

Greek teachers' resilience levels during the COVID-19 pandemic lockdown and its association with attitudes towards emergency remote teaching and perceived stress

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Abstract

The mandatory closure of schools due to the Covid-19 pandemic affected the mental health, and, by extension, the personal and professional life of teachers. This study explored their level of resilience during the pandemic and its association with attitudes towards emergency remote teaching and perceived stress. Data were collected through the administration of three self-report instruments: (a) the “Teachers' Professional Attitudes and Behaviors Scale”, (b) the “Teachers' Resilience Scale”, and (c) the “Perceived Stress Scale”. The sample consisted of 1415 general teachers from central Greece. Teachers were found to possess neutral attitudes towards emergency remote teaching, moderate levels of resilience, and experienced slightly increased levels of stress. The examined constructs were largely influenced by some of the teachers' demographic and professional characteristics. Teachers' perceptions of resilience predicted their attitudes to emergency remote teaching and stress levels during the pandemic. The study has reaffirmed the importance of holding sufficient levels of resilience to cope with adverse circumstances and has offered clear directions about which groups of teachers are in most need for counselling and professional support so that their resilience is strengthened.

KEYWORDS

emergency remote teaching, resilience, teacher stress, teachers' attitudes

1 | INTRODUCTION

The emergence of the novel public health threat of COVID-19 pandemic (UNESCO, 2020) led most governments around the globe to temporarily close all educational institutions in an attempt to limit the spread of the SARS-Co-2 coronavirus. Global monitoring of school closures due to COVID-19 by UNESCO showed that on March 10, 2020, 18 countries worldwide had implemented nationwide or localized school closures, affecting more than 21% of total enrolled learners of the world. UNESCO (2020) supported countries in their efforts to facilitate the continuity of global education, through advocating the deployment of distance learning methods in all compulsory educational settings. Although some e-learning content was provided during the first wave of the COVID-19 pandemic, the whole online process of learning was not found to function similarly well for all students (Carver, 2020). Many families with school-aged students lacked access to electronic devices and high-speed internet connection. Reich and his colleagues (Reich et al., 2020) found in their study in United States that many students, especially in rural and to a lesser extent in urban areas, encountered difficulties in accessing online learning. Indeed, families documented that they shared only one computer, while others reported not owning one at all (Goldschmidt, 2020). In some cases where poor internet access was available in students' homes or parents were ill-prepared for supporting their children, teachers reported that they had to assist these families in coping with several computer and internet connection issues (Center for Disease Control and Prevention, 2020).

The requirement to transfer programs online by using remote teaching and e-learning modes that was forced upon teachers has certainly had an adverse impact on them as the latter found themselves ill-prepared to adjust to the new demands of their profession (Goldschmidt, 2020). Teachers were asked to design online materials and to develop new competencies related to the use of learning technologies in their online classrooms. Such an increased workload and unprecedented pressure to perform a new role have negatively affected the teachers' mental health as documented by various studies around the world (Çifçi & Demir, 2020; Purwanto et al., 2020; Reich et al., 2020). For example, a study by Kukreti et al. (2021) detected high levels of occupational stress in Chinese teachers during the pandemic. Another study by Panisoara et al., (2020) reported a link between the notable levels of occupational stress experienced by Romanian teachers during the pandemic and their perceived technological pedagogical competence. The results of other studies on the effects of endorsing distance learning modes on the teachers' psychological well-being confirm these findings citing inadequate facilities and infrastructure, and limited knowledge of information technology as the main contributing factors to occupational stress (Hebebcı et al., 2020; Supriadi et al., 2020; Yi et al., 2021). Strikingly, there is also evidence that the increased stress and anxiety experienced by teachers in the UK have resulted in low levels of happiness and poor psychological well-being thus forcing many of them to consider leaving the profession (Fullard, 2021).

To sum up, the available literature suggests that the increased workload associated with developing online materials and delivering courses in an online environment have negatively impacted on teachers' motivation towards fulfilling their role (Kulikowski et al., 2021) and have increased psychological symptoms, such as stress, anxiety, and depression worldwide (Cruz et al., 2020). These mental health effects were further exacerbated by the self-isolation and social distancing measures adopted in many countries at the peak of the pandemic. Displaying psychological resilience on the part of the teaching workforce during these adverse circumstances becomes of utmost importance. It is towards discussing the psychological construct of "resilience" that we turn next.

2 | TEACHERS' RESILIENCE DURING COVID-19

Teachers' resilience is described either as the individual ability of teachers to overcome personal and environmental stressors and to adapt to different situations or as a set of strategies used by teachers when experiencing adverse circumstances to achieve professional goals and maintain their commitment to teaching (Brunetti, 2006; Castro et al., 2010; Oswald et al., 2003). Consequently, developing resilience is essential for teachers to sustain their full engagement in the educational process, maintain their inner motivation and continue to develop professionally (Day & Gu, 2013).

As already mentioned, during the COVID-19 pandemic, various adverse conditions are likely to have affected teachers' psychological well-being. Besides having increased workload, teachers were found to be concerned with maintaining their students' interest, catering for the complex needs of their students with learning disabilities, managing problematic student behaviour, and dealing with dysfunctional relationships with parents and coworkers (Zhao et al., 2020). All these challenges could be mitigated through adopting a variety of strategies to develop levels of mental resilience, adaptive coping strategies and the presence of social support (Xun et al., 2021).

