ORIGINAL PAPER

Shifts in Stressors, Internalizing Symptoms, and Coping Mechanisms of Teachers During the COVID-19 Pandemic

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Abstract

As the frontline of our education system, teachers endure greater job-related stress than other professionals, even under the best of circumstances. While they were already exposed to certain stressors affecting their emotional health, the pandemic outbreak introduced new challenges putting teachers at risk of experiencing higher rates of emotional distress. This longitudinal study aimed to identify changes in teaching stressors and teachers' coping strategies in the period before the pandemic to the immediate outbreaks of COVID-19 in Fall 2020. In addition, we examined the correlation of teachers' coping approaches with stress, anxiety, and depression to understand if coping strategies correlate and predict such emotional distress. To this end, 376 English as a foreign language (EFL) teachers in Iran in the first wave and 351 in the second wave completed a battery of validated inventories capturing their emotional distress, teaching stressors, and coping approaches. The mean scores of the stressors and coping strategies across two waves indicated significant shifts toward using functional coping strategies upon experiencing new demands. Furthermore, we found that novice teachers experienced higher rates of stress and anxiety, which were positively associated with dysfunctional coping strategies. The results of the stepwise regression analysis with (dys)functional coping strategies indicated that coping mechanisms significantly account for 25% of variances in stress, anxiety, and depression. The implications of the study regarding promoting teacher mental health through identifying the risk factors associated with dysfunctional coping strategies have been discussed.

Keyword (Dys)functional coping mechanisms · Teaching-related stressors · Stress · Anxiety · Depression · COVID-19 pandemic

Teaching is regarded as a stressful profession, given its high emotional involvement, heavy workloads, and lower job satisfaction (Richardson & Watt, 2006; Skaalvik & Skaalvik, 2018). The challenges have multiplied with the outbreak of the COVID-19 pandemic, which has led to unprecedented problems for the students, teachers, parents, and educational system (Kaden, 2020; Ozamiz-Etxebarria et al., 2021). For teachers, the pandemic heightened stressors related to isolation and lockdown, social and physical distancing, health concerns, insomnia, loss of employment, income reduction, and emotional upset (e.g., anxiety, agitation, and distress; Brunier & Drysdale, 2020). The pandemic also introduced significant modifications in social relationships, teaching, and education, which contributed to feelings of isolation and loneliness (Loades et al., 2020). As a result, research has documented both adaptive and less adaptive changes in teachers' well-being, coping, overall health, and satisfaction after the pandemic outbreak (Herman et al., 2021).

While some teachers may respond to the pandemic consequences with heightened stress and anxiety symptoms (Pressley et al., 2021), other teachers may adapt well and demonstrate high levels of mental health (Herman et al., 2021). According to Gustems-Carnicer and Calderon (2013), the way teachers respond to stressors using coping strategies plays an important role in their psychological well-being and adjustment. Therefore, investigating teachers' use of (dys)functional coping strategies prior to and during the pandemic could provide information on the consequences of COVID-19 on teachers' mental health. In particular, understanding changes in teachers' coping strategies and stressors could help us recognize and prevent risk factors associated with psychological distress, magnified through the pandemic impact (see Mercer & Gregersen, 2020).

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We use the term "psychological distress" to refer to a set of symptoms associated with mood fluctuations, which are characterized by stress, anxiety, and depression (VandenBos, 2007). This study is an attempt to (a) shed light on teachers' experienced psychological distress (i.e., stress, anxiety, depression) before the pandemic, (b) describe the emergence of new stressors for teachers during the pandemic, and (c) determine patterns of coping strategy use during the pandemic and their relations with teacher psychological distress.

Stress and Internalizing Symptoms

Stress refers to the physiological or psychological response to internal or external stressors that affects one's feelings and behaviors and is manifested by negative emotions, sweating, shortness of breath, and dry mouth (VandenBos, 2007). The levels of experienced stress in teachers depend on several variables, including, but not limited to, their appraisal of occupational demands, expectations of the possible future stressors, and skills in managing the demands and stressors efficiently (Kyriacou, 2011). In other words, teachers make primary appraisals to identify the risk and examine the available resources to cope with it through the secondary appraisal. This stress-appraisal process is a mechanism that would culminate in using cognitive and/or behavioral coping strategies (Lazarus & Folkman, 1984; Moos, 1995). Herman et al. (2020) expanded the focus beyond teacher coping processes to include three interrelated pathways contributing to teacher stress. They proposed the Coping-Competence-Context (3C) Theory, which emphasizes the interplay of teacher coping skills/meta-cognitions, classroom management competence, and contextual factors (e.g., expectations, resources, and policies) as a comprehensive framework to predict teacher stress and its impact on teacher and student outcomes. The 3C theory highlights key points of assessment and intervention for promoting teacher well-being and effectiveness.

Before the pandemic, teaching was a stressful occupation with high rates of attrition and emotional exhaustion (Ghasemi, 2021, 2022a; Ryan et al., 2017). Several stressors (e.g., emotional labor, time pressure, limited autonomy, tense relationships with colleagues, student behaviors, and lack of administrative support) have been identified (Mercer & Gregersen, 2020; Reinke et al., 2011; Richardson & Watt, 2006; von der Embse et al., 2019) that predict teacher stress, anxiety, and depression (Melchior et al., 2007). In other words, high levels of stress predict the development of anxiety and depression in teachers (Pressley et al., 2021; Steinhardt et al., 2011). While anxiety is a future-oriented response to a threat associated with apprehension and somatic symptoms of tension, depression is characterized by negative feelings, such as unhappiness, sadness, pessimism,

and despondency (VandenBos, 2007). Similarly, Gardner and Leak (1994) defined teaching anxiety as the feelings of apprehension, worry, and tension experienced by teachers during the planning and conducting of classroom activities. According to Melchior et al. (2007), occupational stressors could precipitate diagnosable depression and anxiety due to high psychological job demands, which have been amplified by the pandemic outbreak and transitioning to online instruction (Pressley et al., 2021). Apart from the previous stressors, teachers are now dealing with new difficulties pertinent to the pandemic itself (e.g., losing administrative support, lack of prior training in online instruction, and inadequate resources or infrastructure; Pressley et al., 2021), signifying a transition in stressors and coping mechanisms. However, few studies (e.g., Herman et al., 2020; Pressley et al., 2021) have attempted to identify the stressors during the pandemic, and little is known about the new factors and/or intensified pre-pandemic challenges that contribute to teacher stress, anxiety, and depression. Recognizing these instructional stressors, affecting teachers' mental health (Baker et al., 2021) and students' emotional well-being (Loades et al., 2020), could help school administrators, psychologists, and counselors develop, plan, and implement preventive and treatment programs and practices (Baker et al., 2021).

