et al., 2020).

Provide intensive training and resources

Healthcare facilities workers work in a different surrounding that is comparatively compound and multidimensional, requiring critical thinking, focus, and efficiency. Hence, the government and hospital administration need to deliver frequent and up-to-date training on new approaches for virus control and the expected outcomes. Asset management such as the safety of equipment should be prioritised by the facilities management service team. Adequate training and resources will improve the performance of facilities management staff and have positive impacts on frontline healthcare workers, which will reduce the prevalence of infections in hospitals. Organizations typically have limited incentives to capitalize in distinct pandemic management facilities since there is less likelihood of such events. And although firms are likely to refresh resilience plans in combating pandemic, it is important to ponder changes in today's environment.

Change management

The COVID-19 pandemic provides the opportunities for facilities management to practise change management which is crucial for organisational performance. Pinheiro and Luís (2020) stated that healthcare facilities management should be capable of adopting changes to cater to the COVID-19 operational requirements, and changes must be made to other domains that are affected by the pandemic. Changes to the work setting must be in the multi-facet style and should incorporate environmental, social, and financial features of virus management with the objective of reducing the probability of virus transmission. Hence, the facilities management department need to implement the required changes swiftly to incorporate the new mechanisms of service delivery. For example, the pandemic has necessitated the introduction of new work norms such as refilling hand sanitizer, performing surface sanitisation on a regular basis, and using face masks. Housekeeping staff in charge of waste management and cleaning need to be re-orientated to enable them to adapt to these new shifts.

Stakeholder communication

In the past years, communication gap has been observed between the government's strategic planning and facilities management operations. Real-time information should be provided promptly in response to any queries. Likewise, healthcare facilities processes should be related with the facilities management to recognize interactions and commonalities that might have life-threatening consequences for the efficient running of healthcare delivery and patient safety (Lucas et al., 2013). An appreciative association between facilities management of healthcare delivery will enable the healthcare team to improve the quality and speed of decision-making, thus preventing costly interruptions to the healthcare delivery procedure. Established protocols and guidance on the pandemic should be communicated to facilities management staff on a daily basis. Given that the way to death COVID-19 is presently not recognized and assumed that any future strategy would be dependent upon technical predicting, fast, clear and relevant information on the success established and required interventions must be properly communicated to all hospital stakeholders. Also, the facilities management team need to design a methodical approach for collaboration with wider stakeholders. Facilities management sub stakeholders, e.g., subcontractors must be informed of any changes to the preferred service delivery. Poor ICT infrastructure is a challenge for many developing countries given the important role of technology in improving communication. In the absence WhatsApp chats, dedicated hotlines and daily meetings should be promoted.

Build a key coordination channel to improve strategic facilities management

According to Amos et al. (2020), there is a need to improve facilities management for better hospital performance. In the current situation, it is crucial for public hospitals to enhance the strategic role of their facilities management department. Therefore, there is a need to build a for facilities management activities. The broad functions of facilities management require many sub-unit heads within hospitals. In many healthcare institutions, health service administrations are by default made up of the general heads of the non-clinical facility. Some healthcare administration personnel might not be well versed in facilities management, does not encouraging strategic role with an argumentative problem in post governmental hospitals in emerging countries. The recommended coordination is intended to serve the strategic interest of facilities management by coordinating the different facilities management components. Undoubtedly, a lack of central cooperation has led to inefficiencies in executing the critical functions of facilities management. With a promoted strategic role in healthcare management, facilities management will be able to articulate clear strategies in order to achieve the objectives and realise the shared values of hospitals, with the overall aim of improving hospital performance.

Establish a facilities management database for space management

Public administered hospitals need to establish a database on the healthcare environment, as it has been observed that most of the hospitals in emerging countries do not have data on their healthcare facilities. An updated database will enable hospitals to identify areas of space over-utilisation. Numerous scientific studies have postulated that the coronavirus transmits easily in crowded areas. Highly used areas in hospitals often become a potential ground for virus transmission due to frequent contacts, especially in shared spaces and on surface for instance washrooms and door handles (Horve et al., 2020). Given the increasing need to isolate patients in hospitals, space management has become a major issue in hospital facilities management. Hence, a database showing the total space in the hospital and space per healthcare provision is needed. Highly reliable data on facilities will benefit resources management and can help with facility planning and activity preparation for example replenishment of sanitizers, general cleansing and disinfection plans, and proper cleaning. Furthermore, it will provide valuable input in facilities strategic planning, e.g., design briefings and makeovers.

Improve the standards of cleaning and daily decontamination

Ong et al. (2020) stated that the coronavirus can remain on surface till 9 days at room temperature and even up to weeks on surfaces with lower temperatures. Hence, thorough and frequent cleaning is required to disinfect the surfaces, particularly for surfaces in public areas where there are higher contacts (Eykelbosh, 2020). Additionally, facilities management should ensure adequate supplies of necessary hygiene items for instance running water and hand sanitizers and provide clear instructions using signage, automated screens, and other resources.

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An approach towards a post-pandemic healthcare setting

It has been argued that whether the coronavirus will continue to exist for an indefinite period is partially dependent on mass vaccinations or treatments of COVID-19. While there are prominent consequences in the initial phases of vaccine development and diagnosis, it is important for the healthcare system such as facility management to consider the post-pandemic healthcare settings. Megahed and Ghoneim (2020) proposed that the "new normal" will affect the planning and designing of the healthcare environment and have also suggested that safety environment in the advanced healthcare system must be enhanced to prevent infections. Therefore, healthcare facility personnel need to establish a strategic team that will plan upcoming projects with a resilient viruse-free environment. In line with this, (Kashdan, 2020) illustrated the use of disinfected and uncontaminated material that can be used effortlessly to sanitise, while Molla (2020) advocated that the focus should be on modern skills that can maintain consistently high space temperatures to eliminate and kill harmful germs and viruses. Currently, Malaysia is highly dependent on imported medicines, which increase the prices of medicines for treating COVID-19 patients. Hence, Malaysia needs to encourage local manufacturers to produce medicines and should allocate budgets for research and development in this area. In sum, multi-dimensional collaborations are needed to develop ground-breaking solutions for the post-pandemic healthcare setting.

Establishing crisis management team

The top priority for the businesses and government authorities during a crisis is the well-being of the people. Businesses can contribute and complement these efforts by having a professional crisis management team. A strong crisis management team can help businesses to ensure the well-being of their people, keep the resources protected and reinforce their ability to perform optimally when the odds are stacked against them. From a perspective of risk management, volatile nature of epidemics makes crisis management worthless in preventing its implications. However, with the proper financial and human resources in place and with the right skills we can built a more resilient environment where we can combat any future crisis. Coming out of this pandemic, organizations have learnt to be resilient and prepared. Yet a more balanced approach requires to be held between economic, social, and health-care facilities management to build a resilient healthcare environment to cope with the existing pandemic as well as any such future crisis. Organizations must prepare crisis management agency and response, involving C-suite executives and delegations of authorities, so that delegations are well planned to implement timely decisions in the setting where key decision-makers are not available.

Conclusion

Malaysia was one of the highly affected countries by the COVID-19 and yet COVID-19 cases are surging once again. The overstrained and inadequate healthcare infrastructure along with poor facilities management practices underlines the necessity to put forward a technical view on how to handle the pandemic in the healthcare setting. This review shows that present interventions are largely on non-healthcare mechanisms such as social distancing, while facilities management interventions have been lacking despite its critical role in managing COVID-19 cases in public hospitals. Even though there are many published studies on coronavirus, very few scientific studies have focused on COVID-19 and facilities management. Most of the previous studies focused on medicine, treatment, vaccine, public health, and the related factors. The paper adds to the literature by explaining the interventions and receptiveness to the COVID-19 pandemic in Asia. It also argues for including facilities management in the present interventions to counter the pandemic. This study on the virus advances alongside present socio-economic methods, an irrepressible healthcare structure must be established due to the responsibility of healthcare facilities to treat patients. Healthcare stakeholders in developing countries are advised to incorporate the important endorsements facilitation management strategies to improve healthcare structure.

Future research directions

Despite the best efforts from the authors, this research has limitations, including the likelihood that the research might have overlooked a variety of related publications. Nevertheless, this paper serves as the basis for future research on facilities management solutions for battling the pandemic and improving post-pandemic building operations. More studies on facilities management interventions, receptiveness to the COVID-19 pandemic are required for future respiratory infection control. Malaysia as a developing country with limited resources faces mounting challenges in responding to the crisis management. Future researches can also be carried out to explore the rapid strategies in dealing with such challenges to comprehend crisis in developing countries.

Public interest statement

The COVID-19 pandemic has provided unexceptional encounters and authenticities to the healthcare system in Malaysia. While governments in the Malaysia have made substantial efforts to curb the spread of the pandemic, there is still a need to develop a strategic services management plan to improve hospital management of COVID-19 cases. A facilities management system that is timely, effective, and legally sound is a necessary feature for virus-free environment. The COVID-19 pandemic is an on-going concern, and the situation worldwide continues to change rapidly overtime. This study aims to highlight current issues in order to provide a more objective assessment of facilities management to ensure hospital readiness in handling COVID-19 cases.

Author contributions

WM: formal analysis. RM-R: investigation. MA: methodology. MF: editing, proof reading, and project administration. AA-U: writing – original draft. All authors contributed to the article and approved the submitted version.

Conflict of interest

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

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The role of school organizational conditions in teacher psychological resilience and stress during COVID-19 pandemic: A moderated mediation model

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Educational revisions facilitate the relief of teacher stress by means of enhancing school organizational conditions. However, limited research has explored the effects of school organizational conditions on teacher stress in China. Using a sample of 734 primary and secondary school teachers from 30 provinces or municipalities of China, this study examined the effects of school organizational conditions on teacher stress in China, with a particular focus on the mediating role of psychological resilience and moderating role of perceived COVID-19 crisis strength. The results demonstrated that school organizational conditions were negatively associated with teacher stress. Furthermore, psychological resilience partially mediated the relation between school organizational conditions and teacher stress. In addition, perceived COVID-19 crisis strength significantly moderated the direct and indirect relations between school organizational conditions and teacher stress. The relations between school organizational conditions and teacher stress and between school organizational conditions and psychological resilience were stronger for teachers who perceived low levels of COVID-19 crisis strength. However, the indirect relation between psychological resilience and stress was stronger for teachers who perceived high levels of COVID-19 crisis strength. Implications have been provided accordingly.

KEYWORDS

school organizational conditions, teacher stress, psychological resilience, perceived COVID-19 crisis strength, quantitative research

1. Introduction

School operations have been severely interrupted since the outbreak of COVID-19, resulting in school closure in as many as 191 countries around the world and affecting 91.3% of the school population (The United Nations Educational, Scientific and Cultural Organization [UNESCO], 2020). The pandemic has been a massive and unprecedented disruption for most teachers' regular lives (Espino-Díaz et al., 2020). Ozamiz-Etxebarria et al. (2021) have found a high proportion of teachers suffering from stress caused by COVID-19. Teacher stress, an unpleasant emotional experience with psychological syndromes from work, including anger, frustration, anxiety, tension and depression (Kyriacou, 1987), has been drawing attentions of scholars around the globe (Stoeber and Rennert, 2008; Skaalvik and Skaalvik, 2015; Newberry and Allsop, 2017). Many studies have proclaimed being a teacher as one of the most stressful jobs (Bauer et al., 2007; Chaplain, 2008; Liu and Onwuegbuzie, 2012). However, teachers may endure various long-term problems under high stress from work, causing issues like the outflow of teachers (Clark and Antonelli, 2009; Skaalvik and Skaalvik, 2011; Struyven and Vanthournout, 2014) and damage to students' academic achievements and mental health (Shen et al., 2015; Herman et al., 2018; Sutcher et al., 2019).

Teachers' working conditions in China have been deteriorating since the COVID-19 pandemic. To mitigate teachers' stress in such context, delineating pivotal predictors is crucial for releasing teachers' stress. Given the importance of school organizational conditions to teachers' mental health, this study targeted to examine the association between school organizational conditions and teacher stress. Further, this study aimed at exploring teacher psychological resilience as one possible mechanism through which school organizational condition might relate to teacher stress. Additionally, as individuals often have different experiences with COVID-19, we also intended to explore how individuals' perceptions of COVID-19 might moderate the above relationship among organizational conditions, psychological resilience, and teacher stress. The current study was situated in the Chinese context, where primary and secondary school teachers tend to suffer from high working pressure due to large class sizes, heavy workload, and heavy emphasis on academic performance by parents and society as a whole (Liu and Onwuegbuzie, 2012; Wang et al., 2015) during the pandemic. This study will extend our understanding of the association between school organizational conditions and teacher stress in non-Western cultures.

2. Literature review

2.1. Organizational conditions and teacher stress

School organizational situations have been identified as an important influencing factor of teacher stress (Parent-Lamarche and Marchand, 2019) and are generally conceptualized as a great number of organizational factors in school denoting the organization of educational processes and people (Creemers and Reezigt, 1996).

Teacher stress originates from mainly two aspects in existing literature: inadequate work-related demands and school-based support. Work-related stressors include and are not limited to student behavior management, tremendous workload, inter-relationship with colleagues and students, and so on (Tsivgiouras et al., 2019). A high volume of work and lack of time often occurs when teachers' abilities cannot meet the requirements of daily teaching (Torres et al., 2009). Meanwhile, Ouellette et al. (2018) found that support from colleagues, especially from school leaders, could alleviate teacher stress. The support from colleagues and their network are natural psychological resources for educators (Kaihoi et al., 2022).

Although many studies have explored the role of school organizational conditions in teacher stress, existing studies often only focus on one aspect of school organizational conditions. For instance, leadership, working atmosphere, and organizational structure might be potential dimensions to evaluate organizational conditions in school (Zhang and Zheng, 2020; Nong et al., 2022). The existing literature about Chinese teachers had explored the association between empowering leadership and stress (Nong et al., 2022) and relationship between organizational support and burnout (Xu and Yang, 2018). However, empirical understanding of the independent impact of different aspects of school organizational conditions on teacher stress is limited. Therefore, more research should be conducted to verify the holistic role of school organizational conditions on teacher stress in China.

2.2. Psychological resilience

Extending upon research on the association between school organizational conditions and teacher stress, some researchers have explored possible mechanisms behind such association. Durbin et al. (2019) proposed that psychological resilience could be an important mechanism to consider, in virtue of the nature of psychological resilience, as a dynamic process of adaptation and swift recovery against adversity and trauma owing to capacities for navigation to social, cultural and psychological contexts (Ungar, 2011; Windle, 2011; Stainton et al., 2018). Positive adaptation and adversity were two key components that were frequently mentioned among all definitions by academics (Fletcher and Sarkar, 2013). Teachers' interpersonal communication within the context of schools can be demonstrated as a positive process of adaptation (Howe et al., 2012), and stress from occupation and COVID-19 exists as extensive adversity among primary and secondary teachers. High resilience can be regarded as an essential personal asset that revives teachers from adversity and relieves teachers from mental stress (Deng et al., 2020). This provides support for our exploration of the mediating role of psychological resilience in the association between school organizational conditions and teacher stress.

Teaching is an occupation with high stress because of its requirement for emotional interactions (Johnson et al., 2005). However, personal and psychological behaviors are not the only determinants of personal requirements or aims, social and organizational factors also play an important role (Salancik and Pfeffer, 1978). Besides support from families and friends as the primary resource, colleagues and supervisors can be the most productive resource that helps reduce teachers' stress (Zhang and Zhu, 2007). A systematic review by Kangas-Dick and

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O'Shaughnessy (2020) suggested that school-level contextual factors appear to be the most essential to contribute to psychological resilience outweighing personal factors for the thrive of teachers' well-being. Hu et al. (2019) also demonstrated that school conditions and relational trust were significant predictors of teacher resilience, which has not been paid much attention to in previous studies.

Therefore, increasing psychological resilience can be an indirect effect between support teachers receive from school leaders and colleagues and enhancing teachers' mental health (Guo et al., 2020). However, there was limited research regarding the mechanism and process and it is what our study aimed at.

2.3. Perception of teacher stress during the pandemic

Considerable studies have explored teachers' feelings and stress during COVID-19 (Robinson et al., 2022). Against the background of COVID-19 pandemic, extra efforts are needed for daily teaching activities (Nagasawa and Tarrant, 2020). As a disruptive event, the pandemic brings an abundance of the likelihood of negative mental and physical health (Subica et al., 2012), as many studies have examined COVID-19 as a determinant on teacher stress (e.g., Baker et al., 2021; Diliberti et al., 2021; Steiner and Woo, 2021).

Nevertheless, significant individual differences in the experience and perception of COVID-19 may directly associate individual well-being or interact with other factors to jointly associate with individual well-being. From the perspective of event system theory, the strength of a salient event to individuals can be reflected in its novelty, disruption, and criticality (Morgeson et al., 2015). In the context of the COVID-19 pandemic, the novelty can be considered as an unexpected impact on teachers; disruption is the extent to which teachers are intruded and hindered by the virus; and criticality reflects the correlation between COVID-19 and individual career development in the long term (Morgeson et al., 2015). These perspectives vary enormously owing to personal traits and external assets and so on and associate with individual mental stress.

Previous studies have investigated teachers' perception toward school community needs (Hatzichristou et al., 2021), classroom safety (Quansah et al., 2022) and online learning (Konukman et al., 2022) during COVID-19. However, few studies analyzed the perceived strength of COVID-19 as a disruptive crisis and its association with teachers' working conditions and mental health in China. Given previous literature, there is a possibility that perceived COVID-19 crisis strength may be a moderator in the model that the current study developed.

2.4. The present study and hypotheses

We explored how teacher stress is associated with different school organizational factors, including the mediated contributions of psychological resilience to educator stress. Based on the empirical research described, the following hypotheses were formulated.

> *H1*: School organizational conditions negatively predict teacher stress.
>
> *H2*: School organizational conditions are indirectly associated with teacher stress by means of psychological resilience.
>
> *H3*: Teachers' perceived COVID-19 crisis moderates the processes between school organizational conditions, psychological resilience and teacher stress. Figure 1 shows the assumptive moderated mediation model of this study.

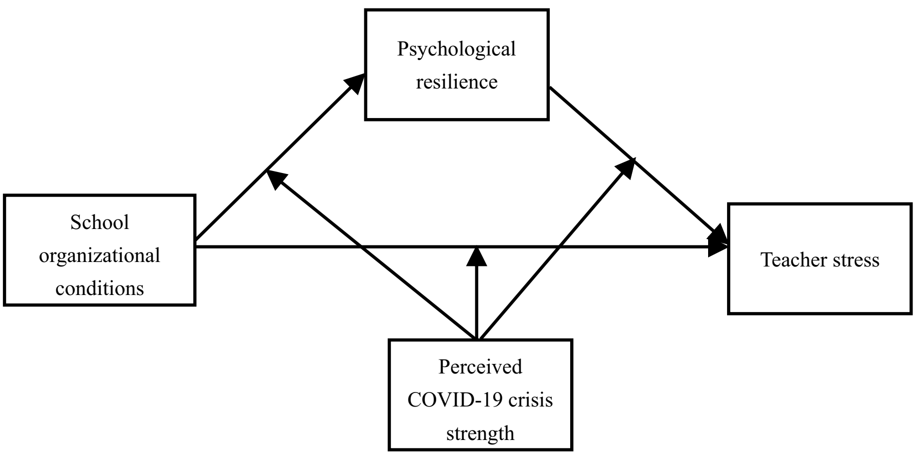

FIGURE 1
The assumptive moderated mediation model.

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3. Materials and methods

3.1. Participants

This study involved samples of 734 teachers from 30 provinces or municipalities in China. Teachers completed an online survey between June 2022 to August 2022. The teacher participants illustrated variances in gender, age, teaching tenure, years of schooling and teaching institutions (see Table 1). Convenience sampling method was adopted in this study. Participants are teachers working in primary and secondary schools in China. We contacted the principals in the local educational department from different provinces and districts in China, such as education bureaus and schools, to increase the diversity of participants. Participants are teachers working in primary and secondary schools in China. There are no additional exclusion criteria on age, gender, race or teaching subjects. If the participants did not complete the questionnaire, or filled in the questionnaire indiscriminately, these data have been removed from the samples.

3.2. Measures

3.2.1. School organization conditions

School organization conditions were measured by the subscale of the School Organization Conditions Scale (SOCS) developed by Zhang and Sun (2018). The subscale includes 16 items and comprises three dimensions: 6 items about supportive leadership (e.g., "School leaders provide us information and resources related to teaching."), 5 items about collaborative atmosphere (e.g., "Teachers are willing to exchange and collaborate with each other in our school."), and 5 items about organizational structure (e.g., "School leaders participate in our collaborative learning activities."). All the items were rated on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher average scores indicate more positive school organization conditions perceived by teachers. The subscale of the SOCS had good construct validity, as the first-order CFA model generated a good fit ($\chi^2/df = 4.49$, $p < 0.001$; RMSEA = 0.069; CFI = 0.96, TLI = 0.95). In this study, Cronbach's alpha for the subscale was 0.91.

TABLE 1 Demographic information of the teachers.

Variables	Levels	*n*	%	Cumulative %
Gender	Male	143	19.50%	
	Female	591	80.50%	100
Age	Less than 35 years	423	57.60%	
	35–50 years	205	27.90%	85.5
	More than 50 years	106	14.50%	100
Teaching experience	Less than 13 years	450	61.30%	
	13–26 years	139	18.90%	80.2
	More than 26 years	145	19.80%	100
Teaching school	Primary school	426	58.00%	
	Junior high school	140	19.10%	77.1
	Senior high school	168	22.90%	100

3.2.2. Teacher stress

Teacher Stress Scale (TSS) was used to assess teachers' stress (Luo et al., 1997; Chen et al., 2022). The TSS consists of three dimensions, namely inadequate school-based support (3 items, e.g., "I felt stressed for not having support from colleagues at my school."), teaching-related demands (4 items, e.g., "I felt stressed for not being able to meet the diverse learning needs of my students."), and interpersonal stress (4 items, e.g., "Most colleagues are not interested or friendly to me."). All the items were rated by teachers on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), with higher average scores indicating higher levels of teacher stress. First-order CFA results validated the construct of the TSS with a good model fit ($\chi^2/df = 9.98$, $p < 0.01$; RMSEA =0.07; CFI =0.96, TLI =0.93). In this study, Cronbach's alpha for the scale was 0.94.

3.2.3. Psychological resilience

Brief Resilience Scale (BRS) was used to measure teachers' psychological resilience (Smith et al., 2008). The BRS includes six items (e.g., "It does not take me long to recover from a stressful event."). All the items were rated by teachers on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher average scores indicate higher levels of psychological resilience. First-order CFA results showed that BRS had good construct validity ($\chi^2/df = 1.41$, $p > 0.05$; RMSEA = 0.02; CFI = 0.99, TLI = 0.99). In this study, Cronbach's alpha for the scale was 0.62.

3.2.4. Perceived COVID-19 crisis strength

The Perceived COVID-19 Crisis Strength Scale (PCCS) developed by Liu et al. (2021) was used to assess teachers' perceived COVID-19 crisis strength. The PCCS includes 11 items and three dimensions, namely, novelty (4 items, e.g., "There is an understandable sequence of steps that can be followed in responding to this COVID-19 crisis."), disruption (4 items, e.g., "This COVID-19 crisis causes me to stop and think about how to respond."), and criticality (3 items, e.g., "This COVID-19 crisis is of a priority to me."). All the items were rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Mean scores across the 11 items were used in the present, with higher scores meaning higher levels of perceived COVID-19 crisis strength. In the perceived COVID-19 crisis strength scale, the first-order CFA model generated a good fit ($\chi^2/df = 4.134$, $p < 0.001$; RMSEA = 0.065; CFI = 0.998, TLI = 0.97), indicating that this scale had acceptable construct validity. In this study, Cronbach's alpha for the scale was 0.89.

3.3. Data analysis

Second, this study used Model 4 of the PROCESS macro developed by Hayes (2013) to examine the mediating effect of psychological resilience in the relationship between school organization conditions and teacher stress (see Table 2). Third, this study further examined whether the mediation process was moderated by perceived COVID-19 crisis strength using Hayes's (2013) PROCESS macro (Model 59; see Table 3). The bootsrapping method based on 5,000 resample was used to examine the significance of the direct and indirect effects.

4. Results

4.1. Common method bias

As all measures were completed by teachers, we examined the severity of the common method bias issue by using Harman's single factor test. The total variance for a single factor was 32.761% after all items were loaded into one common factor, which was less than the 50% cutoff suggested by Mat Roni (2014). It indicated that a common method bias was not influential to the data, so as to the results. So, the common method biases are not required in the current study.

4.2. Descriptive statistics and correlation analysis

As presented in Table 4, school organizational conditions were negatively correlated with teacher stress ($r=-0.228$, $p<0.001$) and perceived COVID-19 crisis strength ($r=-0.143$, $p<0.001$), but positively correlated with psychological resilience ($r=0.310$, $p<0.001$). Teacher stress was negatively correlated with psychological resilience ($r=-0.521$, $p<0.001$) and positively correlated with perceived COVID-19 crisis strength ($r=0.456$, $p<0.001$). In addition, psychological resilience was negatively correlated with perceived COVID-19 crisis strength ($r=-0.382$, $p<0.001$).

4.3. Mediation effect of psychological resilience

Model 4 of the PROCESS macro (Hayes, 2013) was employed to examine the mediating effect of psychological resilience on the relationship between school organizational conditions and teacher stress. The results of the mediation analysis were displayed in Table 2, showing that school organizational conditions was negatively correlated with teacher stress ($\beta=-0.228$, $p<0.001$) after controlling for covariates of gender, age, and teaching tenure (see Model 1). Results also presented that school organizational conditions was positively correlated with psychological resilience ($\beta=0.314$, $p<0.001$; see Model 2), which was negatively correlated with teacher stress ($\beta=-0.496$, $p<0.001$; see Model 3). The indirect effect of school organizational conditions on teacher stress by means of psychological resilience was significant ($ab=-0.156$, $SE=0.024$, 95%CI = [−0.208, −0.110]), and the direct effect was also significant ($c'=-0.074$, $SE=0.033$, 95%CI = [−0.139, −0.007]). Thus, the partially mediating effect of psychological resilience was supported, which accounted for 67.83% of the total effect.

4.4. Moderation effect of perceived COVID-19 crisis strength

We used Model 59 of the PROCESS macro (Hayes, 2013) to test the moderating effect of perceived COVID-19 crisis strength on the direct and indirect relationships between school

TABLE 2 The mediation effect of school organizational conditions on teacher stress *via* resilience.

Variables	Model l (Teacher stress)				Model 2 (Psychological resilience)				Model 3 (Teacher stress)			
	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI
Gender	−0.002	0.09	−0.010	0.005	0.053	0.091	−0.125	0.231	0.024	0.081	−0.134	0.183
Age	0.009	0.01	−0.008	0.022	0.004	0.011	−0.018	0.027	0.012	0.01	−0.009	0.032
Teaching tenure	−0.017	0.01	−0.010	0.008	−0.002	0.01	−0.022	0.018	−0.018*	0.009	−0.035	−0.0005
School organizational conditions	−0.228***	0.04	−0.139	−0.008	0.314***	0.036	0.244	0.384	−0.074*	0.033	−0.139	−0.008
Psychological resilience									−0.496***	0.033	−0.561	−0.431
R^2	0.063				0.100				0.284			
F	9.732***				16.100***				48.080***			

β are standardized coefficients. SE, standard error; LLCI, lower limit of the 95% confidence interval; ULCI, upper limit of the 95% confidence interval. Each column is a regression model that predicts the criterion at the top of the column. *$p<0.05$, ***$p<0.001$.

TABLE 3 The moderated mediation effect of school organizational conditions on teacher stress.

Variables	Model 1 (Psychological resilience)				Model 2 (Teacher stress)			
	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI
Gender	0.025	0.084	−0.141	0.19	0.065	0.076	−0.085	0.215
Age	0.007	0.011	−0.014	0.027	0.01	0.01	−0.009	0.029
Teaching tenure	−0.006	0.009	−0.024	0.012	−0.015	0.008	−0.031	0.001
School organizational conditions	0.264***	0.033	0.198	0.329	−0.076*	0.032	−0.137	−0.014
Perceived COVID-19 crisis strength	−0.324***	0.034	−0.391	−0.257	0.300**	0.033	0.235	0.366
School organizational conditions * Perceived COVID-19 crisis strength	−0.093**	0.033	−0.159	−0.03	0.100**	0.032	0.038	0.162
Psychological resilience					−0.385***	0.033	−0.451	−0.319
Resilience * Perceived COVID-19 crisis strength					−0.074**	0.027	−0.126	−0.021
R^2	0.224				0.371			
F	35.020***				53.451***			

β are standardized coefficients. SE, standard error; LLCI, lower limit of the 95% confidence interval; ULCI, upper limit of the 95% confidence interval. Each column is a regression model that predicts the criterion at the top of the column. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

TABLE 4 Descriptive statistics of and correlations among study variables.

	M	SD	1	2	3	4
1. School organizational conditions	4.109	0.761	1			
2. Teacher stress	2.843	0.953	−0.228***	1		
3. Psychological resilience	3.414	0.608	0.310***	−0.521***	1	
4. Perceived COVID-19 crisis strength	2.865	0.553	−0.143***	0.456***	−0.382***	1

***$p < 0.001$.

organizational conditions and teacher stress. The results of the moderated mediation were presented in Table 3. After controlling for covariates, Model 1 indicated that school organizational conditions had a positive association with psychological resilience ($\beta = -0.324$, $p < 0.001$), and this effect was significantly moderated by perceived COVID-19 crisis strength ($\beta = -0.093$, $p < 0.01$). Thus, the relationship between school organizational conditions and psychological resilience was moderated by perceived COVID-19 crisis strength. To better understand this moderation effect, we plotted predicted psychological resilience against school organizational conditions, for low and high levels of perceived COVID-19 crisis strength (1 SD below the mean and 1 SD above the mean, respectively; see Figure 2). Simple slope tests demonstrated that for teachers with perceived low levels of COVID-19 crisis strength, the positive relationship between school organizational conditions and psychological resilience was stronger ($\beta_{simple} = 0.357$, $p < 0.001$). However, for teacher with perceived high levels of COVID-19 crisis strength, the positive relationship between school organizational conditions and psychological resilience was weaker ($\beta_{simple} = 0.171$, $p < 0.001$).

In addition, the results of Model 2 displayed that school organizational conditions was negatively correlated with teacher stress ($\beta = -0.076$, $p < 0.05$), and this relationship was significantly moderated by perceived COVID-19 crisis strength ($\beta = 0.100$, $p < 0.01$). As shown in Figure 3, we plotted predicted teacher stress against school organizational conditions, for low and high levels of perceived COVID-19 crisis strength (1 SD below the mean and 1 SD above the mean, respectively). Simple slope tests showed that for teachers with perceived low levels of COVID-19 crisis strength, school organizational conditions was negatively correlated with teacher stress ($\beta_{simple} = -0.176$, $p < 0.001$); while for teachers with perceived high levels of COVID-19 crisis strength, the relationship

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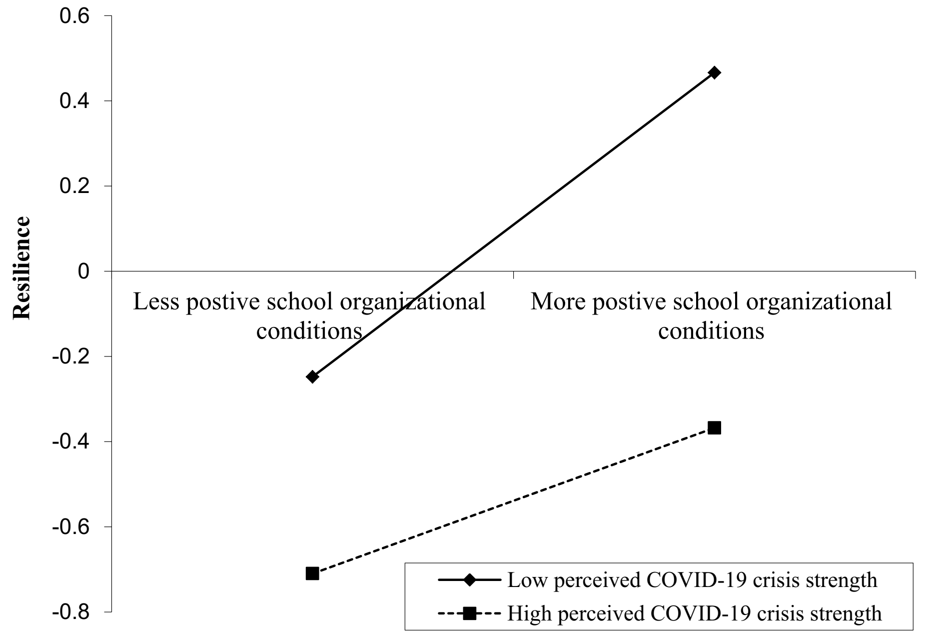

FIGURE 2
Perceived COVID-19 crisis strength moderates the indirect relationship between school organizational conditions and psychological resilience.