According to the international literature, few studies have systematically studied the resilience displayed by teachers during the covid-19 pandemic and its association with their teaching efficacy and mental health. The results of a longitudinal study by Sokal et al. (2020) showed that the teaching efficacy of Canadian teachers, their attitudes toward change, and their perceptions of administrative support were positively correlated with their reported resilience levels. Specifically, in this study, at the start of the pandemic, teachers demonstrated exhaustion and cynicism, but as time went by they reported increased efficiency in classroom management and an increased sense of accomplishment which were, in turn, positively correlated with their reported resilience levels. Similarly, a study by Zadok-Gurman et al. (2021) in Israel found that the participating teachers reported resilience was positively correlated with psychological well-being, subjective well-being and mindfulness, and negatively correlated with burnout. Finally, the results of a study by Xun et al. (2021) in China showed that the participating teachers were confronted during the Covid-19 pandemic with four types of challenges: personal, professional, institutional, and community during the pandemic. Again, in this study, those teachers who felt weak and uncertain about meeting their new professional demands were the ones who had failed to adopt adaptive coping strategies and, by extension, demonstrate sufficient levels of resilience.

2.1 | The case of Greece

Following the World Health Organization (WHO) Director-General's suggestions for confinement and isolation to prevent the rapid spread of the COVID-19 (WHO, 2020), the Greek government declared on March 10th 2020 the closure of schools and the suspension of operation of all public spaces (Government Gazette 783/t.B'/10-03-2020). Accordingly, the Ministry of Education and Religious Affairs of Greece circulated instructions to schools for delivering distance learning as a means by which to continue education for the remainder of the school year (Center for Disease Control and Prevention, 2020). Specifically, teachers working across all school levels were given the opportunity to use asynchronous (e-me or e-class platforms) or synchronous learning (webex platform) or a combination of the two types of distance learning (Ministry of Education and Religious Affairs of Greece, 2020a). Many teachers were initially hesitant to teach online and might have experienced stress and consternation in their attempt to cope with the demands of distance learning (Goldschmidt, 2020). However, according to government statistics (Ministry of Education and Religious Affairs of Greece, 2020b) the majority of students and teachers participated in distance learning during the quarantine period (755,625 students and 117,126 teachers, respectively).

The few available studies on the distance education practices of Greek teachers during the COVID-19 pandemic suggest that despite the sudden shift to a pure distance learning mode they managed to respond successfully to the challenge (Nikiforos et al., 2020). Initially, Greek preschool teachers adopted mainly asynchronous forms of distance

education to maintain the communication with their students and support their students (Foti, 2020). At a later stage, they adopted synchronous forms of distance teaching with technical problems such as limited resources, limited support for children at home and limited experience of using information communication technology emerging as important obstacles to overcome (Nikolopoulou, 2022). Similar results were reported by studies on the practices of primary and secondary school teachers; despite struggling initially with implementing distance education, they subsequently rose to the challenge of catering effectively for their students (Jimoyiannis et al., 2021; Nikiforos et al., 2020). Moreover, these studies highlighted the teachers' perceived needs for professional development and support. For example, the study by Perifanou et al. (2021) explored the perceptions of 806 primary and secondary school teachers about their digital skills in performing their teaching and professional responsibilities during the pandemic. While most teachers had managed to use digital tools to find, evaluate and develop educational resources, to deliver new material, and perform student assessment, they faced significant difficulties in interacting and communicating with their students, a finding also reported in a study by Giannouli et al. (2021).

To sum up, despite having been afforded opportunities for training on the use of ICT technology, there is overwhelming evidence that Greek teachers faced significant difficulties in their transition to "emergency remote teaching". The term "emergency remote teaching" has been recently coined (Hodges et al., 2020 cited in Jimoyiannis et al., 2021) to describe the shift of providing education through distant learning modes due to crisis circumstances and is considered to be giving rise to substantial occupational stress for the teaching workforce.

2.2 | Aim of the study

On the assumption that the unprecedented confinement at home due to the COVID-19 pandemic has affected the mental health of Greek teachers, this study sought to examine these professionals' attitudes towards emergency remote teaching alongside with the resilience and stress levels experienced during quarantine. In so doing, the impact of a host of demographic (i.e., gender, age, marital status, permanent residence) and professional variables (i.e., employment status, education sector, years of teaching experience, educational level, school level) on the psychological constructs assessed were also examined. Further, given that most research to date has associated resilience with stressful situations, personal trauma, natural disasters or terrorist attacks (Bonanno et al., 2015; Kalisch et al., 2017) the present study aspires to examine the relationship between the teachers' perceived resilience and their attitudes to emergency remote teaching and stress during quarantine. Specifically, the study sought to address the following research questions

- What are the attitudes towards emergency remote teaching of teachers in Greece during the COVID-19 quarantine?
- What are the resilience and stress levels of teachers in Greece during the COVID-19 quarantine?
- Are there differences in the measured psychological constructs between subgroups of teachers determined by their personal and professional characteristics?
- To what extent the teachers' perceived resilience is related to their reported attitudes and stress experienced during the COVID-19 quarantine?

3 | METHODS

3.1 | Participants and procedures for data collection

The sample consisted of 1415 general primary teachers, 1221 (86.3%) women and 194 (13.7%) men with a mean teaching experience of 15.79 years ($SD = 9.21$ years). Regarding the employment status, 505 (35.7%) were temporary (supply) teachers while 910 (64.3%) held a permanent post, a ratio which reflects the national figure. It is worth noting here that the

educational system of Greece is highly centralised and controlled by the responsible for education issues ministry. Variations between different areas and schools do not exist and all teacher recruitment is conducted by the ministry. Permanent appointments have been very limited due to financial restraints over the last decade resulting in a constantly increasing number of temporary appointments. Temporary teachers carry out similar duties to their colleagues but are employed on 1-year fixed-term contracts and it is common to serve in different schools every academic year.

