

Australian teacher stress, well-being, self-efficacy, and safety during the COVID-19 pandemic

Paulina Billett¹  | Kristina Turner²  | Xia Li³

¹Department of Social Inquiry, La Trobe University, Bundoora, Victoria, Australia

²Department of Education, Swinburne University of Technology, Hawthorn, Victoria, Australia

³Department of Mathematics & Statistics, La Trobe University, Bundoora, Victoria, Australia

Correspondence

Paulina Billett, Department of Social Inquiry, La Trobe University, Plenty Rd &, Kingsbury Dr, Bundoora, VIC 3086, Australia.
Email: p.billett@latrobe.edu.au

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Abstract

The 2020 COVID pandemic radically altered the way in which individuals live and work. For teachers, this entailed a shift in their teaching practice, with large numbers of schools around Australia and the world closing for prolonged periods of time and moving to an “online” format. This required teachers to quickly adapt their teaching practices adding further stress to an already stressful environment. In this article, we examine the relationships between teachers' stress, teachers' self-efficacy, and teachers' well-being during the COVID pandemic. The study presents the results from a quantitative survey undertaken in June and July 2020 with 534 teachers around Australia. While the study found that, overall, most teachers (77.29%) reported that they were not feeling anxious in their teaching role, teachers' responses indicated that they were experiencing high levels of stress and low levels of positive feelings such as joy, positivity, and contentment in their work during the COVID-19 pandemic negatively impacting their well-being and self-efficacy.

KEYWORDS

COVID-19, safety, self-efficacy, teacher stress, well-being

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1 | INTRODUCTION

The COVID-19 pandemic radically altered the way individuals live and work. In an effort to contain the spread of the coronavirus, schools worldwide were physically closed and there was a sudden move to online teaching and learning. As a result, teachers were required to quickly adapt their teaching and learning practices to suit an online learning environment. In addition, teachers often had to support their students' psychological well-being and assist families as they became more involved in their child's education during the pandemic. Whilst teachers were successful in quickly adjusting to teaching online in pandemic circumstances, teachers' perceptions of their well-being, stress, self-efficacy and safety during the COVID-19 pandemic remain unknown.

1.1 | Teacher stress

Stress and its negative consequences are often reported in studies involving teachers. Often discussed in terms of workload, teacher stress can severely hamper teacher self-efficacy and their desire to remain in the profession (Billett et al., 2019). Stressors for teachers include lack of control over work and workload, blurred lines between work and home, stress of online teaching, irregular hours, and financial concerns (MacIntyre et al., 2020). For some teachers, particularly those new to the profession, the transition from preservice teacher to a qualified teacher can be particularly stressful (Gordon, 2020). Gordon (2020) explored the factors involved in the well-being of early career teachers in Australia and England and found that early career teachers often experience high levels of stress with the transition from initial teacher education to a newly qualified teacher being described as overwhelming.

Teacher stress not only affects teachers but can also impact students (McInerney et al., 2018). Teachers experiencing high levels of psychological distress may be unable to model positive social and emotional behaviors to students or to help students with their own social and emotional problems. Students of teachers who are satisfied and more psychologically well are more likely to attain better results than if they were taught by less satisfied and/or psychologically unwell teachers (McInerney et al., 2018).

Levels of teacher stress may not necessarily be static. A US study by von der Embse and Mankin (2020) on the changes to teachers' stress and well-being throughout the academic year found that teacher stress peaked in the fall and winter, with well-being being highest before the spring standardized testing period. Interestingly, teacher efficacy and school connectedness declined as teacher stress rose.

An important consideration is the increased role of accountability, sense of external judgment, and fear of failure, which may contribute to increased levels of teacher stress and anxiety (Brady & Wilson, 2020). Teachers reported negative impacts such as increased stress and anxiety, due to increased focus on comparison, ratings, and competition. In contrast, administrators suggested that the increased stress caused by teacher evaluations could be considered "healthy stress," resulting in increased collaboration.

Teacher stress can be positively influenced, with Lester et al. (2020) finding that higher perceived supportive relationships with school leadership and other staff members were linked with lower levels of reported work stress, depression, and anxiety. In addition, staff perception of being engaged with the school community was associated with lower work stress and depression (Lester et al., 2020).

1.2 | Teacher well-being

Previously, researchers in the field of education have applied Seligman's (2012) PERMA theoretical model of well-being to measure teacher well-being (e.g., Kern et al., 2015; Kun & Gadanez, 2019; Turner & Thielking, 2019). Although not specifically addressing teacher well-being, a leading researcher in positive psychology, Seligman (2012), states that well-being can be defined as a construct that includes the elements of positive emotion,

engagement, relationships, meaning, and accomplishment (acronym PERMA). Positive emotion is the subjective measure of happiness and life satisfaction, engagement is the subjective measure of being highly absorbed in a task, and positive relationships are relationships with others who support well-being (Seligman, 2012). Meaning is the subjective experience of belonging to or serving something that you believe is bigger than yourself and accomplishment refers to experiencing achievement or success (Seligman, 2012).

High PERMA is considered to be a state of optimal well-being, which is termed “flourishing” (Seligman, 2012). Optimal well-being, or flourishing, is the state in which individuals can realize their own potential, cope with the normal stresses of life, work productively and fruitfully, and contribute to the community (World Health Organization, 2020).