Teachers' Responses to Stressors

Employing specific psychological mechanisms or strategies (both cognitive and behavioral) to respond to a stressor is referred to as coping (Lazarus & Folkman, 1984). According to Lazarus and Folkman's (1984) 'transactional model' of stress and behavioral self-regulation, coping has two functions of solving the problem as the source of tension (problem-focused) and/or modifying one's emotional experiences (emotion-focused) to alleviate the emotional reaction. In other words, one would attempt to regulate the experienced tension either by involving in (dys)functional activities to approach or avoid the situation or by developing an understanding of their emotions to enhance their outcomes through self-regulation. Self-regulation refers to "a deliberate attempt to modulate, modify, or inhibit actions and reactions toward a more adaptive end" (McClelland et al., 2010, p. 510). Such attempts could be cognitive or behavioral in nature using (dys)functional coping strategies (Moos, 1995). While cognitive coping strategies involve efforts to change the way one thinks about a situation (e.g., cognitive restructuring, self-blame), behavioral coping strategies are actions one takes as an attempt to alleviate the effect of stress (e.g., seeking social support).

The self-regulation construct was applied to health behavior by Leventhal et al. (1998), who considered regulation a feedback system in which one engages in a problem-solving

process by generating a set of plans and monitoring his/her responses based on the information provided in the environment. The individual was seen as an information processing system that utilizes the feedback and information to apply or change the coping strategy to solve the problem (McClelland et al., 2010). The key components in Leventhal's model are extracting information from the environment, creating a representation of the problem, planning to respond to it, and monitoring the effects of the coping mechanism (Leventhal et al., 1998). Drawing on Leventhal's work, Clark et al. (2001) developed a self-regulation model for individuals with chronic conditions, suggesting that an individual is affected by a set of internal (i.e., knowledge, feelings, attitude, and beliefs) and external (i.e., social support, role models, material resources, technical services, and health systems) factors when attempting to solve a problem or deal with a stressor. According to this model, management strategies are the result of one's observations, judgments, and reactions toward risks and problems (McClelland et al., 2010). Pertinent to self-regulation and coping strategies is the process model of emotional regulation (Gross, 2015), which has two broad categories of antecedent-focused (i.e., feelings before the regulation process) and response-focused (i.e., feelings after the regulation process) emotion regulation. Gross proposed five regulation strategies that one may adopt to (a) approach or avoid certain situations (situation selection), (b) modify a situation to change its emotional effect (situation modification), (c) distract their attention (attentional deployment), (d) modify their appraisal of the situation (cognitive change), and (e) change the experiential aspects of the response through suppression or faking (response modulation).

These models may contribute to our understanding of the processes associated with individuals' coping procedures and strategies and explain the development of different coping scales. For instance, Carver and Scheier (1998), finding problem-focused and emotion-focused coping dimensions simplistic, developed a multidimensional model of coping, which resulted in a measurement scale (i.e., the COPE Inventory) with 15 subscales assessing (mal)adaptive coping strategies in stressful situations. However, it does not identify or group coping strategies into adaptive or maladaptive strategies and looks at each subscale separately. To develop composite scales, Carver (1997) recommended doing second-order factors with a different sample. In the current study, we utilized a new measure (i.e., (Dys)functional Coping Strategies Scales) with two composite scales to identify (dys)functional coping strategies.

To develop the scale, we studied the literature on the relevant stressors and coping mechanisms of teachers in the past decades. Regarding research on teacher coping strategies, it has been found that teacher self-efficacy and classroom management skills contributed to teacher adaptation to the stressors of COVID-19 (Herman et al., 2020). Likewise, Baker et al. (2021) found that maximizing protective factors (e.g., attending to personal health, spending time with family and friends, connections with supportive people) was associated with better coping skills and resilience in teachers. In addition, there is collective literature, indicating that coping strategies are significantly associated with teacher well-being. For instance, Gustems-Carnicer and Calderon (2013) found that functional coping strategies in teachers were effective in mitigating symptoms of anxiety, depression, and psychological distress, while dysfunctional coping strategies were associated with symptoms of psychological distress.

Current research has also traced changes in coping mechanisms. For instance, Diehl et al. (2014) in a longitudinal study identified development and changes in coping and defense mechanism of 392 European American adults, resulting in (non)linear age-related changes for the defense mechanisms of doubt, regression, displacement, and intellectualization and the coping mechanisms of suppression and sublimation. Although there was development in the direction of more functional coping and defense strategies from adolescence until late middle age, the development was reversed in late old age, indicating potential challenges in the functional coping mechanism of older adults. Additionally, Gutner et al. (2006) demonstrated the dynamic nature of coping strategies following trauma by investigating changes in the coping mechanisms of females experiencing post-traumatic stress disorder (PTSD). They found a significant association of certain coping strategies (e.g., social support and expressing more emotions) with PTSD, indicating changes in specific methods of coping over time as a response to PTSD symptomatology. Despite these studies conducted to capture changes in coping strategies, there is no evidence regarding changes in teachers' coping mechanisms and internalizing symptoms during COVID-19. In other words, this longitudinal study is an attempt to understand the dynamic nature of the coping mechanisms of teachers during a traumatic stressor by investigating changes in their coping and rates of symptomatology.

Teacher Stress in an Iranian Context

Most of the literature on teacher stress and coping to date has focused on Western educational contexts. Yet available data suggest that teachers in other world contexts also experience high levels of stress and burnout and many of the same common stressors (Ma et al., 2022). For instance, Ma et al. (2022) recently completed a meta-analysis of 64 studies in 22 countries that were conducted during the pandemic and found high levels of stress across nations. They found that workload, interpersonal conflicts, job insecurity, lack of

organizational fairness, perceived risk of getting COVID-19, and challenges with distance learning were significant predictors of teacher stress across contexts. Similarly, in Iran, prior to the pandemic, teachers reported time pressures, excessive work demands, limited autonomy, conflicts with supervisors, and lack of administrative support as sources of work stress (Ghasemi, 2022b).

Current Study

Different factors (i.e., organizational and individual) appear to influence teachers coping strategies, particularly in the face of novel stressors during the pandemic (Herman et al., 2021). However, no study to date has investigated the shifts in teachers' stressors and coping strategies during the pandemic. Although there are studies (e.g., Ford et al., 2021; MacIntyre et al., 2020) exploring the challenges of the pandemic for teachers, there has been no attempt to trace changes in educational stressors and teachers' coping strategies. As teachers with various occupational attributes may respond differently to stressors (Ghasemi, 2022b), recognizing shifts in teachers' coping as well as changes in the stressors could help educators develop effective intervention programs to train and equip teachers with skills and strategies to overcome the challenges. Moreover, how teachers' (dys)functional coping strategies correlate with certain emotional factors (i.e., stress, anxiety, and depression) has not been thoroughly investigated yet. In brief, this study will (a) address the rates of teaching stressors and psychological distress in Iran prior to and during the pandemic, (b) identify their common coping strategies, (c) examine the correlation between (dys)functional coping strategies and emotional disorders, and (d) indicate to what extent the methods of coping strategies can explain the variance in emotional factors.

Methods

Participants and Context

The education system in Iran is centralized and divided into K-12 settings with primary and secondary schools. Besides public schools, parallel private schools with a similar educational system and higher academic qualities are also available. Regarding foreign language learning, there are privately run English training centers as well, where classes are usually geared toward communicative competence in a foreign language. The participants of the current study were English as a foreign language (EFL) teachers working at private language schools in Tehran, Iran. Unlike state schools, where teachers are employed by the Ministry of Education to get tenure, language teachers in private schools are contract

teachers who have to work hard to motivate their students, which may give rise to extra pressure, stress, and/or anxiety.