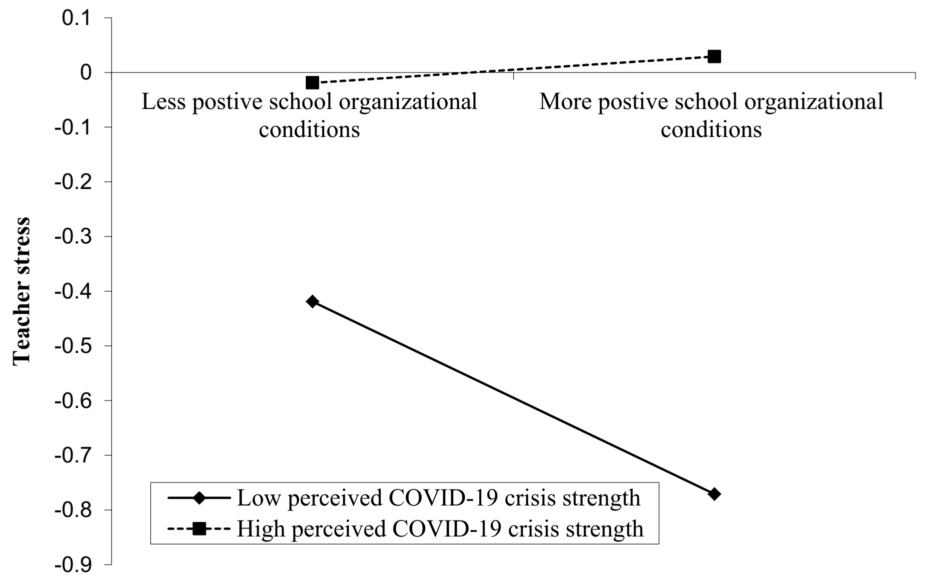

FIGURE 3
Perceived COVID-19 crisis strength moderates the direct relationship between school organizational conditions and teacher stress.

between school organizational conditions and teacher stress was not significant ($\beta_{simple} = -0.024$, $p = 0.581$).

Besides, the results of Model 2 also showed that psychological resilience was negatively correlated with teacher stress ($\beta = -0.385$, $p < 0.001$), and this relationship was significantly moderated by perceived COVID-19 crisis strength ($\beta = -0.074$, $p < 0.01$). We plotted predicted teacher stress against psychological resilience, for low and high levels of perceived COVID-19 crisis strength (1 SD below the mean and 1 SD above the mean, respectively; see Figure 4). Simple slope tests showed that for teachers with perceived low levels of COVID-19 crisis strength, the negative relationship between psychological resilience and

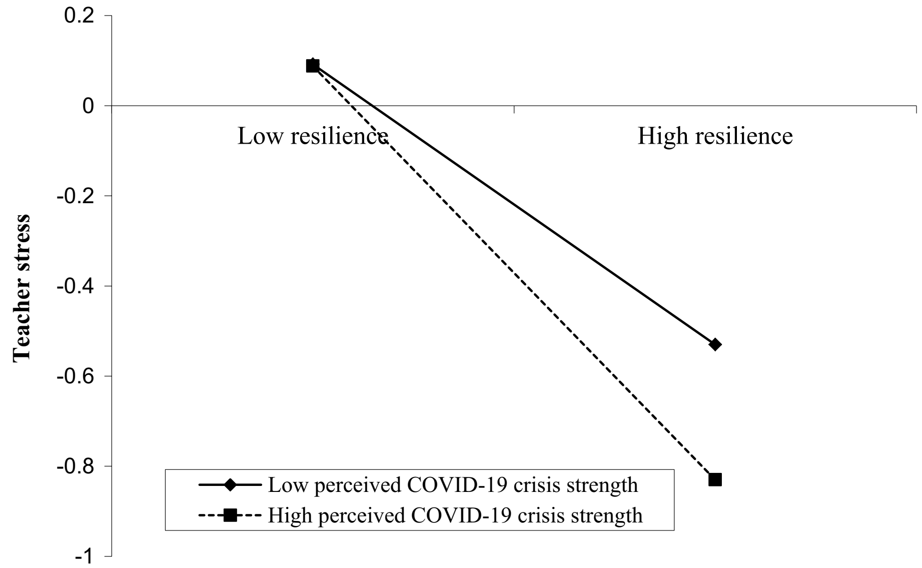

FIGURE 4
Perceived COVID-19 crisis strength moderates the indirect relationship between psychological resilience and teacher stress.

teacher stress was weaker ($\beta_{simple} = -0.311$, $p < 0.001$). However, for teachers with perceived high levels of COVID-19 crisis strength, the negative relationship between psychological resilience and teacher stress was stronger ($\beta_{simple} = -0.459$, $p < 0.001$).

The bias-corrected percentile bootstrap analyzes further confirmed that the indirect effect of school organizational conditions on teacher stress by means of psychological resilience was moderated by perceived COVID-19 crisis strength. Specifically, for teachers with perceived low levels of COVID-19 crisis strength, the indirect relationship between school organizational conditions and teacher stress was stronger ($\beta = -0.111$, SE = 0.023, 95%CI = [−0.162, −0.069]). While for perceived high levels of levels of COVID-19 crisis strength, the indirect relationship between school organizational conditions and teacher stress was weaker ($\beta = -0.078$, SE = 0.029, 95%CI = [−0.146, −0.029]).

5. Discussion

In the present study, we explored the association between school organizational conditions and teacher stress, with a mediated role of psychological resilience and moderated role of perceived COVID-19 crisis stress. We obtained significant support from the analysis above concerning research hypotheses.

5.1. Effects of school organizational conditions on teacher stress

Our findings provided insights into the relationship between school organizational conditions and teacher stress in the Chinese context. This study showed that Chinese primary and secondary teachers would be more relieved from working stress when their schools provided more support on organizational conditions. In line with similar studies focused on school teachers in Western societies, organizational and environmental factors significantly correlated with teacher stress (Clayback and Williford, 2021; Nikolopoulou and Kousloglou, 2022). The research findings were also in accordance with previous studies indicating that positive cultural, social and collaborative support from school can reduce the possibility of teacher stress (Kyriacou, 2001; Paterson and Grantham, 2016). As indicated in previous literature, beneficial school organizational conditions could promote teachers' well-being and personal development in the context of primary and secondary schools (Frieder et al., 2018); on the contrary, the lack of system support and insufficient school organizations could be correlated with teacher stress (Tebben et al., 2021).

The higher level of school organizational conditions increased teachers' chance to interact and socialize with colleagues and principles at school, which may create a positive cycle between individual health and school organizational conditions in China. As the rights and duties of Chinese teachers had been determined from the perspectives of authority, hierarchy and responsibility, these are not the same as those in informal groups (Çimili Gök, 2022). The Chinese tradition of collectivism caused the high power distance nature of school top leaders (Iwasaki, 2005). The principals and leaders in the school organization have been empowered the ability to contribute assets and resources for teachers. Teachers needed to obey the administration from the upper level, otherwise, educational resources may not be provided sufficiently without a good relationship, which may lead to teacher stress (Schoen, 2005). Therefore in Chinese primary and secondary schools, school-level contextual factors outweighed individual factors contributing to teachers' mental health in China (Kangas-Dick and O'Shaughnessy, 2020).

5.2. Mediating role of psychological resilience

This study proved the mediating role of psychological resilience concerning the relationships between school organizational conditions and teacher stress. First, in line with previous studies (Salancik and Pfeffer, 1978; Stainton et al., 2018), this study confirmed that psychological resilience as a critical psychological condition showed a positive correlation with school organizational conditions in China. Owing to the stress from school regulations, governmental policies, social environment and other aspects, Chinese teachers were usually required to focus on enhancing professional skills and cultivating students' core competencies as much as possible to help students master knowledge, which lead to ignorance of teachers' ability of coping with adversities on constructing psychological and mental health to some extent (Wang et al., 2022). The competitive circumstance not only existed in enhancing students' academic performance, but also transferred into Chinese teachers' relationships owing to evaluation of professional titles and salary, impeding collaborative support from colleagues (Zhang and Li, 2021). In addition, the lack of mental support from school weakened teachers' ability to cope with afflictions and adversities. Heavy workload expended teachers' physical and psychological energy, required long working time at schools and limited the possibility of acquiring emotional support from families and friends, which negatively predicted psychological resilience of Chinese teachers (Guo et al., 2020).

Second, this study revealed that psychological resilience can negatively predict teacher stress. As indicated in previous literature, psychological resilience was internal capabilities enabling individuals' capability to cope with people and the surrounding environment (Stainton et al., 2018). Teachers with the belief of potential benefits from stress, namely psychological resilience toward teacher stress, experienced a lower level of stress and teacher attrition (Kim and Asbury, 2020). Accordingly, this study added credence to Deng et al.'s (2020) opinions that psychological resilience was a personal ability and asset to revive teachers from adversity, burnout and mental stress at work. From the perspective of role socialization theory, psychological resilience enhanced interpersonal connections and increases teachers' competence to cope with people's reactions and exceptions. Therefore, the result proved validity to the findings of Guo et al. (2020) that psychological resilience can be a significant mediating effect between teacher supports from school leaders and colleagues and teacher stress in the Chinese context. Compared with a single impact of external factors or internal factors on teacher stress, this study attempted to integrate organizational and individual impact as an indirect correlation to expand the source of teacher stress in this field of existing literature.

5.3. Moderating role of perceived COVID-19 crisis strength

This study provided insights into the moderating effects of teachers' perceived COVID-19 crisis strength on the associations among school organizational conditions, psychological resilience and teacher stress. First, high-level perceived COVID-19 crisis strength weakened the positive correlation between school organizational conditions and psychological resilience. Owing to extra efforts needed to be made to deal with administrative issues during the pandemic, school organizational conditions were reshaped by the pandemic and the administration was not able to provide teachers with psychological support contributing to teacher resilience from limited resources (Kangas-Dick and O' Shaughnessy, 2020); we suspected that with higher perceived COVID-19 crisis strength, teachers' mental assets were occupied by coping with the pandemic individually, while losing confidence on the support from schools (Diliberti et al., 2021). The negative perception might prevent teachers from benefiting psychologically from supportive organizational conditions.

Second, high-level perceived COVID-19 crisis strength weakened the correlation between school organizational conditions and teacher stress. With higher perceived COVID-19 crisis strength, nonsignificant correlations had been testified according to the results from data collected among Chinese primary and secondary teachers. When teachers' perceived strength of COVID-19 crisis are relatively high, it might obstruct teachers communicating with colleagues and leaders, the lack of occupational support might aggravate teachers' workload and individual stress (Cross et al., 2004). In other words, school organizational conditions could not negatively predict teacher stress if and when teachers perceived COVID-19 as an important event owing to higher perception of COVID-19 impeding the organizational support from school, which is in accordance with the discussion above (Cann et al., 2022).

Third, high-level perceived COVID-19 crisis strength strengthened the negative correlation between psychological resilience and teacher stress. When teachers perceived COVID-19 as a stronger crisis, the negative association between individual psychological resilience and teacher stress was stronger, which means psychological resilience works more efficiently as a protective factor against teacher stress when teachers reported higher perceived COVID-19 crisis strength. Community resilience (Saghin et al., 2022) and nurses' resilience (Balay-Odao et al., 2021) have been enhanced facing the crash of COVID-19, and people even made fun of the virus and appreciating medical staff's dedication on social networks (Sadeghmoghadam et al., 2020). This may be explained by a psychological dependence against a public crisis to a group because people obtained a sense of belonging which enhanced teachers' psychological health and social cohesion.

6. Limitations and directions for future research

This study has several limitations that warrant attention. First, a convenience sample was used, and therefore, the current findings cannot be generalized nationwide. Therefore, domestic and foreign representative samples should be used in future studies to generalize to other cultures. Second, the data collected in this study are cross-sectional and cannot prove causality between school organizational conditions, psychological resilience, perceived COVID-19 crisis strength and teacher stress. Prospective studies are suggested to employ longitudinal research designs to explore causalities long-term associations between factors. Third, since teacher stress was self-reported, which may cause uncontrolled effects of common method bias. Other methods should be used to examine the effects between variables more accurately in future research. Objective evaluations of school organization conditions should be used to better delineate their effects on teacher psychological resilience and teacher stress. Fourth, the current study focused on psychological resilience as a mechanism. Other possible mechanisms may include job motivation and self-esteem, which need to be examined in future research.

7. Conclusion and implications

This study provides some practical implications for improving the organizational conditions and relieving teacher stress in Chinese primary and secondary schools. First, school leaders should focus their leadership practice on improving school organizational conditions, such as providing professional guidance on daily classes, bolstering teachers' opportunities for communication and mutual trust and organizing meeting of collaborative learning and educational resources. Second, school psychologists and administrators should provide incremental behavioral and social support to obtain nurture of teacher resilience, assisting teachers to cope with mental problems and relieve stress within school organizational structure (Oducado et al., 2021). Third, attentions should be paid to lessening perceived COVID-19 crisis strength by strengthening the psychological construction of teachers, specifically proceeding from changing teachers' attitude toward COVID-19, which may help individuals put psychological assets into how to make better use of resources around them (such as good school support environment) to improve their own mental health.

From the theoretical perspective, the present findings provide an empirical framework to test the mediating role of psychological resilience in the association between school organizational conditions and teacher stress and the moderating role of perceived COVID-19 crisis strength in the links among these factors. This framework sheds light on the mechanism underlying the relationship between school organizational conditions and teacher stress.

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 Research Ethics Committee of Minzu University of China. The patients/participants provided their written informed consent to participate in this study.

Author contributions

CF, MO, and XL: conceptualization, software, and writing original draft. GX and XL: writing, supervision, and validation. HW, ZY and JZ: review and editing. All authors contributed to the article and approved the submitted version.

Conflict of interest

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

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Mediating role of wellbeing among organizational virtuousness, emotional intelligence and job performance in post-pandemic COVID-19

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It is devastating to people's mental and emotional health to be exposed to the COVID-19 pandemic and the multifaceted response strategies are required to curb it. As a result of social distancing and self-isolation, people have faced many challenges in their lives. The suffering is even greater at the workplace where the employees are working with the fear of getting exposed to the virus and its new variants which is adversely affecting their wellbeing. This study explores and tests a model that extends the wellbeing research across organizational settings and targets the crucial factors that lead to job performance improvement even in the post pandemic COVID-19 situation. To improve both in-role performance and extra-role performance behaviors in the Pakistan banking sector, organizational virtue (also known as organizational virtuousness) and internal virtue (also known as emotional intelligence) are examined. Data were collected from the 416 bank employees using disproportionate stratified sampling technique. In the bank sector of Pakistan, wellbeing was identified as the key psychological factor that relates the in-role performance and extra-role performance to internal and organizational factors. Research findings also determined that conceptualizing subjective wellbeing in the context of work is more meaningful in understanding its relationship with the workplace variables than the general or global subjective wellbeing.

KEYWORDS

wellbeing, organizational virtuousness, emotional intelligence, employee performance, Smart-PLS, COVID-19

Introduction

When people are exposed to the COVID-19 pandemic and the many different reaction tactics implemented to stop it, it can have a catastrophic effect on their mental and emotional health. Employees have said that they have struggled with various issues throughout their lives due to social isolation and self-isolation. It is necessary to recognize, investigate, and address these consequences in order to deal with them in order to minimize detrimental effects in order to ensure the wellbeing of persons, particularly those who are in the job. Notably, the emergence and spread of the COVID-19 virus negatively affected wellbeing. Similarly, the consequences of the COVID-19 pandemic on work place wellbeing and job performance are even greater. The pandemic generated a wide range of emotions, thoughts, and reactions worldwide (Mahmood et al., 2022). According to the global happiness report 2021, "The workplace happiness has declined. Happiness and life satisfaction saw one of the largest declines during the pandemic, along with mental and physical health, together with more modest declines in meaning in life and overall flourishing. The frequency of positive emotions has fallen, and of negative emotions has risen, with the increase in negative emotions much higher than the reduction in positive emotions" (Helliwell et al., 2021, p. 34). It is important to keep in mind that Pakistan, as a developing country, is vulnerable to COVID-19 (Atif and Malik, 2020). The risk of a poor health system makes the residents apprehensive. Through risk communication and engagement, the government is strategically aligning the expanded scope of community ownership and understanding in the population; however, despite the efforts of the government, the situation still appears to be very austere, and it has even affected the psychological health of employees and employers.

In the country's economic development, the banking sector plays a significant and valuable role in supporting economic growth. The banking sector has gained more significance in developing countries like Pakistan due to less developed money and capital markets and an uncertain economic environment (Karim et al., 2022). To accumulate capital for various sectors of the economy needs, the government of these countries relies on the banks as a significant source of funds because the inflow of funds in the form of foreign capital has decreased due to several factors such as terrorism and mistrust between foreign donor and government (Singh and Kapuria, 2021). More recently, the outbreak of the COVID-19 pandemic has led to unanticipated changes in the outlook of the economic system around the world. The uncertainty caused by COVID-19, particularly in developing countries, has caused lower economic growth and affected the banking sector by reducing foreign investments and credit growth (Barua and Barua, 2021). The prevailing condition has thus provided challenges for the management of the banks in finding ways of improving growth and profitability under this uncontrollable external environment.

One of the vital internal factor contributing to banking organizations' financial performance is employees' job performance. Every organization relies considerably on individual employee performance to gain high organizational performance (Gazi et al., 2022). According to O'Connell (2022), the profitability of banks can be increased through the high performance of employees, which will be beneficial in the stiff competition of the banking industry. However, the banking sector is facing the problem of decreasing employees' job performance (Inayat and Jahanzeb Khan, 2021). It is crucial for the survival and sustainability of a bank that its employees are high-performing individuals who can meet the expectations of their management and customers. The aggressive nature of the competition and the globalization of the markets, have compelled the banking institutions to implement unique strategies for enhancing their own internal performance in order to be able to effectively compete (Moghadam and Salamzadeh, 2018). Due to these factors to keep up with the competition and maintain their market share, the banking institutions must be aware of the challenges faced by their workforce and actively develop strategies that will enable their staff to function at the highest possible level despite the challenging conditions.

Wellbeing in terms of "Happiness," as an academic concept, has sparked formidable interest for the researchers from varying fields as organizational behavior, sociology, psychology, and economics in recent years. Of note, plethora of research has been done on this concept in the diversified academic fields with focus on studying its relationship with performance in workplace setting. With growing focus on positive psychology (Seligman, 2002), it has been labeled "happy-productive worker thesis," i.e., individuals and groups with feelings of higher levels of wellbeing perform better in their jobs than do those with lower wellbeing. Support for this "commonsense theory" can be traced to the seminal Hawthorne studies (Roethlisberger and Dickson, 2003), which concluded that higher levels of job-related performance were attributed to happy workers, compared to their unhappy counterparts (Wright and Cropanzano, 1997; Wright et al., 2002; Peiró et al., 2019).

Notwithstanding the general support for the presumed "happy-productive worker" link, there still remains lack of consensus on the conceptualization. Empirical researchers are hard-pressed to establish a close link between employees' happiness and their performance (Hosie and Sevastos, 2009; Taris and Schreurs, 2009; García-Buades et al., 2020). Infact, in two studies of the relationship among individual-level job satisfaction (tapping the affective dimension of wellbeing) and "performance," their relationship was determined at 0.14 (Vroom, 1964), 0.17 (Iaffaldano and Muchinsky, 1985). While, on other hand, a prominent meta-analysis revealed that when several aspects of job satisfaction (affective and cognitive) are formed into a composite construct of happiness, there was a prominent revised relationship of r 0.30 among happiness and job performance (Judge et al., 2001). In similar work, Warr and Nielsen (2018), in their meta-analysis, study various kinds of job-related and context-free wellbeing with work performance in form of extra-role and in-role behavior. They compiled the outcomes of analysis as positive but low. In sum, it can be inferred that decades of work still unfruitful in providing strong theoretical and empirical evidences for understanding the happiness and performance link at the workplace, that is also considered as the "Holy Grail" of industrial and organizational psychology (Wright and Cropanzano, 2004).

It is clear that employee wellbeing has a crucial role to play in improving performance behaviors because it is well-known that "happy workers are also productive workers." Employee wellbeing is considered crucial not only for employee performance but also for the profitability of the bank as a whole. Organizations in Pakistan, especially the banking sector, have largely overlooked employee wellbeing as one of their key challenges (Gulzar et al., 2020; Bhardwaj et al., 2021; Tajpour et al., 2021). As the banking sector in Pakistan is facing an extremely competitive environment today, it is imperative that employers take good care of their employees in order to stay competitive. To increase the productivity of the employees, banks must identify all the factors that can contribute to the wellbeing of the staff at work in order to increase the level of productivity at the workplace the normal operations period but also in the post pandemic era.

This study explores the relationship between OV and EI and EMP at five significant Pakistani banks, with a focus on the potential mediating function of work-related SWB. Based on the results of this study, the theoretical contribution of the study could be applied to the field of human resource management, in the area of positive organizational psychology and to continue to progress the study on employees' subjective wellbeing as it relates to employee performance at work as a way to enhance the understanding of organizational behavior. This study provides insights that can assist management in the Pakistani banking sector in designing their organizational policies and practices to create an environment conducive to make employee feel happy to perform well.

From the critical literature review on wellbeing, happiness and job satisfaction in relation to job performance from various fields following gaps are identified that warrant urgent attention to solve this so-called "holy grail of the organizational psychology" in business management. Firstly, though, previous works found modest assistance for Happy-worker productive worker thesis (Judge et al., 2001; Hosie et al., 2012; Kabene and Baadel, 2020). However, one of the discrepancies of the thesis is that it does not highlight measures to enhance employee's wellbeing to increase their performance behaviors (Kaur et al., 2020), as employees cannot be happy by themselves. Thus it does not highlights the key predictor of employee wellbeing in boosting their job performance. In addition, earlier research has suggested that both the external and internal factors should be included to gain a deeper understanding of the mechanisms that connect these variables with the performance, previously ignored to gain a deeper understanding of their relationships.

Secondly, researchers have given largely insufficient attention to distinct dimensions of job performance in studying the relationships between wellbeing and job performance (Hosie and ElRakhawy, 2014). Thirdly, there is scarcity of empirical work on wellbeing in organization settings (Merdeka et al., 2020), especially in Asian context (Sender et al., 2020). Therefore, expanding the work into other sectors of the underdeveloped economy that place great importance on employee wellbeing, such as the banking industry, is imperative.

Lastly, and most importantly, terms such as "wellbeing," "Happiness," and "Job satisfaction" have been synonymously and interchangeably used in the literature creating confusion regarding their differentiation. Moreover, to date, the majority of the scholars from various fields failed to provide a universal single definition and operationalization of these related terms (Wright, 2014; Al Suwaidi, 2019; Mohammed and Abdul, 2019; Joanna and Jerzy, 2020; Tuzovic and Kabadayi, 2020). Similarly, there is no single acceptable measurement exist to measure the complete aspect of wellbeing, happiness or job satisfaction. Although various instruments are available but they measure either one of the facets not the complex multidimensional aspect of these construct. Saks and Gruman (2014) mention certain issues. The first disquiets the lack of agreement on its definition and the other is concerned with its measurement. It is argued that most of the problems/issues are embedded in the definition and operationalization of the construct of happiness and performance. So far, very little work has been done on defining a single concept of wellbeing in terms of workplace that can be universally agreed upon. Therefore, it is extremely important to extend the research in this field.

The purpose of this study is to identify and address the gaps in the previous literature and to find a way forward for the direction of the research. In order for the researcher to accomplish this, it conceived up and validated a research model that is founded on both theoretical and empirical evidences.

Literature review

Subjective wellbeing (work-related model)

The literature review as already discussed in the previous section revealed that, terms such as "subjective wellbeing," "wellbeing," "job satisfaction" and "Happiness" have been synonymously used. Wellbeing has been operationalized by a variety of complex constructs touching one of the element of happiness, for example, affect, satisfaction, work engagement, quality of working life (Cropanzano and Wright, 2001; Hosie et al., 2007; Sender et al., 2020) and more commonly as job satisfaction in the work performance link (Wright, 2005). Even though, when various investigations utilize the same construct, the measurement scale was different. Diener (1984) took a more rational approach to the problem. He proved that virtually all scientific explanations of happiness could be boiled down to three key points that set them apart. According to Diener (1994), happiness is, first and foremost, a uniquely individual experience contingent on each individual's point of view. In addition to both affect (positive and negative), a greater number of positive emotions in combination with a relatively lower number of negative emotions is a significant component in determining levels of happiness (Argyle, 1987). As a final point, happiness is a universal evaluation. As a result, a person's entire life is taken into account when judging them. He added that happiness exhibits consistency over time (Myers, 1993; Myers and Diener, 1995). Overall, Diener classified subjective wellbeing (SWB) as the term for happiness. He explained that the evaluation of a person's life on a cognitive and emotional level is subjective wellbeing. Most academician recognized this happiness paradigm as the hedonic wellbeing model, or the hedonic wellbeing theory. As a matter of fact, happiness is defined as the wellbeing that can be experienced by an individual (Ryan and Deci, 2001). Diener et al. (1998) found that the absence of bad moods, the existence of good moods, and the satisfaction with life can significantly impact happiness levels.

The other prospect given into contrary to hedonic is of eudemonia wellbeing/happiness. The eudemonic perspective shows engagement in activities that foster human growth, such as autonomy, personal growth, self-acceptance, life purpose, mastery, and positive relatedness, as essential to wellbeing (Ryff and Keyes, 1995; Ryff, 2013). While Ryff's (2013) model centers on eudemonic elements, researchers stated that hedonic presents an important part in wellbeing. On the hedonic SWB conception and its measurement scale for assessing an individual's level of happiness, the vast majority of academics have reached a consensus (Lent and Brown, 2008). In the same way, some studies on wellbeing in term of happiness had been conducted from a hedonistic point of view (Lorente et al., 2019). Although the subjective wellbeing (SWB) framework is generally thought of as context-free, In the workplace wellbeing paradigm, there has only been a relatively limited amount of research undertaken (Houge Mackenzie and Hodge, 2020).

By employing the hedonic paradigm in the context of the workplace, the study presented employee wellbeing model referred as "work-related subjective wellbeing" or "employee subjective wellbeing," respectively (refer to **Figure 1**). It is defined as "employee affective and cognitive appraisal of work-life," The definition is line with the suggestions from the previous scholars researchers (such as Bakker and Oerlemans, 2011). An employee's emotional response and feelings at work, are considered as the affective evaluation, whereas,

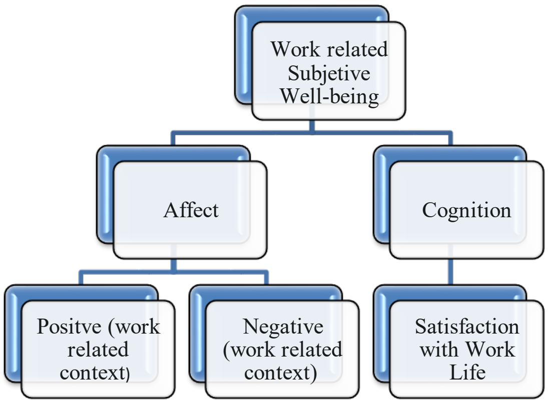

FIGURE 1
Wellbeing conceptualization.

the cognitive evaluation and judgment refers to what employees think about their work or employment.

The justification of proposing the new definition lies in the fact that this definition considers both the cognitive and affective component in forming the composite employee wellbeing construct that has been identified in the previous literature as one of the reasons for its misinterpretation by tapping only one of the components/facet, i.e., either affective or cognitive. Another plausible justification for proposing this definition is that the operationalization of the complex wellbeing construct has now become simpler and easily understandable among the scholar of same interest from various field. It proposes that wellbeing as a multidimensional construct, will be measured as a high order composite wellbeing, with an affective and cognitive component on a single order. These arguments are based on the recommendations and empirical evidences from the previous scholarly works. For example, various attitude scholars suggested that to achieve construct (wellbeing) correspondence with job performance, considering both component (affective and cognitive) as a whole is the most appropriate approach (e.g., Norman, 1975, Fazio and Zanna, 1978; Bagozzi and Burnkrant, 1979; Schleicher et al., 2004). Similarly, Judge et al. (2001), concluded that when different facets of job satisfaction (affective and cognitive) are formed into the composite measure, there is a notable corrected correlation of r 0.30 among satisfaction and performance. Moreover studies on human brain also suggested that emotional and cognitive regions influence one another *via* a complex web of connections in ways that jointly contribute to behavior (e.g., Okon-Singer et al., 2015). Similarly some scholars have also demonstrated the neural integration of emotion and cognition in the brain *via* imaging (Shackman et al., 2011; Raz et al., 2012). As a result, the proposed definition is consistent, not only conceptually and intellectually, but also experimentally, with the earlier thoughts and research.

The term "wellbeing" refers to a state of mental and physical fitness that can be affected by a variety of factors, depending on the setting. Further, studies have also conducted on the outcomes of wellbeing. As discussed earlier, limited studies have shown that there is a positive correlation between an employee's level of happiness and their level of performance on the job (e.g., Zheng et al., 2015; Krekel et al., 2019; Mardanov, 2020, 2021). Several different antecedents of happiness have been uncovered by other researchers. These antecedents include emotional intelligence (Carmeli, 2003), organizational rewards (Nthebe et al., 2016), perceived organizational support (Ahmed and Nawaz, 2015), organizational virtuousness (Asad et al., 2017), and personality (Higgs and Dulewicz, 2014). It has been stated by Nanda and Randhawa (2019) that, in order for organizations to manage their employees' emotional states at work, they must create an environment in which workers can feel happy while at work and thus be able to manage their emotional states effectively. Even though wellbeing is a highly relevant variable, it has, for the most part, been ignored in work place context. Furthermore, very few studies have investigated the question of whether or not wellbeing mediates the relationship between the individual difference in both IRP and ERP by identifying several factors in the workplace that triggers happiness (Haryono et al., 2019).

Job performance

When it comes to reaching different results and accomplishments, organizations place a strong emphasis on their employees' job performance. It was Campbell (1990) who first formulated the concept of job performance and describe job performance as "synonymous with behavior" (pg. 40). This is something that people really do and can be observed. By definition, it includes behaviors or actions that are related to the organization's goals. Work that an organization hires people to do and expects them to accomplish successfully is referred to as performance. Campbell et al. (1993) further stated that the only action that can be restrained could be considered as performance. Besides, this behavior was pointed out as manageable and will be drawn toward the organization's objectives (Campbell et al., 1993). It is a widely held belief that employee performance on the job cannot be reduced to a single dimension, even though different academician has come up with varied definitions of what constitutes good job performance. Therefore, it ought to be understood and conceived of as a variable comprising various behaviors in their many manifestations.

Although many attempts have introduced different performance frameworks, Campbell's definition of performance has been widely accepted as the basic definition of job performance Scholars have put forward different dimensions of job performance based on the multi-dimensional nature of human behavior, however, A closer inspection reveals that they only focus on two or three unique dimensions, namely In-role performance (IRP) or task and Extra-role performance (ERP) or contextual performance.