In a mixed-methods study of 300 Hungarian teachers, Kun and Gadanez (2019) applied the PERMA theoretical well-being framework and concluded that teachers' workplace happiness correlated positively with all dimensions of PERMA well-being. In addition, Zeng et al. (2019), in a correlation analysis study of 472 Chinese secondary school teachers, revealed that teacher well-being as measured by PERMA positively correlates with teachers' growth mindset, perseverance of effort, and work engagement. So, too, in the phenomenological study of teacher PERMA well-being, Turner and Thielking (2019) concluded that, in the context of the study, teachers' conscious application of strategies to improve their PERMA well-being positively effected their perceptions of their well-being, teaching practice, and student learning.

Teacher well-being plays a crucial role in teacher satisfaction within the profession. Teachers with lower well-being are more likely to experience stress, anxiety, and depression (Kidger et al., 2016) and poor well-being is a leading factor in teachers' decision to leave the profession (Brady & Wilson, 2020). Therefore, understanding the factors that support teachers' well-being is important for encouraging greater sustainability and teacher retention (Acton & Glasgow, 2015).

In addition, teachers' well-being can have an important impact on students' levels of academic achievement and well-being. Harding et al. (2019) found that better teacher well-being is associated with increased student well-being and decreased student psychological distress.

1.3 | Teacher self-efficacy

Teacher self-efficacy has been defined as “teachers' beliefs in their capability to produce desired educational outcomes” (Lauermaann & König, 2016, p. 10). Previous research has demonstrated relationships between teacher self-efficacy, well-being, and burnout. For example, in a New Zealand study of 1040 teachers, Soykan et al. (2019) found a relationship between high levels of teacher self-efficacy and teacher well-being as well as between teacher self-efficacy and work engagement. In addition, high self-efficacy was found to be negatively related to teacher burnout. Similarly, in a study of 295 Turkish educators, Arslan (2018) found a positive relationship between high levels of teacher well-being and high levels of teacher self-efficacy. Also, in a United States correlational study, Lauermaann and König (2016) examined the relationship between teacher self-efficacy and burnout, concluding that teachers with greater self-efficacy were more likely to master the challenges of teaching and less likely to experience burnout.

1.4 | Teachers and the COVID-19 pandemic

A review of the literature reveals a growing number of studies on the relationship between teacher well-being, self-efficacy, stress, and COVID-19. One such study by Alves et al. (2021) of 1479 Portuguese teachers examining the factors that contributed to professional well-being in times of pandemic found that the COVID-19 pandemic decreased teachers' perceptions of professional well-being and increased their teaching difficulties, with many

teachers feeling unsatisfied and concerned with their future professional prospects. In another study, MacIntyre et al. (2020) examined the stressors and coping responses of language teachers in response to COVID-19 online teaching. The most stressful experience reported by teachers was workload, followed by family health. Other stressors included loss of control over work, blurred lines between work and home, stress of online teaching, irregular hours, and financial concerns (MacIntyre et al., 2020). In another study, Chan et al. (2021) surveyed 151 elementary teachers in the United States. The online survey asked teachers to retrospectively report on their experiences of teaching after the COVID-19 school closure. It was found that teachers felt emotionally exhausted as well as reported high levels of stress due to increased workload and job ambiguity. These stressors were found to negatively impact teachers' well-being. Interestingly, Herman et al. (2021) study of 639 teachers in the United States found that teachers' stress reported significantly lower levels of stress, higher coping, and better overall health at the onset of the pandemic's school closures. Competence and perceived efficacy in managing student behavior were key in maintaining teacher well-being. Similarly, Pressley et al. (2021) examined ($n = 329$) the impact of returning to teaching during the coronavirus pandemic in the United States. While, overall, a decrease in stress and anxiety among 40% of those surveyed was reported, several factors were found to be significant predictors for increased teacher anxiety, with virtual teaching being a significant predictor of an increase in feelings of anxiety.

A study of 351 Chinese teachers by Ma et al. (2020) retrospectively reported on teaching self-efficacy at the beginning and end of school lockdowns. They found that passion burnout saw a marked change in reported teaching self-efficacy. An international sample of 600 language teachers conducted by MacIntyre (2020) found increased levels of teacher stress. This increase is argued to be due to increased demands placed on teachers, including the shift to the online learning environment, as well as concerns for health and safety negatively impacting teacher well-being. Cataudella et al. (2021) study on the impact of the COVID pandemic on teacher self-esteem and self-efficacy ($n = 226$) showed lower teacher self-esteem and self-efficacy when compared to a normative sample. This also increased among teachers who had been in the profession for longer.

1.5 | Purpose of the present study

This study aims to determine teacher stress, well-being, and self-efficacy levels during the COVID-19 pandemic and, in addition, to better understand teachers' feelings of safety when teaching face to face. To determine these outcomes, the following research questions were set:

- What are teachers' stress levels during the COVID-19 pandemic?
- What are teachers' well-being levels during the COVID-19 pandemic?
- What are teachers' self-efficacy levels during the COVID-19 pandemic?
- What are teachers' perceptions of their safety during the COVID-19 pandemic?
- What are the relationships between teacher stress, well-being, self-efficacy, and safety during the COVID-19 pandemic?