Regarding the educational level of the participating teachers, 647 (45.7%) held a first degree and 768 (54.3%) held postgraduate qualifications. Approximately one quarter of the participants were aged between 22 and 34 years ($N = 346$, 24.5%), one-third was aged between 35 and 44 years ($N = 468$, 33.1%), one-third was aged between 45 and 54 years ($N = 413$, 29.2%), with the remaining 188 (13.2%) teachers falling within the over 55 years band. Additionally, most participants were married or in a relationship ($N = 961$, 67.9%) with the remaining 454 (32.1%) being single (including divorced or widowed). Probability sampling was followed which involved randomly selecting 100 primary schools from a central region. Permission for conducting the study was obtained from the Research Ethics Committee of the authors' university (protocol number: 492/18-5-2020). Survey packages were sent to the headteachers of the participating schools, containing a letter describing the purpose of the study along with survey questionnaires, the number of which corresponded to the number of teachers employed by each school. In the letter, it was clearly stated that the teachers' participation was voluntary and their anonymity was guaranteed. The completed questionnaires were returned through the post. The response rate was 58.9% of the targeted teachers, which is deemed satisfactory for a postal survey and, therefore, no follow-up administration was carried out.

4 | MEASURES

4.1 | Assessment of attitudes towards emergency remote teaching

In the absence of any relevant scales, we developed for the purposes of this study a Likert type inventory named the "Teachers' Professional Attitudes and Behaviors Scale" (TPABS) with a view to capturing the emotional state of teachers and the impact of working under the given circumstances, during quarantine. TPABS consists of 22 items representing five factors: (a) emotional state (questions: 1, 2, 3, 4, 5), (b) relationships with students (questions: 6, 7, 8, 9), (c) relationships with parents (questions: 10, 11, 12), (d) relationships with colleagues (questions: 13, 14, 15, 16) and (e) response in distance learning (questions: 17, 18, 19, 20, 21, 22). These items could be answered on a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). The higher the score is in the subscales the more positive teachers' attitudes and behaviors are implied. The psychometric structure of this newly developed instrument reflects our conceptualisation of the construct we sought to measure (i.e., attitudes towards emergency remote teaching) as a multidimensional one.

Following administration, the psychometric structure of the TPABS instrument was examined through Principal Component Analysis with varimax rotation, having first ensured that the conditions for exploratory analyses are met (i.e., the Kaiser–Meyer–Olkin Measure of Sampling Adequacy was nonsignificant and the Bartlett's Test of Sphericity was significant). The analysis of the responses to the newly developed instrument TPABS yielded four factors (as opposed to the five-factor solution hypothesized) accounting for 56.36% of the variance which were named: (a) emotional state (4 items), (b) relations with students and parents (6 items), (c) relations with colleagues (3 items) and (d) response in distance learning (4 items). Five items were dropped because their loadings were low. The Cronbach alphas of the extracted factors were satisfactory ranging from 0.72 to 0.85.

4.2 | Assessment of teachers' resilience

Having considered relevant instruments in the literature, we selected the Teachers' Resilience Scale (TRS) developed by Daniilidou and Platsidou (2018) as a suitable instrument for measuring Greek teachers' resilience

during the COVID-19 pandemic. The scale contained 26 items which assesses four dimensions of teachers' resilience: (a) spiritual influences (questions: 1, 2, 10), (b) personal competences and persistence (questions: 3, 4, 5, 6, 7, 8, 9, 11, 12), (c) family cohesion (questions: 17, 18, 19, 20, 21, 22) and d) social skills and peer support (questions: 13, 14, 15, 16, 23, 24, 25, 26). To complete the scale teachers had to choose among the following options: Not at all true (1), Mostly False (2), Sometimes False/Sometimes True (3), Mostly True (4) True (5). The higher the score is in the subscales, the higher the resilience levels.

Following administration, the psychometric structure of the TRS scale was confirmed through Principal Component Analysis with varimax rotation. The analysis produced the 4 anticipated factors which accounted for 60.8% of the variance namely: (a) spiritual influences (3 items), (b) personal competences and persistence (9 items), (c) family cohesion (6 items) and (d) social skills and peer support (8 items). The Cronbach alphas of the extracted factors were again satisfactory and ranged from 0.75 to 0.90.

4.3 | Assessment of teachers' stress

The level of stress experienced by Greek teachers during the Covid-19 pandemic was assessed through the administration of the Perceived Stress Scale (PSS), an instrument developed by Cohen et al. (1983) to assess the level to which respondents found their lives unpredictable, uncontrollable, or overloading. In this study, we utilized the short version of this instrument which contains 10 items, 6 of which have a negative content and concern perceived stress (1, 2, 3, 6, 9, 10), with the remaining 4 questions having a positive content and concern management stress (4, 5, 7, 8). The positive element evaluates the ability to cope with perceived stressors, whereas the negative one focuses on assessing the lack of control, negative emotions and reactions (Katsarou et al., 2012). To complete the scale teachers had to choose among the following options: Never (1), Almost Never (2), Sometimes (3), Fairly Often (4), Very often (5). The PSS extracts an overall stress score by summing all questions having first reversed those with a positive content. Higher scores indicate higher perceived stress. The Principal Component Analysis performed on the responses in the PSS scale produced the anticipated single factorial solution accounting for 45.6% of the variance. The Cronbach alpha reliability coefficient of the extracted factor was satisfactory ($\alpha = 0.86$).