The notion of task performance was first introduced by Williams and Anderson (1991) and then Borman and Motowidlo (1997). Based on the behaviors they observed, they classified work performance into two categories: task performance and contextual performance. Task performance, on the other hand, is defined as behaviors specific to a job, which are formal and fundamental to the job as a whole. While, employee behaviors are normally categorized as contextual performance when they have the potential to impact the whole context in which they performs work as well as the overall psychological and organizational context in which it exists.

In addition, a review of the literature in the field confirmed that some other labels for in-role performance had also been used previously. These include task behavior (Murphy, 1989); job-specific task proficiency (Campbell et al., 1990; Griffin et al., 2007; Wisecarver et al., 2007); technical proficiency (Lance et al., 1992; Campbell et al., 2001); task performance (Borman and Motowidlo, 1993) in-role performance (Bakker et al., 2004; Maxham et al., 2008) and more recently individual work performance (Koopmans et al., 2011). The ERP dimension had also been interchangeable with several other labels in the literature. These include: contextual performance (Borman and Motowidlo, 1993);extra-role performance (Maxham et al., 2008); citizenship Performance (Organ, 1997; Organ and Paine, 1999; Coleman and Borman, 2000); non–job-specific task proficiency (Campbell, 1990); organizational citizenship behavior (Smith et al., 1983; Williams and Anderson, 1991); non-prescribe behavior (Orr et al., 1989); interpersonal relations (Murphy, 1989); organizational spontaneity (George and Brief, 1992) among others.

Concluding, all of these terms overlaps each other conceptualization and are mostly used interchangeably through the performance literature. The fact that managers or employers use ERP in addition to IRP when evaluating an employee's performance is one of the main justifications for distinguishing the two types of job performance. Further, because both of these factors contribute to the success of the companies in their own different ways, it is essential to investigate factors affecting both the performance, even though previous researchers have largely neglected this aspect. By focusing on the factors that affect employee wellbeing, this study hopes to close this gap and improve the performance of the organization as a whole.

Organizational virtuousness

In organizational literature, the concept remained neglected by scholars and did not draw the practitioner's attention. Nevertheless, due to emerging financial and moral crises around the globe, prevalent business press and business community tend to believe that nurturing virtuousness both at the organizational and individual level can enhance efficiency and performance (Cameron, 2010; Rego et al., 2011; Magnier-Watanabe et al., 2020) therefore, virtues should be considered in the agenda of business and management researches. Positive organizational scholarship is where the concept of organizational virtuousness (henceforth abbreviated as OV) first emerged. OV has been formally defined as "individuals' actions, collective activities, cultural attributes, or processes that enable dissemination and perpetuation of virtuousness in an organization" (Cameron et al., 2004, p. 768). It is characterized as the presence of an atmosphere in which trust, humanism, forgiveness, optimism, and integrity flourished, maintained, and spread across the members of the organization (Cameron et al., 2004). Employees may develop a more optimistic outlook on their jobs due to their exposure to the organization's core values, which, in turn, will likely affect their attitudes and behaviors (Rego et al., 2010).

As a concept, OV has received limited attention since its origin (Cameron et al., 2004), and only a small number of empirical studies have examined its consequences and determinants. Although research on this topic is sparse, some researchers have discovered that organizational and individual-level effects can be brought about through the perception of OV (for example, Bright et al., 2006; Cameron et al., 2004; Rego et al., 2015; Ahmed et al., 2018). It is argued that employees are likely to represent great performance in their job and put most of their efforts for the organization and their work when they experience their organization to be good and virtuous (Magnier-Watanabe et al., 2017). Moreover, when employee perceive organizational support (in the form of virtuous environment) they will be motivated to be grateful to their employers by engaging in ERP and IRP (Ahmed et al., 2018). Similarly, when employees perceive OV, they form emotions, organizational image, and self-construal, making their relationship stronger with their employer (Rhee et al., 2006).

Though some scholars have provided empirical evidences of OV significant direct relationship with the job performance (Ahmed et al., 2018; Pires and Nunes, 2018; Sun and Yoon, 2022) and also with the wellbeing (Rego et al., 2011; Nikandrou and Tsachouridi, 2015; Asad et al., 2017; Singh et al., 2018; Salas-Vallina, 2020), however, only a handful number of studies have focused on the psychological mechanism through which OV influences workplace outcomes and warrants further investigations (Ahmed et al., 2018; Dubey et al., 2020). Therefore, this study has considered the wellbeing as mediating mechanism for linking OV and job performance in the workplace to bridge this gap.

Emotional intelligence

The basic idea of Emotional Intelligence (henceforth abbreviated as EI) can be found in the noticeable study by Thorndike (1920). According to Thorndike (1920), intelligence is basically the junction of three aspects, which are abstract intelligence (capability to manage and understand ideas), mechanical intelligence (associated with real objects) and social intelligence (related to people). He further defined social intelligence as "the ability to understand and manage men and women, boys and girls—to act wisely in human relations." (p. 228). Later, Salovey and Mayer (1990) first defined EI and gave the true meaning of EI in their developed theory which is also called the ability model. Emotional intelligence is comprised of four different competencies that are all intertwined with one another. These competencies are: recognizing one's own feelings as well as the feelings of others; using emotion to facilitate thought; recognizing emotional information, and controlling one's own feelings and those of others (Mayer et al., 1990). According to the notion of EI, workers who have a high level of EI will have better success in their personal and professional lives (Carmeli, 2003).

There is considerable evidence in favor of EI, showing that EI is more critical than job-specific (technical) skills and knowledge or IQ. Brotheridge and Grandey (2002) regarded EI as twice as important as IQ and technical expertise and four times as important in overall success. Sternberg (1996), in another analysis, stated that IQ only explains 4 to 10 percent of success at work. Further, EI is double as important as intellectual intelligence, and IQ only explains twenty percent of the factors that cause life success (Goleman, 1996), whereas emotional intelligence accounted for 80% of the determinants of individual success (Martinez-Pons, 1997; Boyatzis et al., 2000). Moreover, Dulewicz and Higgs (2000) found EI as a vital success construct that directly contributed more than managerial intelligence and intelligence quotient (IQ) in job performance. Therefore, EI has become the focus of the interest of several researchers in examining the EI and job performance relationship.

In a famous study conducted by Wong and Law (2002), who used empirical research as a basis for the study on emotional intelligence, discovered a significant correlation between EI and outcomes related to the workplace. In addition, Gong et al. (2019) and Prentice (2019) have demonstrated that EI influence a number of attitudes and positive behaviors related to the job, including job satisfaction and job performance. It is argued that in contrast to someone with a lower

EI score, an individual with a high EI score would be expected to be better capable of comprehending, perceiving, and managing their emotions in a way that might affect their success at work. This is why Mayer et al. (2000) suggest that EI may be an important variable in determining job performance. This is because employee with high EI are better able to understand, perceive, and have the ability to regulate their emotions in a way that contributes to their success in their careers.

More importantly, large number of studies have empirically determined EI as an important construct for increasing job performance (i.e., Sendaro and Baharun, 2020; Alheet and Hamdan, 2021; Furnham and Treglown, 2021; Miao et al., 2021) and also the wellbeing of the employees (i.e., Akhtar et al., 2017; Fida et al., 2019; Xu et al., 2021; Peláez-Fernández et al., 2022; Sha et al., 2022). However, limited studies have explored the mechanism by which EI leads to better IRP and ERP. Thus, this study aims to address this gap by considering wellbeing as a key intervening variable that is proposed to cause EI enhancing the job performance.

Theoretical underpinning

The Affective Events Theory (AET) theory gives us a good theoretical reason to look into the mediating processes *via* which background information and personality traits influence behavior in the workplace. AET provides an extremely useful theoretical framework for the investigation of these mechanisms. The purpose of this is to understand how people behave in various situations in order to better predict their behavior. From a theoretical point of view, there is a possibility that, within the context of AET, a work-related SWB may play an important role in mediating between dispositional factors (such as personality traits or emotional intelligence) and external factors (Organizational Virtuousness) in the relationship between performance behaviors and performance factors. A work-related SWB is one that is related to the workplace (i.e., the use of IRP or ERP) and therefore has a greater impact. Behavioral, affective, and emotional aspects may be crucial intervening explanations for how people behave at work and how these elements influence their behavior (Devonish, 2016). An affective state is proximal to affective events, which are important to wellbeing on the basis of AET. The impact of the effect on work behavior is determined by the impact of the effect on job attitude (Weiss and Cropanzano, 1996). As the holistic concept of wellbeing ties into cognitive and affective constructs (Greenidge et al., 2014; Devonish, 2016), this study examines how an external factor (organizational virtuousness) may contribute to IRP and ERP since virtuousness is seen as a cognitive and affective construct.

In this study, we demonstrate that according to the assumptions of AET, work-related SWB may enhance or hinder job performance (i.e., IRP and ERP depending on both cognitive and affective dimensions of the employee), considering observed levels and quality of employees (EI). This is true regardless of whether or not the employee is engaged in their work (Devonish, 2016). As a result, the study's hypothesis claimed that work-related subjective wellbeing would mediate between individual factors (EI) and job performance. In addition to this, Organizational support theory (OST) is another theory that supports the relationship between the study's variables. In accordance with the tenets of the OST, an employee is expected to demonstrate positive behavior to demonstrate gratitude for their benefits from their employer. This is because the employee feels obligated to show gratitude (Eisenberger et al., 1986). According to this presumption, the assistance provided by employees comes from working in an environment that exemplifies virtue. When people have the impression that they are being supported, they experience increased levels of happiness and satisfaction, which contributes to employees' strong sense of wellbeing. Because of this wellbeing, the employee will have the feeling that they are compelled to provide favorable treatment to the organization in return for the favorable treatment they have got, and they will participate in IRP and ERP in order to help the business realize its goals.

Research framework

The following conceptual model is presented in light of the research conducted for this study, which combines theoretical underpinnings, empirical findings, analytical support, and an examination of relevant literature. All of these elements help form the model's foundation.

Research hypothesis

On the basis of the literature review and theoretical underpinning discussed in the previous sections, the following hypotheses are formulated as shown in **Figure 2**:

> H1: There is a mediation effect between OV and IRP in relation to work-related SWB.

> H2: There is a mediation effect between OV and ERP in relation to work-related SWB.

> H3: There is a mediation effect between EI and IRP in relation to work-related SWB.

> H4: There is a mediation effect between EI and IRP in relation to work-related SWB.

Methodology

The findings of this study are derived from survey responses from 416 bankers who were chosen using disproportionate stratified sampling. Data was gather from the employees working in management positions (such as branch manager and branch operations manager) at the branches of Pakistan's five largest banks namely, Habib Bank Limited (HBL); MCB Bank Limited (MCB); National Bank Limited (NBP); United Bank Limited (UBL); and Allied Bank Limited (ABL), which were 7,282 (State Bank of Pakistan, 2018). The table developed by Krejcie and Morgan (1970) was utilized in the research to estimate the suitable size of the sample from the population of 7,282 (State Bank of Pakistan, 2018). However, at the time that the data was collected, the population was down to 6,514

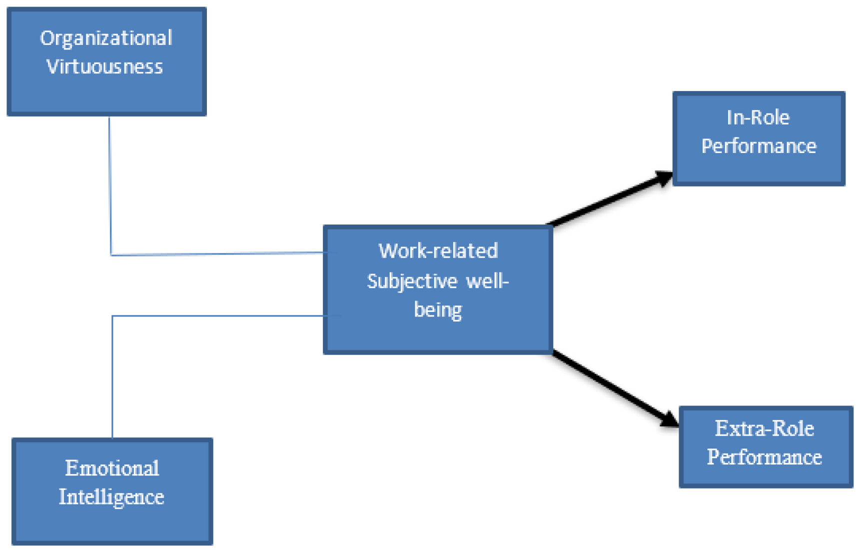

FIGURE 2
Research framework.

TABLE 1 Descriptive analysis of demographic data.

Demographic variables	Category	Frequency	Percentage (%)	Cumulative percentage (%)
Bank	HBL	92	22.1	22.1
	MCB	88	21.2	43.3
	UBL	104	25	68.3
	ABL	76	18.3	86.5
	NBP	56	13.5	100.0
Gender	Male	342	82.2	82.2
	Female	74	17.8	100.0
Age	21–30 Years	110	26.4	26.4
	31–40 Years	168	40.4	66.8
	41–50 Years	122	29.3	96.2
	51–60 Years	16	3.8	100
Education	Ph.D.	0	0	0
	Masters	236	56.7	56.7
	Bachelors	164	39.4	96.2
	Diploma/Associate degree	16	3.8	100
Experience	1–5 Years	92	22.1	22.1
	6–10 Years	174	41.8	63.9
	11–15 Years	120	28.8	92.8
	16 Years and above	30	7.2	100.0
Cadre/Grade	OG–1	38	9.1	9.1
	OG–2	128	30.8	39.9
	OG–3	100	24	63.9
	OG–4	142	34.1	98.1
	OG–5 and above	8	1.9	100.0
Functional title	Branch manager	266	63.9	63.9
	Branch operation manager	150	36.1	100

as a result of instructions from the State Bank of Pakistan (SBP) to banks to operate with a smaller number of branches and the closure of branches in regions with a high incidence of COVID-19 virus. In addition, the researcher handed out 550 questionnaires to make up for the lower response rate, which was 40 percent (according to Umrani and Mahmood, 2015) and 51.5 percent (according to

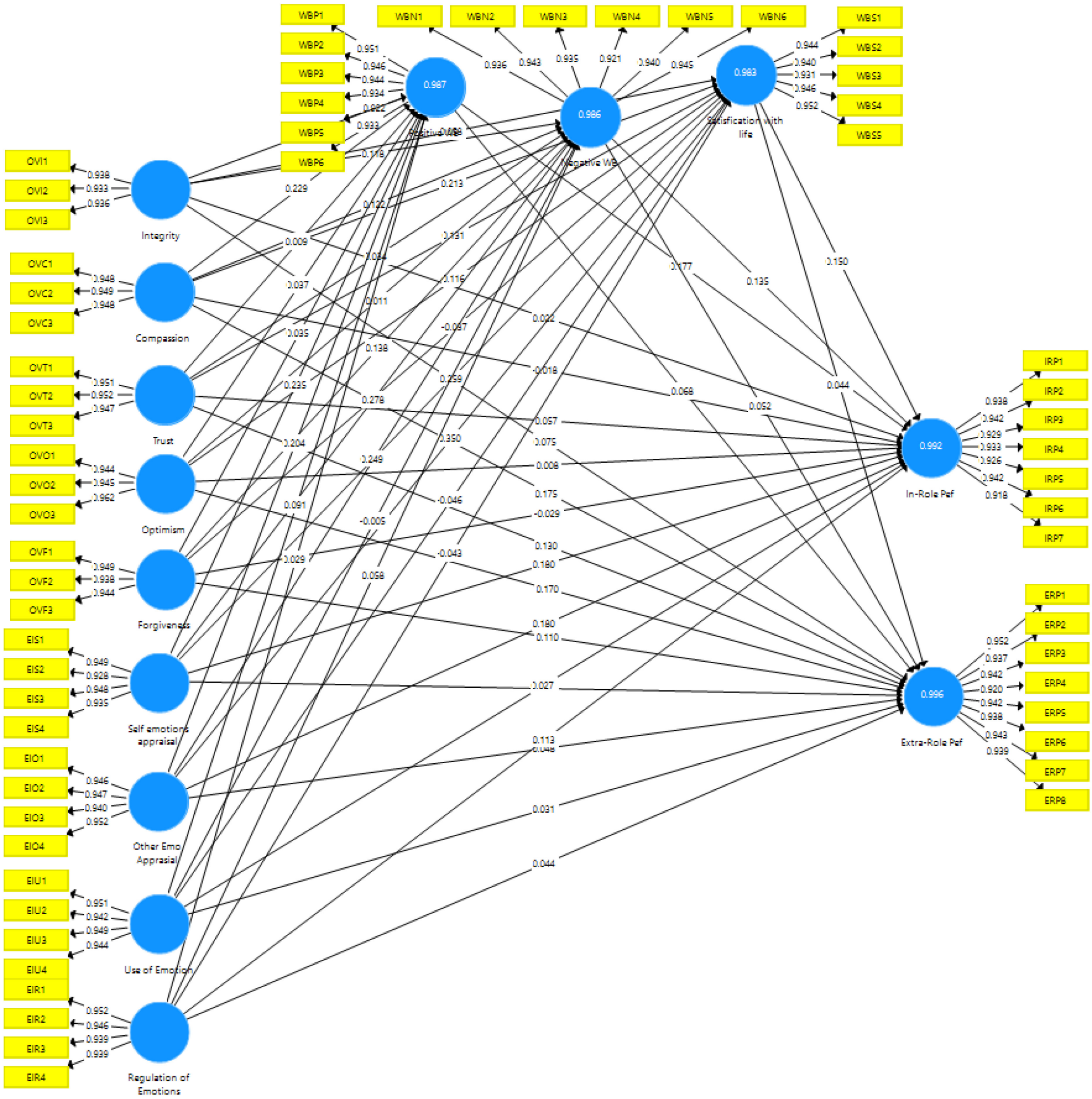

FIGURE 3
First order measurement model.

Ahmed, 2017) in earlier research carried out on the banking industry of Pakistan. Demographic information about the respondents and their respective organizations, including the respondent's bank, gender, age group, the highest level of education, years of experience, Official Cadre, and functional title/designation is given in Table 1.

Measurement scales

A five-point Likert scale was used to acquire the respondents responses and validated and well-established. In order to measure the variables following well established and validated scales are used. The 15-item measure that Cameron et al. (2004) established for OV's evaluation was used. As, there is not yet a single scale capable of measuring both the emotional (including both positive and negative sensations) and the cognitive aspects of wellbeing, subjective wellbeing was examined using two distinct scales (satisfaction with life). In addition, in order to get a sense of the respondents' levels of SWB in relation to their work, we asked them to frame their comments in terms of their work. This allowed us to get a better sense of the respondents' SWB. The 12 item Scale of Positive and Negative Experience (SPANE) that was developed by Diener et al. (2010) was used in this concern to measure the affective wellbeing, and the 5-item SWLS (Satisfaction with Life scale) that was developed by Diener et al. (1985) was adapted to measure the cognitive component of wellbeing. Both of these scales were developed by Diener et al. (2010). Diener et al. (2010) are responsible for the development of both of these scales. In addition, the Wong Law EI Scale (WLEIS) (Wong and Law, 2002) was applied to individuals to ascertain the amount of EI they possessed. In addition, the IRP was evaluated utilizing a scale that consisted of 7 items and was established by Williams and Anderson (1991). In contrast, the ERP was evaluated utilizing a scale that consisted of 8 items and was developed by Koopmans et al. (2013). In this investigation, trustworthy and valid measurements were used to establish the variables that were to be introduced, and the measures themselves were all regarded as acceptable and useful based on the findings of the study.

TABLE 2 Reliability and validity.

Construct	Loadings	CA	CR	AVE
Integrity	0.878–0.916	0.911	0.916	0.84
Compassion	0.833–0.938	0.9	0.907	0.799
Trust	0.847–0.951	0.899	0.902	0.703
Optimism	0.844–0.962	0.875	0.879	0.687
Satisfaction with life	0.840–0.931	0.88	0.885	0.679
Forgiveness	0.844–0.938	0.872	0.876	0.674
Self-emotions appraisal	0.897–0.945	0.91	0.915	0.838
Extra-role performance	0.838–0.938	0.902	0.907	0.832
Use of emotion	0.842–0.944	0.898	0.903	0.825
Regulation of emotion	0.846–0.939	0.901	0.906	0.83
Positive wellbeing	0.822–0.944	0.903	0.91	0.836
Negative wellbeing	0.836–0.945	0.899	0.905	0.829
Other emotion appraisal	0.847–0.940	0.912	0.916	0.84
In-role performance	0.825–0.0933	0.879	0.883	0.74
Trust	0.847–0.951	0.899	0.902	0.703

Analysis and results

The study used PLS-SEM technique for measuring path model, which included both the structural and the measurement models, to test the hypothesis. The reason of using PLS-SEM is because the study model consisted both reflective and formative construct, therefore, on the basis of recommendation of prominent scholar, (Sarstedt et al., 2021), the data was analyzed with Smart-PLS 3.2.8. In addition, in order to evaluate both reflective and formative measurement models, the authors of this study utilized a two-stage methodology that included the first-order reflective measurement model and the second-order reflective-formative hierarchical model. This methodology was suggested by the authors of the previous study of Becker et al. (2012).

Assessment of measurement model

It is important to stress that as this study was conceived as a construct of both reflective and formative components, it is important to focus on each separately. We chose to use PLS-SEM, as recommended by prominent scholars in the field of measurement (Sarstedt et al., 2017a,b). This section examines the second-order formative measurement which combines first-order reflections along with second-order (higher-order) formative measures.

Assessment of reflective measurement model (first order)

Validity and reliability were determined using the first-order reflective measurement model. In order to accomplish this goal, the research investigated the reliability of individual items, as well as the consistency of the dependability within itself, convergent validity, and discriminant validity. In **Figure 3**, you can see an image depicting the PLS algorithm diagram, which was used in order to assess the measurement model. Additionally, the results of their evaluation can be found in **Table 1** as well as a report on their evaluation process. Each construct's outer loading was examined as part of the work undertaken to assess its dependence on individual items. This was done to determine whether those outer loads corroborated with the dependability of individual items (Hair et al., 2014). Hair et al. (2014) conducted a study detailing that a maximum value of outer loading was acceptable as determined by the maximum value of 0.700, which was determined by the research. As a direct consequence of this, the item loadings in the current study ranged anywhere from 0.822 to 0.962. Furthermore, we investigated the composite reliability (CR) coefficient and Cronbach's alpha (CA) coefficient to determine the degree of internal consistency dependability as proposed by Peterson and Kim (2013). This CA result exceeded the threshold value of 0.70, which was 0.872–0.912. Additionally, the CR values were 0.876–0.916, which are higher than the cutoff value of 0.7 (Hair et al., 2010). This resulted in significant internal consistency reliability for every construct in the study. Thirdly, CV was analyzed using the values obtained from the Average Variance Extracted (AVE) statistic. According to the recommendations made by Chin (1998), an AVE value that is larger than 0.5 should be regarded as satisfactory. According to the suggestions made by Chin (1998), the findings showed that the convergent validity was good because the AVE was greater than 0.50 on their important constructs. In conclusion, the current research utilized the Fornell-Larcker Criterion in order to evaluate the discriminant validity of the results (Hair et al., 2010). Fornell and Larcker (1981. p. 11) recommend that, for all reflective constructs, "the square root of the AVE (diagonal) needs to be higher than the correlations (off-diagonal) in order to achieve sufficient discriminant validity." In **Table 2**, it appears that the study met the Fornell-Larcker Criterion as well.

Assessment of formative-measurement model (second order)

Measuring the formative construct in conjunction with the measurement model, Hair et al. (2014) developed a set of criteria related to the overlap and significance of outer weights as well as the collinearity issue. **Figure 4** depicts the level of the partial least squares diagram that corresponds to the second-order formative measurement model. Additionally, the results of the assessment of the formative measurement model are presented in **Table 3**, which shows that for the constructs within the model, the outer weights have been found to be significant, along with the *t*-values associated with the formative constructs. Despite the fact that the emotional intelligence indicator known as "use of emotion" was not relevant (*t*-value = 0.338) to the formative construct of emotional intelligence. Despite this, we will continue to use this signal because the outer loading it contributes is significantly more significant than 0.50. In addition, the VIF numbers were used to investigate the collinearity issues. This was done to determine whether or not the formative indicators have a strong correlation with one another. A VIF value of 5 or higher indicates that there may be a problem with collinearity (Hair et al., 2014). As illustrated in **Table 3**, the results of this study indicate that for each formative indicator, the VIF values fell below

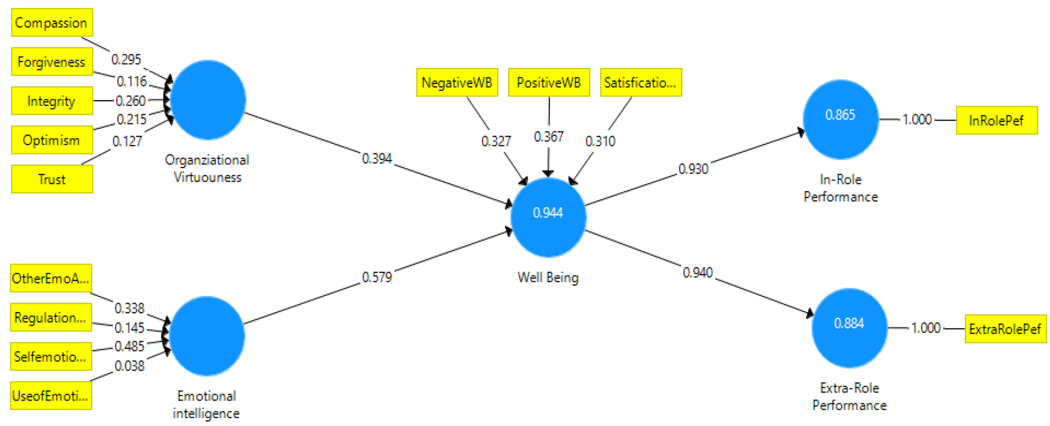

FIGURE 4
Second-order structural model.

TABLE 3 Fornell-Larcker Criterion.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Compassion	0.978													
Extra-role pef	0.835	0.939												
Forgiveness	0.867	0.883	0.944											
In-role pef	0.888	0.890	0.875	0.932										
Integrity	0.916	0.885	0.773	0.881	0.936									
Negative WB	0.778	0.791	0.679	0.790	0.780	0.784								
Optimism	0.872	0.785	0.760	0.877	0.672	−0.770	0.950							
Other emo appraisal	0.775	0.888	0.872	0.789	0.675	−0.786	0.912	0.946						
Positive WB	0.882	0.791	0.775	0.791	0.678	−0.792	0.777	0.665	0.938					
Regulation of emotions	0.775	0.872	0.874	0.788	0.723	−0.785	0.721	0.644	0.684	0.786				
Satisfaction with life	0.879	0.789	0.771	0.690	0.676	−0.792	0.717	0.636	0.629	0.685	0.943			
Self emotions appraisal	0.875	0.889	0.874	0.790	0.811	−0.794	0.656	0.641	0.648	0.670	0.784	0.940		
Trust	0.757	0.881	0.774	0.677	0.731	−0.776	0.611	0.634	0.637	0.645	0.673	0.871	0.950	
Use of emotion	0.817	0.884	0.764	0.856	0.744	−0.795	0.721	0.612	0.618	0.639	0.645	0.786	0.756	0.947

the threshold value of 5 in light of the findings. Consequently, all the VIFs for the constructions did not mention any issues with multicollinearity appearing in the VIFs of the constructions.

Assessment of structural model

There are three main evaluation metrics for assessing the robustness of structural models: the collinearity concerns test for the structural model, the coefficients of determination (R2) and their statistical significance explain the variance.

Multicollinearity assessment

For the first step, we measured the VIF and tolerances of the structural model in order to find out if it was multicollinear. Based on the study material and rules of thumb, we were able to conclude that there was no collinearity issue in Table 4 since both values fell inside the range that is indicated by a tolerance value more than 0.2 and a VIF value less than 5, as stated by Hair et al. (2014).

Coefficients of determination R^2 and hypothesis testing

An endogenous construct's predictive ability was measured by its R2 value (coefficient of determination) in the research model by Henseler et al. (2009). It was then determined that there was a level and significance associated with the path coefficient so that the PLS algorithm could be run to test the hypothesis and bootstrapping could be done. As can be seen in Table 5, the study's R2 findings can be summarized as follows.

TABLE 4 Second-order measurement model.

Constructs	SD	Weights	*T*-values	Loadings	*T*-values
Integ–> Org Virt	0.038	0.220	5.776	0.989	781.8
Comp–> Org Virt	0.031	0.335	10.703	0.989	699.8
Trust–> Org Virt	0.029	0.180	6.182	0.893	562.3
Optim–> Org Virt	0.040	0.154	3.870	0.918	33.6
Forg–> Org Virt	0.030	0.124	4.177	0.985	659.0
SEA–> EI	0.043	0.419	9.664	0.955	1346.8
OEA–> EI	0.044	0.384	8.795	0.994	1272.9
UOE–> EI	0.047	0.045	0.338 (NS)	0.989	655.7
ROE–> EI	0.043	0.158	3.667	0.992	959.8
PWB–> WB	0.033	0.320	9.639	0.997	2888.8
NWB–> WB	0.031	0.383	12.187	0.996	2135.4
SWL–> WB	0.030	0.300	10.168	0.995	1682.1

As a rule of thumb, Henseler et al. (2009) recommend R2 values of 0.75, 0.50, and 0.25 for endogenous latent constructs relate to substantial, moderate, and weak constructs, respectively. 94.4% of the variance in the WB was accounted for by independent variables, including OV and EI, as evidenced in Table 6. There was also a substantial R2, with a value of 86.5 and 88.4% for the R2 of ERP and IRP, respectively.

We took certain steps according to the guidelines that were described in Preacher and Hayes (2004) in order to test the mediation hypothesis, which is a path coefficient, in this study. As a result of this, bootstrapping was performed in the PLS-SEM model based on these assumptions. To determine the "*P*-value" and "*T*-Value" of the bootstrapping process, two-tailed tests of significant level 5% were run in Smart-PLS, followed by 2-tailed test significance. Hence, if a t-value of 1.96 is considered to be a critical value, as a result, this should serve as a threshold value in our current study when evaluating the hypotheses. The correlation coefficient for structural models along the measurement path can be seen in Figure 5.

The following table gives the results of the structural model, which are shown in Table 7. As it turns out, the first hypothesis H1 suggests that "wellbeing mediates the relationship between OV and IRP" at a level of significance of 0.05 was significant ($\beta = 0.367$, $t = 5.925$, $p < 0.01$). Based on the results of the analysis, the second hypothesis H2, which states that wellbeing mediates the correlation between OV and ERP, has also been confirmed ($\beta = 0.370$, $t = 5.906$, $p < 0.01$). There was also a significant correlation between EI and IRP when H3 was assumed to be the mediator ($\beta = 0.539$, $t = 8.293$, $p < 0.01$). In the final hypothesis H4 we also found that an association between EI and ERP is mediated by wellbeing ($\beta = 0.545$, $t = 8.387$, $p < 0.01$). It can be concluded that the proposed hypotheses of the study were all supported by the findings of the study.

TABLE 5 Multicollinearity.

Variable	Level of tolerance	VIF
ORG VRT	0.433	2.058
EI	0.537	1.862
WB	0.263	3.798

TABLE 6 Variance explained by exogenous constructs.

Constructs	Variance explained (R2)	Level
WB	94.40%	Substantial
IRP	86.50%	Substantial
ERP	88.40%	Substantial

Discussion

With the introduction of COVID-19, the fragile state of young people's mental health and wellbeing around the world has only become more precarious, which is particularly alarming when we consider the already precarious state of young people's mental health and wellbeing. The urgency of conducting high-quality research to address mental health problems has multiplied by several orders of magnitude following a pandemic of COVID-19's magnitude. Based on these consideration, the study developed a research framework and examined the work related subjective wellbeing as a process underlying the associations between positive feature of work environment (OV) with IRP, between positive feature of work environment (OV) with ERP, between individual factor (EI) with IRP and between individual factor and ERP. The study found that Perception of OV impact both IRP and ERP through wellbeing. The significant mediating role of WEB between OV and job performance is consistent with tenants of OST (Eisenberger et al., 1986) and AET (Weiss and Cropanzano, 1996).