2 | METHOD

This study used a quantitative survey design to examine teacher well-being, stress, and self-efficacy during the COVID-19 pandemic. University human research ethics permission was obtained for the study from the relevant universities. Data were then collected between June 2020 and July 2020 using Qualtrics survey software to manage the survey. An invitation to participate in an online questionnaire examining teacher well-being, stress, and self-efficacy during the COVID-19 pandemic was distributed via one social media platform. Individuals were invited to participate in the study by clicking on the dedicated website link. The call for participants was released to

targeted online pages, such as those of teacher unions and other professional online groups after approval from their admins.

A further call was made by a cold call approach through a social media campaign, which identified individuals containing teachers as their primary job description on their online profile who also resided in Australia. Before starting the survey, potential participants were asked to confirm that they were qualified Australian teachers and were currently engaged in teaching at a primary or secondary institution in Australia.

To maintain the integrity of the survey, attempts were restricted to just one and this was monitored by the Qualtrics survey system. The questionnaire was open to kindergarten, primary, and secondary school teachers aged between 21 and 70 years, and who are currently teaching in Australia.

2.1 | Participants

The 532 participants of our anonymous survey all self-identified as qualified teachers or principals currently teaching in Australian schools. These participants taught across the sectors of government, independent, and catholic schools, teaching students from ages 5 to 18 years. While most teacher respondents were female, this is not unusual in the Australian teaching context, which is largely feminized. In fact, in a survey conducted by the Australian Bureau of Statistics in 2019, around 71.7% of registered Australian teachers identify as females and 28.3% as males (Australian Bureau of Statistics, 2019). Thus, a larger participation of females was to be expected in this survey.

2.2 | Data collection

In developing the survey instrument, questions were adapted from three previously used survey instruments. The Effort-Reward Imbalance Questionnaire (Siegrist et al., 2019) was applied to measure teachers' level of workplace stress. This survey consists of 12 Likert-type questions requiring responses on a 4-point scale from "Strongly Disagree" to "Strongly Agree." The final stress score is calculated by adding these 12 items scores; higher scores indicated higher teacher stress. Previous research revealed the Effort-Reward Imbalance Questionnaire to be a reliable and valid instrument (Siegrist et al., 2019).

Teacher PERMA well-being at work was measured using the Workplace Perma Profiler (Butler & Kern, 2016). This survey consists of 16 Likert-type questions requiring responses on a 10-point scale from "Never" to "Always." Higher scores indicate higher teacher well-being. Researchers have previously tested the validity of the PERMA construct and showed good convergent validity with existing and reliable measures of well-being (see Iasiello et al., 2017; Kern et al., 2015). Significantly, Goodman et al. (2017) found a correlation of 0.98 between Diener's (1984) subjective well-being model and the PERMA Profiler (Butler & Kern, 2016).

Teacher self-efficacy was measured using the Teacher Self Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). This survey consists of 12 Likert-type questions requiring responses on a 10-point scale from "Not at all" to "A great deal." Higher scores indicate higher teacher self-efficacy. Previous research has revealed that the Teacher Self Efficacy Scale demonstrates acceptable reliability and validity (Erçetin & Çevik, 2019).

A teacher safety score was determined through five 4-point scale items developed by the researchers for this study. Higher scores indicated a lower safety feeling. The validity of the scale is unknown. In addition, questions were included on the survey instrument to determine participant demographics and current COVID pandemic specific practices such as social distancing and the wearing of face masks.

2.3 | Statistical analysis

Descriptive analyses were carried out to explore the characteristics of the samples, and also reported teachers' stress, well-being, self-efficacy, and safety. The descriptive analyses results were summarized as mean, standard deviation (SD), and median, or n (%) by different levels of stress, well-being, and self-efficacy. Shapiro–Wilk test was used to do the normality test. Differences in these characteristics for each of the four aspects were compared using two independent-sample t test or Mann–Whitney U test depending on the distributions; one-way analysis of variance or Kruskal–Wallis test followed by post hoc testing with a Bonferroni-adjusted α level was also used for comparisons for variables with more than two levels. Bivariate correlation analysis was then carried out to explore the relationship among the four aspects. Finally, we employed quantile regression (QR) to conduct the multivariate analysis to capture the full distribution of outcomes. We estimated QRs at the 5th, 10th, 25th, 50th, 75th, and 90th quantiles. QR was chosen as it allowed us to consider the impact of a covariate on the entire distribution of our main outcomes. For QR estimates in this study, key independent variables include age, work experience, and work location, which were all significant or close to significant from the descriptive analysis.

Data collected were aggregated and analyzed using SPSS statistical software (IBM Corp. Released 2019; IBM SPSS Statistics for Windows, Version 26.0; IBM Corp). A two-sided p value less than .05 was deemed statistically significant.

3 | RESULTS

3.1 | Descriptive statistics

“Descriptive statistics” presents the characteristics including each of the subdomains of the sample used in the analysis (Table 1a–d). Among the 532 participants, more than half were 41–60 years old, and 342 participants were females. Over 1/3 of teachers have more than 25 years of work experience. Among the teachers, around half (55.64%) came from the state of Victoria and work on a full-time basis (73.68%) and mostly (59.02%) performed face-to-face teaching.