A total of 551 teachers from 34 language schools were invited to participate in the current study based on the results of a power analysis using G*Power 3.1.9.7 (Erdfelder et al., 2009). The projected sample size needed was $n = 172$ based on a small effect size of $f = 0.15$, $\alpha = 0.05$ and power $(1\text{-}\beta) = 0.95$. Of the 551 teachers, 376 (68%) teachers accepted to participate in this study by returning the inventories in the first wave of the study before the pandemic. The sample size was reduced to 351 (64%) teachers due to several reasons, including teacher turnover, attrition, and accessibility issues. We used multistage sampling to form the core sample of the study. After constructing a sampling frame for each stage, we assigned a number to each city in Tehran Province ($N = 16$ cities) as the first stage units and selected a randomly generated city (i.e., Tehran). Similarly, we randomly selected sample districts after assigning a number to each district ($N = 22$ districts) in Tehran as the units of the second stage. Finally, after listing all the private schools of the selected districts, we randomly chose 34 schools to include the required number of teachers by calculating the sample size needed for a margin of error of $\pm 5\%$ at the 95% confidence level. The participants were teachers with diverse occupational attributes who were categorized based on their expertise (novice: ≤ 3 years; experienced: > 3 years) to provide a better picture of individual differences in coping strategies and emotional well-being. In addition, they had experienced online teaching as a consequence of the COVID-19 virus pandemic. Table 1 demonstrates the demographic attributes for each subgroup of the participating teachers.

Measures

Depression Anxiety Stress Scales (DASS)

The DASS (Lovibond & Lovibond, 1995) was employed to assess teachers' stress, anxiety, and depression. It is a 42-item scale measuring three dimensions of stress, anxiety, and depression (14 items for each subscale) on a 4-point Likert scale, ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). The Stress subscale considers agitation, impatience, and difficulty in being relaxed (e.g., "I found myself getting agitated"). The Anxiety subscale assesses aspects connected with subjective anxiety experiences and psychophysiological activation (e.g., "I felt I was close to panic"). Finally, aspects such as hopelessness, devaluation of life, sadness, and lack of interest are evaluated in the Depression subscale (e.g., "I felt that life was meaningless"). Summing the items gives the total score, ranging from 0 to 42. Scores indicative of severe levels for the Stress, Anxiety, and Depression subscales

Table 1 Characteristics of the Study Sample

	Novice teachers	Experienced teachers	Total sample
N/n	223 (59%)	153 (41%)	376 (100%)
Age			
Mean (SD)	24.21 (1.4)	33.48 (6.1)	28 (8.9)
[Min–Max]	[20–26]	[26–40]	[20–40]
Gender			
Male	96 (25%)	51 (13%)	147 (39%)
Female	127 (34%)	102 (27%)	229 (61%)
Education			
Undergraduate student	78 (20%)	3 (01%)	81 (21%)
BA	139 (36%)	93 (24%)	232 (61%)
MA	6 (02%)	57 (15%)	63 (17%)

are > 25, > 14, and > 20, respectively (Lovibond & Lovibond, 1995). The scale has demonstrated high internal consistency and reliability and good convergent and discriminant validity (Crawford & Henry, 2003). The computed Cronbach's alphas for the Stress, Anxiety, and Depression subscales were 0.75, 0.73, and 0.71, respectively.

(Dys)functional Coping Strategies Scales (DCSS)

We developed the DCSS by categorizing coping strategies into functional and dysfunctional strategies based on their functionality (Carver & Scheier, 1998; Moos, 1995). More specifically, the DCSS was developed based on self-regulation models (Clark et al., 2001; Gross, 2015; Leventhal et al., 1998), emphasizing factors and processes associated with self-regulation and coping strategies. These models endorse changes in the emotions, cognitions, and behaviors of individuals for effective coping. Similar to Moos (1995), we used two conceptual approaches of *focus of coping* (i.e., functional vs. dysfunctional) and *method of coping* (cognitive vs. behavioral) in developing the scale. More specifically, the scale was categorized into two main dimensions of functional and dysfunctional coping strategies based on one's orientation to use (dys)functional coping in response to a stressor, which entails either cognitive or behavioral efforts (Ghasemi, 2022b). For instance, subscales of (dys) functional cognitive coping method assess (a) whether individuals reappraise the situation or are unable to analyze the situation due to intrusive cognitions (Cognitive reappraisal/overload); (b) whether they could monitor their coping reactions or unable to monitor and plan a coping strategy (Active/defective monitoring); and (c) whether they could modulate their emotions or engage in rumination and/ or negative self-talk (Affective modulation, Negative self-talk). To form subscales of (dys)functional behavioral coping method, we used the management model of Clark et al. (2001), which emphasizes the influence of the internal (e.g., prior knowledge and beliefs about a problem) and external factors (e.g., interpersonal relationships) in the process of the coping. For instance, internal and external factors may influence one's choice of (mal)adaptive behavior for distraction from the situation (Behavior distraction) and whether to actively engage with the situation (Active engagement) or engage in risky behaviors (Misdirected response). Figure 1 depicts the components of (dys)functional coping strategies and their association with emotional factors.

Items were developed and rated by a panel of experts to recognize and evaluate potential (dys)functional coping strategies. Items with low factor loading and low correlation were subject to removal. We were interested in creating a measure with adequate technical properties and fewer items to assess teachers' cognitive and behavioral coping methods based on self-regulation models. In comparison with other available scales (e.g., the Brief COPE and the Coping Responses Inventory), the DCSS has been validated with a population of teachers and is brief ($N_{item} = 20$), making it more manageable for test-takers. It was piloted in the present sample to assess its factor structure. Similar to Carver (1997), this scale takes a dispositional response format in which respondents rate their preferences when stressed out on a 4-point Likert scale, ranging from 0 (*I don't do this at all*) to 3 (*I do this a lot*).