From the OST perspective, within a working environment characterized by organizational virtuousness, employees perceive that their organization cares about them by forgiving their mistakes, treats them well with compassion, values them by trusting them, and gives them respect. Thus, employees who perceive organizational virtuousness experience an increased level of wellbeing. With this feeling of gratitude for working in a virtuous organization, the individuals feel compelled to reciprocate with acts that benefit the organization and other people. It means that individuals who perceive their organizations as virtuous develop positive feelings of attachment with the virtuous agents; such feelings may increase their wellbeing, thus reacting by exhibiting higher levels of productivity, greater

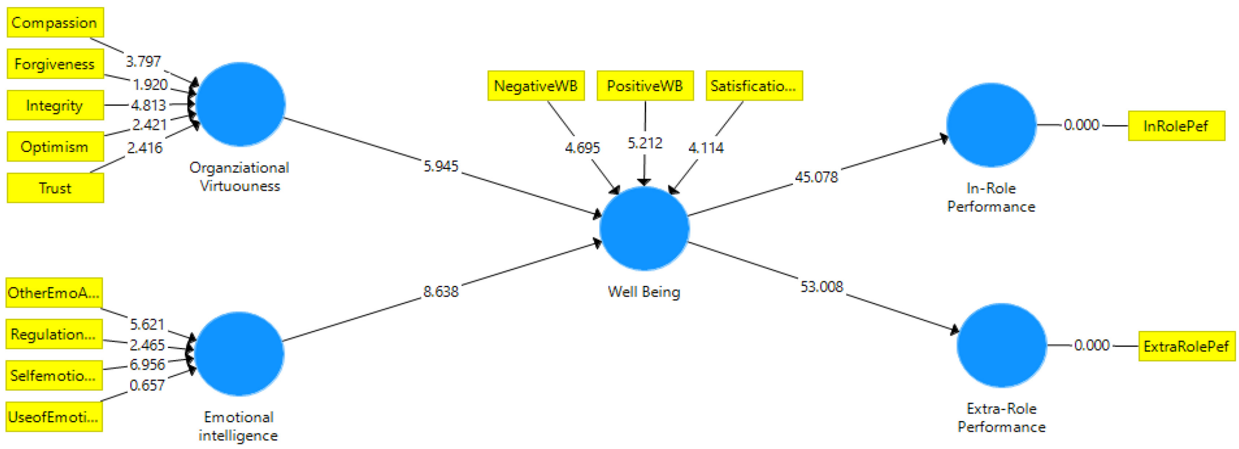

FIGURE 5
Structural model assessment.

TABLE 7 Hypothesis result.

	Hypo	Beta	SD	*T*-value	*P*-values	Results
H1	Org Virt_-> WB-> IRP	0.367	0.062	5.925	0.000	Supported
H2	Org Virt_-> WB-> ERP	0.370	0.063	5.906	0.000	Supported
H3	EI-> WB-> IRP	0.539	0.065	8.293	0.000	Supported
H4	EI-> WB-> ERP	0.545	0.065	8.387	0.000	Supported

job performance and behaviors that may also go beyond their in-role duties.

Furthermore, Affective events theory (Weiss and Cropanzano, 1996) also helps to understand and support the mediating relationship. This theory suggests that stable work environments influence the occurrence of positive and negative affective events. Experiencing these events leads employees to experience affective states. Affective states, in turn, derive behavior. In incoherence with such theory, working in a virtuous context is an important affective event, thus triggering higher wellbeing and leading to derive IRP and ERP.

According to a few previous studies, perceptions of OV also contribute to WEB and subsequent job performance (e.g., Ahmed et al., 2018; Magnier-Watanabe et al., 2018; Setyoko and Kurniasih, 2022; Sun and Yoon, 2022) in different context. For example, Sun and Yoon (2022) argued that an organization with virtuous actions produces social and individual happiness. When employees are happy, it eventually leads to such complacency, leading to extra-role behaviors. Similarly, Magnier-Watanabe et al. (2018) also confirmed the importance of wellbeing on employees' job performance. They suggested that the firms pay attention to their organizational virtousness because it promotes higher wellbeing, which in turn enhances job performance in this perspective. The findings are also consistent with Pimentel et al. (2022) suggesting that positive organizational features may influence extra-role performance because organizational identification increases, leading to feelings of happiness which, in turn, induce employees to perform extra-role behaviors that benefit themselves and the organization.

In addition, the results of this study demonstrated that a person's level of WEB plays an important mediating role in the relationships between individual factors (EI) and both IRP and ERP. The significant mediating role of wellbeing between EI and job performance is consistent with the Affective Events Theory. The theory posits that an individual dispositional variable (EI) can have both a direct and indirect effect on a wide range of employee work behaviors, including IRP and citizenship behaviors (Weiss and Cropanzano, 1996; Greenidge et al., 2014; Vratskikh et al., 2016). Theoretical tenets underlying the notion of AET suggested that various affective (emotional) and attitudinal factors serve as key mediating mechanisms that emerge to facilitate or hinder employees' work behaviors (e.g., job performance) (Weiss and Cropanzano, 1996). Under the framework of AET, Wellbeing (which comprises both affective and attitudinal dimensions) is considered a critical intervening mechanism in the relationship between dispositional factors (e.g., EI or personality traits) and behavioral outcomes at work.

The finding is also in accordance with limited past studies that had examined the mediating role of wellbeing in the different contexts of usage (e.g., Spector and Fox, 2002; Joseph and Newman, 2010; Brunetto et al., 2012; Devonish, 2016; Li et al., 2018). For example, Joseph and Newman (2010) postulated that in the organizational setting, EI is theoretically related to job performance through the induction of affective states (wellbeing) that are beneficial to job performance. Devonish (2016) argued that individual difference variables (EI) indirectly affect the IRP and ERP of employees through different affective, attitudinal, and emotional mechanisms.

Also, Miao et al. (2017) found that EI helped employees to cope with negative emotions that may lead to improper behaviors in the workplace. Since managing emotions is a key part of EI, individuals facilitate their behavior by adjusting their emotions. Employees with higher EI coped better with various matters at the workplace and tend to experience more wellbeing, leading them to engage in positive work behaviors. Similarly, Brunetto et al. (2012) demonstrated that EI positively predicted wellbeing, which, in turn, promoted employee engagement. Li et al. (2018) also considered wellbeing as the mediator between EI and job performance. This study revealed that EI affects teachers' job performance through employee wellbeing. In sum, all these studies have established EI's role in enhancing IRP and ERP through promoting wellbeing.

In conclusion, these findings suggest that employees who scored higher on the individual dispositional scale were better able to deal with issues that arose in the workplace and tended to be happier and more fulfilled, both of which drove their IRP and ERP behavior while they were on the job. Furthermore, the findings of this study are in stark contrast to the assumptions of the AET. An employee's EI is considered a dispositional variable, meaning it can affect him or her directly or indirectly, depending on the situation. This is one of the many ways in which the results are supported theoretically (Greenidge et al., 2014). By relying on the assumption that wellbeing mediates the relationship between EI and job performance, the study contributed to the expansion of AET, which had not been examined under a tenant of the theory in the past.

Conclusion

Evidence is growing that the employee wellbeing and their general welfare is the key factor at the workplace for causing difference in the individual and organizational level performance. As a consequence of this, the concept of wellbeing as measured by levels of pleasure, satisfaction, and happiness has emerged as an essential topic of investigation in the field of organizational research. In addition, the findings of the study demonstrated that the academic idea of wellbeing takes on a significant role in the context of its application in the context of the workplace when it is conceived of as a notion that is unique to that area. This study empirically proved the components of wellbeing. In relation to working, SWBs have been largely ignored to date. Furthermore, academicians from diverse disciplines are unsure how to operationalize the concept of wellbeing, whether it should be understood as merely attitudinal, affective, cognitive, or both (affective and cognitive). According to the findings of an in-depth analysis of the pertinent literature, several different terms are regularly interchanged with one another in the context of work, including "wellbeing," "job satisfaction," and "happiness," contributing to the confusion as to the exact meanings of these terms. Toward understanding this conceptualization of individual wellbeing, the model of subjective wellbeing that Diener (1994) put up, which includes both cognitive and affective dimensions, has gained widespread acceptance. In light of this, and in accordance with the suggestions made by earlier researchers (e.g., Bakker and Oerlemans, 2011; Magnier-Watanabe et al., 2017, 2020), and to further avoid any confusion and misinterpretation, which previous scholars have made in examining work-related wellbeing in relation to the job performance, this study proposed wellbeing as a multidimensional construct and measured it as high-order composite wellbeing, with an affective and cognitive component on the lower order. This model of workplace SWB was shown to be validated by empirical evidence and sound theoretical approach, while it still requires additional research to provide additional empirical support. Therefore, work related subjective wellbeing is proved to be certain type of attitude. This is an important finding. In the light of study findings it is concluded that an employee at the work place is said to be happy and high in wellbeing when he is feeling more positive emotions, less negative emotions and satisfied with his work life domain. Therefore, employee this attitude will result in high job performance. Thus, in order to make them happy, organizations needs to focus on internal and external factors that will create happiness at the workplace.

In this study, decades of confusion were cleared up, revealing that subjective wellbeing will be key to organizational performance and growth in the future. The psychological mechanism in explaining the several links among workplace variables can be better understood with the findings of the study by considering work related subjective wellbeing as a mediating variable. Likewise, by distinguishing IRP and ERP as two different types of performances, the study succeeded in highlighting the merit in understanding the importance of both the performances especially in the banking sector. It is important to progress in developing the theory of workplace happiness and extension of happy worker thesis. In this notion, this study is an important attempt to resolve the holy grail of organizational psychology in management by extending the concept of subjective wellbeing to the workplace. Further, overall result also provided useful insight for the management of the banks to focus on the factors that can make employees happy and productive at the workplace. More importantly, to deal with the COVID-19 pandemic threats that adversely affect the performance of employees at banks, the research findings concluded that it can also be addressed by focusing on the same factors that triggers the wellbeing and happiness of employee at the workplace which will ultimately resulted in enhancing their performance even in the tough times.

Limitations and future research

Despite the fact that the research spans a wide scope of territory to be investigated, it is nonetheless subject to a few limitations. The fact that the research was conducted using a cross-sectional design and five different banks also raises the possibility of common method variance, and generalizing the result to whole banking sector. In addition, the IRP and ERP used in this study are self-reported, thus they may over- or under-estimate an individual's achievement relative to their true potential. Furthermore, future researchers could get better outcomes by concentrating on and creating a unified scale to evaluate subjective wellbeing in the workplace. Considering the correlation between independent variables and dependent variables can provide us with a better understanding of the phenomenon, the results could be replicated in other context and industries. In addition, studies in the future could investigate the moderating variable in the research model. Furthermore, the study findings can be used as guiding principles for other researchers from the field of organizational behavior, business management, psychology, and the positive psychology movement interested in developing the theory of workplace happiness. While most researchers focusing only on the social exchange theories and Job demand resources in understanding workplace variables relationship, the theory of Happiness at the workplace needs to be build up that have been ignored for decades despite its importance and generally acceptability in the organizational setting.

Data availability statement

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

Author contributions

MA, DA, and NZ conceptualized the model. MA and DA wrote the manuscript. MA collected the data. NZ analyzed the manuscript and proof read the draft. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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

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Research on sports reform in the network era based on educational psychology in the context of the COVID-19

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Introduction: In the context of the continuous progress of the "Internet+" era and the exceptionally severe outbreak of the Covid-19, online education confronts many challenges and also brings unlimited development opportunities.

Methods: In this paper, taking six universities with sports majors in Chongqing as the research objects, we analyze the current situation and problems of the development and construction of online education resources for sports in colleges and universities by browsing the official websites of colleges and universities, investigating the cooperation between colleges and universities and Massive Open Online Course (MOOC), and conducting a questionnaire survey on students.

Results: The results show that it is necessary to innovate the traditional inefficient classroom teaching model based on the values of adapting to the characteristics of the "Internet+" era and learning advanced teaching rules, thus optimizing teaching effectiveness and fostering students' independent learning, thinking and innovation.

Discussion: We investigated students' online learning habits, their experience of using online education platform and the difficulties they encountered in the process, based on which two issues were raised: learning needs and learning experience.

KEYWORDS

Internet+, college sports, online education, reform, educational psychology

1. Introduction

It is well known that the Internet is a double-edged sword, and how to use it to build on its strengths and avoid its weaknesses to better serve college sports is a problem that every educator should be concerned about (Wegerif, 2019). The application and popularity of the Internet has promoted the construction and development of a number of online teaching platform websites, among which the more famous ones are Massive Open Online Course (MOOC), Hujiang Online School, and Pandora English. Some of these platforms are websites established for individual disciplines, while others are integrated disciplinary education platforms. MOOC is a large integrated Internet learning platform that offers multi-disciplinary courses, and is followed by many double first-rate universities and well-known scholars in China, aiming to meet the needs of learning users in various disciplines (De Notaris et al., 2021). However, there are still some characteristics of outmoded teaching concepts and contents in physical education teaching in colleges and universities in some countries.

Before the "Covid-19" epidemic hit, many disciplines in colleges and universities had not yet applied online teaching methods to teaching, and the development of online teaching was slow. Although some subjects are not suitable for online teaching, no attempt has been made, resulting in a stagnation in the development of online teaching. At the beginning of 2020, the "Covid-19" epidemic hit the traditional offline teaching, which brought opportunities and challenges to China's education model. With the continuous development of Internet technology, online teaching will be one of the factors promoting educational reform. In this "new era" of education caused by the intersection of "information technology" and "Covid-19," new changes have taken place in the form of teaching. During the epidemic, comprehensive online teaching was carried out to promote the development of education reform in the new era, and bring new opportunities for the development of subjects that were originally practice-based and not suitable for online teaching. It is helpful to clarify the positioning and development trend of future teaching, promote the design and implementation of teaching links, and develop high-quality teaching.

Physical education is a secondary subject of education. Students majoring in physical education and physical education normal students in colleges and universities are typical teaching executive groups in this discipline. However, the single limitation of teachers' teaching methods, traditional and outdated learning forms, and students' passive absorption of knowledge and information are still problems that need to be solved urgently in the training process. Under the influence of the "Internet +" era and the epidemic, the reform of physical education is an effective way to accelerate the modernization of education. Utilize modern Internet information technology, adopt methods such as building and upgrading online education platforms, and optimizing online college physical education teaching resources to innovate and improve education and teaching methods, improve students' learning efficiency, and reduce the cost of knowledge and information acquisition. This is an important research focus of building a high-level physical education teacher team.

At present, Internet technology organizations, technical teams, and university groups in various countries and regions are paying attention to the construction of online teaching resources sharing platform, and have made some research based on it again. Many different types of universities and colleges have also created exclusive online teaching and learning resource sharing platforms. However, Internet technology is a relatively new field that will be more useful and valuable when combined with the education system and subject knowledge. In addition, such platforms are not well developed in terms of theoretical and practical issues, narrowing the educational field to the sports category, with even fewer relevant and mature research results (Sosa-Díaz and Fernández-Sánchez, 2020).

In the training process of college students majoring in physical education or normal students majoring in physical education, China traditionally focuses more on the totality of the discipline and adopts a batch and group approach to education, paying less attention to individual differences. At the same time, more attention and resources are put on practical training, while relatively little attention is paid to the construction of physical education knowledge, social sports spiritual civilization, and campus sports culture atmosphere. No form of sports can adapt to the characteristics of different regions, different industries, and different people, and cannot better meet the subjective needs of students, making them more passive in absorbing knowledge. In addition, imperfect policies and regulations for the construction of network platforms, uneven quality of online teaching resources, lack of unified standards and specifications for shared courses, and insufficient attention to users' needs and opinions are also problems that need to be solved. Therefore, constructing and optimizing the online physical education teaching resources sharing platform in colleges and universities is a topic worthy of in-depth study (Hsu, 2021).

In addition, physical education in colleges and universities in the new era is facing great opportunities and challenges (Lemes et al., 2022). In modern higher education, where new technologies are emerging, physical education should also keep up with the times and new approaches and steps need to be taken. In the Internet+ era, physical education teachers should not only store rich expertise in physical education, but also keep pace with teachers of other disciplines in terms of mastering and applying new technologies. In modern university teaching, the use of Internet+ technology has penetrated into the work and study of every teacher and student. Therefore, in terms of the integration of sports and Internet+ in this emerging but not unfamiliar field, the construction of an online educational resource base has naturally become a top priority in the process of building software infrastructure in universities (Li, 2021). The development and also the online educational resource library of the school is gradually related to the quality and level of school operation. As a part of the educational resource base of colleges and universities, the development and construction of online sports resources is imperative. The research of this paper aims to provide a reference for improving the application effect of the construction of high-quality digital education resources for sports in China's colleges and universities, fully reflecting the concept of paying attention to the needs of teachers and students and putting people and users first. With the continuous and deep integration of Internet and education, more network technologies have been applied and promoted in the field of education, and the construction of online sports teaching resources in colleges and universities needs to be studied more deeply.

Based on the impact of the epidemic, it provides an important opportunity for online physical education teaching. Through this study, we comprehensively analyze the situation faced by online physical education teaching during the epidemic period, conduct evaluation and reflection, and put forward development ideas for the reform of online physical education teaching. It not only makes the means for teachers and students to master knowledge more diversified, but also improves students' awareness of physical exercise, self-learning ability, discussion ability, and increased sports participation behavior. It can also improve the application effect of online courses, and finally achieve effective teaching and achieve the purpose of students' all-round development. This study provides a practical basis for the teaching methods adopted in emergencies in the future.

2. Research status

This paper explores the existing online education platforms based on the current situation of traditional education and online education, for example, the traditional campus culture has problems such as single mode of talent training, information exchange restricted by time and space, and relatively lagging culture and information circulation (Asli et al., 2020). In addition, free learning resources on existing search sites are relatively scattered and also suffer from more harmful information problems such as duplication of content, lack of information depth and content. In addition, many online education platforms also suffer from imperfect policies and regulations, lack of attention to user needs and opinions, varying levels of resources, and lack of a unified certification mechanism for quality educational resources (Yu and Jee, 2020). In terms of user perception, there is also a lack of awareness of online resource education platforms in universities, weak ability of educators to use the Internet, neglect of students' interests, and copying traditions to achieve teaching effects. Based on this, scholars have proposed the necessity or advantages of building and optimizing the Internet teaching resource platform (hereinafter referred to as the platform). For example, in terms of campus network culture, network information spreads fast and efficiently, and online campus culture has a wide range of influences; and in terms of cross-field combination of "Internet+," the human-centered "crowd innovation" mechanism should focus on individual needs.

Resource base construction is often considered by researchers as the most important step in building and optimizing a platform, and the resource base is also the part that reflects the core competitiveness and use value of the platform (Chen et al., 2020). First of all, there are many ways to use the content of the resource base, such as school, family, society, policy, traditional culture, and natural environment. Scholars believe that, in addition to using traditional and classical subject knowledge, more new types of resources should be discovered in combination with the use of new technologies. In addition, there is a need to maintain the pedagogical function of online educational resources by cleaning up the online environment. The content of the resource library should be aligned with the trends in sport and the teaching objectives of each university, and updated regularly to ensure that the user community can keep up with the latest information on the subject and experience a good learning process (Beard and Konukman, 2020).

The usual practice of platform safeguards is government leadership, the main role of the school, and the development of a relevant network platform system to ensure information and copyright security. In addition, the practical operation class is mainly related to the following aspects of research (Ruiz-Palmero et al., 2020): (a) platform operating environment—such as media server, web server, FTP server, and address server; (b) platform technology design—commonly used web technologies are object-oriented software engineering methods, big data technologies, Web 2.0, and cloud computing technologies. In addition, IoT technology is a technology that integrates hardware education resource information into the education resource sharing platform, and scholars have proposed methods to help optimize the online teaching platform in the related literature; and (c) platform module design—the modules in the platform are user experience areas that perform their designated functions. They are interrelated and can operate independently or be dynamically added or deleted as needed, such as system management module, information retrieval module, teacher–student interaction module, teaching evaluation module, etc. The operation and overall association of these modules are supported by web technologies in the platform design. They can better improve the management of teaching resources and integrate the process of realizing various functions for online teaching; and (d) operational structure of the platform—the principle of the platform's retrieval structure is to rationalize multiple database modules with different objectives to their goals and resources in order to coordinate the various things that users need to retrieve. Each database module is itself an autonomous computing entity that can automatically identify key fields and targets. Finally, multiple database modules coordinate and cooperate to form a problem retrieval and resolution network. The campus network should not only be a carrier of information technology, but also a functional entity of culture, values, and education (Goad et al., 2019). Universities should not only pay attention to the technical issues of hardware and software, but also do a good job of positioning the campus network culture, improving network security, strengthening online supervision, cultivating the Internet thinking of college teachers and students, and enhancing their ability to use network technology. It is also required to deeply integrate online and offline teaching resources, increase the supply of educational resources, address the common needs of college users for quality teaching resources, and realize real-time sharing of teaching resources and online teaching experience, construct or improve the actual employment plan of students, improve the employment information database in a targeted way, and realize the organic combination of talent training and employment in enterprise units (Tabuenca et al., 2018).

From the above information, it can be found that there is a relative lack of research results combining Internet and online educational resources with college physical education. From the perspective of optimizing the quality of platform college physical education resources and improving the effectiveness of college physical education, we explore how to discover the problems and solutions of existing Internet teaching resource sharing platforms and take more specific measures, for example, comparing the advantages and disadvantages of the existing major online learning platforms in China, increasing user experience research and discussion, combining the needs of user groups, and taking appropriate methods to integrate the existing physical education resources in colleges and universities more effectively, more standardized digital resources, more convenient uploading and updating to the platform resource base, and more powerfully uniting major universities to expand the scope and influence of resources. These reflections provide space and possibilities for in-depth research in academia.

3. Hypotheses

Regarding the impact of online education on physical education under the above-mentioned epidemic situation, research can be carried out as follows: (1) Although research has shown that online education has been initially improved, past research has not focused on the education of college students, especially sports majors. (2) Assume that most college students are not interested in online physical education. Because the user interface is complicated, it is difficult for students to interact with teachers. (3) This paper predicts that although most college students use online education platforms with high frequency, they are not interested in online physical education.

In order to understand the current situation of online physical education resources in colleges and universities and propose optimization strategies, this paper takes Chongqing colleges and universities as an example and selects six colleges and universities including physical education teachers or physical education majors, namely Chongqing Normal University, Chongqing University of Posts and Telecommunications, Chongqing College of Arts and Science, Chongqing University of Technology and Industry, and Chongqing Second Normal College of Changjiang Normal University, to investigate the development of their online physical education teaching resources. During the epidemic period, this paper chose to browse and investigate the online homepages of each university, the cooperation with the MOOC platform, and the online questionnaire survey of physical education students in each university.

According to the survey, since none of the six universities uploaded sports-related teaching resources on the "MOOC" platform, I divided the findings of their official homepages into three parts: the timeliness of online resources, the richness of resource information, and the design and layout of web pages. In terms of the timeliness of resources, the content of most universities' homepages lagged or even stagnated in terms of updating research information. Among them, the online journals or periodicals of three universities are in a state of frequent updating and good management and maintenance; in terms of resource information richness, all of the six universities display the information of scientific research results in the corresponding columns, but none of them provides the entrance links to the existing sports research resources or teaching resources of the school on the official homepage, e.g., teacher education resources column; in terms of webpage design and layout, all six universities adopt the traditional window format page layout. When the content displayed in the window is relatively concise, the visual effect of the page does not appear mixed. In most cases, the page layout is dense and the search bar is clear at a glance, and there is the problem that the user experience is not smooth enough and the visual effect is not good, which makes it inconvenient to search for information. Overall, the online sports resources on the official homepages of the six universities are not optimistic and cannot provide users with enough professional teaching resources for reference.

4. Theory support

4.1. Questionnaire survey and analysis

The object radiation, selection angle, and analysis method of the website homepage of six colleges and universities in Chongqing are relatively limited, and the online sports resources covered on the website do not fully represent and stand for the overall development of online sports teaching resources in colleges and universities. Therefore, the author then used the online application of Wenjuanxing to conduct a questionnaire survey on physical education students in six colleges and universities in Chongqing to investigate and explore the current situation and needs of online education of the research subjects from multiple perspectives. A total of 400 electronic questionnaires were collected, and 63 invalid questionnaires with too short response time and consistent answers were excluded. According to the third question, 32 invalid samples did not contact the online education platform, totaling 95 invalid samples, and 305 valid samples. The survey subjects were all freshmen to seniors, and the number was relatively average, as shown in Table 1. The educational platforms they currently contacted and their frequency of use were investigated to understand the current number of online courses and the main purpose of using online education platforms for students, as shown in Table 2.

4.2. Reliability test

The internal consistency reliability method is used to measure the correlation between each measure and the other measures in a set of measures of the same object. The measurement indicator of this method is Cronbach's reliability coefficient. The larger the Cronbach value of the variables, the higher the correlation coefficient of the dimensions and the higher the internal consistency between each dimension. Studies have shown that when Cronbach's alpha is between 0.65 and 0.7, it is an acceptable level; when it is between 0.7 and 0.8, it is considered to have good reliability; and when the indicator exceeds 0.8, it means that the data is ideal. For items under each dimension, items were purified by CITC values and homogeneity tests. CITC was used to measure the correlation coefficient between each measure of the same variable and other measures to evaluate each measure. If the CITC value is greater than 0.5, it indicates that the scale has a reasonable item design and good convergence, and there is no need to eliminate items. If the reliability is low, i.e., the alpha coefficient is small, the total coefficient of the corrected items can be used to purify the measurement items (Cruickshank et al., 2021).

TABLE 1 Basic information of survey objects.

Demographic variable	Classification	Frequency	Percentage (%)
Grade	Freshman	71	23.3
	Sophomore	66	21.6
	Junior	87	28.5
	Senior	81	26.6

TABLE 2 Main results of the questionnaire.

Describe the object	Classification	Frequency	Percentage (%)
Main online education platforms	MOOC	92	30.2
	NetEase Cloud Classroom	74	24.3
	Baidu classroom	6	2
	Tencent classroom	48	15.7
	Hujiang Online School	47	15.4
	Youdao School	28	9.2
	New Oriental Online	3	1
Usage frequency	Once a day	51	16.7
	Once a week	91	29.8
	Semi-monthly	95	31.1
	Once a month	61	20
	Quarterly and above	7	2.3
Main purpose	Assisting in the study of varsity physical education courses	103	33.8
	Learning of knowledge other than physical education courses	54	17.7
	Interest in learning, hoping to increase the accumulation of knowledge in a certain field	78	25.6
	Killing time	7	2.3
	Go with the flow and learn with everyone	53	17.4
	Other	10	3.3
Number of courses studied online	1–3	131	43
	4–6	124	40.7
	7–10	46	15.1
	Greater than 10	4	1.3

4.2.1. Reliability test of the learning needs scale

As shown in Table 3, the reliability values of Learning Environment Needs, Learning Interaction Needs, and Learning

TABLE 3 Learning needs scale reliability checklist.

Dimensions	Items	CITC	Cronbach's alpha, title removed	Cronbach's alpha
Learning environment needs	E-1	0.659	0.814	0.845
	E-2	0.627	0.820	
	E-3	0.629	0.819	
	E-4	0.575	0.830	
	E-5	0.615	0.822	
	E-6	0.650	0.815	
Learning interaction needs	I-1	0.640	0.820	0.847
	I-2	0.646	0.818	
	I-3	0.676	0.810	
	I-4	0.663	0.813	
	I-5	0.650	0.817	
Learning support needs	S-1	0.550	0.789	0.812
	S-2	0.592	0.777	
	S-3	0.661	0.756	
	S-4	0.594	0.777	
	S-5	0.600	0.775	

TABLE 4 Empirical scale reliability test table.

Dimensions	Items	CITC	Cronbach's alpha, title removed alpha	Cronbach's alpha, title removed alpha
Functionality experience	F-1	0.690	0.821	
	F-2	0.680	0.825	
	F-3	0.730	0.856	
	F-4	0.698	0.804	
			0.817	
Emotional experience	E-1	0.709	0.804	0.851
	E-2	0.725	0.788	
	E-3	0.729	0.785	
Social experience	S-1	0.651	0.816	0.835
	S-2	0.732	0.735	
	S-3	0707	0761	

Support Needs were 0.845, 0.847, and 0.812, respectively, all of which were greater than 0.7, and the CITC values of each item in each dimension were greater than 0.5, indicating that the reliability of each dimension was reasonable, the items were consistent, and they passed the reliability test.

4.2.2. Reliability testing of empirical scales

As shown in Table 4, the reliability values of functional experience, emotional experience, and social experience were 0.856, 0.851, and 0.835, respectively, which were all greater than 0.7, and the CITC values of each item in each dimension were all greater than 0.5, indicating that the reliability of each dimension was reasonable, the items were consistent, and the reliability test was passed (Daum et al., 2022).

TABLE 5 Table of Bartlett's sphericity test and KMO test for demand scales.

KMO and Bartlett tests		0.829
Bartlett's sphericity test	Cardinality last read	1750.743
	DOF	120
	Significance	0.000

5. Discussion

5.1. Validity test of the learning needs scale

First, Bartlett's sphericity test and Kaiser-Meyer-Olkin (KMO) test were conducted using SPSS 21.0. The results showed that the Bartlett's sphericity test^2 value for the 16 questions in the questionnaire learning needs scale was 1750.743 (120 degrees of freedom, sig = 0.000), and there was some overlap in the information reflected by the 16 questions, which was necessary for factor analysis. The KMO test was used to check for partial correlation between the variables (Erfayliana et al., 2022). The value is between 0 and 1. The closer the KMO statistic is to 1, the stronger the partial correlation between the variables and the better the factor analysis is. As shown in Table 5, the KMO value for this part of the questionnaire is 0.829, which indicates that it is well suited for factor analysis.

Factor analysis was performed using the extraction method of principal component analysis. Six shared factors were extracted according to the method of extracting eigenvalues greater than 1. The cumulative explained variance was 58.526%, which met the criterion of explaining more than 50%. The specific calculation results are shown in Table 6.

To further clarify the structure of each common factor, the maximum variance method was used to orthogonally rotate the indicators, and the results are shown in Table 7. The first common factor was assumed to be the learning environment needs factor, the second common factor was the learning interaction needs factor, and the third common factor was the learning support needs factor. From the factor loadings of the 16 measurement questions included in the three extracted factors, they were all above 0.5, which also exceeded the recommended critical level, reflecting the high structural validity of the questionnaire learning needs scale.

5.2. Empirical scale validity test

First, Bartlett's sphericity test and KMO test were conducted using SPSS 21.0. The results showed that the χ^2 value of Bartlett's sphericity test for the 10 questions in the questionnaire experience scale section was 1357.370 (DOF at 40, sig = 0.000), and there was some overlap in the information reflected by the 10 questions, which was needed for factor analysis. The KMO test was used to check the partial correlation between

TABLE 6 Factor analysis of the learning needs scale.

Total differences explained									
Components	Total	Initial Eigenvalue Variance %	Total %	Total	Extraction of loading squares and variances	Total %	Total	Rotational load squared and variance	Total %
1	3.977	2.4855	24.855	3.977	24.855	24.855	3.395	21.218	21.218
2	2.709	16.933	41.755	2.709	16.933	41.788	3.108	19.424	40.652
3	3.678	16.738	58.526	2.678	16.738	58.526	2.861	17.884	58.526
4	0.799	4.747	63.273						
5	0.715	4.481	67.745						
6	0.648	4.053	71.798						
7	0.622	3.889	75.686						
8	0.857	3.672	79.358						
9	0.533	3.332	82.690						
10	0.498	3.115	85.805						
11	0.454	2.837	88.642						
12	0.403	2.516	91.158						
13	0.382	2.388	93.546						
14	0.370	2.312	95.859						
15	0.336	2.097	97.956						

Extraction method: Principal component analysis.

TABLE 7 Calculation results of orthogonal rotation of demand size index.