“Descriptive statistics” also shows the comparisons in each background variable (Table 1). Stress scores differed in location and work fraction, especially for teachers working part-time who were found to have lower stress scores than full-time teachers ($p = .031$). Well-being scores also differed in location, of note are the scores in the state of New South Wales (NSW), which were significantly lower than those in Victoria ($p = .001$). Teachers of different ages, work years, and work fractions were also found to have different self-efficacy scores. Teachers with different work years, locations, and work fractions also were found to have different safety scores.

3.2 | Bivariate correlation analyses

From Spearman's correlation analysis (Table 2), stress scores were negatively correlated to self-efficacy ($\rho = -0.151$, $p < .01$), well-being ($\rho = -0.461$, $p < .01$), and safety (reverse) ($\rho = -0.360$, $p < .01$); well-being was positively correlated to self-efficacy ($\rho = 0.430$, $p < .01$) and to safety (reverse) ($\rho = 0.342$, $p < .01$).

3.3 | Multivariate analysis

“Multivariate analysis” presents the results of the multivariate QR analysis for each of the standardized scores of stress, well-being, and safety adjusting for age, work years, work sections, and work roles (Table 3). The effect of well-being on self-efficacy (Table 3a) was significantly positive at all quantiles, especially in the lower quantiles, which was greater than the mean effects obtained in the ordinary least squares (OLS) regressions, while in the

TABLE 1a Descriptive statistics for participants and stress.

Variables	Stress				
	N (%)	Missing	Mean (SD)	Median	p Value
Gender					
Male	19 (5.26%)	3	32.38 (5.44)	33.00	.124 [§]
Female	342 (94.74%)	61	34.38 (5.68)	35.00	
Missing	171				
Age (years)					
21–30	61 (11.47%)	16	33.29 (4.52)	33.00	.312
31–35	47 (8.83%)	6	35.05 (5)	36.00	
36–40	68 (12.78%)	19	34.37 (6.12)	35.00	
41–50	166 (31.2%)	31	34.61 (6.14)	35.00	
51–60	147 (27.63%)	20	34.93 (5.56)	35.00	
60–70	43 (8.08%)	7	35.11 (5.57)	36.00	
Work years					
<4	60 (11.28%)	11	34.63 (4.9)	34.00	.818
5–9	91 (17.11%)	24	34.55 (6.01)	35.00	
10–14	84 (15.79%)	15	34.71 (5.31)	35.00	
15–19	102 (19.17%)	18	33.87 (6.78)	34.50	
25+	195 (36.65%)	31	35 (5.26)	35.00	
Teach level					
Kindergarten–year 6	281 (54.88%)	48	34.53 (5.92)	35.00	.874 [§]
Year 7–12	231 (45.12%)	47	34.79 (5.44)	35.00	
Location					
VIC	296 (55.64%)	58	34.17 (5.59)	35.00	.028
NSW	94 (17.67%)	13	35.93 (5.64)	36.00	
QLD	72 (13.53%)	15	35.58 (4.23)	36.00	
Others	70 (13.16%)	13	33.7 (6.81)	34.00	
Work fraction					
Full-time	392 (73.68%)	80	35.12 (5.32)	35.00	.031
Part-time	122 (22.93%)	15	33.27 (6.5)	34.00	
Casual Relief Teacher&Short term	18 (3.38%)	4	33.86 (4.5)	34.50	
Work sector					
Public	365 (69.39%)	66	34.49 (5.58)	35.00	.582
Catholic	77 (14.64%)	18	35.39 (5.6)	36.00	
Independent	84 (15.97%)	13	34.51 (6.12)	35.00	
Missing	6				

(Continues)

TABLE 1a (Continued)

Variables	Stress				
	N (%)	Missing	Mean (SD)	Median	p Value
Work area					
Regional	193 (36.42%)	39	34.34 (5.77)	35.00	.721
Rural	81 (15.28%)	15	34.83 (5.22)	35.00	
Urban	256 (48.3%)	45	34.78 (5.76)	35.00	
Missing	2				
Teaching method					
Mix	123 (23.12%)	20	34.37 (5.51)	35.00	.731
Face to face	314 (59.02%)	59	34.83 (5.8)	35.00	
Online only	85 (15.98%)	18	34.3 (5.16)	35.00	
Other	10 (1.88%)	2	34.13 (7.64)	32.50	
Role					
Teacher	464 (87.22%)	87	34.41 (5.78)	35.00	.275
Head teacher	48 (9.02%)	10	36 (4.67)	35.00	
Principal	20 (3.76%)	2	36.11 (4.59)	35.5	

[§]Mann-Whitney *U* test, others are Kruskal-Wallis tests.

higher quantiles it was smaller. The effect of stress on self-efficacy (Table 3b) was significantly negative from 10th quantile, while the safety score was not significant, except only in 10th quantile. The effect of work years significantly positively affected self-efficacy score in 75th and 90th quantile from all the results. Work fraction starts to be positively significant from the 50th quantile (Table 3c).

Figure 1 is a graphical presentation of the results obtained in the QR analysis. The graphs illustrate how the effects of well-being, stress, and safety on self-efficacy vary over quantiles, and how the magnitude of the effects at various quantiles differs considerably from the OLS coefficients, even in terms of the confidence intervals around each coefficient.