4.4 | Data analysis

Following the calculation of composite scores for all factors obtained through the three Principal Component Analyses conducted, a series of independent sample *t* tests and one-way analyses of variance (ANOVAs) were calculated to examine differences between subgroups of participants determined by their demographic and professional characteristics. Next, correlational analyses (Pearson's product) were performed with a view to examining the associations between the three variables (attitudes, resilience, and stress) measured. Finally, two multiple regression analyses were performed with the TRS components used as predictor variables and the teachers' attitudes and perceived stress scores as criterion variables, respectively.

5 | RESULTS

5.1 | Greek teachers' attitudes towards emergency remote teaching and their levels of resilience and stress experienced during the Covid-19 pandemic

Concerning the descriptive data of the TPABS measure, the factor with the highest average was the "Response to distance learning" ($M = 3.65$, $SD = 0.67$) followed by the "emotional state" ($M = 3.59$, $SD = 0.50$), and the

"relationships with colleagues" ($M = 3.13$, $SD = 0.95$). Interestingly, the factor "relationships with students and parents" received lowest average which, moreover, was slightly negative ($M = 2.93$, $SD = 0.75$). Overall, the TPABS total scale average was neutral ($M = 3.29$, $SD = 0.46$). When considering the five factors yielded by the TRS measure, the factor with the highest average was the "Family Cohesion" one ($M = 4.17$, $SD = 0.72$). The remaining three resilience factors ("Personal Competence and Persistence," "Social Skills and Peer support," and "Spiritual Influences") yielded lower but still positive scores ($M = 3.68$, $SD = 0.60$, $M = 3.68$, $SD = 0.59$, and $M = 3.39$, $SD = 0.65$ respectively). Overall, the Resilience Total scale average was quite high ($M = 3.81$, $SD = 0.45$). Finally, the analysis of the data relating to the PSS scale yielded a slightly negative average indicating the increased levels of stress experienced by the respondents at the time of the study ($M = 2.87$, $SD = 0.70$).

Differences in the measured psychological constructs between subgroups of teachers determined by their personal and professional characteristics (Table 1).

5.2 | Gender

The t tests conducted to compare the attitudes to emergency remote teaching of two genders revealed only one statistically significant difference in the factor "Response to distance learning" with male teachers reporting more positive attitudes than their female counterparts ($M = 3.62$, $SD = 0.66$ for females and $M = 3.79$, $SD = 0.72$ for males). However, the effect size calculated (Cohen's delta) indicated that the difference between the two groups was rather small ($d = 0.25$). Moreover, the two genders were found to differ in their overall TPABS score with males outperforming their female counterparts. Again, the effect size calculated indicated that the difference between the two groups was negligible ($d = 0.17$) The t tests

TABLE 1 Descriptive data of TPABS, TRS, and PPS scales and their factors

Variables	M	SD
TRS		
Spiritual influences	3.39	0.65
Personal competences and persistence	3.68	0.60
Social skills and peer support	3.68	0.59
Family cohesion	4.17	0.72
Resilience_total	3.81	0.45
TPABS		
Emotional state	3.59	0.50
Relationships with students & parents	2.93	0.75
Relationships with colleagues	3.13	0.95
Response to distance learning	3.65	0.67
TPABS_total	3.29	0.46
PSS		
PSS total	2.87	0.70

Note: Teachers' Resilience, Attitudes and Stress were recorded on 1–5 scales with higher scores correspondingly indicating higher levels of resilience, positive attitudes and higher perceived stress.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

conducted to compare the levels of Resilience of the two genders revealed statistically significant differences in the “Spiritual Influences” and “Personal Competences and Persistence” factors of the TRS scale. Regarding the first factor, female teachers demonstrated a statistically significant higher mean value than males ($M = 3.41$, $SD = 0.64$ for Females and $M = 3.28$, $SD = 0.64$ for Males) but in the second factor the opposite was observed ($M = 3.66$, $SD = 0.60$ for Females and $M = 3.82$, $SD = 0.57$ for Males). According to the effect sizes produced these differences were small ($d = 0.2$ and $d = 0.27$, respectively). For the other two components of the TRS scale (“Family Cohesion” and “Social Skills and Peer Support”) as well as for the Resilience Total there were no statistically significant differences by teacher’s gender. Concerning the Perceived Stress Scale, females ($M = 2.91$, $SD = 0.70$) had statistically significant higher average score than males ($M = 2.60$, $SD = 0.66$) with the difference representing a medium effect size ($d = 0.46$) (Table 2).

5.3 | Age

The one-way ANOVAs concerning the TPABS components failed to detect statistically significant differences with the exception of the factor ‘Response to Distance Learning’ ($F_{(3,1411)} = 9.22$, $p < 0.001$). In this analysis, the two younger groups (22–34 and 35–44) reported significantly higher perceptions than their older colleagues (45–54 & 55+ years). Nevertheless the four age groups did not differ in any other TPABS factor or in the total TPABS score (see Table 3).