Rotating component matrix[a]			
	Component 1	Component 2	Component 3
Learning Environment Needs 1	0.777	0.041	0.042
Learning Environment Needs 2	0.752	0.038	0.032
Learning Environment Needs 3	0.747	0. 102	0.058
Learning Environment Needs 4	0.704	0.057	0.033
Learning Environment Needs 5	0.744	0.040	0.000
Learning Environment Needs 6	0.763	0.084	0.077
Learning Interaction Needs 1			
Learning Interaction Needs 2	0.051	0.779	0.028
Learning Interaction Needs 3	0.068	0.801	0.006
Learning Interaction Needs 4	0.048	0.791	0.061
Learning Interaction Needs 5	0.053	0.783	0.003
Learning Support Needs 1			
Learning Support Needs 2	0.038	0.004	0.752
Learning Support Needs 3	0.069	0.061	0.800
Learning Support Needs 4	00064	0.035	0.747
Learning Support Needs 5	0.041	0.047	0.752

Extraction method: Principal component analysis.
Rotation method: Kaiser standardized maximum variance method.
[a]Rotation converges after five iterations.

the variables. The value is between 0 and 1. The closer the KMO statistic is to 1, the stronger the partial correlation between the variables and the better the factor analysis is. The KMO value for this part of the questionnaire was 0.735, as detailed in Table 8, and this value indicates suitability for factor analysis.

Factor analysis was performed, and the extraction method of principal component analysis was used. Three common factors were extracted using an extraction method with eigenvalues greater than 1. The cumulative explained variance was 73.811%, which met more than 60% of the explanation criteria, and the results are shown in Table 9.

To further clarify the structure of each common factor, the maximum variance method was used to orthogonally rotate the indicators, as detailed in Table 10. Let the first common factor be the functional experience factor, the second common factor be the emotional experience factor, and the third common factor be the social experience factor. From the factor loadings of the 10 measurement questions included in the three extracted factors, they were all above 0.5, which also exceeded the recommended critical level, reflecting the high structural validity of the questionnaire experience scale.

TABLE 8 Table of empirical scales Bartlett sphericity test and KMO test.

Number of KMO sampling suitability		
KMO and Bartlett tests		0.735
Bartlett's spherical test	Cardinality last read	1357.370
	DOF	45
	Significance	0.000

6. Results

As shown in Figure 1, according to the online learning demand statistics, it can be seen that the online network platform environment has the highest demand with a mean value of 3.465, followed by the learning platform support demand with a mean value of 3.373 and the lowest learning interaction demand with a mean value of 3.246. This indicates that students pay more attention to the learning environment of online learning courses, in other words, the learning environment helps students to learn better. In contrast, students' need for learning interaction is not very high, which indicates that students pay less attention to interaction when using online sports learning courses on the platform, and the actual learning behavior is mainly based on learning knowledge itself.

As shown in Figure 2, according to the statistical results of online learning experience, the online network platform has the highest functional experience with a mean value of 3.376, indicating that the online network education platform widely used by students now has better functions; the mean values of emotional experience and social experience are 3.293 and 3.267, respectively, indicating

TABLE 9 Factor analysis of empirical scales.

Components	Total	Initial Eigenvalue Variance %	Total %	Total	Extraction of loading squares and variances	Total %	Total	Rotational load squared and variance	Total %
1	3. 175	31.751	31.751	3. 175	31.751	31.751	2.805	28.053	28.053
2	2.202	22.019	53.770	2.202	22.019	53.770	2.315	23. 151	51.204
3	2.004	20.041	73.811	2.004	20.041	73.811	2.261	22.607	73.811
4	0.557	5.574	79.384						
5	0.491	4.910	84.295						
6	0.397	3.973	88.267						
7	0.339	3.389	91.657						
8	0.322	3.216	94.873						
9	0.281	2.810	97.683						
10	0.232	2.317	100.000						

Extraction method: Principal component analysis.

TABLE 10 Calculated results of orthogonal rotation of empirical scale indicators.

Rotating component matrix			
Functionality Experience 1	Component 1	Component 2	Component 3
Functionality Experience 2	0.825	0. 101	−0.005
Functionality Experience 3	0.813	0.070	0.058
Functionality Experience 4	0.852	0.073	0.064
Functionality Experience 1	0.838	0.041	0.009
Functionality Experience 2	0. 151	0.858	0.030
Functionality Experience 3	0.039	0.882	0.043
Social Experience 1	0.060	0.879	0.049
Social Experience 2	−0.005	0.039	0.841
Social Experience 3	0.075	0.067	0.883
	0.038	0.014	0.873

Extraction method: principal component analysis.
Rotation method: Kaiser standardized maximum variance method.
[a]Rotation converges after four iterations.

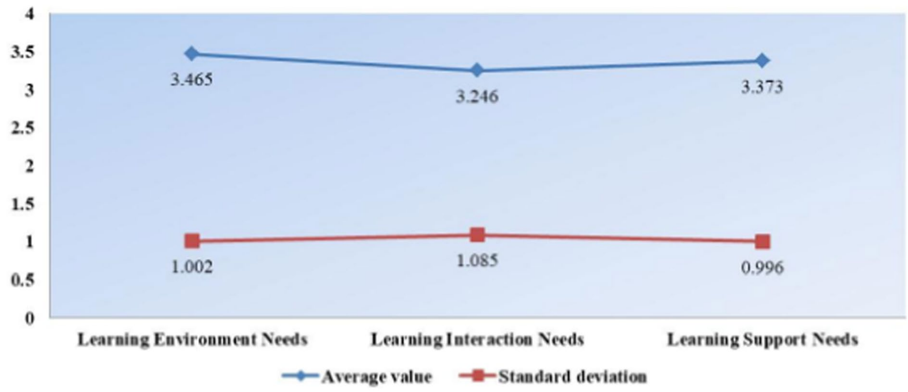

FIGURE 1
Statistical linear plot of learning needs.

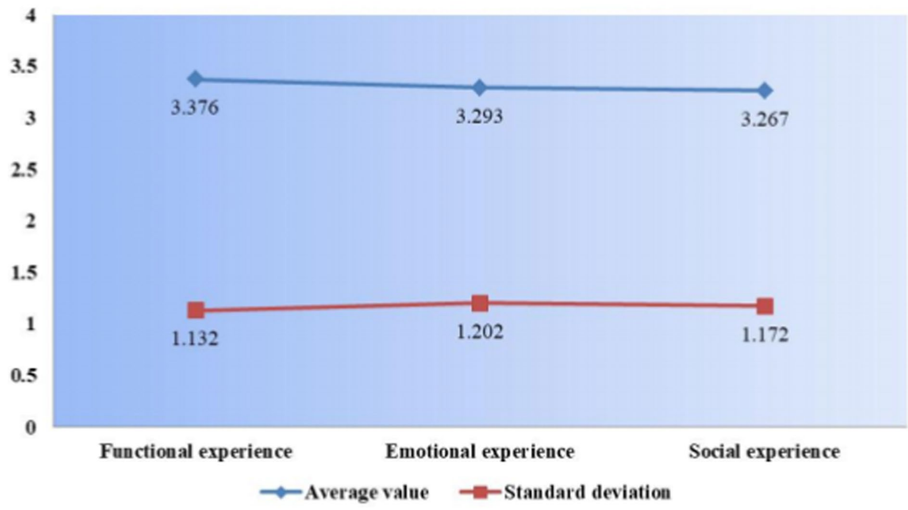

FIGURE 2
Statistical linear plot of learning experiences.

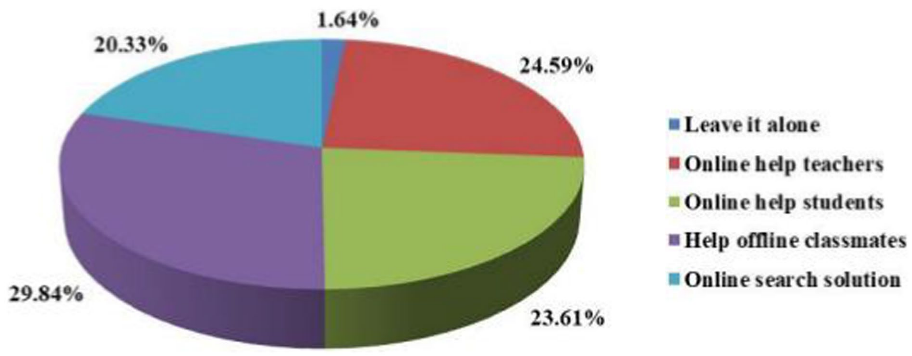

FIGURE 3
Solution statistics pie chart.

that the online network emotional experience and social experience are better, but both are lower than the online network platform functional experience.

The results in Figure 3 show that 91 students used the "help offline classmates" method to seek help if they had a problem in an online course. There was little difference between the number of online instructors and

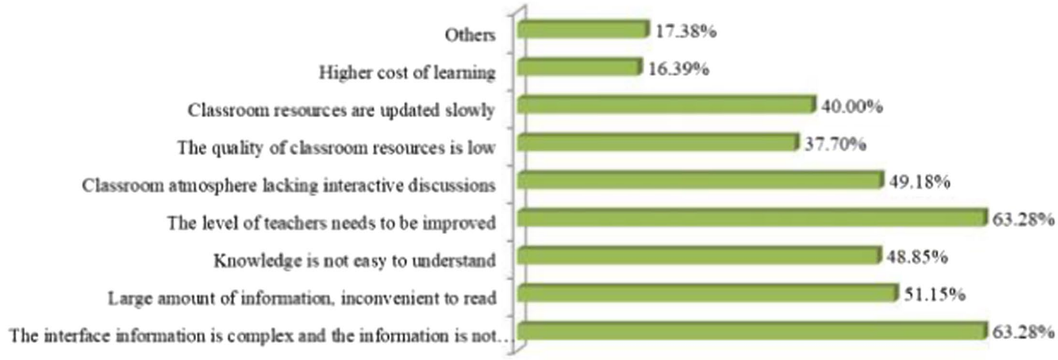

FIGURE 4
Statistical chart of problems with the online platform.

online teachers, 75 and 72, respectively, and this was the second lowest solution for online search and solutions, with only 62 people choosing this option. A total of 209 people, or 68.52%, chose the online solution.

The analysis was performed using the chi-square goodness-of-fit test according to whether the proportion of each program was evenly distributed. As seen in Figure 4, the goodness-of-fit test showed significance (Chi = 167.499, $p = 0.000 < 0.05$), which means that the selection rate of each item was significantly different, and the differences can be specifically compared by response rate or penetration rate. Specifically, response rates and penetration rates were significantly higher for five items in the classroom atmosphere, including complex interface content, inconspicuous key information, large amount of information, inconvenient access, difficult knowledge to understand, teacher level to be improved, and lack of interactive discussion.

7. Conclusion

When people combine Internet information technology to break through the time and space of learning, the era of lifelong learning has quietly arrived. At present, the country vigorously promotes "Internet + Education," digitalization and informatization of education. Only by keeping up with the update of information technology and constantly optimizing and providing high-quality network education resources can the physical education courses in colleges and universities avoid being outdated, decadent and abandoned by the times, and truly play their proper value, so as to improve the effect of physical education teaching.

The key to the integrated development of Internet online education platform and college sports is, firstly, the construction and upgrading of college sports online education resources; secondly, both platform users and auxiliary learners must have "Internet thinking" and use modern network technology to realize the efficient use of platform education resources; thirdly, it is to build a complete legal system to protect the rights and interests of sports online teaching resources from the legal level; and finally, it is clear that the closed loop of business interests to ensure sustainable development. However, from the actual situation in Chongqing, there are certain challenges in the construction of digital and informatized educational resources of college sports with strong practicality, and the informatization ability and professional strength of teachers responsible for the development and teaching of network resources still need to be improved; the corresponding platform also needs to be optimized in terms of resource information processing, interactive module design, and update timeliness. The independent learning and practice of physical education does not play a good supporting role, and the effect of online teaching of physical education is generally not optimistic.

Therefore, the construction and optimization of online sports resources to meet the needs of contemporary college students' sports learning, and the development of hybrid teaching and personalized independent learning based on MOOC which meets the learning habits of contemporary learners, are essential to promote the development of modern online technology learning. Moreover, it is important for the development of university sports and the discipline itself to realize the reform of teaching mode and teaching reform.

8. Limitation

Due to the impact of the epidemic, this study only uses online questionnaire surveys, and the survey objects are college students majoring in physical education in Chongqing universities. Although the sample size is small, the schools and students covered are representative and can reflect the online education situation of Chinese college students, especially students majoring in physical education, under the epidemic.

9. Implications

According to the results of the questionnaire, this paper proposes the necessity of constructing and optimizing the online education resources of sports in colleges and universities. It is necessary to adapt to the characteristics of the "Internet+" era with advanced teaching rules. Keeping up with the pace of the times is the value concept. Innovate the traditional classroom teaching mode with relatively low efficiency to achieve the purpose of optimizing teaching effect and cultivating students' independent learning, thinking and innovation ability. The characteristics of platform online education are proposed. The mainstream platform guarantees the user experience and the quality of teaching resources, online learning meets the needs of "Internet natives," and the Internet provides possibilities for various learning conditions and environments.

Data availability statement

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

Author contributions

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

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Conflict of interest

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

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Communication style drives emergent leadership attribution in virtual teams

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Leader selection plays a key role in how human social groups are formed and maintained. Leadership is either assigned through formal processes within an organization, or emerges informally through interactions with other group members–particularly in novel contexts. COVID-19 has accelerated the adoption of virtual meetings and more flexible team structures. However our understanding of how assigned leadership influences subsequent leadership emergence in virtual settings is limited. Here we examine the relationship between assigned leadership within an existing organization and subsequent emergent leadership attributions as members engage in virtual interactions. To do so, we created and implemented a novel virtual group decision-making task designed to support quantification of a more comprehensive set of communication style elements, such as speech dynamics and facial expressions, as well as task behaviors. Sixteen members of a real world organization engaged four repeated rounds of a group decision making task with new team members each time. We found participants made novel attributions of emergent leadership rather than relying solely on existing assigned leadership. While assigned leadership did influence leadership attributions, communication style, including amount of speech but also variability in facial expressions, played a larger role. The behavior of these novel emergent leaders was also more consistent with expectations of leadership behavior: they spoke earlier, more often, and focused more on the correct decision than did assigned leaders. These findings suggest that, even within existing social networks, virtual contexts promote flexible group structures that depend more on communication style and task performance than assigned leadership.

KEYWORDS

leadership selection, virtual teams, synchrony, speech analysis, facial affect, group decision making

Introduction

Forming groups is a universal feature of human social behavior (Gordon et al., 2014; Shamay-Tsoory et al., 2019). How we attribute leadership status to others is a key aspect of how we form and manage those groups (Spisak et al., 2015). Broadly speaking, leadership attribution occurs either by (1) assigning it through formal processes within an organization or (2) by it emerging informally through the impressions of other group members (Hollander, 1960; Stein and Heller, 1979; Paunova, 2015).

Early research argued that leadership depended upon traits inherent to individuals (Lewis, 2000), which explain some variance in whether individuals emerge as a leader. However, leadership emergence is increasingly considered to be a relational process, depending more upon the dynamics of verbal and non-verbal communication in groups than upon the distribution of individual traits (DeRue and Ashford, 2010; Hackman and Johnson, 2013; Gerpott et al., 2018). Much of the work on this topic has nonetheless remained focused on traits and other static antecedents of emergent leadership (Gerpott et al., 2018) rather than the relationship between assigned and emergent leadership over time, or to the dynamics of behaviors that drive attributions of emergent leadership in groups.

Communication style, particularly speech, is considered so central to leadership attribution that leadership has been referred to as a "language game" (Pondy, 1989). Speech, focused on task outcomes reliably predicts emergent leadership (Bales, 1950; Lonetto and Williams, 1974) particularly when related to information-seeking and sharing (Morris and Hackman, 1969). The tendency to participate in discussion early and regularly has been shown in numerous studies to predict perceptions of emergent leadership (Morris and Hackman, 1969; Sorrentino and Boutillier, 1975; Kickul and Neuman, 2000; Sudweeks and Simoff, 2005).

The display and management of emotions through both verbal and non-verbal communication (Adolphs, 2001; Kelly and Barsade, 2001; Barsade and Gibson, 2012) drive perceptions of leadership (Pescosolido, 2002; Li et al., 2012). Facial expressions are a primary means of signaling emotions, one for which we have evolved unique facial musculature (Ekman, 1993). Links between facial expressions, particularly emotional signaling, and perceptions of leadership have a well-developed theoretical basis (Trichas et al., 2017; Trichas, 2017a). Emotional signaling plays an important role in group coordination (Cosmides and Tooby, 2000), influencing a person's perception in dimensions relevant to leadership attributions (Zebrowitz and Montepare, 2008; Trichas, 2017b). For example, the variability of an individual's facial expressions has been shown to have a positive influence on perceptions of their leadership, authenticity and trustworthiness (Slepian and Carr, 2019).

Our ability to synchronize behavior with others is both a measure and a mediator of dyadic and group communication and cohesion (Wiltermuth and Heath, 2009; Dikker et al., 2017; Gordon et al., 2020). Facial mimicry–the synchronization of facial expressions–is thought to support social cohesion through enhancing emotional recognition (Fischer and Hess, 2017; Slepian and Carr, 2019), affective and cognitive empathy (Hofelich and Preston, 2012; Drimalla et al., 2019; Holland et al., 2021) and perspective-taking (Stel et al., 2008). Inhibiting facial mimicry reduces credibility and cognitive empathy (Ask, 2018). Perspective-taking, emotional recognition, and empathy are all thought to contribute to emergent leadership attributions (Pescosolido, 2002; Wolff et al., 2002).

A comprehensive account of the leadership attribution process requires quantifying the rich array of dynamic social cues, diverse communication styles, and competencies that constitute human group behavior (Hollander, 1960; Stein and Heller, 1979; Pondy, 1989; Gerpott et al., 2018). Development of computational approaches to quantifying key aspects of communication, such as facial expressions and speech dynamics, and various forms of interpersonal synchrony, has been developing rapidly. However these make up only a subset of the rich multi-dimensional content of social interactions, and are best studied in tightly controlled contexts, thus making the comprehensive quantification of real-world human group interactions notoriously difficult. This challenge emphasizes a tension between realistic, ecologically valid experiments, where much of the richness of group interactions is maintained, and the ability to maintain control over experimental variables and their quantification. This tension tends to result in approaches that either use abstract, simplified paradigms where richness and ecological validity is sacrificed for tight experimental control, or realistic group interactions with low experimental control and many crucial variables remaining unquantified.

Teleconferencing constrains the richness of social interactions in shared physical space, yet much of that richness is maintained (Werkhoven et al., 2001). Indeed, despite reductions in eye contact, obscured expression of postural and gestural cues, and of course physical proximity, teleconferencing has shown only limited or conflicting impacts on measures of group task performance (Sellen, 1995; McLeod et al., 1997; Brucks and Levav, 2022). Crucially, as teleconferencing requires that the entirety of a social interaction including the information each individual sends and receives is mediated by software, it becomes much more amenable to comprehensive quantification.

Teleconferencing is also becoming increasingly common in personal and professional interactions, and abruptly increased during the COVID-19 pandemic (Frost and Duan, 2020; Arrero et al., 2021; Chai and Park, 2022) It has been estimated that as much as 20% of all United States workdays will continue remotely once the pandemic has passed (Barrero et al., 2021; Brucks and Levav, 2022). Teleconferencing therefore provides not only a powerful way of quantifying social interactions but is also becoming an increasingly common form of everyday human interaction.

The proliferation of the use of teleconferencing, the richness of virtual social interactions, and their increased amenability to quantification provide a unique balance between maintaining experimental control and ecological validity. This makes it an ideal tool for studying realistic human group behavior and leadership selection.

While the literature on leadership is extensive, research focusing on leadership, and specifically leadership selection in virtual interactions, is limited but growing (Kayworth and Leidner, 2002). Much like in-person teams, leaders regularly emerge through contribution and influences upon the team (Yoo and Alavi, 2004) and often virtual teams have greater shared leadership (Frost and Duan, 2020). It is thought that the lack of shared physical space can undermine the effectiveness of group communication (McDonough et al., 2001; Frost and Duan, 2020). Typical social skills involved in in-person leadership may not be enough to lead in the online environment (Roman et al., 2019), rather, additional skills in communication are required (Contreras et al., 2020). Therefore, communication style, specifically frequency, quality and quantity of communication, has been hypothesized to be more important for leadership in virtual teams (Kayworth and Leidner, 2002; Kirkman et al., 2004; Yoo and Alavi, 2004).

Here we focus on an important but overlooked aspect of leadership: how existing assigned leadership impacts emergent leadership attributions in virtual interactions. We examined the effect of hierarchical standing by conducting a teleconferencing group decision making task with members of an established professional network with pre-assigned leadership roles. We compared the influence of established assigned and dynamic in-task variables—communication style, speech and facial expressions, and task performance have on subsequent leadership attribution. We then modeled how assigned leadership, task behaviors, and subjective ratings predicted actual leadership selection. We found that participants made novel attributions of emergent leadership rather than deferring to the assigned leadership defined by their professional network. While assigned leadership did influence leadership attributions it was less predictive of leadership attribution than elements of communication style generally and the amount of time spent speaking in general. The behavior of these novel emergent leaders was also more consistent with expectations of leadership behavior than that of assigned leaders; they spoke earlier, more often, and focused more on the correct task outcome. This indicates that while participants were attributing leadership with greater reliance on communication style than assigned leadership they did so in a way that was guided by both competence and leader-like behaviors. This suggests that teleconferencing may support more flexible status structures and teams that are able to assess leadership in an effective manner both of which could support increasingly common, dynamic teams.

Materials and methods

Participants

During the summer of 2020 we recruited 16 University of Pennsylvania undergraduate students (M age = 20 SD age 1.31) who were all part of the same social network—a medical fraternity club—and repeated the experiment 4 times. Because all participants were part of a club that included leadership positions, each participants' club status was manually coded with a larger number denoting a higher status (e.g., president of the club: 9) and a lower number denoting a lower status (e.g., a freshman at entry level in the club: 1). All members take part in frequent shared club activities, and hold different explicit roles that vary in status. All participants had normal or corrected to normal vision. Written and informed consent was obtained from each participant prior to the experiment, and confirmed on each subsequent experimental session. The study procedures were approved by the University of Pennsylvania Institutional Review Board.

Hidden profile task

Each participant engaged in four rounds of a hidden profile task (HPT) as a means to measure both individual and group performance in information-sharing and consensus-seeking. The HPT is designed so that the optimal outcome can only be explicitly uncovered when group members collectively pool information that they acquire individually before the task begins. Some of this information is shared among all members, but, crucially, some information is uniquely held by each of them. Each participant engaged in four hidden profile task discussions in groups of four (Figure 1C). We pseudo-randomly selected participants to maximize the number of novel pairings and avoid repeat pairings.

Prior to the discussion each participant is given a short vignette that contains information on three choices available to them, crucially some of that information is shared across all participants while some information is hidden from all but one participant. The optimal decision can only be reliably reached by the sharing of the hidden information. Small groups engaging in a HPT tend to have a collective information sampling bias toward basing their decision on commonly-held rather than unique information, leading to suboptimal outcomes (Stasser and Titus, 1985, 1987; Stasser and Stewart, 1992). The commonly-held information is designed to favor an incorrect choice while the unique information held by individuals supports the correct option and invalidates the incorrect ones.

Participants were given 10 min to read the assigned vignette containing the shared and hidden information units, they were then instructed to reach a consensus and given 10 min to do so. They were prompted 2 and 1 min before this time elapsed, and whether the group reached consensus, and which choice the group made was then recorded. The HPT relies on distribution of hidden information, and classically on the participants being unaware that they have access to information that other members do not. Having participants engage in repeated HPT's did not lead to significant changes in group behavior—i.e., coordinating to explicitly announce all information each participant had at the start of a session, rather than revealing information through discussion.

Pre HPT measures

Before their first group discussion, each participant completed measures of their demographics and individual differences, including anxiety. Each participant also completed the anxiety measure before their second, third, and fourth rounds. Trait and state anxiety were measured using the State–Trait anxiety index (Spielberger, 2012), Grit was measured using the short Grit Scale (Duckworth and Quinn, 2009), Generalized Problematic Internet Usage Scale-2 (GPIUS2; Caplan, 2010) and Interpersonal Reactivity Index (IRI; Davis, 1980).

Post HPT measures

Following the HPT, participants were asked to choose which participant they considered the leader and rate that participant on a modified Multifactor Leadership Questionnaire 6S (MLQ-6S) and rate both themselves and each of the other participants in the experimental group on warmth and competence. Following completion of these measures, participants were informed as to whether they had chosen the correct outcome or not.

Audio analysis

We made use of the native recording options in Zoom to obtain a separate audio track for each participant, and a single audio track for the whole group, per session (Figure 1E). Each participant's audio track was processed in MATLAB and converted to logical speech/silence vectors. These speech vectors were then used to calculate quantity, timing and dynamics of speech (Figures 1F,H). One participant's audio was excluded due to a recording error.

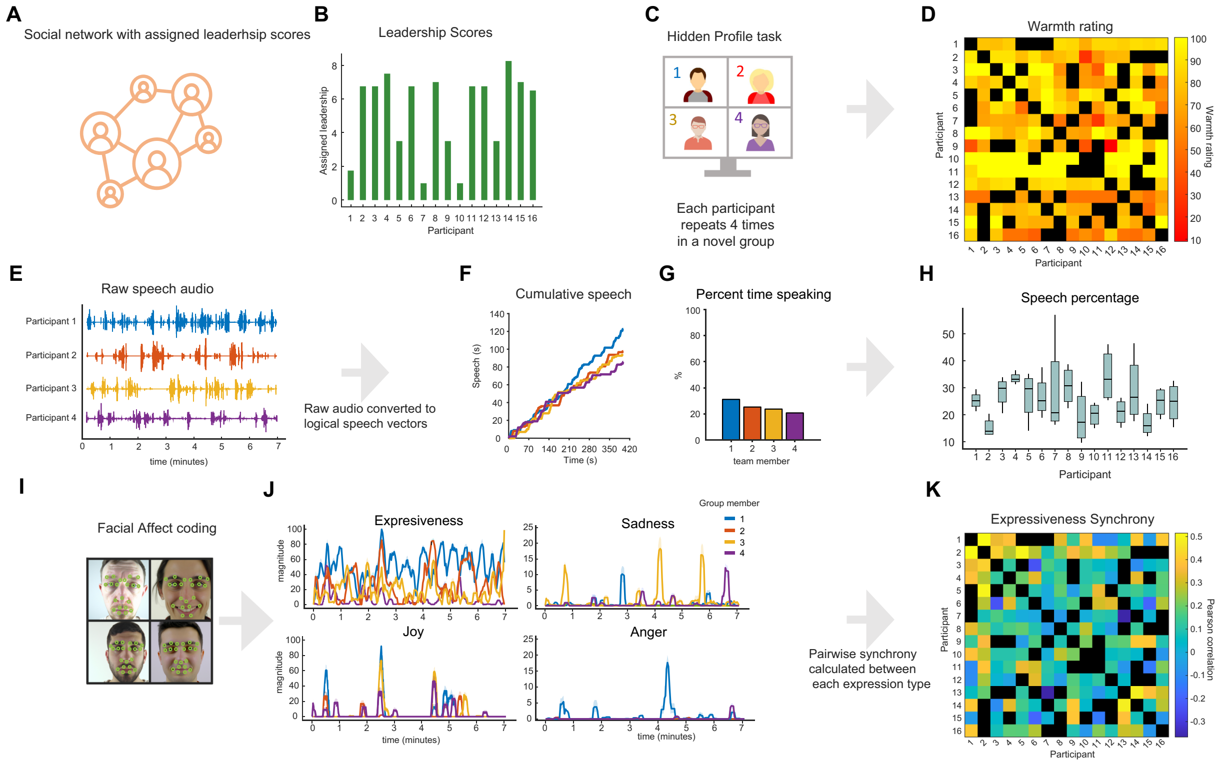

FIGURE 1
Experimental approach and analysis pipeline: **(A)** Quantified social network, **(B)** Leadership scores of participants in social network. **(C)** Hidden profile task schema. **(D)** Ratings of participants on warmth and competence from other participants. **(E–G)** Example data from session 10, **(E)** Raw speech waveforms **(F)** cumulative speech over session durations **(G)** Percentage of total speech by each participant. **(H)** Percentage of speech by each participant in each session. **(I)** Facial affect coding shema. **(J)** Example facial affect time course from session 10, Engagement, Joy, Sadness and Anger **(K)** pairwise synchrony between interacting participants, black squares indicate participants that did not interact. Faces created with AI software (https://stablediffusionweb.com/) License: CC0 1.0 Universal Public Domain Dedication.

Facial expressions and mimicry

Each video session was cropped into individual videos using a simple function in Bonsai (Lopes et al., 2015). These videos were then imported in iMotions Biometric Research Platform 9.0 software and analyzed using the Affectiva Facial expression recognition engine (Bishay et al., 2022; Figures 1I,J). To be clear, and in line with a growing body of research, we do not consider affect expressed in facial expressions as veridical measures of a participant's affective state (Kappas, 2003; Mauss and Robinson, 2009; Yang, 2014). We instead consider it to be a measure of emotional signaling, while remaining agnostic to the participant's internal affective state. The mean and standard deviation for each emotion category was calculated for each participant in each session. As we were quantifying mimicry of macro-expressions, which tend to vary between 0.5–4 s (Rosenberg and Ekman, 2020), and to reduce the role of false positives facial expression data was smoothed with a 2 s before conducting pairwise Pearson correlations between each participant in each group (Figure 1H).

Modeling description

Here we examined whether pairwise emergent leadership choices could be predicted by key task variables. As participants engaged in four HPT sessions with three other participants each time, this provided 192 individual leadership choices. We initially included the following trait predictors: assigned leadership score, trait anxiety, grit and gender; the task predictors: amount of information conveyed, a conveyed information "unit" was defined as an outcome relevant element of the HPT vignette spoken by a participant. We included the following communication style predictors: mean facial expression magnitude for each emotion category, valence and expressiveness, and the proportion of time the potential leader spent speaking. We included expression mimicry predictors: the pairwise Pearson correlation between potential leader and participant in both expressiveness and valence categories. Finally, we included pairwise participant ratings of warmth and competence. We used a generalized linear model with a logit link function, random intercept and added and removed variables in a backwards stepwise manner using a Bayesian Information Criterion implemented using the *glmfit.m* and *stepwiseglm.m* functions from the statistic toolbox in MATLAB (2022; The Mathworks, Inc., Massachusetts).

Results

Group performance

Groups reached the correct consensus in 10 of 16 HPT sessions; in the remaining sessions they failed to reach consensus in 2 and reached an incorrect consensus in 4 (Figure 2A). There are three primary measures that determine how information is being used in a HPT: (1) the proportion of total available hidden information shared; (2) information pooling, the percentage of unique information mentioned out of total information available; and (3) discussion focus, the percentage of unique information out of total information discussed (Lu et al., 2012). We found no significant differences in any of these three measures between groups that succeeded or failed to reach consensus. However, when examining the distribution of speech between groups, we found that the correct consensus groups had greater dispersion in the quantity of speech across participants ($T_{14} = 2.1804$, $p < 0.05$; Figure 2B). This suggests that the tendency for particular individuals to lead the discussion more than others, rather than information sharing, played a greater role in groups reaching the correct outcome.

What determines emergent leadership selection?

Our primary research question focuses on what qualities drive the selection of individuals leaders. To answer this question, we fit a generalized linear model to predict whether a participant would choose another participant as the group leader. Each participant rated and was rated by 12 of the 16 other participants across four separate sessions. To remove non-significant predictors, we added and removed variables in a backward stepwise manner using a Bayesian Information Criterion (BIC). We initially included the following trait predictors: assigned leadership score, trait anxiety; and grit. We included task predictors: the amount of information, with each sentence quantified as a conveyed 'information unit'. We included facial affect and mimicry predictors: the mean magnitude and pairwise Pearson correlation between each participant and all other members of their group in expressiveness—the variability in expressions across all categories, and valence—the net magnitude of positive and negative expressions and the proportion of time the potential leader spent speaking. Finally, we included pairwise participant ratings of warmth and competence.