Upon testing the sampling adequacy and data acceptability and suitability, exploratory factor analysis (EFA) was performed and rotated by an oblique rotation to allow for correlations among factors. The results indicated ten factors with acceptable eigenvalues (> 1), accounting for 71.62% of the total variance in scale responding. Next, we performed confirmatory factor analyses using the first random split-half sample and inspected fit indices, factor loadings, and factor correlations. The ten-factor model was tested, and all items had appreciable factor loadings and showed acceptable model fit, RMSEA = 0.03, TLI = 0.94, CFI = 0.95. The factor correlations ranged from 0.69 (Active engagement with Active monitoring) to -0.16 (Misdirected response with Active monitoring). Table 2 demonstrates the results of the
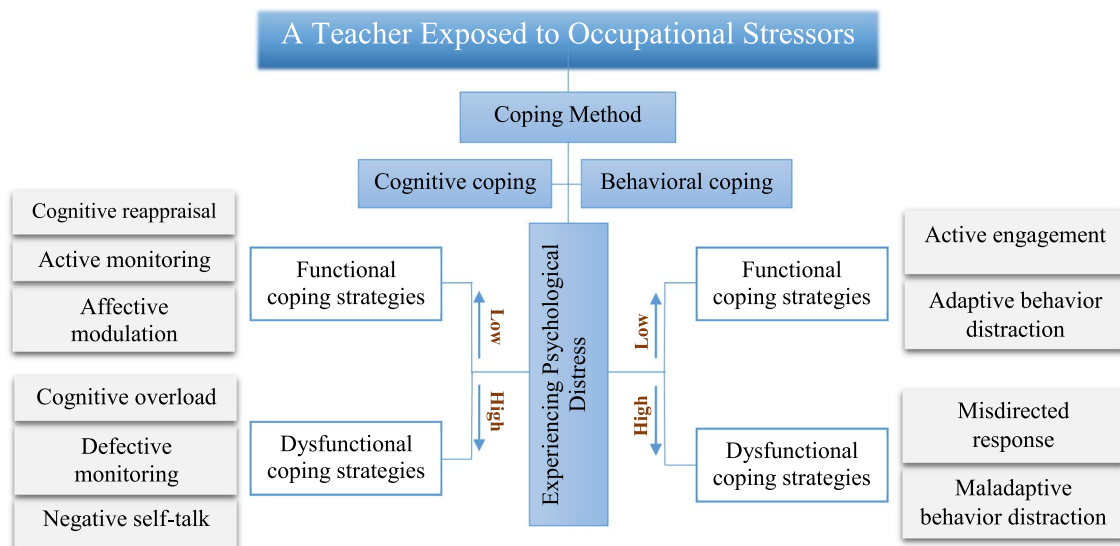
Fig. 1 The Association Between (Dys)functional Coping Strategies and Teacher Stress, Anxiety, and Depression

EFA and alpha reliabilities in the current sample, along with the scale names and definitions. As a measure of concurrent validity, the DCSS was correlated with the General Health Questionnaire (GHQ; Goldberg & Williams, 1988), which assesses general health with anxiety, depression, and general health subscales. The results demonstrated moderate positive correlations between the GHQ and dysfunctional subscales ($r_{range} = 0.38$–0.59) and negative correlations with functional responses ($r_{range} = -0.40$ and -0.68). Overall, the results supported the DCSS as a reliable and valid scale to measure a broad range of (dys)functional coping responses. However, additional information should be collected regarding the construct validity of the subscales to further support its validity for wider use.

Teaching Stressor Survey (TSS)

In order to capture sources of teaching stress, we developed a rating scale asking teachers to indicate the degree of experienced stress. An item pool ($N = 40$) was developed based on the qualitative and empirical literature (e.g., Harmsen et al., 2018, 2019; Haydon et al., 2018; Travers, 2017) on the causes of job stress and were refined by a panel of experts ($N = 30$). After preparing a list of potential stressors (e.g., student misbehavior, excessive workload, conflicts with supervisor/administration), items were developed (e.g., "I had students with disruptive behaviors," "I had too much work to do," "I had conflicts with the supervisor") by clarifying the situation regarding the stressors. Subsequently, it

was piloted with a sample of 153 EFL teachers, and ambiguous items with low factor loading were removed, leaving a final 20-item scale. Further data analyses using exploratory factor analysis resulted in five factors, including psychological job demands ($\alpha = 0.86$), job control ($\alpha = 0.79$), job skill ($\alpha = 0.73$), school climate ($\alpha = 0.78$), available resources ($\alpha = 0.72$), and employment conditions ($\alpha = 0.69$), which explained 82% of the variance in scores with high loadings on the factors (0.73–0.92).

In this scale, teachers rate the items signifying the degree of stress they had experienced in the past semester using a 4-point scale ranging from 0 (*I felt no stress*) to 3 (*I felt lots of stress*). The number of items was increased to 30 items in the second wave of data collection due to the new challenges introduced during the pandemic (e.g., poor virtual instruction competencies). In addition, there was a free space at the bottom of the survey for the participants to add any additional comments and stressors they had experienced. The scale had acceptable internal consistency ($\alpha = 0.77$) and adequate test–retest reliability (0.79 over a three-week period).

Procedures

After inviting and delivering consent forms containing information about the study to 551 teachers, 376 teachers returned the consent forms and completed the inventories. The data were collected from the participants in two waves before (November 2019) and during (January 2021) the COVID-19

Table 2 Alpha Reliabilities and the Standardized Factor Loadings Using Confirmatory Factor Analyses for each Scale

	α	Loading
Functional responses		
1. Cognitive reappraisal: Accepting and reframing the situation to develop positive attitudes and facilitating changes in cognition	0.71	0.65
I try to reflect on the situation to find its positive aspects		0.59
I consider the situation as a positive challenge that should be overcome		
2. Active monitoring: Self-monitoring for either developing a coping plan or evaluating the efficacy of a response	0.68	0.68
I think about my feelings and thoughts about the situation and attempt to find a solution for it based on my previous experiences		0.71
I try to think about how I should respond to my feelings about the situation and see if the strategy works		
3. Affective modulation: Trying to suppress, replace, or modify emotions through thinking about a positive situation	0.65	0.73
When I feel stressed out, I try to think about a pleasant moment in my life to reduce my negative feelings		0.64
I attempt to not think about the situation and ignore it for a while by pretending other positive emotions		
4. Adaptive behavior distraction: Doing positive activities to distract one's mind from the situation for the purpose of proper functioning	0.75	0.78
		0.81
I attempt to direct my attention and energy away from the negative feelings by doing a positive activity (e.g., exercising or reading a book)		
I try to get involved in another positive activity to not think about the situation (e.g., turning to work or writing a letter)		
5. Active engagement: Actively focusing attention to deal with the situation by taking constructive actions to solve the problem	0.73	0.92
I try to solve the problem by seeking help from counselors or talking about it with friends, parents, etc.		0.83
I try to concentrate on the situation to find a way to make it better		
Dysfunctional responses		
6. Cognitive overload: Developed negative cognitions make one unable to control or regulate emotions, giving rise to a sense of helplessness	0.67	0.48
		0.51
I have no control over my feelings when stressed out		
I can't get my mind off the situation and I am unable to think about other things		
7. Defective monitoring: Fail to monitor feelings to develop a coping plan or evaluate the effects of previous response	0.70	0.61
I don't try to think about my thoughts about the situation		0.63
I don't think about how I should deal with the situation		
8. Negative self-talk: Negative inner dialogue with oneself about a situation through blaming and criticizing	0.79	0.87
when stressed out about a situation, I criticize myself by expressing negative thoughts (e.g., I am not good enough)		0.76
I find myself responsible for the situation by verbalizing negative thoughts and feelings		
9. Maladaptive behavior distraction: Engaging in activities without positive outcomes just for diverting attention from the situation	0.75	0.89
		0.71
I turn to activities just for the sake of distraction from the situation (e.g., playing computer games, exploring the internet)		
To get away from stress or anxiety, I try to daydream to get my mind off the situation		
10. Misdirected response: Directing attention and energy on negative activities that may provide immediate relief with consequences	0.77	0.83
		0.78
When feeling under stress, I try to solve the problem by doing things that make me feel better (e.g., smoking, taking drugs)		
I try to relieve my emotions by throwing or breaking objects and unhealthy eating		