The one-way ANOVAs conducted to compare the resilience levels of groups determined by age detected statistically significant differences in all factors of the TRS scale as well as the Total Resilience score. Specifically, the

TABLE 2 Differences in TRS, TPABS, and PSS scores by gender

Variables	Females (N = 1221)		Males (N = 194)		T(1413)	p	D
	M	SD	M	SD			
TRS	M	SD	M	SD			
Spiritual influences	3.41	0.65	3.28	0.65	2.53	0.01	0.2
Personal competences & persistence	3.66	0.60	3.82	0.58	-3.50	0.001	0.27
Social skills & peer support	3.84	0.67	3.84	0.67	0.88	0.37	0
Family cohesion	4.17	0.73	4.17	0.73	0.08	0.93	0
Resilience_total	3.81	0.45	3.80	0.45	-0.80	0.42	0.02
TPABS							
Emotional state	3.58	0.49	3.61	0.56	-0.73	0.47	0.06
Relationships with students & parents	2.92	0.76	3.00	0.70	-1.28	0.19	0.11
Relationships with colleagues	3.12	0.96	3.17	0.88	-0.72	0.47	0.05
Response to distance learning	3.62	0.66	3.79	0.72	-3.32	0.001	0.25
TPABS_total	3.28	0.46	3.36	0.48	-2.33	0.02	0.17
PSS							
PSS total	2.91	0.70	2.60	0.65	5.81	0.001	0.46

Note: Teachers’ Resilience, Attitudes and Stress were recorded on 1–5 scales with higher scores correspondingly indicating higher levels of resilience, positive attitudes and higher perceived stress.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers’ Professional Attitudes and Behaviors Scale; TRS, Teachers’ Resilience Scale.

TABLE 3 TRS, TPABS, and PSS by age

Variables	22–34		35–44		45–54		55+		$F_{(3,1411)}$	p
	M	SD	M	SD	M	SD	M	SD		
TRS										
Spiritual influences	3.43	0.66	3.44	0.67	3.37	0.63	3.26	0.61	4.06	0.01
Personal competences & persistence	3.56	0.56	3.65	0.59	3.79	0.61	3.75	0.59	9.95	0.001
Social skills & peer support	3.69	0.69	3.82	0.69	3.92	0.64	3.93	0.66	8.98	0.001
Family cohesion	4.06	0.71	4.22	0.71	4.23	0.65	4.14	0.79	4.78	0.01
Resilience_total	3.70	0.47	3.81	0.47	3.88	0.43	3.84	0.47	10.39	0.001
TPABS										
Emotional state	3.57	0.52	3.60	0.46	3.59	0.50	3.59	0.53	0.17	0.92
Relationships with students & parents	2.88	0.77	2.93	0.75	2.94	0.75	3.02	0.72	1.43	0.23
Relationships with colleagues	3.05	0.90	3.17	0.98	3.14	0.94	3.12	0.95	1.01	0.38
Response to distance learning	3.73	0.64	3.72	0.69	3.58	0.66	3.47	0.66	9.22	0.001
TPABS_total	3.27	0.46	3.31	0.45	3.28	0.46	3.28	0.47	0.75	0.52
PSS										
PSS total	2.94	0.67	2.90	0.73	2.82	0.69	2.75	0.68	4.01	0.01

Note: Teachers' Resilience, Attitudes and Stress were recorded on 1–5 scales with higher scores correspondingly indicating higher levels of resilience, positive attitudes and higher perceived stress.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

analysis concerning the factor 'spiritual influences' detected a statistically significant effect $F_{(3,1411)} = 4.06$, $p < 0.001$. The post hoc Bonferroni tests revealed this effect was due to differences between the 55+ group and the three other age groups. Specifically, the 55+ group scored significantly lower in that factor than all other age groups.

The analysis concerning the factor "Personal Competences and Persistence" detected a statistically significant effect $F_{(3,1411)} = 9.95$, $p < 0.001$. The post hoc Bonferroni tests revealed this effect was due to the difference between the 55+ group and the younger age groups of 22–34 and 35–44. In both cases, the 55+ group reported significantly lower perceptions. Similarly, the 45–54 group differed significantly from the two younger groups (22–34 and 35–44). By contrast, the opposite was true in the analysis relating to the 'Social Skills and Peer Support' factor where a significant effect was detected ($F_{(3,1411)} = 8.98$, $p < 0.001$); this time, the oldest group (55+) reported significantly higher scores than all other age groups and, additionally, the youngest group (22–34) reported significantly lower scores than the middle groups (35–44 & 45–54). The analysis relating to the factor "Family cohesion" revealed a statistically significant effect ($F_{(3,1411)} = 4.78$, $p < 0.01$). The Bonferroni tests conducted indicated that this difference was due to differences between the youngest group (22–34) and the two middle groups (35–44 and 45–54). Moreover, the analysis on the TRS total scale detected a statistically significant effect $F_{(3,1411)} = 10.39$, $p < 0.001$. The Bonferroni tests conducted indicated that this effect was due to the youngest group (22–34) reporting significantly lower perceptions than all other age groups. This final analysis on the whole TRS scale suggests that young teachers are more likely to report lower perceptions of resilience overall than their older colleagues.

Finally, the analysis concerning the stress levels experienced by the four age groups revealed a statistically significant effect $F_{(3,1411)} = 4.01$, $p < 0.01$. The post hoc Bonferroni test revealed that the youngest group (22–34) experienced significantly more stress than the oldest group (55+).