There was an overall downward trend from a lower quantile to a higher quantile, as shown in Figure 1, while well-being and safety score coefficients fluctuated slightly. However, the stress score coefficient indicated an upward trend.

4 | DISCUSSION

This section discusses the results under the headings of well-being, self-efficacy, stress, and safety.

4.1 | Well-being

Well-being as defined by Seligman (2012) includes the elements of positive emotion, engagement, relationships, meaning, and accomplishment. In the context of this study, teachers' responses indicated that they were experiencing low levels of positive emotions in their work during the COVID-19 pandemic. Concerningly, 33.73% of

TABLE 1b Descriptive statistics for well-being.

Variables	Well-being				
	N (%)	Missing	Mean (SD)	Median	p Value
Gender					
Male	19 (5.26)	1	95.39 (27.26)	99	.412 ^S
Female	342 (94.74)	34	90.58 (23.58)	89	
Missing	171				
Age (years)					
21–30	61 (11.47)	8	89.02 (21.9)	89	.673
31–35	47 (8.83)	7	90.3 (21.95)	90	
36–40	68 (12.78)	9	87.2 (24.91)	87	
41–50	166 (31.2)	18	92.42 (25.71)	92	
51–60	147 (27.63)	13	90.35 (21.01)	90	
60–70	43 (8.08)	6	85.92 (25.94)	88	
Work years					
<4	60 (11.28%)	7	89.49 (23.97)	88	.751
5–9	91 (17.11%)	14	87.62 (23.86)	89	
10–14	84 (15.79%)	8	88.36 (23.42)	87	
15–19	102 (19.17%)	11	91.92 (24.95)	92	
25+	195 (36.65%)	21	91.2 (22.84)	90	
Teach level					
Kindergarten and prep–year 6	281 (54.88%)	31	91.34 (23.84)	91	.061 ^S
Years 7–12	231 (45.12%)	27	87.98 (23.25)	86.5	
Location					
VIC	296 (55.64%)	37	93.51 (23.06)	92	.001
NSW	94 (17.67%)	9	82.48 (23.98)	80	
QLD	72 (13.53%)	11	86.9 (22.93)	87	
Others	70 (13.16%)	4	89.52 (23.59)	89	
Work fraction					
Full-time	392 (73.68%)	48	89.27 (24.24)	89	.055
Part-time	122 (22.93%)	12	93.96 (21.62)	91.5	
Casual Relief Teacher & Short term	18 (3.38%)	1	82.06 (19.75)	78	
Work sector					
Public	365 (69.39%)	36	89.96 (23.33)	90	.684
Catholic	77 (14.64%)	13	92.33 (25.94)	92	
Independent	84 (15.97%)	10	88.58 (23.15)	88	
Missing	6				

(Continues)

TABLE 1b (Continued)

Variables	Well-being				
	N (%)	Missing	Mean (SD)	Median	p Value
Work area					
Regional	193 (36.42%)	25	90.69 (23.25)	90	.819
Rural	81 (15.28%)	7	90.3 (25.93)	88.5	
Urban	256 (48.3%)	29	89.56 (23.11)	90	
Missing	2				
Teaching method					
Mix	123 (23.12%)	12	90.99 (24.03)	91	.373
Face to face	314 (59.02%)	38	89.75 (23.48)	89	
Online only	85 (15.98%)	10	92 (22.21)	89	
Other	10 (1.88%)	1	74.22 (30.46)	67	
Role					
Teacher	464 (87.22%)	55	89.57 (23.33)	89	.131
Head teacher	48 (9.02%)	5	90.95 (27.14)	90	
Principal	20 (3.76%)	1	99.74 (19.43)	101	

[§]Mann-Whitney *U* test, others are Kruskal-Wallis tests.

participants indicated that they did not feel joyful in their teaching role. Whilst 28.83% of participants reported that they did not feel positive in their teaching role, 35.43% of participants did not feel content in their teaching role. However, in terms of negative emotions, 41.00% of participants indicated that most of the time they felt angry in their teaching role and 46.93% of participants indicated that they felt lonely in their daily work life. In spite of this, most teachers (77.29%) reported that they were not feeling anxious in their teaching roles.

In considering teachers' feelings of engagement at work, 91.04% of participants indicated that most of the time they felt absorbed in their teaching role and 62.32% of participants reported that most of the time they felt excited and interested in teaching. Similarly, in the context of this study, most teachers were satisfied with their professional relationships. To illustrate, 51.29% of participants indicated that most of the time they received help and support from others when they needed it and 58.32% reported that most of the time they were satisfied with their professional relationships.

In terms of finding meaning at work, in the context of this study, 65.54% of participants reported finding purpose and meaning at work. While 71.89% of participants believed that teaching is valuable and worthwhile, 55.31% of participants indicated that most of the time they felt a sense of direction in their work as teachers. However, only 33.53% of participants reported making progress toward accomplishing their teaching goals, with 31.14% of participants reporting that they were not able to achieve goals that they had set for themselves; 59.28% of participants felt able to handle their teaching responsibilities.

Previous research in the field of teacher well-being has found that high levels of PERMA well-being are associated with improvements in teachers' perceptions of their teaching practice and student learning (Kun & Gadanecz, 2019; Zeng et al., 2019). In a pre-COVID phenomenological study of teacher PERMA well-being, Turner and Thielking (2019) asked teacher participants to consciously apply four positive psychology strategies for a period of 15 working days. Teachers reported improvement in their PERMA well-being such as feeling more positive

TABLE 1c Descriptive statistics for self-efficacy.