pandemic in Iran. Data collection took almost a month for each wave. In the first wave, the participants were personally met by the lead researcher and were briefed about their rights, privacy, data confidentiality, and ethical approval. Then, they were invited to participate in the predefined sessions (arranged by the administrators) in their workplaces at the end of their classes to complete the surveys. The data collection procedure for this wave lasted almost a month. In the second wave, the participants were contacted through different available means (social media, email, phone calls, and personal meetings) to complete the questionnaires again. The sample size was reduced to 351 participants by retaining 93% of the original sample after taking care of missing or incomplete data. Upon analysis of complete and missing data in the two waves of data collection on all variables, no statistically significant differences were found for the effects

of missing data or sample attrition on the results. We appreciated the teachers for their participation with gift cards at the end of the study.

Results

Stressors and Emotional Health of Teachers

In order to address the first objective of the study, which was to describe teaching stressors before and during the pandemic, we analyzed the results of the TSS in terms of teachers' occupational attributes. The calculated means for the stressors in both time points yielded different results for teachers (Figs. 2 and 3). Based on the results, *excessive workload, high demands/expectations,* and *constant*
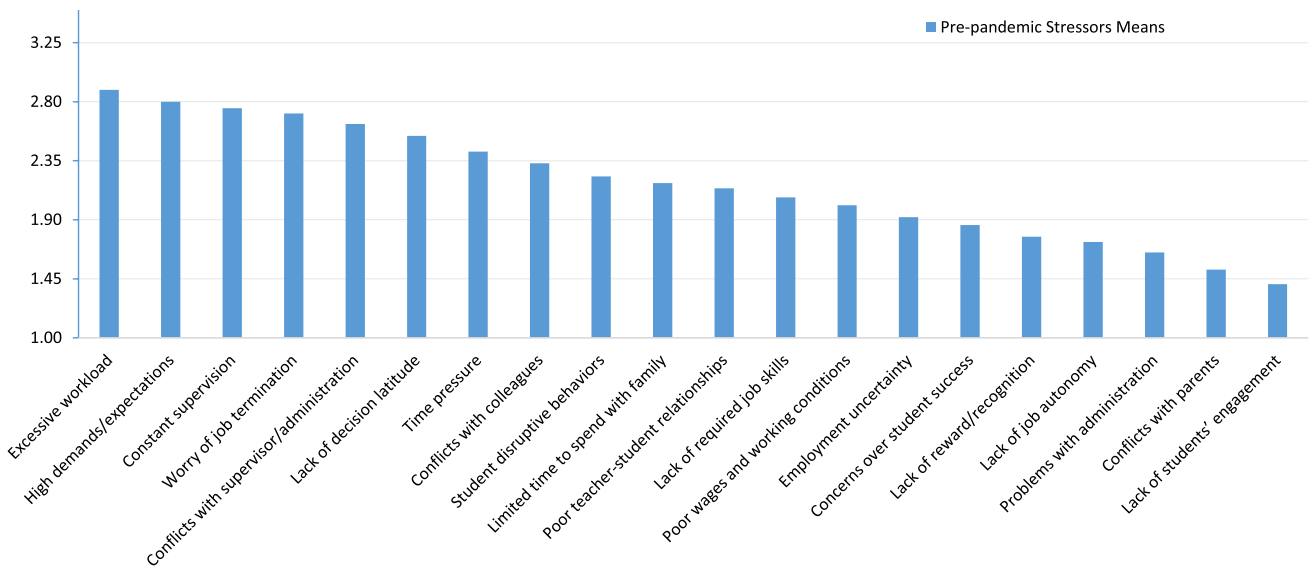
Fig. 2 Teachers' Mean Ratings of Stressors before the Pandemic
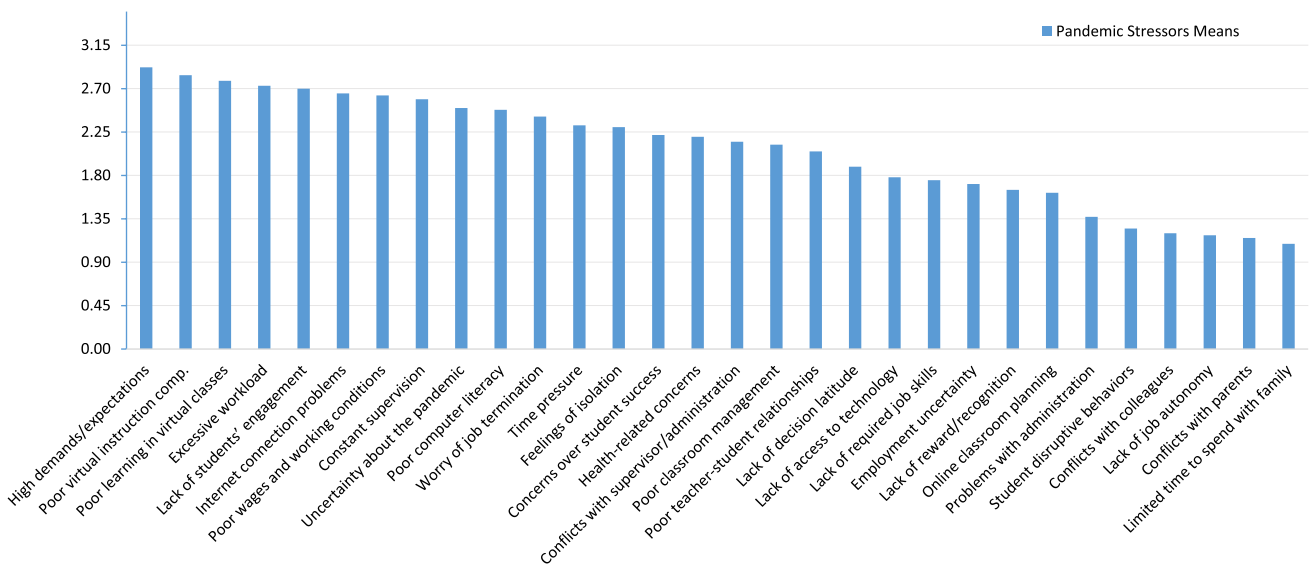

Fig. 3 Teachers' Mean Ratings of Stressors during the Pandemic

supervision were among the most stressful factors before the pandemic, with mean ratings over 2.70 out of 3. In addition, the results demonstrated that *worry of job termination, conflicts with supervisor/administration,* and *lack of decision latitude (autonomy)* were also significant teaching-related stressors ($M > 2.50$) for teachers working in private schools. However, *problems with administration*, *conflicts with parents*, and *lack of students' engagement* were among the lowest rated stressors for these teachers with less than a 1.7 mean rating. In addition to the prevalence of *excessive*

workload and *high demands/expectations*, which were quite high for both novice and experienced teachers, we also found differences in types of stressors in terms of teaching experience. While novice teachers were more concerned with *lack of required job skills, student disruptive behaviors,* and *concerns over student success* ($M \geq 2.71$), experienced teachers had to deal with *lack of decision latitude, poor wages and working conditions,* and *conflicts with supervisor/administration* as the sources of occupational stress ($M \geq 2.81$) before the pandemic. Furthermore, the mean

rates of the stressors were significantly different for the novice ($M=22.81$, $SD=8.87$) and experienced ($M=20.78$, $SD=7.52$) teachers, $t(374)=2.31$, $p=0.02$.