The final model significantly predicted leadership choice [$X^2(184, N = 189) = 40.5$, $p < 0.0001$]. Variables that survived exclusion were predominantly related to communication style: proportion of time speaking, median expressiveness and expressiveness mimicry as did assigned leadership. We found that speech proportion, average expressiveness during an individual's speech, and real world status each positively predicted leadership emergence while expressiveness entrainment was a weak negative predictor (Table 1).

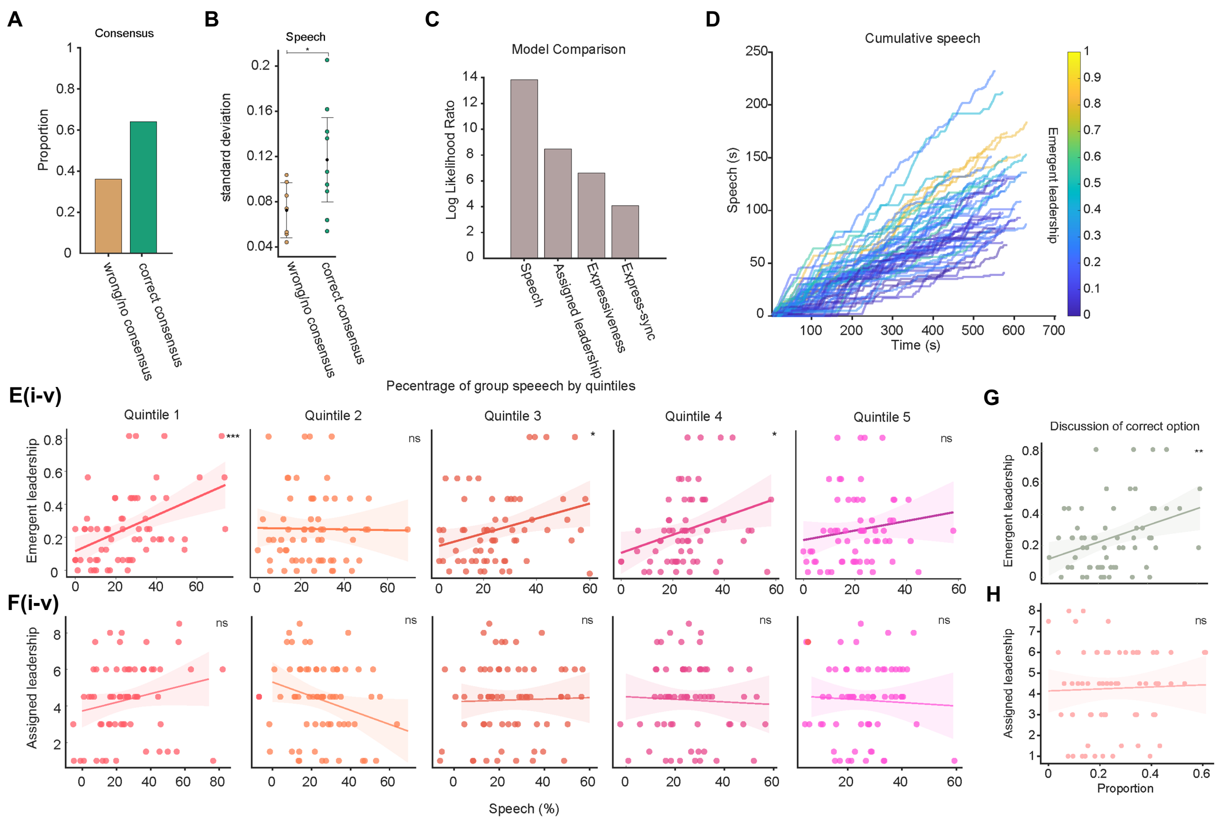

FIGURE 2
Communication style predicts emergent leadership attribution. **(A)** Proportion of 16 sessions that reached the correct consensus. **(B)** Standard deviation of speech percentage between correct consensus and incorrect groups. **(C)** Log likelihood ratio of reduced models compared to best models. **(D)** Cumulative speech for each participant session color temperature indicates emergent leadership score. **(E,F)** Relationship between percentage of speech and **(E)** emergent or **(F)** assigned leadership by each participant in a session split into five (i–v) quintiles. **(F)** Percentage of speech and assigned leadership proportion by each participant in a session split into five quintiles. **(G,H)** Relationship between each proportion of each group's discussion of the correct outcome by each participant and emergent and assigned leadership.

TABLE 1 Leadership selection model.

Predictor	Estimate	Standard Error	T stat	*P*-Value
Intercept	−5.3485	0.94581	−5.6549	<0.0001
Speech percentage	7.181	2.0778	3.4561	<0.0001
Assigned leadership	0.27561	0.10235	2.6928	<0.001
Expressiveness	0.032582	0.013088	2.4894	0.01
Expressiveness mimicry	−1.9705	0.94681	−1.9843	<0.05

To more precisely quantify the importance of each surviving predictor we performed a series of model comparisons, with a leave one out approach, and compared the log likelihood ratio of each reduced model to the full model (Figure 2A). As expected speech percentage was the most important predictor, and yielded the greatest decrease in log-likelihood ratio, followed by assigned leadership, mean expressiveness and expressiveness synchrony. This demonstrates that while assigned leadership did influence emergent leadership attribution, communication style generally, and proportion of speech specifically, played a much more important role.

Speech qualities are related to emergent but not assigned leadership

Speech quantity was the greatest predictor of emergent leadership attribution. We therefore quantified which elements of speech had the strongest relationship to both emergent and assigned leadership. To facilitate the comparison between emergent and assigned leadership, we calculated an emergent leadership score as the proportion of the total possible times each individual was chosen as a leader.

We visualized speech dynamics by calculating the cumulative sum of speech for each participant (Figure 2B). This illustrated that individuals with higher emergent leadership contributed both more and earlier to each discussion. Leaders have a tendency to speak more, earlier (ref). We therefore quantified these patterns by splitting each session into quintiles and plotting each participant's speech against both their emergent and assigned leadership scores. We found that emergent leadership most strongly predicted the percentage of speech in the first quintile [$F(63,61) = 16.2$ $p < 0.001$] with an R^2 of 0.194, and weaker positive relationships in the 3rd [$F(63,61) = 6.16$ $p < 0.05$, $R^2 = 0.09$] and 4th [$F(63,61) = 5.97$ $p < 0.05$, $R^2 = 0.0892$] quintiles. Assigned leadership failed to significantly predict the percentage of speech in any quintile. This indicates that emergent leaders spoke earlier, initiating conversation, but did not proceed to dominate it throughout the session, while assigned leaders' behavior was not distinguishable from other group members.

A benefit of the HPT is that it allows, in addition to quantifying the amount and timing of speech, to quantify elements of competence in task focused discussion. Because the HPT has a correct solution, which the group must reach consensus upon for success, competence can be measured by the proportion time each participant spends discussing the correct vs. incorrect options (Figures 2G,H). Two linear regressions were calculated to predict time spent speaking about the correct option from emergent and assigned leadership. A significant regression equation was found for emergent leadership [$F(64,62) = 8.52$ $p < 0.01$] with an R^2 of 0.121, but not assigned leadership, [$F(64,62) = 0.001$ $p = 0.07$] with an R^2 of 0.0017. Thus, emergent leaders displayed more competence in their task-focused communication than participants with higher assigned leadership. This finding suggests that participants made effective choices when choosing group members as emergent leaders rather than relying on assigned leadership status.

Discussion

Multiple studies have linked communication style, particularly the quantity and timing of speech, to emergent leadership attribution (Morris and Hackman, 1969; Sorrentino and Boutillier, 1975; Kickul and Neuman, 2000; Sudweeks and Simoff, 2005). Here we predict leadership attribution from a range of communication style elements, including speech dynamics, information content of speech and facial expressions within members of a professional social network with an established assigned leadership structure. By using a novel approach, examining teleconferencing interactions in combination with a HPT, we were able to combine high experimental control with high ecological validity and quantify a more comprehensive range of communication style elements and task relevant information conveyed by each participant.

Our primary research question focused on how existing assigned leadership within a social network would influence emergent leadership attribution in a teleconferencing context. Two expectations were that (1) if assigned leadership plays the same role in a teleconferencing as it does in face to face interactions it would be most predictive of leadership attribution and (2) that the behavior of assigned leaders would be most consistent with established leadership behaviors. In contrast, our model of leadership attribution demonstrated that the quantity of speech in particular, and communication style as whole, were better predictors of leadership attribution than previously-assigned leadership, which validate previous studies (Pescosolido, 2002; Zebrowitz and Montepare, 2008; Li et al., 2012; Trichas, 2017a; Slepian and Carr, 2019).

The medium of teleconferencing has been shown to reduce the impact of existing team identity (Joshi and Roh, 2009). We speculate that this might extend to decreasing the importance of assigned leadership within a particular social network. Particularly, changes in information sharing dynamics in digital settings offer the possibility of flatter hierarchies, more flexible leadership roles (Cortellazzo et al., 2019) and greater performance. In line with this we also found that novel emergent leaders, but not assigned leaders, demonstrated patterns of communication that are classically associated with leadership, and largely consistent with a dominant leadership style (D'Errico and Poggi, 2019). They spoke earlier, engaged in more competent, task-focused communication, and increased discussion of the correct outcome. Participants therefore did not rely exclusively upon assigned leadership and instead integrated it with group members' communication style and task behavior.

The existing research on various aspects of team effectiveness during teleconferencing is mixed. These data argue that leadership attribution is more flexible being be more driven by accurate appraisals of current social information in teleconferencing contexts. Information shared among all members is crucial to group performance in the HPT. A flatter hierarchy, in this example with less reliance on existing assigned leadership, may allow for more a wider distribution of information contributions from the group (Cortellazzo et al., 2019) which may result in better performance for virtual groups (Pearce et al., 2009; Hoch and Kozlowski, 2014).

Emotional regulation is thought to be an important predictor of leadership attribution (Pescosolido, 2002; Li et al., 2012). Anxiety represents a maladaptive form of emotion regulation (Cisler and Olatunji, 2012), while grit is thought to be related to successful emotional regulation and perseverance (Hwang and Nam, 2021). Perspective-taking ability is thought to support leadership through detection and management of group emotion and task relevant information (Wolff et al., 2002). We found that none of these traits had any measurable impact on leadership attribution. These findings underscore the relational nature of leadership attribution over the role of specific individual traits.

Neither the average magnitude of signaled emotion, nor pairwise synchrony in any of these categories, predicted leadership attribution. We note that the HPT vignettes used in this study were more procedural and thus unlikely to evoke strong emotional responses, thus making the average magnitude of emotional expression less informative. Nonetheless, consistent with the findings of Slepian and Carr (2019) we found that the variability in expressiveness rather than the valence of signaled emotion positively predicted leadership attribution. This diminished role of signaled emotion synchrony, despite being considered important for group behavior and leadership selection, may reflect disruption of social presence and interpersonal synchrony thought to be caused by virtual interactions (Gutman et al., 2022). Expressiveness synchrony negatively predicted emergent leadership attribution, this may be the result of participants attempting to attract the attention of the group at the same time. Interpersonal competition has been found to negatively predict leadership attribution between individuals sharing individual differences such as social dominance (D'Errico, 2020). Expressiveness synchrony may also be an indication of competition in this data.

Limitations

A limitation of this study is that it focuses on a single social network, an undergraduate medical fraternity, which limits the extent to which these findings can generalize to other organizational contexts. While undergraduate medical fraternities are professional and have clear assigned leadership positions, they may be treated differently from more formal and longer lasting professional networks. This may limit the impact of assigned leadership.

There is evidence that virtual interactions reduce the impact of hierarchical status (Joshi and Roh, 2009; Lilian, 2014). Nonetheless this study does not aim to provide a quantified comparison of the relative importance of assigned leadership, communication style and task behavior between in-person and teleconferencing leadership attribution. Further research explicitly comparing in person and online interactions would be required to address this question explicitly.

Conclusion

The rise in the use of virtual communications is coinciding with an increasing reliance on more flexible and dynamic teams (Lilian, 2014) challenging traditional hierarchical structures. This study demonstrated a novel paradigm that can be used to quantify a more comprehensive account of the milieu of social cues that make up group behavior. We implemented this new technique finding that virtual teams are able to effectively integrate assigned leadership with the communication style and task behavior of group members when making leadership attributions. Additionally, the virtual setting, as opposed to an in-person one, may allow individuals to emerge as more effective leaders than those formally assigned, supporting both more agile and flexible teams and potentially increasing status mobility.

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 University of Pennsylvania Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

Author contributions

SR designed the experiment, conducted data analysis, and wrote the paper. LP conducted data collection and took part in both experimental design, analysis, and writing. MP is the lead investigator of the lab who carried out the study. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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

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The impact of online office on social anxiety among primary and secondary school teachers—Considering online social support and work intensity

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The COVID-19 has had a major impact on the global education system. In order to ensure the normal implementation of education courses, governments and education departments around the world have taken corresponding emergency measures. Based on data from 384 validated questionnaires, this study explored the effects of teleworking practices, work intensity, and online social support on social anxiety among primary and secondary school teachers. The results found that teleworking was more likely to cause social anxiety among teachers, while work intensity could promote social anxiety and online social support could reduce the probability of social anxiety. Work intensity can weaken the influence of partner support on social anxiety. Moreover, the model path coefficients differed across work styles. Based on the results, this study proposes some policy recommendations in order to provide theoretical guidance for improving social anxiety among primary and secondary school teachers and promoting the quality of educational work.

KEYWORDS

online social support, online office, social anxiety, structural, equations models

1. Introduction

The respiratory disease caused by coronavirus was first identified in Wuhan, China, in 2019, initiating the largest pandemic of the 21st century. on 30 January 2020, the World Health organization officially declared COVID-19 a public health epidemic. In the months that followed, cases were reported in countries around the world, threatening global health. The global epidemic of COVID-2019 posed unprecedented challenges to security, health, education, economy, and job stability (Andrade-Vargas et al., 2021). In order to prevent the rapid spread of the virus, various countries have to take corresponding emergency measures. The World Health Organization recommended the wearing of masks in public and maintaining appropriate social distancing to prevent the spread of the virus (Yan-Rong et al., 2020). In this case, classrooms and schools are considered high-risk Spaces for the transmission of the virus due to the large and concentrated population. Therefore, more than 90% of countries choose to temporarily close their teaching areas and adopt the way of distance learning to carry out education and teaching (Basilaia and Kvavadze, 2020). These changes are based on the implementation of emergency education and virtual distance education. In order to ensure that students in different situations can attend classes normally, education and teaching work needs to be more flexible. In addition, the World Bank has begun working with national education authorities to support them in adopting a virtual education approach in response to the global crisis. Other international organizations such as the United Nations Children's Fund (UNICEF) have since joined this initiative. In the face of the virus, every country is looking for alternatives to offline education, all of which require, to a greater or lesser extent, the use of virtual education models. For example, during the New Coronary Pneumonia epidemic, China launched the One-Stop Learning initiative. The goal of the initiative was to develop a systematic program to address the COVID-19 pandemic and the main issues related to the public health crisis. The Chinese government has taken measures to: a. promote online education, b. train teachers, c. develop academic research centers, and d. organize logistical operations. The ultimate goal of the program is to achieve uninterrupted learning.

There is no doubt that under this reality, there will be a series of changes in the education system, and teachers will be the most affected group (Faisal Mahmood et al., 2021)·Due to the closed management of major schools, offline education was announced to be suspended, while the education plan still needs to be carried out, the education department has to change the teaching model and carry out remote teaching (Unger and Meiran, 2020). In effect, from 1 day to the next, teachers, students, and their families were constantly trying to adapt to this change. In the case of teachers, they have had to fundamentally change the way they work, move to online office without realizing the increased demands of their jobs, or stop to think about whether they have the resources necessary to cope with the dramatic changes that come with forced home teaching. Remote working can improve job satisfaction, increase autonomy, and reduce work–family conflict among remote workers to some extent (Bakker, 2007) and the impact of teleworking on energy savings in an organizational setting (Hook et al., 2020). Similarly, negative effects of teleworking have been reported, such as social isolation or coworker dissatisfaction (Golden et al., 2008).

Personally, not everyone has the same resources or has received the same training to meet challenges. Some teachers had experience in distance training before, but others did not. Some of them have handled the new technology well (maybe young teachers), while others have difficulty (definitely older teachers). A successful tele work plan should specify the responsibilities of employees and employers, tele employee agreements, working hours, employee expenses (reimbursable and non reimbursable), maintenance and recovery procedures for tracking equipment, furniture and other assets, training requirements and schedules. Therefore, this will be a process of analysis and evaluation before implementation. However, this description bears little resemblance to what happened in the first weeks of the pandemic. Suddenly, teachers are forced to work remotely, although in reality, it is more like working at home, closing your eyes and crossing your fingers, a kind of "doing what you can do" without analyzing or evaluating the consequences. Scientific literature has seen the advantages and disadvantages of teleworking.

Existing studies have explored several aspects of teleworking on teachers' physical and mental health (Barros, 2017), family harmony (Paschoal et al., 2022), work engagement (Lewig and Metzer, 2007), job satisfaction (Gu et al., 2020), and job well-being (Gajendran and Harrison, 2007), the results of the study showed different effects depending on the region, environment, and group. However, the effect of teleworking on teachers' social anxiety has not received the attention it deserves, and there are almost no relevant studies. People with social anxiety show a pronounced and persistent fear of various social scenarios or appearing in social events that make people embarrassed, and once they are exposed to such situations, they feel overwhelmed and experience various symptoms of discomfort (Piccirillo et al., 2016). Teachers have made great contributions to the inheritance of human culture and the development of scientific knowledge. With the help of teachers, students can better shape their personality and enhance their ability. The quality of teachers' work is closely related to the physical and mental development of students and the progress of the country. Social anxiety not only has a negative impact on teachers' physical and mental health, but also seriously affects teachers' work quality (Samantha et al., 2020). Although there are no studies examining the relationship between teleworking and teacher social anxiety, teleworking can reduce opportunities for face-to-face interaction between teachers and teachers and between teachers and their peers. Some studies have shown that long-term home isolation can negatively affect people's mental health, leading to panic, anxiety, depression, frustration, anger, boredom, and paranoia (Samantha et al., 2020; Souvik Dubey, 2020). However, it is unknown whether teleworking leads to social anxiety among teachers. Therefore, it is important to explore the effects of teleworking on teachers' social anxiety.

The purpose of this study is to explore the effects of remote work style on social anxiety of elementary and secondary school teachers, taking into account online social support and work intensity. In order to provide more insight into the mechanisms of the effects of remote work styles, this study will compare the differences in teachers' social anxiety between remote and non-remote work styles and explore the differences in the effects of online social support and work intensity on social anxiety in the two work styles. The findings of this study aim to enhance the well-being of primary and secondary school teacher populations and promote sustainable development in education.

The theoretical significance of this study is as follows: based on the special environment affected by the epidemic, this paper aims at the mechanism of remote work of primary and secondary school educators, and gives a reasonable explanation for the relevant mechanism, thus further expanding the research on the theory of social anxiety.

The practical significance of this study is as follows: Based on the background of the epidemic, it is difficult for primary and secondary school education to use offline conditions to carry out education work, so as to use the network environment to carry out education work, to study the influence of social support and other factors on the social anxiety of primary and secondary school educators under the new working environment, and to explore the deterioration of the adaptation of primary and secondary school educators to the new working environment. Effective measures to effectively relieve social anxiety, so as to improve the adaptability of primary and secondary school educators to the new teaching environment, effectively relieve social anxiety, improve work efficiency, and provide effective coping strategies, has a strong practical guiding significance.

2. Literature review

As a result of the ongoing impact of the pandemic and the increasing use of technological advances and information technology, telework is gaining popularity and attracting widespread interest from academic scholars, administrators and organizations, but there is no exact definition of telework. Remote workers are widely accepted in academic circles and are defined as people in dependent employment relationships who use information technology and communications as a means to carry out work from the employer's location in any form prescribed by law. In a world where remote work is not just a shrunken call center, neither working from home nor temp services, but a viable and legal alternative to employment; It requires open mindsets and paradigm shifts in organizations, managers, and remote workers, as well as flexibility in thinking, schedules, work environments, and work outcomes. That is, it requires plasticity and adaptability to emerging space–time models. Remote working is a form of work that has both benefits and risks. One of these advantages has to do with the macro environmental systems that affect humans. It can be noted that the corresponding advantages point to a large extent to various aspects of a person's mental health, namely his emotional dimension, social, family and cognitive. In fact, talking about isolation, loneliness, stress, mood, reduced social and work relationships, insecurity, etc., are all considered predictive variables of threatening health. Although the 21st century can be considered as the era of online education (Cutri and Mena, 2020), due to the rapid changes in technology and adoption of educational technologies (Sokal et al., 2020; Tempski et al., 2020), many developing countries are still using offline education as the main method, and most of the face-to-face education models that are used to online teachers are not adequately prepared for online education (Mahmoud Al-Balas et al., 2020).

This teleworking environment for teachers led to various consequences of health conditions due to overload during the pandemic, including depression, anxiety, stress, and burnout syndrome (Leire Aperribai et al., 2020). The impact of online office on Chilean teachers during the 2019 coronavirus disease pandemic was reported to exacerbate the production of anxiety and stress, resulting in high workload, exhaustion, and burnout (Pablo and Lizana, 2021). In addition, prior to the COVID-19 pandemic, one of the occupations with the greatest global health deterioration was teaching (Li, 2020), with a significant increase in mental health deterioration and physical discomfort in professional practice, resulting in psychosocial deterioration and occupational stress (Bauer et al., 2007; Lizana et al., 2020)[a]nd burnout (Arvidsson et al., 2016) resulting in quality-of-life impairment. Although a large number of studies have analyzed the impact of teleworking on teachers' physical and mental health after the COVID-19 pandemic, they have neglected teachers' social anxiety status. Comparing teleworking styles with non-teleworking styles, as opposed to setting teleworking styles as an independent variable, better captures the mechanism of the effect of teleworking styles on teachers' social anxiety, which is one of the main innovations of this study.

In addition, social anxiety, as a common emotional problem in individuals' interpersonal interactions, is affected by physiological, psychological, and social factors, and also has an effect on individuals' emotions, cognition, and behavior (Lpine et al., 2000). With the development of the times, online social support has become a new way to support the development of the real society, and between the anonymity and the stronger interaction of the network itself, more and more people are involved in online social support or find confidence in the network (Cherba et al., 2019). In the academic field, research on social support can be traced back to the late 19th century French sociologist Dürkheim, who found in his study of suicide that the closeness of social ties was associated with suicide rates and that the loss of social ties/support contributed to one of the major causes of suicide. In the 1970s, social support was formally introduced as a scientific term. Social support refers to the love, respect and concern that individuals feel when interacting and communicating with others. This supportive interaction helps individuals offset the negative impact of life pressure on health. Social support is a concept that encompasses multiple structures and has been defined differently by researchers from different perspectives. Broadly speaking, however, social support refers primarily to the material and emotional help that people receive from social groups, organizations and various social relationships. In terms of the sources of social support, it includes both formal and informal social support. Formal social support generally refers to state support embodied by national policies and regulations, support from units that specifically implement national policies and regulations, as well as support from other community organizations and civil society organizations; informal social support refers to support from various social relationships, such as family, relatives, classmates, friends and informal social support refers to support from various social relationships, such as family, relatives, classmates, friends, colleagues, etc.

As a complement to the type of social support, online social support is a meaningful development of real social support and adds a new channel for individual interpersonal interaction. Online social support consists of four dimensions: companion support, instrumental support, information support, and emotional support (Nick et al., 2018). The biggest differences between real social support and online social support are the characteristics of online anonymity, visual absence, lack of temporal and spatial barriers and elastic synchronization. Real social support in which the supporter and the recipient generally need to exchange personal and real information, instrumental support is required for the supporter to alleviate the bondage of the real situation with full knowledge of the recipient. Online social support does not require face-to-face communication and getting along, and for individuals with weak interpersonal social skills, it can avoid the stresses associated with interpersonal interactions while not interfering with interactions with others. Group diversity is a key feature of online social support. Whereas most real social support is only recognized by peers in their own sphere, expressing oneself online allows one to interact with many types of people, exchange ideas and gain the approval and support of others. Also, one of the key reasons why individuals tend to express themselves online is because they can choose not to reveal their real names in online interactions, which makes the content of interactions between individuals more private. Some studies have shown that individuals who are more shy in real life will prefer online interactions as a way to compensate for the deficiencies that come with real interactions.

The study showed that online social support was significantly and negatively associated with social anxiety and significantly and negatively predicted social anxiety (Ruppel and McKinley, 2015). According to social cognitive theory, individuals with low levels of social support are blunt and do not easily experience pleasure in social interaction activities, they experience less social support subjectively, perceive social activities as low value and they do not get attention and rewards from them, and the resulting unpleasant experience leads to social anxiety (Piccirillo et al., 2021). The buffer model of social support suggests that when individuals encounter stressful events or situations, social support acts as a buffer to cushion the consequences of the stressful event or situation, promoting better stress reduction and health maintenance (Wang and Zhang, 2021). When individuals have higher levels of perceived social support, they are also motivated to have more confidence in social situations, and this perceived social support can buffer individuals from possible stress and anxiety in social situations, thereby reducing social anxiety levels (Porter and Chambless, 2017).

In addition, work intensity affects teachers' physical and mental health, but existing studies have ignored the relationship between work intensity and social anxiety. This complexity exacerbates existing inequalities in access to quality education and has generated high levels of stress, anxiety and general discomfort among teachers as a result of changes in teaching and learning styles and an epidemic that widens the economic, structural and capacity heterogeneity of schools and teachers. The above studies suggest that lack of connections and adequate digital skills in online teaching are associated with stress and poor mental health.

Based on the above studies, the following research hypotheses are proposed:

> *H1*: Work intensity has a significant positive effect on teachers' social anxiety.

And that peer support and better coping strategies are protective factors. In this sense, recent studies have shown that the instability, uncertainty and fear caused by the COVID-19 pandemic are worryingly exacerbating poor mental health. Poor mental health is a widespread problem that affects not only patients but also their families, work environments and education systems. As noted above, the implementation of mandatory telework without proper working conditions may affect the mental health or well-being of teachers and, in turn, the quality of education they provide to their students. We identified gaps in the literature on the mental health of teachers working remotely in the context of the pandemic. For these reasons, we believe it is necessary to understand the mental health status of teachers, paying particular attention to experience, as inexperience appears to be a factor influencing higher mobility and gender, as women may have additional workloads in domestic or child care based on stereotyped gender roles, which may be exacerbated during the pandemic (Unger and Meiran, 2020).

Based on the above studies, the following research hypotheses are proposed:

> *H2*: Companion support has a significant negative effect on teachers' social anxiety.

Jiezong (2014) pointed out that in the environment of information society, human existence and life style have undergone radical changes. In the field of education, modern information technology is being used more and more widely. However, the application of information technology can change the teaching methods of teachers, so that teachers can use information technology to carry out teaching independently from the specific actual teaching environment, and greatly reduce the opportunity for teachers to contact with others, thus aggravating the anxiety of teachers.

Based on the above studies, the following research hypotheses are proposed:

> *H3*: Information support has a significant negative effect on teachers' social anxiety.

Unger and Meiran (2020) put forward that there are many factors affecting the optimization of teaching process, and teachers' emotional support is one of the most important factors. This factor affects teachers' social anxiety in the teaching process and thus affects teachers' teaching state. Piccirillo et al. (2016) studied the relationship between safety behaviors and social anxiety of adults and believed that social anxiety of adults in teaching and other professions had an inverse relationship with their emotional support (Unger and Meiran, 2020).

Based on the above scholars' research on the influence of emotional information support on teachers' anxiety, the following hypotheses are proposed:

> *H4*: Emotional support has a significant negative effect on teachers' social anxiety;

Liang and Chen (2021) found through investigation and analysis that instrumental support of teachers in teaching can promote the improvement of teachers' teaching effect, and teachers will become dependent on it, which makes them easy to deviate from normal social activities and thus increase their anxiety.

Based on the above scholars' research on the influence of emotional information support on teachers' anxiety, the following hypotheses are proposed:

> *H5*: Instrumental support has a significant negative effect on teachers' social anxiety.

In general, work intensity should be reflected in two ways: the physical or mental exertion that workers incur per unit of time because of their work, and the length of time that workers work. The former is more difficult to measure and analyze, so scholars usually judge whether people are working too hard, mainly based on whether workers work too long hours (Panter-Brick, 2003). One study discusses this trend through the key dimensions of working time (length, duration, pace, and autonomy) and considers the role of current trends in changing workspaces. Changes in working time patterns are driven by several drivers: globalization and business restructuring that challenge current work organizations, new information technologies, demographic and climate change, and current and future pandemics. The dramatic changes in working hours, past and present, suggest that changes in working hours will continue. Contemporary trends in future working time pose risks to personal, family and social life, material well-being and health. Excessive work intensity not only directly and negatively affects teachers' physical and mental health, but also, working long hours inevitably shortens teachers' leisure time and social time, leading to social anxiety and thus causing secondary damage to physical and mental health. When the work intensity is high, teachers' energy and time are largely occupied by work, which will weaken the impact of online social support on social anxiety. Although there is no research evidence to prove this conclusion, the reality seems to be so.

Based on the above analysis, the following hypotheses are proposed in this study.

> *H6*: Work intensity has a negative regulatory effect between companion support and social anxiety;
>
> *H7*: Work intensity has a negative regulatory effect between information support and social anxiety;
>
> *H8*: Work intensity has a negative regulatory effect between emotional support and social anxiety;
>
> *H9*: Work intensity has a negative regulatory effect between instrumental support and social anxiety.

In addition, some scholars theoretically analyzed the gap between offline and online teaching.

Yang et al. (2022) analyzed the gap between online and offline education and believed that the advantage of offline education lies in that teachers and students can feel the real classroom atmosphere, have face-to-face contact and solve relevant problems efficiently. Online teaching can be widely used in a variety of practical teaching tools, greatly enriching the teaching technology and means.

Zhang (2022) put forward his own views on the differences between "online" and "offline" education. He believes that there are obvious differences between the offline and online teaching methods suitable for different subjects or courses. Therefore, teachers need to reasonably choose appropriate teaching methods according to different courses. During the epidemic period, some courses that were originally more suitable for offline teaching had to be carried out online due to the impact of the epidemic, which greatly affected the learning effect of students.

3. Method

3.1. Participants

Primary and secondary school educators in Sichuan, China, were selected for this study，and take it as a whole of the study. Many primary and secondary schools in Sichuan, China, were unable to teach offline due to the epidemic, and staff members were converted to online office from home. After detailed questionnaire design, validation, and testing, data were collected from primary and secondary school teachers through an online format. A total of 429 questionnaires were collected, and 384 questionnaires (222 online office and 162 in the office) remained after eliminating invalid questionnaires, with a validity rate of 89.51%. Among the respondents, 259 (67.4%) were female and 125 (32.6%) were male; age was mainly concentrated in 30–40 years old (216, 56.3%), 48 (12.5%) in 20–30 years old, 47 (12.2%) in 40–50 years old and 73 (19.0%) in 50–60 years old; monthly income was less than 3,000 RMB 8 (2.1%), 121 (31.5%) for 3,000–5,000 RMB, 174 (45.3%) for 5,000–7,000, 49 (12.8%) for 7,000–10,000 RMB, and 32 (8.3%) for over 10,000 RMB.

The reason why we choose online format to collect data from primary and secondary school teachers is that, first of all, the offline activities of primary and secondary school educators are restricted during the epidemic period, and they cannot freely accept the phenomena interviewed by the investigators. Meanwhile, for the investigators, the phenomenon investigation activities are also restricted, and the participants cannot be surveyed offline in a face-to-face way. Therefore, participants were surveyed in an online format; Secondly, due to the large number of survey objects, even if the offline survey can be adopted during the epidemic period, due to the wide distribution of participants, investigators have limited time to investigate. Therefore, the offline survey requires a lot of time, which makes the efficiency of the survey extremely low. Therefore, the online survey is adopted.