Variables	Self-efficacy		Mean (SD)	Median	p Value
	N (%)	Missing			
Gender					
Male	19 (5.26)	1	67.61 (18.42)	63.5	.549 [§]
Female	342 (94.74)	52	69.57 (21.02)	73	
Missing	171				
Age (years)					
21–30	61 (11.47)	11	61.2 (19.53)	62	.013
31–35	47 (8.83)	5	69.33 (21.08)	72	
36–40	68 (12.78)	9	68.95 (21.47)	72	
41–50	166 (31.2)	21	70.32 (20.05)	74	
51–60	147 (27.63)	23	74.19 (17.39)	77.5	
60–70	43 (8.08)	9	67.15 (23.55)	71.5	
Work years					
<4	60 (11.28)	9	59 (18.89)	56	<.001
5–9	91 (17.11)	11	68.96 (20.73)	75	
10–14	84 (15.79)	10	67.14 (20.94)	68.5	
15–19	102 (19.17)	15	73.43 (18.75)	76	
25+	195 (36.65)	33	73.07 (19.31)	75.5	
Teach level					
Kindergarten and prep–year 6	281 (54.88)	50	70.35 (21.24)	75	.207 [§]
Years 7–12	231 (45.12)	26	68.84 (19.36)	70	
Location					
VIC	296 (55.64)	41	69.67 (20.48)	72	.336
NSW	94 (17.67)	15	67.04 (21.28)	68	
QLD	72 (13.53)	12	70.28 (18.95)	75	
Others	70 (13.16)	10	74 (17.82)	77.5	
Work fraction					
Full-time	392 (73.68)	58	70.5 (20.15)	73.5	.009
Part-time	122 (22.93)	18	69.94 (20.14)	74	
Casual Relief Teacher & Short term	18 (3.38)	2	56.19 (14.92)	57	
Work sector					
Public	365 (69.39)	54	68.76 (19.91)	71	.28
Catholic	77 (14.64)	14	72.37 (20.32)	78	
Independent	84 (15.97%)	10	71.66 (20.57)	73.5	
Missing	6				

(Continues)

TABLE 1c (Continued)

Variables	Self-efficacy				
	N (%)	Missing	Mean (SD)	Median	<i>p</i> Value
Work area					
Regional	193 (36.42)	31	69.23 (21.5)	75	.075
Rural	81 (15.28)	9	65.38 (19.14)	67.5	
Urban	256 (48.3)	38	71.59 (19.13)	73	
Missing	2				
Teaching method					
Mix	123 (23.12)	14	67.16 (19.37)	70	.061
Face to face	314 (59.02)	48	71.86 (19.94)	75	
Online only	85 (15.98)	14	68.11 (19.74)	68	
Other	10 (1.88)	2	56.13 (30.94)	68.5	
Role					
Teacher	464 (87.22)	68	69.66 (20.36)	72	.44
Head teacher	48 (9.02)	7	69.34 (19.78)	72	
Principal	20 (3.76)	3	76.00 (14.57)	82	

[§]Mann-Whitney *U* test, others are Kruskal-Wallis tests.

emotions in their daily work (Turner & Thielking, 2019). In addition, teachers reported a greater sense of achievement at work, for example, perceived improvements in their students' learning behaviors and outcomes.

Whilst there have been studies examining the application of positive psychology strategies to improve student well-being during the COVID pandemic (e.g., Arslan & Burke, 2021), there appears to be a dearth of literature on the application of positive psychology strategies to support teacher well-being during the COVID pandemic. Interestingly, in a discussion of positive psychology approaches to support the well-being of students, families, teachers, school leaders, and school communities during the COVID pandemic, Waters et al. (2021) suggest that the application of positive psychology strategies may be beneficial. Consequently, in light of the findings of this study of teacher well-being during the COVID pandemic, along with previous research in the field of positive psychology, the researchers propose that teachers' conscious application of positive psychology strategies at work during the COVID pandemic may support their PERMA well-being elements of positive emotions and accomplishment. It is recommended that research be conducted to confirm this hypothesis.

Teacher well-being scores differed according to location, with teachers in NSW reporting lower overall well-being levels than teachers in Victoria ($p = .001$). As expected, teachers' well-being scores were negatively correlated to their stress scores ($\rho = -0.461$, $p < .01$), positively correlated with self-efficacy ($\rho = 0.430$, $p < .01$), and negatively correlated with safety ($\rho = -0.342$, $p < .01$). These findings are consistent with previous research by Soykan et al. (2019) and Arslan (2018), who also found a positive relationship between teacher well-being and self-efficacy.

4.2 | Self-efficacy

In the context of this study, just over half of the teacher participants reported feelings of self-efficacy in terms of establishing classroom management systems (57.69%), getting students to believe they can do well at school

TABLE 1d Descriptive statistics for safety.