Regarding the stressors during the pandemic, there were changes in the types and degrees of stressors, particularly through conversion to online instruction. More precisely, *high demands/expectations, poor virtual instruction competencies, poor learning in virtual classes,* and *excessive workload* ($M>2.70$) were among the significant stressors after the pandemic, indicating a shift toward online teaching stressors. It appears that concerns over students' learning and engagement also increased with online teaching. In addition, remote teaching had reduced occupational stress associated with *limited time to spend with family* and *conflicts with colleagues and parents* ($M\leq1.20$). Overall, *high demands/ expectations* and *excessive workload* seem to be the persistent stressors during the pandemic for both experienced and novice teachers. In addition to these top stressors, novice teachers experienced great stress with *poor virtual instruction competencies*, *poor learning in virtual classes,* and *lack of students' engagement* ($M\geq2.79$) during the COVID-19 pandemic and online teaching. However, the experienced teachers found *poor wages and working conditions*, *constant supervision*, and *worry of job termination* ($M\geq2.83$) as the sources of great stress during the pandemic. Similar to the pre-pandemic results, the mean rates of the stressors were significantly different for the novice ($M=21.88$, $SD=8.63$) and experienced ($M=19.53$, $SD=7.33$) teachers with a slight decrease in means, $t(348)=2.64$, $p<0.01$.

Additionally, the results of the DASS indicated mild levels of anxiety ($M=8.99$) and depression ($M=10.81$), and moderate levels of stress ($M=24.98$) before the pandemic. Regarding differences in terms of teaching experience in this period, while novice teachers experienced severe stress ($M=26.41$, $SD=9.22$) and moderate anxiety ($M=10.08$, $SD=3.59$), the experienced teachers had moderate stress ($M=23.75$, $SD=8.14$) and mild anxiety ($M=8.12$, $SD=2.96$). The rates of depression in both groups were mild. Overall, there were significant differences between these groups of teachers on the Stress ($t(374)=2.88$, $p<0.01$) and Anxiety subscales ($t(374)=5.57$, $p<0.001$) with no significant differences on the Depression subscale ($t(374)=1.76$, $p=0.07$). During the pandemic situation, it appears that all three symptoms increased: teachers reported severe levels of stress ($M=26.71$) and moderate anxiety ($M=11.37$) and depression ($M=12.03$). Similar to the pre-pandemic situation, teaching experience was a significant factor in teachers' levels of stress, anxiety, and depression. Novice teachers' rates of experienced stress ($M=27.91$, $SD=7.72$), anxiety ($M=12.26$, $SD=3.93$), and depression ($M=11.57$, $SD=3.74$) were significantly different from the experienced teachers' levels of stress ($M=25.44$, $SD=8.14$; $t(348)=2.86$, $p>0.01$), anxiety ($M=10.53$, $SD=4.01$; $t(348)=4.00$, $p<0.001$), and depression ($M=12.59$, $SD=4.06$; $t(348)=2.37$, $p=0.018$). In brief, there were increases in the levels of experienced stress, anxiety, and depression during the pandemic, particularly among novice teachers.

Teachers' Coping Strategies

The second objective of this research study was to understand teachers' coping strategies at different time points to capture any shift in their coping mechanisms. Figure 4 demonstrates the ratings of the frequency of the (dys)functional coping strategies before and during the pandemic. According to the results, the use of dysfunctional coping strategies ($M=25.16$, $SD=7.23$) was significantly higher than the functional coping strategies ($M=22.86$, $SD=6.12$) before the pandemic, $t(374)=3.10$, $p<0.01$. On the contrary, the utilized frequency of functional coping strategies

Fig. 4 Teachers' Mean Ratings of Utilized Coping Strategies Before and During the Pandemic
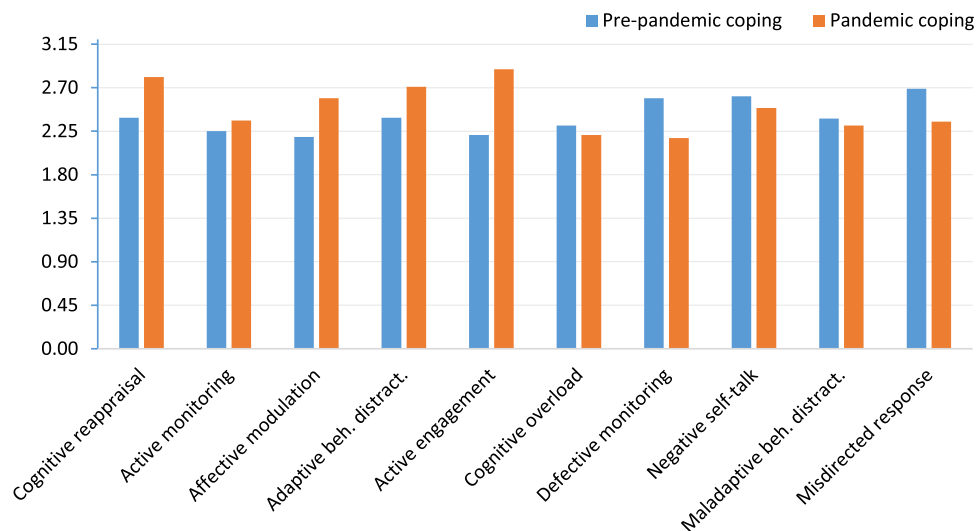
($M = 26.72$, $SD = 7.09$) was significantly higher than the dysfunctional coping strategies ($M = 23.08$, $SD = 7.20$) during the COVID-19 pandemic, $t(348) = 4.67$, $p < 0.001$. There were no significant differences between teachers' mean frequency of the (dys)functional coping strategies (DCSS) before ($M = 24.01$, $SD = 6.82$) and during the pandemic, $M = 24.90$, $SD = 6.91$; $t(348) = 1.18$, $p > 0.05$. The results suggest that the pattern of changes in coping mechanisms was in the direction of more functional coping mechanisms during the pandemic, as the participating teachers successfully adapted their coping strategies to the pandemic-specific stressors.