TABLE 4 TRS, TPABS, and PSS by marital status

Variable	Single/divorced/widowed (N = 454)		Married/underregistered partnership (N = 961)		t (1413)	p
	M	SD	M	SD		
TRS						
Spiritual influences	3.38	0.67	3.40	0.64	-0.37	0.71
Personal competences and persistence	3.67	0.60	3.69	0.59	-0.47	0.64
Social skills and peer support	3.74	0.70	3.87	0.65	-3.70	0.001
Family cohesion	3.90	0.82	4.31	0.63	-10.23	0.001
Resilience_total	3.71	0.48	3.86	0.44	-5.63	0.001
TPABS						
Emotional states	3.29	0.46	3.34	0.43	-1.77	0.08
Relationships with students & parents	2.98	0.68	3.10	0.67	-2.96	0.01
Relationships with colleagues	3.45	0.71	3.52	0.69	-1.76	0.08
Response to distance learning	3.44	0.62	3.46	0.63	-0.75	0.46
TPABS_total	3.25	0.46	3.31	0.46	-2.22	0.03
PSS						
PSS total	2.91	0.72	2.85	0.69	1.47	0.14

Note: Teachers' Resilience, Attitudes and Stress were recorded on 1–5 scales with higher scores correspondingly indicating higher levels of resilience, positive attitudes and higher perceived stress.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

5.4 | Marital status

The independent samples *t* tests conducted to compare the attitudes towards emergency remote teaching of groups determined by their marital status (single/divorced/widowed vs. married/under registered partnership) detected statistically significant differences in the "Teacher's relationships with students and parents" factor and the TPABS total score. On both occasions, married and/or under registered partnership teachers scored higher than their single peers.

The independent samples *t* tests conducted to compare the perceived resilience of the two groups revealed statistically significant differences in the TRS factors "Social skills and peer support," "Family cohesion," as well as for the Resilience Total score. In these comparisons, married or under registered partnership teachers had statistically significant higher average values from their single, divorced, and widowed counterparts (see Table 4).

Finally, the analysis concerning the stress experienced failed to detect a significant difference between the two groups as both reported average levels of stress.

5.5 | Education level

The independent samples *t* test conducted to compare the attitudes towards emergency remote teaching of groups determined by their education level detected statistically significant differences in the "Response to distance

learning” factor of the TPABS scale and the TPABS Total score. Likewise, statistically significant differences were detected in the “Social skills and peer support” and the “Family coherence” factors of the TRS scale as well as on the total TRS score. Specifically, in all these comparisons teachers who held only a Bachelor's Degree had statistically significant lower average values than their counterparts with postgraduate (Master's and PhD) qualifications. Finally, the analysis concerning the stress experienced by the two groups failed to detect a significant difference as both reported average levels of stress (see Table 5).

5.6 | Employment status

The independent samples *t* test conducted to compare the attitudes towards emergency remote teaching of groups determined by their employment status (Temporary or permanent teachers) showed statistically significant differences in “Teachers' relations with students and parents,” “teachers' relations with colleagues,” and the “Response to distance learning” factors as well as on the TPABS total score. In these comparisons, teachers holding a permanent post demonstrated statistically significant higher average values than their temporary colleagues with the exception of the “Response to distance learning” where the opposite was true. The independent samples *t* test conducted to compare the resilience levels of the two groups showed statistically significant differences in the “Social skills and peer support,” and “Family cohesion” factors as well as on the total TRS score. In all these

TABLE 5 TRS, TPABS, and PSS by teachers' education level

Variables	First degree only (<i>N</i> = 647)		Postgraduate qualifications (<i>N</i> = 768)		<i>t</i> (1413)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
TRS						
Spiritual influences	3.39	0.64	3.39	0.65	-0.31	0.76
Personal competences and persistence	3.64	0.56	3.70	0.61	-3.40	0.07
Social skills and peer support	3.70	0.68	3.90	0.65	-3.28	0.001
Family cohesion	4.06	0.78	4.23	0.69	1.79	0.001
Resilience_total	3.73	0.44	3.85	0.45	0.55	0.001
TPABS						
Emotional state	3.59	0.50	3.58	0.50	0.25	0.80
Relationships with students & parents	2.90	0.73	2.96	0.77	-1.35	0.18
Relationships with colleagues	3.13	0.95	3.13	0.94	-0.04	0.97
Response to distance learning	3.52	0.66	3.76	0.66	-6.83	0.001
TPABS_total	3.25	0.45	3.32	0.46	-3.05	0.01
PSS						
PSS total	2.89	.68	2.86	0.71	0.80	0.42

Note: Teachers' Resilience, Attitudes and Stress were recorded on 1–5 scales with higher scores correspondingly indicating higher levels of resilience, positive attitudes and higher perceived stress.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

TABLE 6 TRS, TPABS, and PSS by teachers' employment status

Variables	Temporary (N = 287)		Permanent (N = 608)		t (893)	p
	M	SD	M	SD		
TRS						
Spiritual influences	3.40	0.64	3.39	0.66	0.28	0.77
Personal competences and persistence	3.64	0.56	3.70	0.61	-1.83	0.07
Social skills and peer support	4.06	0.78	4.24	0.69	-5.35	0.001
Family cohesion	3.71	0.68	3.90	0.65	-4.45	0.001
Resilience_total	3.73	0.44	3.85	0.46	-4.84	0.001
TPABS						
Emotional states	3.59	0.51	3.58	0.49	0.34	0.73
Relationships with students & parents	2.80	0.75	3.01	0.74	-5.01	0.001
Relationships with their colleagues	3.05	0.98	3.17	0.92	-2.22	0.02
Response to distance learning	3.72	0.65	3.60	0.68	3.29	0.001
TPABS_total	3.25	0.45	3.31	0.46	-2.46	0.01
PSS						
PSS total	2.88	0.69	2.87	0.70	0.49	0.62

Note: Teachers' Resilience, Attitudes and Stress were recorded on 1–5 scales with higher scores correspondingly indicating higher levels of resilience, positive attitudes and higher perceived stress.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

comparisons, teachers holding a permanent post demonstrated statistically significant higher average values than their temporary colleagues. Finally, the analysis concerning the stress experienced by the two groups failed to detect a significant difference as both reported average levels of stress (Table 6).