Variables	Safety (reverse)				
	N (%)	Missing	Mean (SD)	Median	p Value
Gender					
Male	19 (5.26)	1	10.67 (2.91)	10.5	.200 ^S
Female	342 (94.74)	68	9.73 (2.69)	10	
Missing	171				
Age (years)					
21–30	61 (11.47)	11	9.08 (2.28)	9	.155
31–35	47 (8.83)	6	9.27 (2.19)	9	
36–40	68 (12.78)	13	10.36 (2.97)	10	
41–50	166 (31.2)	31	9.76 (2.88)	9	
51–60	147 (27.63)	26	9.83 (2.51)	10	
60–70	43 (8.08)	10	9.91 (2.93)	10	
Work years					
<4	60 (11.28)	13	9.49 (2.31)	9	.044
5–9	91 (17.11)	12	9.09 (2.77)	8	
10–14	84 (15.79)	13	9.87 (2.51)	10	
15–19	102 (19.17)	20	10.07 (2.95)	10	
25+	195 (36.65)	39	9.92 (2.64)	10	
Teach level					
Kindergarten and prep–year 6	281 (54.88)	43	9.84 (2.68)	10	.417 ^S
Years 7–12	231 (45.12)	50	9.66 (2.71)	9	
Location					
VIC	296 (55.64)	75	10.09 (2.63)	10	.039
NSW	94 (17.67)	5	9.36 (2.83)	9	
QLD	72 (13.53)	6	9.24 (2.37)	9	
Others	70 (13.16)	11	9.59 (2.85)	9	
Work fraction					
Full-time	392 (73.68)	65	9.6 (2.66)	9	.045
Part-time	122 (22.93)	27	10.23 (2.53)	10	
Casual Relief Teacher & Short term	18 (3.38)	5	9.69 (3.97)	8	
Work sector					
Public	365 (69.39)	64	9.62 (2.5)	9	.241
Catholic	77 (14.64)	16	9.66 (3.1)	9	
Independent	84 (15.97)	16	10.24 (2.94)	10	
Missing	6				

(Continues)

TABLE 1d (Continued)

Variables	Safety (reverse)			Median	p Value
	N (%)	Missing	Mean (SD)		
Work area					
Regional	193 (36.42)	40	9.75 (2.66)	10	.954
Rural	81 (15.28)	14	9.6 (2.56)	9	
Urban	256 (48.3)	43	9.78 (2.75)	9	
Missing	2				
Teaching method					
Mix	123 (23.12)	9	10.28 (2.84)	10	.03
Face to face	314 (59.02)	23	9.48 (2.56)	9	
Online only	85 (15.98)	55	10.2 (2.88)	10	
Other	10 (1.88)	10	0 (0)		
Role					
Teacher	464 (87.22)	90	9.72 (2.68)	9	.832
Head teacher	48 (9.02)	6	9.93 (2.59)	10	
Principal	20 (3.76)	1	9.84 (2.91)	9	

[§]Mann-Whitney *U* test, others are Kruskal-Wallis tests.

TABLE 2 Correlation analysis results.

Correlations (Spearman)	Stress	Well-being	Self-efficacy	Safety (reverse)
Stress	1	-0.461**	-0.151**	-0.360**
Well-being	-0.461**	1	0.430**	0.342**
Self-efficacy	-0.151**	0.430**	1	0.068
Safety (reverse)	-0.360**	0.342**	0.068	1

** $p < .01$.

(51.8%), and controlling disruptive behavior (50%). Similarly, in a study of German early career teachers during the COVID-19 pandemic, König et al. (2020) found that teacher self-efficacy was significant in facilitating task differentiation and feedback to students. Thus, in the context of these studies, teachers reported feeling confident in their ability to manage many aspects of teaching and learning in the online learning environment during the COVID pandemic.

Similar to pre-COVID research (see Arslan, 2018; Lauermaun and König, 2016; Soykan et al., 2019) this study, conducted at one point in time during the COVID pandemic, revealed a significant positive relationship between teacher self-efficacy and teacher well-being, and negative relationship between teacher self-efficacy and stress. Self-efficacy was negatively correlated with stress ($\rho = -0.151$, $p < .01$) and positively correlated with well-being ($\rho = 0.430$, $p < .01$). The correlation between well-being and self-efficacy was significantly positive at all quantiles, especially in the lower quantiles.

TABLE 3a Multivariate quantile regression analysis of the association between self-efficacy and other factors.

Variables	Q05	Q10	Q25	Q50	Q75	Q90
Z-score (well-being)	12.71 (2.13)***	11.01 (1.42)***	12.29 (1.31)***	10.04 (1.04)***	6.53 (0.94)***	4.15 (0.98)***
Age	-0.15 (2.19)	-0.57 (1.46)	1.10 (1.35)	0.49 (1.08)	-0.36 (0.97)	-0.24 (1.01)
Work years	4.31 (2.24)	3.46 (1.49)*	1.92 (1.38)	1.54 (1.10)	3.10 (0.99)**	3.54 (1.03)**
Full-time versus Casual Relief Teacher & Short term	7.92 (11.30)	9.60 (7.54)	9.75 (6.96)	12.67 (5.54)*	12.05 (4.97)*	13.50 (5.22)
Part-time versus Casual Relief Teacher & Short term	4.23 (11.89)	3.93 (7.94)	4.02 (7.32)	12.74 (5.83)*	7.58 (5.24)	8.39 (5.50)
Teacher versus principal	-6 (11.05)	-5.32 (7.37)	-0.63 (6.8)	2.29 (5.42)	3.9 (4.86)	2.21 (5.11)
Head teacher versus principal	-15.54 (12.81)	-6.97 (8.55)	-0.5 (7.89)	2.03 (6.28)	-1.17 (5.64)	2.37 (5.92)

Note: Standard errors are given within parentheses.