The determination of the total number of people surveyed. The purpose of this study is to explore the influencing factors of online office social anxiety of primary and secondary school educators under the epidemic environment, as well as the specific effects of related factors on social anxiety of primary and secondary school educators, and to obtain a universal research conclusion. Therefore, in order to improve the representativeness of the study, When conducting a questionnaire survey, a large number of participants are required to participate. Only in this way can the persuasiveness of this study be improved. At the same time, according to the basic requirements of statistics on sampling survey data collection and statistical analysis, in order to ensure the scientificity and rationality of sampling survey analysis results, large sample data is required when determining the sample size of large-scale population sampling survey, so as to ensure the representativeness of sample data to the research population. And to ensure the rationality and reliability of sampling survey and statistical analysis of data; At the same time, considering that some participants' filling in the questionnaire may not meet the basic requirements of the survey and questionnaire analysis, it is necessary to eliminate them, so as to appropriately increase the understanding of the survey participants. Therefore, the total number of survey participants is determined to be 429 in this paper.

4. Measures

4.1. Social anxiety

The main measurement tool for social anxiety is a self-rated scale, which is used to understand the level of social anxiety of individuals by assessing their cognitive, somatic, and behavioral situations in social scenarios. The Social Anxiety Scale (IAS) developed by Leary (1983) was selected for this study to measure the level of anxiety in interpersonal interactions. The scale contains 15 items and is scored on a five-point scale (1 being "not at all" and 5 being "extremely"), with a minimum score of 15 and a maximum score of 75. The higher the score, the higher the social anxiety level of the subject; the lower the score, the lower the social anxiety level of the subject. SA3 (I usually feel relaxed when talking to a person of the opposite sex), SA10 (I rarely feel anxious in social situations), and SA15 (I feel relaxed even in a group of people who are quite different from me) were reverse scored.

4.2. Online social support

study used the online social support questionnaire developed by Liang and Wei (2008). The questionnaire includes four aspects:

companion support, information support, emotional support and instrumental support, and the relevant contents were adjusted in the context of the research subjects in this study. Emotional support refers to the emotional communication and the care, encouragement and trust that can be obtained in online social interactions; instrumental support refers to the services or material help that can be obtained in online social interactions; information support refers to the information, advice or guidance that can be obtained in online social interactions; and buddy support refers to the sense of belonging to a group that individuals feel when they engage in online social or recreational activities. The scale consists of 23 questions, and is rated on a scale from "not at all consistent" to "completely consistent." The higher the score, the more social support secondary school students have in the Internet.

4.2.1. Working intensity

Work intensity was measured by including the number of hours worked and the amount of work tasks (Treuren and Fein, 2022), with a total of four topics to measure: hours worked per day (1 = less than 3 h, 2 = 3–5 h, 3 = 5–7 h, 4 = 7–9 h, 5 = more than 9 h); days worked per week (1 = less than 4 days, 2 = 4 days, 3 = 5 days, 4 = 6 days, 5 = 7 days); number of meetings per week (1 = less than 3, 2 = 3–5, 3 = 5–7, 4 = 7–9, 5 = greater than 9); and many work tasks per day (1 = completely disagree, 2 = disagree, 3 = average, 4 = agree, 5 = completely agree). Higher scores indicate more intense work (Table 1).

4.3. Statistical analyses

Cronbach's alpha coefficient was used to check the reliability of the data, and confirmatory factor analysis was used to check the validity of the data. Anova was used to analyze differences in social anxiety scores between demographic variables and work styles. Structural equation modeling is used to measure the proposed theoretical model and test the research hypothesis. Structural equation modeling has been widely used to test the relationship between multiple independent and dependent variables. It includes measurement model and structural model. Measurement models examine the relationship between latent variables and observed measurements, while structural models explain the structural relationship between latent variables. The purpose of multigroup analysis is to analyze whether the path model graph that can be applied to one group can also be applied to the corresponding model parameters of other samples. This study used a multi-group analysis to explore differences in patterns between online office and offline office. Multi-group analysis of structural equation modeling can evaluate whether the same theoretical model is consistently valid across groups or whether the parameters are constant. In this study, SPSS 24.0 and AMOS 24.0 were used for data processing, analysis and model fitting. In this study, $p < 0.1$ was considered significant.

The reason why SPSS 24.0 and AMOS 24.0 are used in this paper to process, analyze and model fit the data obtained from the questionnaire survey is that SPSS integrates data file management, statistical data editing, processing and analysis. Statistical analysis report generation, generation of various types of statistical tables, statistical programing and many other functions in one, covering all the commonly used statistical methods of statistics, especially the software is particularly suitable for the application of social economic statistics and management science of sampling survey data statistics and analysis, so this paper chooses this software to study the relevant issues for data statistical processing and analysis.

At the same time, AMOS is selected for the processing and analysis of survey data. Firstly, Amos can simultaneously process multiple simultaneous regression equations, that is, multidependent variable and multipath models, without the need of step processing like some other software, and output results in the form of the overall model graph with parameters. Secondly, Amos can test the overall fit degree of the model, such as GFI, RMSEA, etc., and can directly output the mediating effect and the total effect value. Thirdly, Amos can deal with latent variables, which is the outstanding advantage of the structural equation model compared with other models. Fourthly, Amos can conduct special problems such as multi-group analysis and constraint model testing. Fifthly, Amos is more convenient to construct model diagrams than other structural equation models. It is the most convenient software to construct and adjust model diagrams among current structural equation model software.

TABLE 1 Basic information of respondents.

Variable	Frequency	Percentage %
Gender		
Male	125	32.6
Female	259	67.4
Age (years old)		
From 20 to 30	48	12.5
From 31 to 40	216	56.3
From 41 to 50	47	12.2
From 51 to 60	73	19
Monthly income (RMB)		
Below 3,000	8	2.1
3,000–5,000	121	31.5
5,000–7,000	174	45.3
7,000–1,0000	49	12.8
Above 10,000	32	8.3
Office mode		
Online office	222	57.8
Offline office	162	42.2

5. Results

5.1. Reliability and validity tests

As for the reliability of the scale, there are usually various methods to test the internal consistency of the scale, including Cronbach-α, covariance matrix, covariance matrix of multi-item scale, α and covariance matrix. Cronbach-α is the most commonly used test method for scale reliability. Cronbach-α coefficient ranges from 0 to 1, and the closer it is to 1, the better the reliability is. Its criterion is: coefficient above 0.9, indicating that the reliability of the measuring tool, namely the scale, is good. 0.8–0.9, indicating good reliability; 0.7–0.8 is acceptable, but some contents of the scale need to be modified; Below 0.7, it indicates that some contents of the scale need to be rewritten.

TABLE 2 Reliability and validity tests results.

	Items	Cronbach's α	KMO	Factor loadings	CR	AVE
Social Anxiety	15	0.964	0.938	0.541–0.964	0.943	0.537
Companion Support	7	0.930	0.917	0.624–0.946	0.928	0.654
Information Support	6	0.915			0.912	0.637
Emotional Support	6	0.944			0.929	0.691
Instrumental Support	4	0.908			0.912	0.723
Working Intensity	4	0.913	0.790	0.620–0.962	0.925	0.761

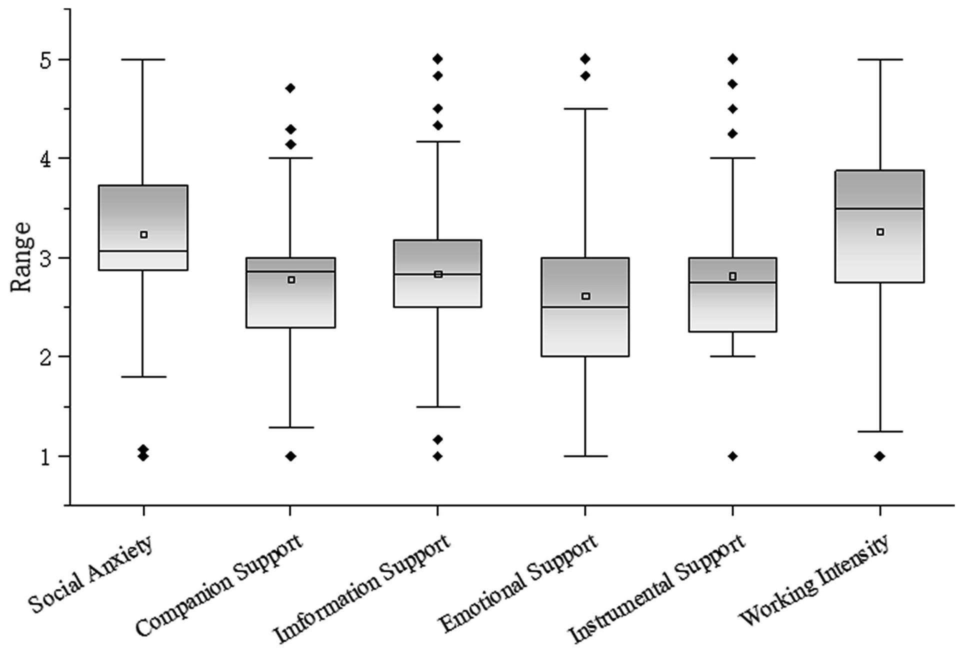

FIGURE 1
Score distribution of each variable.

About the validity test of the scale, AVE, CR: The aggregate validity and discriminative validity of the indicators are mainly checked, and the output indicators include AVE and CR values. Generally, AVE value >0.5 and CR value >0.7 indicate that the data aggregation validity is good.

In this paper, SPSS 24.0 was used to analyze the research data, and the reliability of the data was tested by calculating the Cronbach's Alpha value of the scale. The study showed that when the Cronbach's Alpha value was greater than 0.7, the reliability of the data was good and met the analysis requirements. The results showed that the Cronbach's Alpha of the Social Anxiety Scale was 0.938, the Cronbach's Alpha of the Online Social Support Scale was 0.908–0.944, and the Cronbach's Alpha of the Work Intensity Scale was The Cronbach's Alpha of each scale was greater than 0.9, indicating that the reliability of the scale met the requirements.

In addition, the KMO values of 0.938 for the Social Anxiety Scale, 0.917 for the Online Social Support Scale, and 0.790 for the Work Intensity Scale were greater than the critical value of 0.7, indicating that the scale data were suitable for factor analysis. The structural validity of each scale was further examined using validated factor analysis, and the individual factor loadings were 0.541–0.964 for the social anxiety scale, 0.624–0.946 for the online social support scale, and 0.620–0.962 for the work intensity scale, with each factor loading greater than 0.5. In addition, this study also conducted a convergent validity test, based on the two main indicators of average variance extracted (AVE) and combined reliability (CR), and when AVE is greater than 0.5 and CR is greater than 0.7, it indicates that the scale has good convergent validity.

In conclusion, the reliability validity of the questionnaire data passed the test and can be further analyzed (Table 2).

5.2. Variable description

As shown in Figure 1, the average of social anxiety is high, the scores are widely distributed, and there are a few abnormal values, indicating that the respondents' social anxiety level is high and varies from person to person. The average value of companion support, information support, emotional support, and instrumental support is not much different, and they are all in the middle level. The normal value of emotional support is the most widely distributed, and the normal value of information support is the smallest. The average of work intensity is similar to social anxiety, and the median is the highest among all variables, indicating that half of the respondents have high work intensity.

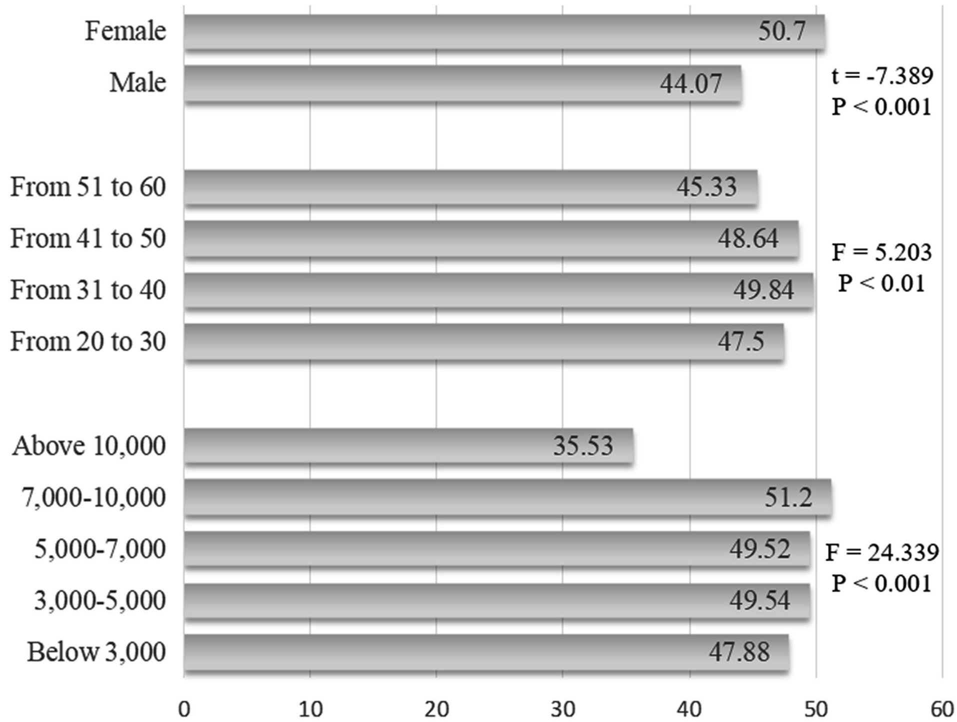

FIGURE 2
Differences in social anxiety across demographic variables.

5.3. Variance analysis

The differences in social anxiety scores between genders, ages, and monthly incomes were compared by independent samples t-test and one-way ANOVA. As shown in Figure 2, social anxiety scores of primary and secondary school teachers differed significantly between genders, with females having significantly higher social anxiety than males'. Social anxiety scores differed significantly by age, with teachers between the ages of 31 and 40 having the highest social anxiety scores and teachers between the ages of 51 and 60 having the lowest social anxiety scores. Social anxiety scores differed significantly by monthly income, with teachers earning less than $3,000 per month having the highest social anxiety scores and teachers earning more than 10,000 per month having the lowest social anxiety scores.

Differences in social anxiety between work styles were compared by independent samples t-test. Overall, the total social anxiety scores of online office teachers were significantly higher than the social anxiety scores of office-based teachers. Specifically, online office teachers scored significantly higher on SA5 (parties often make me feel anxious and uncomfortable), SA6 (I may be shyer in social interactions than most people), SA7 (I often feel nervous when talking to people of the same sex whom I do not know well), SA8 (I get nervous in meetings), SA9 (I wish I had more confidence in social situations), SA13 (I usually feel more confident when calling people I do not know well), and SA14 (I often feel more nervous when calling people I do not know well), and SA15 (I feel relaxed even when I am in a group of people who are quite different from me) scored significantly higher than those of faculty in office settings (Table 3).

TABLE 3 Difference in social anxiety between telework and offline office.

Items	Telework	Office-work	*t*	*p*
SA1	3.38 ± 0.66	3.34 ± 0.79	0.582	0.561
SA2	3.41 ± 0.65	3.30 ± 0.84	1.345	0.180
SA3	3.39 ± 0.67	3.33 ± 0.84	0.832	0.406
SA4	3.41 ± 0.67	3.28 ± 0.82	1.584	0.114
SA5	**3.19 ± 0.72**	**3.00 ± 0.69**	**2.626**	**0.009**
SA6	**3.14 ± 0.74**	**2.89 ± 0.74**	**3.199**	**0.001**
SA7	**3.30 ± 0.68**	**3.13 ± 0.65**	**2.414**	**0.016**
SA8	**3.13 ± 0.74**	**2.88 ± 0.73**	**3.326**	**0.001**
SA9	3.40 ± 0.63	3.27 ± 0.73	1.864	0.063
SA10	3.41 ± 0.62	3.31 ± 0.73	1.395	0.164
SA11	3.33 ± 0.69	3.21 ± 0.78	1.634	0.103
SA12	3.39 ± 0.66	3.28 ± 0.72	1.444	0.150
SA13	**3.24 ± 0.69**	**3.01 ± 0.76**	**3.026**	**0.003**
SA14	**3.22 ± 0.67**	**3.01 ± 0.77**	**2.743**	**0.006**
SA15	**3.18 ± 0.67**	**2.99 ± 0.73**	**2.514**	**0.012**
Total-SA	**49.50 ± 8.12**	**47.23 ± 9.52**	**2.505**	**0.013**

In other words, respondents showed higher social anxiety in the teleoffice compared to the office-work.

5.4. Correlation analysis

Correlation analysis was used to analyze the degree of correlation between online social support scores and social anxiety scores, and the

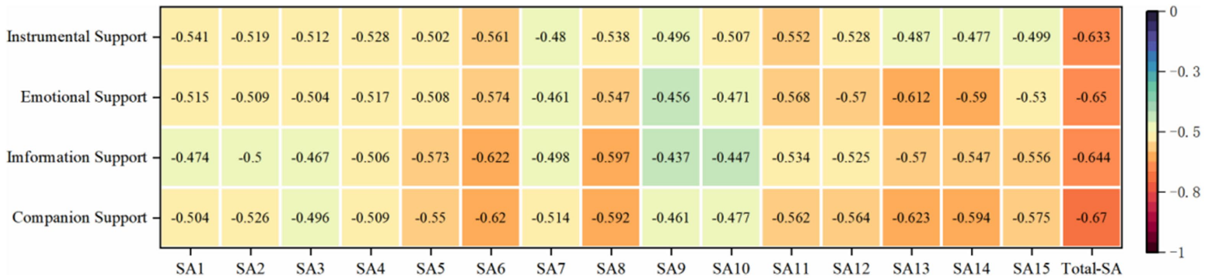

FIGURE 3
Results of correlation analysis between online social support and social anxiety.

TABLE 4 Model fitting indicators.

CMIN/DF	RMR	GFI	PGFI	NFI	IFI	TLI	CFI	RMSEA
3.245	0.049	0.810	0.633	0.912	0.908	0.921	0.914	0.039

results are shown in Figure 3. The variables of online social support are significantly negatively correlated with social anxiety, and the variables of online social support have the highest correlation with the total score of social anxiety. Emotional support, information support and SA9 (I hope I can have more confidence in social occasions) have a low degree of correlation. The correlation between information support and SA10 (I seldom feel anxious in social occasions) is low. Companion support is highly correlated with SA6 (compared with most people, I may be shy in social interaction), SA8 (I am nervous at meetings), SA13 (I usually feel nervous when I call someone who is not familiar with me), and SA14 (I feel nervous when I talk with authority). The above analysis results provide a reference for further analysis of structural equation models.

5.5. Hypothesis testing

After the reliability and validity of the samples were affirmatively replied, the data were estimated by using the great likelihood estimation method of AMOS24.0 software on this basis to estimate the parameters, and then the degree of model fit was analyzed. After correction, the fit of the model met the requirements, and all the goodness-of-fit indicators showed that the model fitted the data well (as in Table 4). The chi-squared ratio of degrees of freedom (CMIN/DF) used to test the model fit was $3.245 < 5$. The RMSEA, called the root mean squared of asymptotic residuals, is often considered the most important information about the model fit metric. Conventionally, if the RMSEA value is higher than 0.10, it is considered as poor model fitness; if the value is between 0.08 and 0.10, it indicates fair model fitness; if the value is between 0.05 and 0.08, it indicates good model fitness; if the value is less than 0.05, it indicates very good model fitness. The RMSEA value in this study is 0.039, which indicates that the model has good fitness. The GFI and PGFI are greater than 0.6, and the NFI, IFI, TL, and CFI all meet the best fitness criterion of 0.9.

In this study, it is concluded that the research hypothesis of the path in the model is valid when the significance level of the coefficients of a path are accompanied by probability p-values below 0.1, and it is concluded that the research hypothesis of the path in the model is not valid when the significance level of the coefficients of a path are accompanied by probability p-values greater than 0.1.

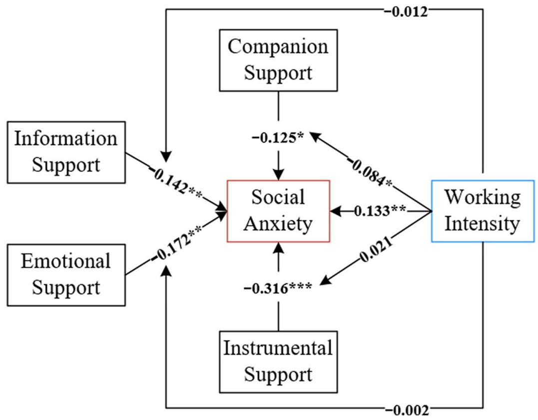

FIGURE 4
Results of the structural model. *p<0.01; **p<0.05; ***p<0.01.

The results are shown in Figure 4. Without distinguishing between online office and offline office, there was a significant positive effect of work intensity on social anxiety, indicating that the higher the work intensity, the more severe the teachers' social anxiety condition, and hypothesis H1 holds. The hypothesis H2 holds that there is a significant negative effect of companion support on social anxiety; the hypothesis H3 holds that there is a significant negative effect of information support on social anxiety; the hypothesis H4 holds that there is a significant negative effect of emotional support on social anxiety, and the teachers' anxiety condition will be improved; the hypothesis H5 holds that there is a significant negative effect of instrumental support on social anxiety; it indicates that the more online social support, the teachers' social The more online social support, the more teachers' social anxiety will be improved. Work intensity only has a negative regulatory effect between companionship support and social anxiety, assuming that H6 is true, H7, H8, and H9 are not.

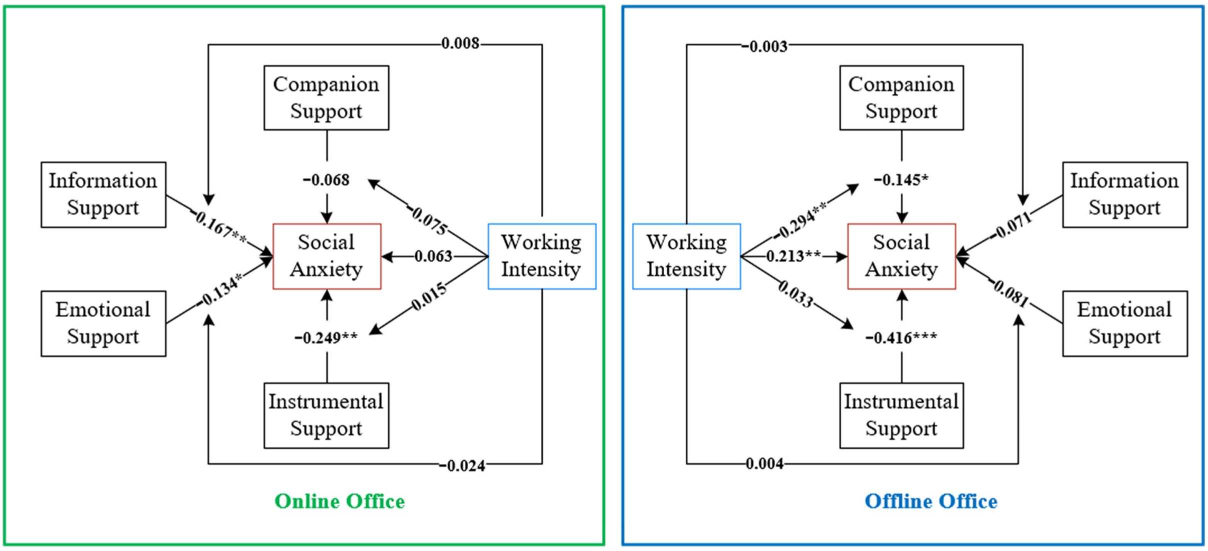

FIGURE 5
Differences of models under different office modes. *p<0.01; **p<0.05; ***p<0.01.

5.6. Multi-group analysis

A multi-cluster analysis on AMOS was used to explore the variability of the model between online office and offline office and to provide insight into the mechanism of the effect of online office modalities on social anxiety among elementary and middle school teachers. The results are shown in Figure 5. There were significant differences in the model between online office and offline office, as evidenced by:

The positive effect of work intensity on social anxiety was not significant for online office ($\beta = 0.063$, $p > 0.1$) and significant for offline office ($\beta = 0.213$, $p < 0.05$).

The negative effect of companion support on social anxiety was not significant on online office ($\beta = -0.068$, $p > 0.1$) and significant on offline office ($\beta = -0.145$, $p < 0.1$).

The negative effect of information support on social anxiety was significant for online office ($\beta = -0.167$, $p < 0.05$) but not for offline office ($\beta = -0.071$, $p > 0.1$).

The negative effect of emotional support on social anxiety was significant for online office ($\beta = -0.134$, $p < 0.1$), but not for offline office ($\beta = -0.081$, $p > 0.1$).

The negative effect of instrumental support on social anxiety was significant for online office ($\beta = -0.249$, $p < 0.05$) and for offline office ($\beta = -0.416$, $p < 0.01$).

Under online office mode, there is no moderating effect between the four variables of online social support and social anxiety; In offline office mode, work intensity only has a negative regulatory effect between companion support and social anxiety.

6. Discussion

The aim of this study was to investigate the mechanisms of the effect of teleworking style on social anxiety of elementary and secondary school teachers, by working with non-teleworking style and considering online social support and work intensity. The results of the study showed that primary and secondary school teachers with teleworking styles had significantly higher scores of social anxiety than those with non-teleworking styles, and similarly, showed similar results in other groups (Barros, 2017). Teachers, as a special group, have the burden of "teaching and educating" in terms of their social role and have more anxiety than the general population in their ordinary lives (Wang et al., 2010). During an epidemic, teachers are often exposed to pictures, videos, and texts about the epidemic, which inevitably lead to negative emotions such as sadness, anxiety, and fear, as well as anxiety about the need for safety in life and the unpredictability of their current and future lives. As the epidemic progresses, both the community and the school are in a state of shutdown, and the prolonged home office makes teachers all feel anxious and overwhelmed.

Female teachers had significantly higher social anxiety scores than male teachers, consistent with the findings of studies on factors influencing teacher anxiety (Pressley et al., 2021).In other words, female teachers are more likely to experience social anxiety, and more attention should be given to female teachers when conducting psychotherapy. Teachers aged 30–40 are more likely to experience social anxiety because teachers in this age group take on more work and are at a critical time in their careers when work takes up most of their leisure time and social time. In addition, teachers with lower incomes are more likely to experience social anxiety, and economics is an important factor that affects people's physical and mental health (Satoshi Kuhara et al., 2022). Therefore, giving more financial support to primary and secondary school teachers is beneficial in reducing social anxiety and thus promoting the quality of educational work.

As shown in Table 2, work intensity has a significant positive effect on social anxiety, meaning that the higher the intensity of teachers' work, the more likely it is to lead to social anxiety, which is consistent with the findings of Satoshi Kuhara et al. (2022); Semple (2021) and Treuren and Fein (2022). Higher work intensity takes away from physical activity and social time, which negatively affects teachers' physical and mental health and is detrimental to labor sustainability and disease risk management. Despite some government policies on reducing the burden of primary and secondary school teachers (Satoshi Kuhara et al., 2022), the work intensity of primary and secondary school teachers remains high due to the specificity of the profession and the continuous competition in the education industry. Moreover, teachers' work has long been characterized by blurred boundaries, and weak work boundaries have led to a lack of clarity in the division of teachers' "work time" and "rest time" (Liu and Yang, 2022). In addition, teachers' invisible workloads are numerous, and many non-teaching "invisible tasks" consume a lot of teachers' time and energy (Ma and Li, 2013; Semple, 2021). Therefore, rationalizing teachers' workload and working hours can effectively reduce teachers' social anxiety.

Online social support was effective in reducing the probability of social anxiety among primary and secondary school teachers, in line with the findings of Mohammed Feroz Ali et al. (2021); Huang et al. (2017). Specifically, companion support, emotional support, informational support, and instrumental support all had a significant negative effect on teachers' social anxiety; in other words, the more online social support elementary and secondary school teachers received, the less likely they were to develop social anxiety. It has been shown that social support provided by close interpersonal relationships can help teachers relieve stress in many forms, including regulating adverse emotions (anxiety, depression, etc.), providing advice and help, etc. (Mohammed Feroz Ali et al., 2021). For teachers, family, relatives, and friends can not only provide love and care for his/her inner world, but also enable college students to gain emotional security and support to provide a basis for social competence, thus improving social anxiety and reducing social avoidance behaviors. Especially during an epidemic, working from home prevents teachers from engaging in offline communication activities, and online social support can improve just that. Therefore, enhancing online social support for primary and secondary school teachers, such as providing some useful information, helpful materials, or emotional care, can effectively improve teachers' social anxiety.

A multi-cluster analysis revealed that the model's path coefficients differed significantly between remote working and non-remote working modes, as shown by:

First, the effect of work intensity on social anxiety was not significant for teleworking, but was significant for non-teleworking. This may be due to the fact that teachers who use teleworking are isolated at home for long periods of time and are unable to engage in offline face-to-face communication regardless of work intensity, which leads to social anxiety. In contrast, the social activities of teachers who used non-teleworking methods were severely affected by the intensity of their work, and when their work tasks were light and they had sufficient time for leisure activities, they could engage in social activities to reduce social anxiety. In addition, work intensity can weaken the influence of companion support on social anxiety. In other words, the higher the work intensity, the lower the effect of companion support on social anxiety. The moderating effect of work intensity is different under different office modes. When working online, there is no moderating effect between companion support and social anxiety. This is because teachers who online office often stay with family and friends, and the effect of companion support is not affected by work intensity. On the contrary, when offline office takes up most of teachers' time and energy, the effect of family and friends' company on social anxiety will not be so obvious.

Second, the coefficient of the effect of buddy support on social anxiety was not significant for telework but significant for non-telework. Under normal circumstances, the more companionship a teacher receives, the lower the social anxiety will be. However, the effect of peer support is diminished when teachers who work remotely live with family or colleagues for long periods of time.

Third, the coefficient of the effect of information support on social anxiety was significant for remote work but not for non-remote work. This is due to the fact that teachers often deal with colleagues, leaders, and students when they work offline, so information transmission is more timely and frequent, and such regular information support does not cause psychological fluctuations in teachers and therefore does not have a significant effect on social anxiety. On the contrary, teachers in a teleworking state can only communicate with the outside world through electronic devices, and information transmission will be lagging or even occluded, such as ignoring a meeting notice or an important notice, which will cause psychological stress and anxiety to teachers.

Fourth, the coefficient of the effect of emotional support on social anxiety was significant for remote work but not for non-remote work, for reasons similar to the mechanism of action of information support. Online emotional support is reflected in the emotional help that teachers can access through the Internet, such as others' responses to their statements, congratulations from others, recognition from others, and emotional empathy. When teachers work offline, others are able to give these emotional supports back to them in a timely manner.

Fifth, the effect of instrumental support on social anxiety was significant both on telework and non-telework, suggesting that instrumental support is an important factor influencing social anxiety. Instrumental support reflects the materials, items, etc. that teachers can access on the internet. In Chinese society, people in epidemic-controlled areas receive material support from other places and institutions, reflecting a spirit of solidarity and love, which is a great boost to people's spirits and helps to improve the anxiety of people in home isolation. Similarly, the more instrumental support primary and secondary school teachers receive when working from home, the less likely they are to develop social anxiety. When teachers are not working remotely, materials and objects are not as timely as information and emotional support, so the importance of instrumental support for social anxiety is not affected by timeliness.

Sixth, previous studies on remote and non-remote working social anxiety of primary and secondary school educators and its influencing factors are based on the general background, while this study in this respect is aimed at the special background of the impact of the epidemic. Due to the particularity of this background, As a result, the influence of work intensity, partner support, emotional support and other factors on social anxiety of primary and secondary school educators has new characteristics, so that this paper has reached a new conclusion in this research.

Previous studies on social anxiety of primary and secondary school educators and its influencing factors usually separate remote working and non-remote working of primary and secondary school educators, and rarely make a comparative analysis of remote working and non-remote working. However, this paper makes a breakthrough in this aspect, and makes a comparative analysis of the two. The difference between the two can be more clearly understood.

Previous studies on the social anxiety of primary and secondary school educators in telecommuting or non-telecommuting and its influencing factors mostly studied the direct impact of independent variables on dependent variables, and few considered the introduction of moderating variables. However, in this study, relevant moderating variables were introduced to make the study closer to reality.