5.7 | Correlational and regression analyses

Correlational analyses (Pearson's product) were performed with a view to examining the associations between the four TRS factors and the other two composite variables measured (TPABS and PSS). As demonstrated in Table 7, the TRS factors were positively associated with the reported attitudes and negatively associated with the reported levels of stress. Although the correlations highlighted at the right panel of Table 7 are mild, the sign of the correlations produced highlight the nature of the associations of the construct of resilience with the other two examined variables.

Next, two separate multiple regression analyses (standard) were conducted to examine the predictive capacity of the Resilience factors with TPABS total and PSS total used as dependent variables respectively. As shown in Table 8, the significant model with the TRS factors as the predictors explained 16% of the variance in attitudes during COVID-19 during lockdown ($R = 0.41$, $R^2 = 0.17$, $F_{(4,1410)} = 70.06$, $p < 0.001$) with all resilience variables emerging as significant predictors. The second analysis (see Table 9) also produced a significant model with the TRS factors explaining 21% of the variance in teacher stress ($R = 0.46$, $R^2 = 0.21$, $F_{(4,1410)} = 96.53$, $p < 0.001$). Again, all resilience variables emerged as significant predictors. In both analyses the factor "Personal competence and persistence" emerged as the strongest contributor ($B = 0.16$ and $B = -0.52$, respectively).

TABLE 7 Correlations between dimensions of TRS, TPABS, and PSS

		1	2	3	4	5	6
1	Spiritual influences	1	0.42**	0.18**	0.18**	0.26**	-0.13**
2	Personal competence & skills		1	0.26**	0.27**	0.33**	-0.44**
3	Social skills & peer support			1	0.36**	0.27**	-0.07
4	Family cohesion				1	0.24**	-0.23**
5	TPABS					1	-0.21*
6	PSS						1

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

TABLE 8 TRS components as predictors of teachers' attitudes during COVID-19 lockdown

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	SD	Beta		
(Constant)	1.72	0.09		18.04	0.001
Spiritual influences	0.09	0.02	0.12	4.65	0.001
Personal competence & persistence	0.16	0.02	0.20	7.39	0.001
Social skills & support	0.11	0.02	0.15	5.83	0.001
Family cohesion	0.07	0.02	0.10	3.92	0.001

Note: Dependent variable: TPABS total.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

TABLE 9 TRS components as predictors of teachers' stress levels during COVID-19 lockdown

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	SD	Beta		
(Constant)	4.82	0.141		34.24	0.001
Spiritual influences	0.07	0.03	0.06	2.45	0.01
Personal competence & persistence	-0.52	0.03	-0.45	-16.62	0.001
Social skills & support	0.09	0.03	0.09	3.48	0.001
Family cohesion	-0.14	0.02	-0.15	-5.82	0.001

Note: Dependent variable: PSS total.

Abbreviations: PSS, Perceived Stress Scale; TPABS, Teachers' Professional Attitudes and Behaviors Scale; TRS, Teachers' Resilience Scale.

6 | DISCUSSION

This study sought to examine teachers' attitudes towards emergency remote teaching alongside with the resilience and stress levels experienced during the Covid-19 pandemic. Given that the participating teachers were faced with adverse working conditions at the time of the survey administration, including their confinement to quarantine, the

study offered some valuable insights about their psychological state during this unprecedented crisis. With regard to the first research question posed, it was found that teachers held positive attitudes towards distance learning and held positive perceptions of their emotional state. By contrast, their relationships with colleagues were neutral and their relationships with students and parents slightly negative. These findings confirm the findings reported by similar studies conducted in Greece which concluded that Greek teachers had managed to respond successfully to the challenge of delivering their courses through asynchronous and synchronous modes but, at the same time, without maintaining the envisaged relationships with colleagues and students (Jimoyiannis et al., 2021; Nikiforos et al., 2020).

When considering the influence of demographic and (i.e., gender, age, marital status) and professional variables (i.e., employment status, educational level) on the teachers' attitudes towards emergency remote teaching some interesting findings emerged. For example, younger teachers (22–34 years of age) with fewer years of teaching experience and teachers with postgraduate qualifications reported more positive appraisal of their response to distance learning than their counterparts. These findings are in agreement with previous research reporting that younger teachers and those holding higher qualifications tend to possess more knowledge of information communication technology (ICT) and are more willing to apply this knowledge in their school practice (Likouresi, 2019; Perifanou et al., 2021). Interestingly, in this study temporary teachers reported more positive attitudes towards distance learning and more positive perceptions about their relationship with colleagues, students and parents. This finding was largely expected since temporary teachers tend to be younger and, paradoxically, more qualified than their colleagues in permanent posts thus identifying more benefits in the incorporation of ICT in their teaching and the application of innovative teaching practices (Likouresi, 2019). Additionally, temporary teachers have been found to establish stronger relationships with students, parents and colleagues due to their unstable work position (Gounari, 2018). Furthermore, the analysis of teachers' attitudes by gender revealed that men appeared more familiar with the use of technology and the application of new learning methods, unlike women, who were more emotionally affected by the impacts of the pandemic on their work. Similar were the results of other surveys, which report that male teachers present higher rates in terms of ICT ability and utilization than women (Vitanova et al., 2015). Finally, teachers in a relationship (married or living together) held more positive attitudes towards emergency remote teaching during the quarantine and had developed better relationships with students and parents, compared to their colleagues who held single status. This finding is in accordance with a recent study contending that people in a relationship had better mental health than singles during the Covid-19 pandemic lockdown (Singh et al., 2020).