The Correlations of (Dys)functional Coping Strategies with Emotional Factors

Another important objective of this study was to understand how (dys)functional coping strategies correlate with stress, anxiety, and depression. We used the Pearson correlation for this objective after calculating the means and standard deviations of the scales and checking for the required assumptions. The results indicated that functional coping strategies were negatively associated with stress, anxiety, and depression, while dysfunctional coping strategies were positively correlated with these emotional factors (Table 3). More precisely, *active engagement* was the only factor that significantly correlated with all of the emotional variables, stress ($r = -0.20$, $p < 0.001$), anxiety ($r = -0.16$, $p < 0.01$), and depression ($r = -0.11$, $p < 0.05$), implying its importance in relation to psychological distress. In addition, *negative self-talk* and *cognitive overload* positively correlated with stress ($r = 0.216$, $p = p < 0.001$) and anxiety ($r = 0.192$, $p < 0.001$), indicating the adverse role of these dysfunctional coping strategies in association with stress and anxiety. However, *defective monitoring* and *maladaptive behavior distraction* did not significantly associate with stress, anxiety, and depression, which may show the lack of significance of these dysfunctional coping strategies in relation to psychological distress in our sample.

In order to understand how the use of specific (dys)functional coping strategies may be associated with one's experienced stress, anxiety, and depression, we categorized the participants into three groups (i.e., low risk, medium risk, and high risk) based on their DASS scores. Subsequently, we performed a 2×3 repeated-measures ANOVA, which resulted in significant main effects of (dys)functional coping strategy ($F(1, 345) = 231.81$, $p < 0.001$, $\eta_p^2 = 0.40$), risk groups ($F(2, 345) = 18.12$, $p < 0.001$, $\eta_p^2 = 0.09$), and interaction of coping strategies and groups ($F(1, 345) = 8.76$, $p < 0.001$, $\eta_p^2 = 0.04$). The results of the interaction indicated no significant mean differences of functional coping strategies across risk groups ($F(2, 345) = 2.81$, $p = 0.06$), implying that the effects of the functional coping strategies

Table 3 Bivariate Correlations between (Dys)functional Coping Strategies and Stress, Anxiety, and Depression ($N = 351$)

	Functional Coping Strategies					Dysfunctional Coping Strategies				
	1. Cognitive reappraisal	2. Active monitoring	3. Affective modulation	4. Adaptive beh. distract	5. Active engagement	6. Cognitive overload	7. Defective monitoring	8. Negative self-talk	9. Maladaptive beh. distract	10. Misdirected response
1. Stress	−.147**	−.119*	−.099	−.125*	−.203***	.106*	.081	.216***	.079	.101
2. Anxiety	−.097	−.088	−.115*	−.119*	−.168**	.192***	.029	.172**	.103	.117**
3. Depression	−.101	−.041	−.083	−.023	−.110*	.012	.099	.102	.026	.127*

*** $p < .001$, ** $p < .01$, * $p < .05$

were consistent across these risk factors (i.e., stress, anxiety, and depression). However, the mean differences of dysfunctional coping strategies across the risk groups were significant ($F(2, 345) = 31.28$, $p < 0.001$) and increased with risk factors, suggesting the significant effects of the risk factors on teachers using dysfunctional coping strategies. In other words, teachers using dysfunctional coping strategies were more likely to report higher rates of stress, anxiety, and depression.

Finally, we examined the extent to which (dys)functional coping strategies predicted psychological distress through a stepwise multiple regression with stress, anxiety, and depression subscales. The stepwise multiple regression was selected, as it includes only significant predictors in the regression model. The results of the regression indicated that *cognitive overload* and *negative self-talk* explained 25.8% of the variance in teacher stress ($F(1, 345) = 11.13$, $p < 0.01$). In other words, *cognitive overload* ($\beta = 0.23$, $p < 0.01$) and *negative self-talk* ($\beta = 0.27$, $p < 0.01$), among dysfunctional coping strategies, significantly predicted stress in teachers. As expected, *active engagement* ($\beta = -0.32$, $p < 0.01$) and *cognitive reappraisal* ($\beta = -0.19$, $p < 0.01$), as the functional coping strategies, significantly accounted for the variation in teacher stress. With regard to anxiety, *cognitive overload* ($\beta = 0.30$, $p < 0.01$), *negative self-talk* ($\beta = 0.19$, $p < 0.01$), *misdirected response* ($\beta = 0.12$, $p < 0.05$), *affective modulation* ($\beta = -0.14$, $p < 0.05$), and *active engagement* ($\beta = -0.18$, $p < 0.01$) accounted for 28.3% of variance in teacher anxiety ($F(1, 345) = 13.18$, $p < 0.01$). Examining the variance in depression, we found that *misdirected response* ($\beta = 0.10$, $p < 0.05$) was the only significant predictor of depression. Overall, the results demonstrated that dysfunctional coping strategies positively predicted psychological distress, whereas functional coping strategies negatively predicted stress, anxiety, and depression.

Discussion and Implications

This study was an attempt to identify shifts in teaching stressors during the COVID-19 pandemic and understand teachers' (dys)functional coping strategies with stress, anxiety, and depression. In addition, we examined how teachers' (dys)functional coping strategies correlated with psychological distress. The results demonstrated that the pandemic outbreak had introduced new stressors regarding virtual instruction, along with persistent pre-pandemic stressors (e.g., excessive workload and high demands/expectations). More precisely, concerns over student poor learning and lack of engagement were heightened in comparison with the pre-pandemic situation, signifying the pressure teachers experience to meet the high expectations defined by administrators, supervisors, and parents. Based on the earlier studies on

teachers working in Iranian private schools, the hierarchical nature of teacher–supervisor relationship, lack of administrative support, job insecurity, dysfunctional feedback, and the lack of teacher autonomy were among the factors contributing to negative affective outcomes and psychological distress (Ghasemi, 2022b; Gholaminejad, 2020). Therefore, teachers working in these schools mostly experience stress and anxiety during supervisor observation and/or when they receive dysfunctional comments regarding their teaching efficiency and students' achievement. Based on the results, constant supervision remains a significant stressor even during the pandemic with conversion to online teaching, implying its importance in teachers' mental health.

The findings highlight that some teacher stressors are ubiquitous. For instance, high expectations and work demands were the most common stressors before and during the pandemic. Similarly, Ma et al. (2022) found that workload and sense of organizational unfairness were consistently high stressors across world contexts. In Iran, these teacher stressors have been common for at least the past decade (Ghasemi, 2022b). Consistent with the 3C theory (Herman et al., 2020), these findings suggest the importance of context and organizational leadership in addressing these common, persistent, and pervasive teacher stressors. Effective school leaders who create a collegial environment and a sense of reasonable and equitable expectations and consequences support teacher well-being. Beyond perceived equity of personal work expectations, Herman et al. (2021) also found that teacher perceptions of fair discipline practices for students prior to the pandemic were a robust predictor of teacher well-being during the pandemic. Thus, school leaders need to attend to teachers' sense of justice regarding their administrative decisions and practices as a strategy for promoting environmental antidotes to teacher stress.