7. Conclusion

7.1. Practical theoretical

The aim of this study was to investigate the mechanisms underlying the effects of teleworking styles on social anxiety among primary and secondary school teachers, while considering the effects of online social support and work intensity on teachers' social anxiety. Based on 384 valid questionnaire data, this study used structural equation modeling and multi-group analysis to provide insight into the factors influencing social anxiety among primary and secondary school teachers, as well as the differences in social anxiety between remote working styles compared with non-teleworking in the context of the COVID-2019 pandemic. The results found that teachers' social anxiety was significantly higher in the teleworking mode than in the non-teleworking mode. There were significant differences in teachers' social anxiety profiles between gender, age and monthly income. The intensity of the work facilitated teachers' social anxiety, while the network support was effective in improving teachers' social anxiety. Work intensity weakens the influence of companion support on social anxiety. Finally, the model's path coefficients differed significantly across work styles. Overall, teachers who work remotely should be given more online social support, such as information support, emotional support and instrumental support, while work intensity should be rationalized and more online communication activities should be organized to improve teachers' communication mood. The findings of this study have important implications for the sustainable development of educational labor and for improving the physical and mental health and quality of work of primary and secondary school teachers.

7.2. Limitation

1. Due to the constraints of the epidemic, the data supporting this study mainly came from the online survey format, which affected the authenticity and reliability of the data to a certain extent. In future studies, if the survey conditions permit, the offline method can be further considered to obtain more reliable offline survey data, so as to make the research results more convincing.
2. Limited by the research time and length, the analysis of the mechanism of remote work on the social anxiety of primary and secondary school teachers, as well as the mechanism of the influence of network social support and work intensity on the social anxiety of teachers is not in-depth enough. Further in-depth analysis of this aspect can be considered in the future.

7.3. Future studies

1. This paper focuses on the influence mechanism of remote working mode on social anxiety of primary and secondary school teachers, and also considers the influence of network social support and work intensity on teachers' social anxiety. However, these studies mainly consider the direct influence of relevant independent variables on dependent variables. In future studies, some mediating variables can be further considered. Then how the independent variable influences the dependent variable through the intermediary variable makes the research closer to the reality of the problem.
2. Future studies can further consider the influence of other factors other than remote working mode, network social support and high wage intensity on the reduction of social anxiety in primary and secondary schools, so as to make the research issues more comprehensive.

Data availability statement

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

Author contributions

Yating Xie: methodology, data analysis, writing, writing-reviewing and editing, article review, and intellectual concept of the article.

Conflict of interest

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

Publisher's note

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The relationship between working in the "gig" economy and perceived subjective well-being in Western Balkan countries

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The combination of accelerated digitalization and the recent COVID-19 crisis has increased the number of remote workers worldwide to unimaginable proportions. Among the large number of remote workers that execute their projects from home, there is a significant number of permanently self-employed remote workers, usually referred to as freelancers. Despite the importance of this kind of business activity for modern project management society, perceived drivers of freelancing are still unknown. The goal of this paper was to shed some light on the general subjective well-being of freelancing activity and investigate differences concerning gender, age, and education. The study was performed in late 2020 and included 471 freelancers from Serbia, Bosnia and Herzegovina, Macedonia, and Montenegro that participated in an online questionnaire evaluating their subjective well-being while participating in the "gig" economy. Factor analysis was used as a primary statistical method and two major groups were identified: (1) Impact of working from home on a freelancer's personal life and health and (2) Fulfillment of expectations in the economic and professional sense. Gender was found not to be significant for overall work satisfaction. However, older freelancers proved to be more satisfied with the fulfillment of economic and professional expectations, which correlate with years of professional experience. Another conclusion is that more educated freelancers are generally less satisfied with both groups of drivers - fulfillment of personal life and professional expectations. Understanding how the combination of occupations, technological infrastructure, and demographic characteristics in the region has affected the well-being of freelancers may help policymakers and organization owners, as well as future entrepreneurs, better prepare for this model of work in the future. It also increases the possibility of exploring individual dimensions of wellbeing useful for targeting interventions at the level of each country separately. In line with this, the present study contributes to the existing body of knowledge and the impact of hybrid models of work on the subjective well-being of workers in the "gig" economy.

KEYWORDS

freelancers, remote work, subjective well-being, gig economy, Western Balkan countries

1. Introduction

European economies have faced a significant increase in self-employed individuals over the last two decades. One of the most significant subgroups among these self-employed individuals is the freelancer group (Van den Born and Van Witteloostuijn, 2014). Freelancers are considered professional individuals contracted by companies and others to whom they sell their knowledge or services, performing at their own risk with temporary work arrangements (Kitching and Smallbone, 2012; Bögenhold and Klinglmair, 2016).

The latest report from the Online Labor Index (OLI) that provides information on the current state of the freelance (gig) economy ranks Western Balkans Countries (WBC) relatively high by the number of freelancers, putting Serbia in 12th, Bosnia and Hercegovina in 47th, North Macedonia in 70th and Montenegro in 110th place on the global scale (Lehdonvirta et al., 2020).

Satisfaction with personal life and subjective well-being (SWB) indicates how individuals feel and perceive their lives, with many studies associating cognitive evaluations of people's lives with various individual characteristics of responders (Meager, 2015; Van Stel and Van der Zwan, 2020). However, the subjective well-being of workers in the gig economy is still a newer topic that needs further research and investigation, expanding on previous findings (Diener et al., 2003; Dolan et al., 2008; Binder and Coad, 2016).

This paper aims to contribute to the increasing body of knowledge by shedding some light on the SWB of freelancers and drivers that contribute to the significant increase of these activities in the WBC region (Serbia, Bosnia and Herzegovina, Montenegro, and North Macedonia).

The paper addressed the research problem using a two-phase analysis to understand the relationship between working in the "gig" economy and perceived subjective well-being. Since SWB accompanies multiple life domains (Erdogan et al., 2012; Binder and Coad, 2013), factor analysis helped measure correlation with each other and decrease the number of survey items to the most relevant factors to use in the following phase. The second phase investigated the differences within the group of freelancers by utilizing gender, age, and education as variables, similar to previous studies (Larsson and Thulin, 2019; Van der Zwan et al., 2020).

The structure of this paper is as follows: The first section introduces the main goals and starting points of this research paper. The second section showcases a review of the existing literature on the "gig" economy, subjective well-being, and drivers of freelancing activity. The third section provides information on research methodology, which includes a description of the data and variables used, statistical approach, and data preprocessing. The Results, discussion, and final remarks are in the last two sections.

2. Literature review

There are many definitions of what "gig economy" means, some describing it as an exchange of labor for money between different parties over online platforms that enable matchmaking and payments between them (Broughton et al., 2018), while others have a broader definition that covers all hybrid work of highly specialized tasks engaged in over digital platforms (Abraham et al., 2018).

Freelancing is usually associated with the specific relationship between a client and a worker that is not permanently working for that client (Wood et al., 2018), sometimes regarded as a new type of entrepreneurship, especially in emerging markets (Akhmetshin et al., 2018). The main characteristics of freelancing are peculiar, project-based, low waged, and infrequent work engagements (Osnowitz, 2010; Cohen, 2015; Aletdinova, 2016; Gandini, 2016; Lo Presti et al., 2018; Radović-Marković et al., 2021c; Worth and Karaagac, 2021), making a clear shift from the Fordist ideal of stable employment to a more neoliberal narrative of free engagement in the unregulated markets (Popiel, 2017; Bologna, 2018). Uberization of work, the new term defining peculiar types of work over digital platforms, also made it possible to recruit labor in new ways and at a larger scale (Davis and Sinha, 2021).

Furthermore, an increasing number of people work in project-based non-traditional environments without a clearly defined organizational structure, shared workspaces, and long-term engagements, which fundamentally changes the relationship dynamics in these organizations between workers and employers (Ashford et al., 2018). They generally work independently and without supervision. Accordingly, this type of autonomy in the "gig" economy creates a specific relationship between workers and organizations, enabling the execution of tasks without active participation in the employer's business organization.

2.1. Drivers and challenges of working in the "gig" economy

Virtual project teams are gradually becoming a norm as more and more companies move to the remote-first or async strategies that go beyond outsourcing and employing freelancers on company projects. Of course, leading this kind of project where there is at least one remote team member may pose different challenges than when all the team members are collocated. There is also a notable rise in the popularity of working as a freelance project manager (Project Management Institute, 2017), which may add additional strain to team interactions.

In a survey conducted among professionals working remotely, "engaging remote participants" was the most common response to the question of challenges in remote project settings (Pullan and Prokopi, 2016), and the main issue when employing freelancers on projects is enabling the shared understanding between team members, which may be paramount for success in remote scenarios (Kniel and Comi, 2021). In a book that covered leading remote teams, the author argued that the novel coronavirus changed the perspectives of working remotely, making almost everyone a remote contributor to the organization, thus requiring new ways of managing and leading the workforce during the pandemic (Burkus, 2021).

When comparing aspects of remote work to the "Agile Manifesto" principles, which emphasize face-to-face conversations and team meetings, the authors of another study on a similar topic conclude that there are significant differences between collocated and remote teams (Deshpande et al., 2016). Therefore, there may be a need to have a decision model for choosing the different PM methodologies for each specific case (Thesing et al., 2021) or even look for a whole new approach to project management on an organizational level (Picciotto, 2020). In addition, multiple software solutions are needed for successfully managing these kinds of projects, especially for task management, teleconferencing, and distance training (Borissova et al., 2020). Despite these findings, the value creation of remote teams seems to be on par with that of co-located teams, which was battle-tested during the COVID-19 abrupt shift to remote work by major international companies (Comella-Dorda et al., 2020).

2.1.1. The current research on working from home, freelancing, and "gig" economy in WBC region

In a recent study on the social and economic advantages and limitations of working from home in the region of Western Balkans it was showcased that the most participants would recommend working in this manner, with some still hesitant to do so (Đukanović et al., 2022). Furthermore, the study acknowledged the benefits of working from home and found that the main motivators for respondents starting home-based businesses were better work-life balance, a higher possibility of earning a better income, and a good business idea. Similarly, a study conducted among participants of the "gig" economy in the WBC region shows that good income and flexibility of time schedules are the most important motivators for people engaged in this way (Borislav et al., 2022), with freelancing cutting across all ages and education levels, and giving much greater independence and autonomy to the workers, thus enabling higher satisfaction in working from home as mentioned previously (Đukanović et al., 2022).

In addition, new forms of employment that include platform work or working remotely by utilizing online marketplaces are gaining more popularity because of the very high unemployment rates in the WBC region and better opportunities to earn a decent income (European Training Foundation, 2022).

2.1.2. Challenges of freelancing

One number of analyzes showed that there is a trend of deteriorating working conditions and worker rights in the "gig" economy, directly comparing the present situation in the markets with the working conditions at the beginning of the past century (Flanagan, 2019). Furthermore, there is a high demand for government intervention in enabling independent arbitrage in case of a dispute or request for personal records ownership, but the triangular relationship of gig work between the platforms, clients, and workers complicates the task of labor regulation, as there are multiple agreements between parties in place (Stewart and Stanford, 2017).

The Terms of Service usually define the relationship between intermediaries and clients where the risk of providing necessary tools and equipment is on the worker, which enhances vulnerability and instability for them (Sutherland et al., 2020). Also, the same agreements enable platforms to enforce disciplinary measures and generally supervise the work conducted by the workers (Jarrahi and Sutherland, 2019). Technology-enabled online work platforms rely heavily on instant feedback and rating of the worker's performance (De Stefano, 2015). Furthermore, there is an evident attempt by them to impose restrictions on the workers and restrict employment agreements between the parties, contacts by third parties about future work, and accepting any offers that come outside their system.

On the other hand, the agreement between the intermediaries and the clients usually diminishes any liability for platforms (Purcell and Garcia, 2021). The authors of the previously mentioned research (Stewart and Stanford, 2017) suggest many options for extending the regulation, but some doubt that regulating the "gig" economy is that easy or even, in some cases, possible (Collier et al., 2017). Despite this, the same research shows the disadvantages of this kind of engagement, including collapsing traditional relations between employees and employers, the ever-present deprivation of workers' rights to sick leave, annual leave, compensation after dismissal, and the like.

Furthermore, freelancing takes a toll on workers by introducing precarity, highly intense stress, uncertainty, and alienation into everyday life by blurring the lines between personal and work commitments (Đukanović et al., 2022).

2.1.3. Drivers of freelancing activity

Many studies have been done on the topic of drivers and experiences of workers in the gig economy during recent years, trying to identify and explain the motivators, incentives, and reasons for participation in this type of economy (Allon et al., 2018; Ashford et al., 2018; Bajwa et al., 2018; Berger et al., 2019; Van der Zwan et al., 2020). For example, in one large study on the topic of economic and behavioral drivers of workers in the "gig" economy, the authors concluded that the possibility of higher earnings and the flexibility of choosing working hours are the primary drivers of engaging in this kind of work (Allon et al., 2018), similarly to the previous research findings in the region of Western Balkans (Radović-Marković et al., 2021a,b). Some people also freelance to "survive" until the next full-time opportunity arrives by moving between employment and unemployment, thus painting a different picture of freelancer motivation for joining the "gig" economy (Menger, 2017). On the other side, previous research showed that freelancers provide vast value for companies and employers (Mettler and Williams, 2011; Burke and Cowling, 2015; Aloisi, 2016; Barlage et al., 2019; Burke and Cowling, 2020; Gupta et al., 2020) who are incentivized to engage workers in the "gig" economy for different kinds of projects. Furthermore, there is evident relationship between high level of self-fulfillment and happiness and entrepreneurial activity, as previous studies show (Núñez-Barriopedro et al., 2020; Ravina-Ripoll et al., 2021).

2.2. Components of subjective well-being

Throughout history, happiness has been the highest good and the greatest motivation for human action within the experience of the individual making subjective well-being a central point in measuring the quality of life (Campbell, 1976; Diener, 2009). Dimensions for assessing SWB are restricted to life satisfaction domain (cognitive measure) in this research paper, and include a global subjective evaluation of the respondent's life (Dolan and Metcalfe, 2012). Furthermore, the experiences of individuals vary across different domains of life, and they may be valued differently among the respondents (Ryff and Heidrich, 1997).

The literature also shows that evaluative questions are usually used for this purpose (Kahneman and Krueger, 2006), with a standard five-item response scaling system (Diener et al., 1985) and a Life Satisfaction Scale (SWLS) (Diener, 2000). Also, it is common to have evaluative measures in nationally conducted studies on SWB (Kapteyn et al., 2015), with single-item and multi-item measuring scales used

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in previous research studies on this topic (Andrews and Crandall, 1976; Haring et al., 1984; Okun et al., 1984; Witter et al., 1985; Okun and Stock, 1987; Ferrans and Powers, 1992; Ellingson and Conn, 2000).

2.2.1. Gender and subjective well-being of freelancers

There is a growing trend among women to become solo entrepreneurs to fulfill other life commitments while attaining a better work-life balance (Bögenhold and Klinglmair, 2015). Furthermore, some research shows the significant success of solo entrepreneurship as a strategy to cope with family obligations and take care of the children while earning an income (Duberley and Carrigan, 2013). Regarding the pay gap, research that included freelancers from Ukraine, India, Pakistan, the United States, and Bangladesh concluded that female freelancers are underpaid in almost all categories and usually undervalue themselves when bidding for jobs (Dubey et al., 2017). In addition, other research has shown different pricing strategies that participants in the gig economy have, which directly impact how much they earn by working in this manner (Foong and Gerber, 2021). Lastly, one study conducted during the COVID-19 pandemic in 2020 showcased how women freelancers carry an additional burden of household obligations, thus sacrificing work time to provide caregiving to family members or finish other in-house chores (Dunn et al., 2021).

2.2.2. Age and subjective well-being of freelancers

Better access to flexible work arrangements may become crucial for the older population to be engaged in the labor market but may provide fewer benefits for younger participants in the "gig" economy (Cory, 2012). Also, engaging in this type of economy can be beneficial for semi-retired workers who want to earn additional funds alongside their pension, but their position in it may not be ideal in a market that only compensates workers based on their achieved productivity (Cook et al., 2019). There is a clear positive impact of marital status and subjective well-being as well as between being religions and fulfillment of expectations (Ravina-Ripoll et al., 2022).

Furthermore, previous research done in the United Kingdom on the topic of employment of people over 50 years old showcased the impact the "gig" economy has on enabling flexible work arrangements for elderly workers engaged in portfolio jobs, freelancing, or consulting (Platman, 2004), but various occupational health implications should also be considered (Tran and Sokas, 2017) before any conclusion on the benefits of this kind of work for elderly people can be made.

2.2.3. Education and subjective well-being of freelancers

On the topic of education, there is a clear trend toward lifelong learning and on-demand certification that is becoming very important in the "gig" economy, as workers need to attain new skills quickly and showcase their proficiency to stay relevant in this type of economy (Wheelahan and Moodie, 2022). Furthermore, investing in self-education may be a great strategy to stay afloat in the labor markets, especially in the era of shifting to more competency-based curriculum. In a broader sense, the complexity of understanding the needs of labor markets may blur the lines between formal and informal education programs, especially when considering that engagement in this kind of economy includes not only platform work but other types of casual work arrangements as well (Forum, 2020).

Because of such activities, often employees in the "gig" economy fail to define their career path, sometimes having too many options in choosing the next job they will work on, which ultimately leads to demotivation and dissatisfaction and shifts the "radical responsibility" of short-term or long-term economic survival to the worker. Also, workers in the "gig economy" cannot expect training from employers, so they must complete the relevant training and education in their own time to perform specific assignments. Specialization has proven not to be a good long-term strategy for workers in this economy, as market demands frequent change. Consequently, participants in this economy must be committed to learning throughout their lives, i.e., to renew their knowledge and move between different areas of expertise.

Considering the findings showcased above, we propose hypothesis as follow:

> *H1*: *Working as a freelancer impacts subjective well-being in the domain of life satisfaction.*
>
> *H2*: *Subjective levels of well-being in the domain of life satisfaction can be highly affected by a freelancer's gender, age, and education.*

3. Research methodology

3.1. Survey instrument and variables

The online survey was conducted in 2020 during the COVID-19 pandemic while workers practiced remote work in a new setting and included 13 questions on freelancers subjective-well-being and experiences working in the "gig" economy. Our research focused on investigating the subjective well-being of 989 respondents including 370 respondents from Serbia, 197 from Montenegro, 221 from North Macedonia, and 201 from Bosnia and Herzegovina.

Afterwards, we excluded the responses with missing data and the ones that stated having permanent work contracts from the data sample to examine satisfaction among freelancers only and to maintain data integrity. Therefore, the final data sample included 471 freelancers whose SWB was analyzed and measured.

The questionnaire was made based on the literature review and commonly found topics on this subject. The provided answers to the asked questions were given to the respondents in a form of five-point Likert-type scale measuring SWB from 1 (Completely disagrees) to 5 (Completely Agrees).

Because of the multidimensional nature of the research model, exploratory factor analysis (Gorsuch, 1988; Abdi and Williams, 2010; Williams et al., 2010) and the principal component extraction model were used to reduce the number of variables to common factors and help us understand the underlying concepts. Furthermore, the varimax rotation (Jackson, 2005; Corner, 2009), Pearson's correlation (Benesty et al., 2009), and Spearman's rank correlation (Gauthier, 2001) are used on the dataset to identify the groups of interrelated variables and investigate how they relate, enabling us to separate factors that are orthogonal to each other, ie. they have 0 correlation which allows them to be better and easier to demarcate. The SPSS software was used to complete the statistical analysis of the attained data sets (Figure 1).

4. Key findings

The Cronbach's alpha coefficient (Ercan et al., 2007; NOKS, 2023) validated the reliability of the instrument (0,830). Item total statistics confirmed that discarding any questions would not impact the scale. Exploratory factor analysis with varimax rotation supports the structure of the questionnaire (Gorsuch, 1988; Jackson, 2005; Corner, 2009; Williams et al., 2010). The first-factor solution shows three factors with a characteristic root greater than 1. But as the third factor consists of only two items and as the scree plot (Macrosson, 1999) also indicated a two-factor solution, we decided to repeat the analysis and limit the number of factors to two (Table 1).

The results displayed in Table 2 show the demographic data of the participants from this research by gender, age, and education. The majority of the participants of this study attained a High School degree (235), and the others have either College (78) or University (153) levels of education. Regarding age, most participants are 26 years old or less (184), then the second group is younger adults aged from 26 to 35 years (26–35), and then the adults aged 35 years or more (127).

The Kaiser-Meyer-Olkin (KMO) test (Dziuban and Shirkey, 1974) indicates that the collected data is suitable for factoring (Table 3). By using exploratory factor analysis with varimax rotation, two factors were singled out. The first factor consists of 7 items, and the second factor consists of 6 items. The first factor describes the impact of remote work on the freelancer's personal life and health. The second factor represents the fulfillment of expectations in the economic and professional sense (Table 4). The question "Since I work from home, I have more time to spend with friends" displayed the same lower saturation for both factors.

Using the results from the rotated component matrix (Table 5), the following two main factors were identified with correlation to the survey questions:

- Factor 1–The impact of working from home on a freelancer's personal life and health
- Factor 2–Fulfillment of expectations in the economic and professional sense

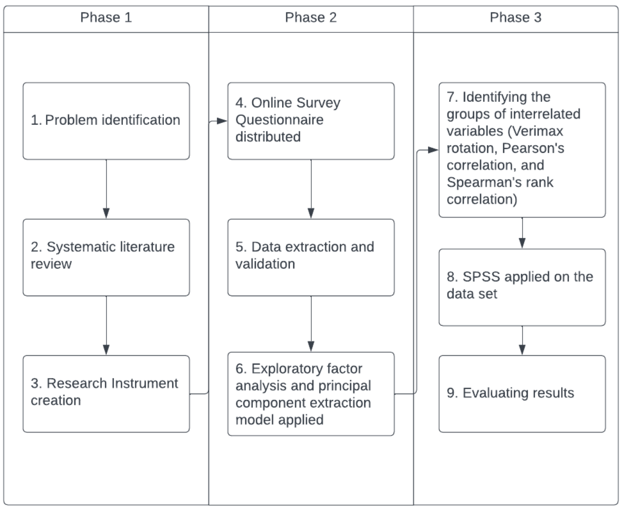

FIGURE 1
Research approach.

5. Discussion

The results show a high negative impact of working from home on subjective well-being, with respondents acknowledging feeling tense and anxious, having trouble separating work and private life, and neglecting other commitments, as also found in the previous research on this topic (Dubey et al., 2017; Tran and Sokas, 2017; Van der Zwan et al., 2020). There is also a high correlation between the fulfillment of expectations in the economic and professional sense and freelancing, which was also presented previously in the literature review.

Furthermore, their subjective well-being may vary depending on their motives for joining this kind of economy and the source of income that it provides, as previous studies have shown (Huđek et al., 2021). This paper found similar results, showing differences in satisfaction levels based on two main factors.

Regarding gender, the analysis did not find any significant differences by using the t-Test on the independent samples, confirming the findings of a recent study done in the same region on a similar topic (Vučeković et al., 2021; Taboroši et al., 2022). The research on the "gig" economy is still in its infancy compared to the traditional markets, and further research is needed to understand the dynamics of this type of economy and its benefits and drawbacks. Still, there is

TABLE 1 Data sample and variables used for the research.

Country	Gender		Age			Education			Total
	Male	Female	<26	26–35	>35	High School	*College	University	
Bosnia and Herzegovina	75	54	95	25	9	93	6	30	129
Montenegro	19	26	12	23	10	12	2	31	45
North Macedonia	70	61	36	49	46	52	36	43	131
Serbia	101	65	41	63	62	83	34	49	166
Total	265	206	184	160	127	235	78	153	471

*College option equivalent to the NQFS scale definition (Corner, 2009).

TABLE 2 Dimensions and main topics found during the literature review.

Author/Year	Dimensions	Main topics
Đukanović et al. (2022)	Material, psychosocial	Working from home, social and economic expectations and satisfaction
Bögenhold and Klinglmair (2015)	Gender, material	Female entrepreneurship, self-employment, freelancing
Binder and Coad (2016)	Health, social, SWB	Life domains, self-employment, Subjective well-being
Taboroši et al. (2022)	Gender, age, education	Entreprenership, freelancing
Vučeković et al. (2021)	Gender, fulfillment in economic sense	Woman entreprenership, freelancing

TABLE 3 Total variance explained.

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.430	34,079	34.079	4.430	34.079	34.079	3.100	23.843	23.843
2	1.410	10.843	44.922	1.410	10.843	44.922	2.740	21.079	44.922
3	1.111	8.547	53.470						
4	0.945	7.266	60.736						
5	0.848	6.521	67.257						
6	0.696	5.354	72.611						
7	0.674	5.184	77.794						
8	0.620	4.767	82.561						
9	0.540	4.151	86.712						
10	0.491	3.779	90,491						
11	0.448	3.449	93.940						
12	0.404	3.110	97.050						
13	0.384	2.950	100.000						

Extraction method: principal component analysis.

TABLE 4 KMO and Bartlett's test.

Kaiser-Meyer-Olkin measure of sampling adequacy		0.866
Bartlett's test of sphericity	Approx. Chi-Square	3286.374
	df	78
	Sig.	0.000

a discrepancy between the pricing and negotiation techniques among the genders found in similar research during the literature review, which may impact the subjective well-being of the involved participants in this economy (Chung and Hahn, 2021).

There is also a clear correlation between respondents' age and the fulfillment of expectations in a monetary and professional sense (Table 6), as many freelancers are domain experts and professionals offering their services in an additional capacity (Platman, 2004). Previous studies covered in the literature review show the significant advantage of professional workers in the "gig" economy with many years of work experience against the younger population, but not the case in the transportation and delivery industry (Younger, n.d.).

Between the level of education and both factors negative correlation was also found (Table 7), showcasing that with the increase in the level of education, dissatisfaction grows in domains of subjective well-being as well as in monetary and career fulfillment, very similar to the previous findings (Menger, 2017; Ashford et al., 2018; Sutherland et al., 2020).

Furthermore, there is a clear benefit for organizations in regard of resilience and business continuity by engaging workers in the „gig "economy, especially when implementing already available frameworks for that purpose (Marković, 2018).

Based on the findings above, we conclude that the first hypothesis "Working in the "gig" economy impacts subjective well-being in the economic, professional, and personal life domains" is confirmed and that the second hypothesis "The subjective well-being levels depends on freelancers' gender, age, and education" is only partially confirmed with no significant differences when considering gender (Tables 7, 8).

6. Conclusion

The contribution of our research is that it is one of the first attempt to empirically explain the relationship between freelancing and subjective well-being in Western Balkans. In line with this, our study concludes that flexible working conditions, professional and economic

TABLE 5 Rotated component matrix.

	Component	
	1	2
Since working from home, I feel more tense and anxious	0.733	0.224
I have trouble separating my work from my private life	0.725	0.163
Since I've been working from home, I've paid less attention to my family or home.	0.713	0.277
Working from home had a negative impact on the quantity and quality of sleep.	0.694	0.224
Since I started my own business, I have much less time for myself and my hobbies	0.611	0.270
I would like to have more contact with other people during work	0.499	−0.024
Since I work from home, I have more time to spend with friends.	0.355	0.319
My current income is sufficient to cover all my basic needs.	−0.020	0.785
I am confident in the stability and future success of the work I am currently doing	0.062	0.780
The work I am currently doing fulfills me.	0.219	0.617
My family and close friends mostly support me in my current job.	0.332	0.558
While working from home, others (family, friends, neighbors) do not disturb me, and I can fully devote myself to work.	0.285	0.512
Working from home does not prevent me from allocating enough time and motivation to engage in physical activities (exercise/sports).	0.233	0.428

Extraction method: principal component analysis. Rotation method: varimax with kaiser normalization. [a]Rotation converged in 3 iterations.

TABLE 6 Correlations between variable age and factors.

		Age	Factor 1	Factor 2
Age	Pearson correlation	1	0.024	0.109*
	Sig. (2-tailed)		0.602	0.018
	N	471	471	471

*Significant correlation at the 0.05 level (2-tailed).

TABLE 7 Correlations between variable education and factors.

			Factor 1	Factor 2	Education
Spearman's rho	Education	Correlation coefficient	−0.225**	−0.097*	1.000
		Sig. (2-tailed)	0.000	0.035	
		N	471	471	471

*Significant correlation at the 0.05 level (2-tailed). **Significant correlation at the 0.01 level (2-tailed).

TABLE 8 Statistical analysis.

Statistical method	Notes
Cronbach's alpha coefficient	Validated the reliability of the instrument
The Kaiser-Meyer-Olkin (KMO) test	Checking if the data is suitable for factoring
Exploratory factor analysis with varimax rotation	Separating factors that are orthogonal to each other (they have 0 correlation)
Principal component analysis	Standard extraction model
Pearson's correlation	Used on age variable because it is a continuous variable
Spearman's rank correlation	Used on education variable because it is of ordinal type

fulfillment, and improved work-life balance are the primary motivators for freelancers working in the "gig" economy in selected countries. Furthermore, there is a clear trend regarding heightened subjective well-being scores and freelancing from home compared to workers who provide traditional services from home, especially when engaged in the passion economy.

The analysis of workers in the "gig" economy concerning their subjective well-being reveals that satisfaction levels drop significantly with the education level of the respondents. Also, there seems to be a trend toward higher satisfaction among the older population participating in the gig economy. As for several other domains of SWB, there are differences between highly educated workers performing their domain work and those working on low-skilled tasks, like transportation or delivery. Furthermore, the results did not show any significant differences between genders among freelancers, but the impact of age and education variables is observable.

By reviewing the survey results and showcasing the findings, this paper contributes to the previous body of knowledge on the topic of motivators for freelancing and its impact on SWB of the participants in the "gig" economy in a limited capacity and calls for further research by investigating the impact of self-employment and peculiar work arrangements on the quality of life and other domains of subjective well-being. Furthermore, limiting factors of our research are related to the fact that due to the pandemic, we were able to collect data electronically, i.e., through a web questionnaire and not directly in the field. Additionally, the authors recommend analyzing the differences between freelancers, self-employed individuals, and part-time contingent workers and their perspectives on subjective well-being in future research.

Data availability statement

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

Ethics statement

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

MV and GA prepared the research concept and literature review, and gave their take on the results. MM defined the methodology and questionnaire and provided final conclusions. DR reviewed and provided perspective on the legal issues and challenges of freelancing. AD and DM did statistics and data preparation and presentation. All authors contributed to the article and approved the submitted version.

Conflict of interest

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

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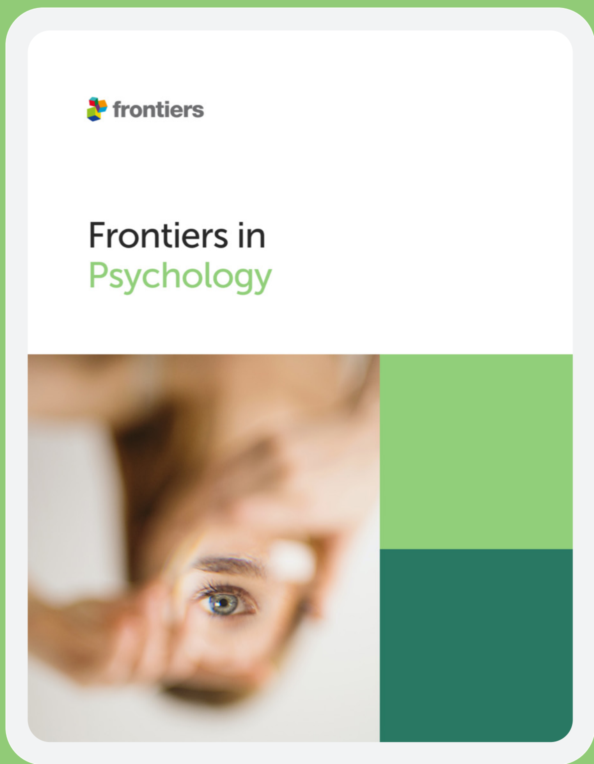

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