School teachers' levels of Resilience during the COVID-19 pandemic in Greece ranged from moderate to high. The results of other studies carried out in Greece before the outburst of the pandemic, demonstrated moderate levels of Resilience (Daniilidou, 2018; Siourla, 2018). Interestingly, in the present study women reported higher rates of "Spiritual influences" and "Personal competences and persistence" than men. This could be explained by approaching life and any adversity that arises through religious and spiritual beliefs. Furthermore, teachers' age and, by extension, years of teaching experience were also found to positively affect their resilience. This finding is in line with research studies reporting that teacher's resilience is positively related to their age and years of employment (Botou et al., 2017). In this respect, our study lends support to the recommendation often made to support young teachers with a few years in service to cope with the adversities of their profession.

Teachers' marital status also played an important role, since individuals in a relationship presented higher rates of resilience compared to their single counterparts. This finding is in line with previous research documenting the importance of the family environment in the development of emotional and social resilience to cope with adversities (Daniilidou, 2018).

Additional professional qualifications seem to have reinforced some resilience factors measured in the present study. Teachers possessing a Master's degree or a PhD reported higher levels of resilience compared to their counterparts possessing only a Bachelor's degree. This finding is in accordance with previous studies in Greece

which found teachers possessing additional academic qualifications more resilient than their counterparts (Brouskeli et al., 2018; Stavraki & Karagianni, 2020).

In terms of employment, permanent teachers reported higher levels of resilience compared to temporary ones. In most surveys conducted in Greece during the financial crisis of the last decade, no statistically significant differences were identified between permanent and temporary teachers (Daniilidou, 2018; Zografou, 2016) in relation to their resilience levels. Interestingly, in the present study, a statistically significant difference was detected regarding 'social skills and peer support' factor with permanent teachers reporting higher scores than their temporary colleagues, a finding also reported by Stavraki and Karagianni (2020) and Siourla (2018). It could be suggested that because temporary teachers feel insecure due to their non-permanent work position and they tend to move to a different school every academic year, they report poorer perceptions of peer support and less satisfaction from their job (Dawson et al., 2017).

Regarding the levels of stress experienced by the participating teachers, the analysis revealed that they were moderate. This finding is in disagreement with most surveys conducted in Greece which have reported low levels of stress in teachers and considerably lower than the ones reported by their colleagues in different countries (Kokkinos, 2006). Therefore, our study suggests that teachers' stress levels were higher due to the COVID-19 adverse circumstances. Moreover, the present study found women experiencing more stress and greater difficulty in stress management compared to men. This finding is in accordance with a recent study reporting women experiencing higher levels of anxiety than men during the COVID-19 pandemic (Liu et al., 2020). Moreover, the evidence reported in the present study also confirms previous research suggesting that female teachers are more anxious than men in managing the workload and their students' behavior during lessons (Antoniou et al., 2006). Finally, younger teachers (22-34) and with fewer years of service encountered greater difficulties in managing stress compared to older and more experienced teachers. Research indicates that teachers with fewer years of service present higher levels of stress than teachers with more educational experience (Antoniou et al., 2006; Daniilidou, 2018).

The correlational analyses performed revealed positive associations between the resilience factors and the attitudes reported by the participating teachers. On the contrary, all resilience factors were negatively correlated with the construct of stress. While correlational analyses should always be treated with caution, we contend that this finding lends support to the often-stated importance of resilience (Brunetti, 2006; Castro et al., 2010). Further, the regression analyses performed demonstrated that all dimensions of resilience measured proved to be significant predictors of both attitudes and stress levels thus lending support to the study by Ye et al. (2020) which contended that COVID-19-related mental health issues and well-being could be mitigated through resilience giving rise to adaptive coping strategies.

7 | LIMITATIONS AND DIRECTIONS FOR FURTHER RESEARCH

Some limitations of the current study should be mentioned. First, we focused exclusively on the perceptions held by teachers as documented in the self-report tools administered without triangulating this evidence with other qualitative data. However valuable our measurement might be, there is a need to explore the tendencies detected in the present study through qualitative fieldwork. Second, the administered TPABS tool represents a new instrument that was developed exclusively for the present study for the measurement of teachers' attitudes towards emergency remote teaching; as such, it has not been validated yet on larger and more representative samples of teachers and, for this reason, the data generated from its administration should be treated with caution. Recognising these limitations, however, the study does contribute to our understanding of the psychological state of teachers during the pandemic and, more importantly, offers clear directions about which groups of teachers are in most need for counselling and professional support so that their resilience is strengthened. Future studies,

therefore, could extend this work by examining the efficacy of particular interventions aiming at strengthening these vulnerable teachers' resilience.

ETHICS APPROVAL

Before commencing the study Ethical approval from university of Thessaly's research and ethics committee was obtained. (Protocol Number: 492/18-5-2020).

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