Additionally, the study highlights how some teacher stressors are context-specific. For instance, unlike teachers in the USA who consistently rate student disengagement and disruptive behaviors among their highest stressors, English teachers in Iran rated student disruptive behaviors as a moderate stressor and engagement as their lowest stressor prior to the pandemic. This difference may represent a student selection bias and/or a teacher competence issue between the USA versus Iranian language schools. On the other hand, low student engagement emerged as a high stressor for teachers in our study after the pandemic, likely as a result of the challenges of engaging students in online instruction. In turn, self-perceived low virtual teaching competencies as well as poor student learning in online classes were the most stressful conditions for teachers during the pandemic. Similarly, Ma et al. (2022) found that challenges with online teaching and learning were consistent stressors for teachers around the world during the pandemic. Again, consistent with the 3C theory, teacher stress is related to not only their

coping skills but also their perceived competence to perform the tasks of their jobs. It is clear that most schools had not prepared teachers to be or feel effective in online teaching prior to the pandemic. Building teacher skills and anticipating emerging areas of skill development will continue to be important priorities for administrators to support teachers in managing work-related stress.

There were also significant differences in experienced stress, anxiety, and depression in terms of teaching experience before and during the pandemic. More specifically, the rates of experienced psychological distress were higher for novice teachers and had slightly increased during the pandemic. This finding aligns with previous research (e.g., Klassen & Chiu, 2010), indicating the prevalence of stress in novice teachers with low self-efficacy. Through identifying teachers at risk of experiencing high rates of stress and anxiety at different time points, a specific interventional program targeting their coping skills and competence, along with optimizing contextual support should be implemented to improve teachers' mental health (Ghasemi et al., 2022; Herman et al., 2020). For instance, novice teachers could be provided with a supportive environment through peer-mentoring methods in order to facilitate professional development and alleviate job-related stress and anxiety (Ghasemi, 2022b). However, due to the new stressors and limited social contact during the pandemic, remote school-based professional support through building trust and positive relationships between administration and teachers by the supervisor as a mediator could be a key factor in improving their psychological distress (see Moorhouse et al., 2021).

The results regarding coping strategies before and during the pandemic indicated significant differences for teachers with different occupational attributes. First, we found that the frequency of dysfunctional coping strategies in the pre-pandemic situation was higher than the functional coping strategies. However, the tendency of the teachers to use functional coping significantly increased during the pandemic. This change could be attributed to increased exposure to social support (e.g., family and friends) and increased job autonomy during the pandemic, which may act as the protective factors facilitating change in their functional coping strategies use and mental health (Kim et al., 2021). This interpretation is bolstered by the finding that decision-making latitude (autonomy) was a high-frequency stressor before but not during the pandemic. In addition, it appears that teachers experiencing stress and depression may have responded differently to the adversities of the pandemic by taking more functional coping strategies and seeking support (see Fluharty & Fancourt, 2021). It is also possible that teachers in this study had developed more social connections on social platforms during the pandemic and improved their emotional health by employing functional coping strategies. According to Moore and March (2020), developing social

networks through online platforms during the pandemic contributes to individuals engaging in functional coping strategies. As teacher coping mechanisms are subject to change and improvement, it is recommended that teachers are encouraged to use stress management apps and are provided with feasible and tailored therapeutic approaches, such as bibliotherapy and/or online stress interventions, which have been found to be effective in alleviating teacher stress and burnout (Ansley et al., 2021; Eddy et al., 2022; Ghasemi, 2021, 2022a).

Another important finding of this study was the correlation of coping strategies with stress, anxiety, and depression. According to the results, while dysfunctional coping strategies were positively correlated with stress, anxiety, and depression, functional coping strategies were negatively associated with these emotional factors, suggesting the beneficial effects of functional coping strategies on psychological distress. This finding is consistent with the earlier studies examining the relationships between coping strategies and psychological well-being/distress (Gustems-Carnicer & Calderon, 2013; MacIntyre et al., 2020). There was no strong and significant correlation between (dys)functional coping strategies and depression, except for *active engagement* and *misdirected response*. It appears that other factors fail to correlate with depression, maybe, due to its complicated nature and dynamic symptoms (Cramer et al., 2016). The results of the regression analysis also indicated the predictive role of *misdirected response* in depression, presenting it as an important risk factor for teachers in the long run. In other words, persistent misdirected coping responses, such as using alcohol or other drugs, may have long-term consequences, as depression develops over time with evolving symptoms causing major depression (Cramer et al., 2016). Among the functional coping strategies, *active engagement* was a significant predictor of stress and anxiety. Therefore, teachers should be encouraged to take steps to actively engage with the situation by sharing their feelings with a friend, family, or counselor (Ghasemi et al., 2022; Ghasemi, 2022b).

Overall, this study casts light on the shifts in teachers' stressors and coping strategies and the rates of experienced stress, anxiety, and depression before and during the time of the crisis to identify the prevalence of the stressors and coping patterns for future interventions. The findings give clear guidance to school administrators, psychologists, and/or counselors regarding organizational factors that can contribute to well-being. Building a culture of fairness and equity focused on supporting educator competence and adaptive coping can help foster a healthy teacher workforce. Moreover, understanding how teachers would cope with new stressors during a crisis may help us predict teachers' coping mechanisms after a serious traumatic event. Further research is required to determine teachers' coping mechanisms with

adverse events and recognize contributing variables toward specific approaches in order to develop group-specific programs for promoting functional coping approaches. This longitudinal study suggests that novice teachers may be more vulnerable to experiencing psychological distress than experienced teachers. Therefore, novice teachers should be provided with the required support, probably through peer-mentoring, to equip them with protective strategies in order to maintain emotional health over their careers (see Fimian, 1986). This study also indicated that dysfunctional coping strategies were significantly associated with psychological distress. Psychoeducational interventions could be a feasible and effective way in these situations to minimize the use of dysfunctional strategies by enhancing teachers' awareness of the consequences of such coping strategies. Considering the results of the regression analysis, it is reasonable to assume that heightened stress and anxiety in teachers could be a sign of dysfunctional coping strategies overuse. Therefore, it is suggested that teachers should be supported to refine their coping strategies toward functional approaches to mitigate the adverse effects of psychological distress.

This study used self-assessment measures for all constructs, so source biases cannot be ruled out as an explanation for the strength of the effects. Using a mixed-method design with detailed accounts of individuals' experiences could present comprehensive and sound results in future studies. As the results of the study may be context-specific, further research in other contexts is required to verify the findings of the current study. The context of the study may also limit its generalizability. Finally, to fully understand the dynamics of the psychological distress and coping process, future studies should attempt to examine the associations among the mediating and moderating factors involved.

Conclusion

Understanding teacher stressors and how they evolve over time and across contexts is vital to supporting teacher well-being and performance. The present study revealed some teaching-related stressors that are pervasive and enduring (including high workloads and unreasonable expectations), whereas others were unique to the challenges introduced by the pandemic. These persistent and evolving conditions can be conceptualized within a 3C framework to highlight the importance of specific contexts, such as equitable and collegial leadership; teacher competence to manage student behaviors and learning; and personal coping strategies as leverage points that can be targeted for creating healthier school environments.

Declarations

Conflicts of interest We wish to confirm that there are no known conflicts of interest associated with this publication, and there has been no significant financial support for this work that could have influenced its outcome.

Informed consent Written consent to conduct the study and publish potentially identifying information was obtained from the subjects and their legal guardians.

Ethical approval We further confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

Animals and human rights All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

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