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

TABLE 3b Multivariate quantile regression analysis of the association between self-efficacy and other factors.

Variables	Q05	Q10	Q25	Q50	Q75	Q90
Z-score (stress)	-6.56 (2.99)	-5.02 (1.99)*	-4.26 (1.49)**	-4.44 (1.31)**	-3.48 (1.07)**	-3.14 (1.12)**
Age	2.32 (3.14)	-0.87 (2.09)	0.80 (1.57)	1.86 (1.38)	-0.05 (1.13)	0.03 (1.18)
Work years	2.68 (3.20)	4.79 (2.13)*	2.15 (1.59)	1.41 (1.4)	3.51 (1.15)**	3.23 (1.20)**
Ful-time versus Casual Relief Teacher & Short term	19.63 (16.71)	4.30 (11.13)	11.69 (8.32)	18.46 (7.33)*	21.31 (6.01)***	15.82 (6.27)*
Part-time versus Casual Relief Teacher & Short term	15.84 (17.36)	-1.54 (11.56)	5.25 (8.64)	15.01 (7.61)*	15.62 (6.25)*	12.85 (6.51)*
Teacher versus principal	-11.84 (15.29)	-14.11 (10.18)	-9.83 (7.61)	-6.40 (6.70)	0.62 (5.50)	-0.84 (5.73)
Head teacher versus principal	-25.84 (17.97)	-26.24 (11.97)*	-9.31 (8.95)	-3.86 (7.88)	-5.67 (6.47)	-4.91 (6.74)

Note: Standard errors are given within parentheses.

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

TABLE 3c Multivariate quantile regression analysis of the association between self-efficacy and other factors.

Variables	Q05	Q10	Q25	Q50	Q75	Q90
Z-score (safety_inverse)	3.25 (3.15)	4.90 (1.94)*	2.76 (1.76)	1.55 (1.37)	0.54 (1.05)	-1.10 (1.15)
Age	1.86 (3.32)	1.29 (2.05)	1.39 (1.85)	0.64 (1.44)	-0.20 (1.11)	0.30 (1.21)
Work years	0 (3.45)	1.90 (2.13)	1.39 (1.93)	3.11 (1.5)*	3.60 (1.15)**	2.80 (1.26)*
Full-time versus Casual Relief Teacher & Short term	15.93 (17.8)	7.95 (10.97)	13.12 (9.92)	18.92 (7.72)*	23.00 (5.95)***	26.09 (6.49)***
Part-time versus Casual Relief Teacher & Short term	18.71 (18.71)	6.95 (11.54)	11.15 (10.44)	18.53 (8.12)*	18.6 (6.25)**	27.02 (6.82)***
Teacher versus principal	-12.79 (15.24)	-8.15 (9.39)	-8.18 (8.50)	-4.91 (6.61)	4.20 (5.09)	-0.59 (5.55)
Head teacher versus principal	-23.43 (17.79)	-15.12 (10.97)	-5.46 (9.92)	-4.72 (7.72)	-2.00 (5.95)	-5.11 (6.49)

Note: Standard errors are given within parentheses.

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

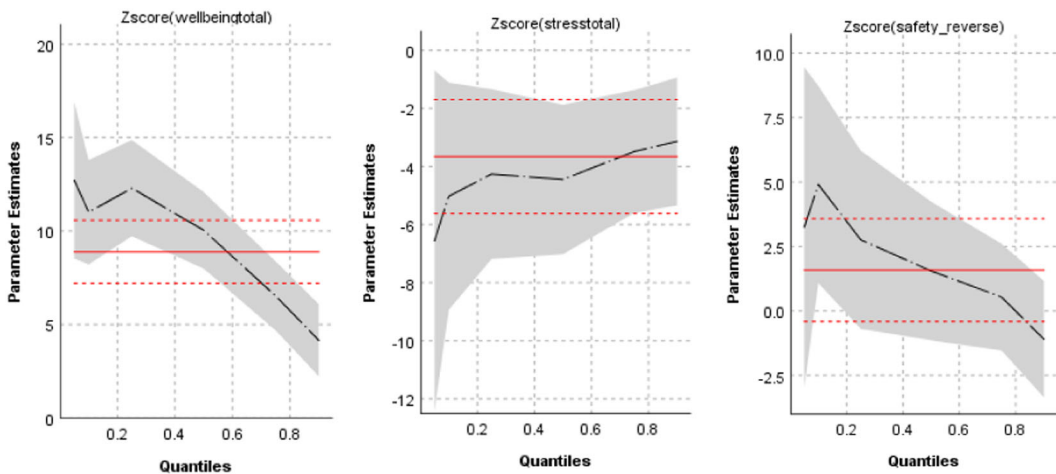


FIGURE 1 Plot effects on quantiles from a multivariable quantile regression (black) and their associated 95% confidence interval (gray shaded regions). Note: The quantiles used are 0.05, 0.1, 0.25, 0.50, 0.75, and 0.9. The solid red lines are the ordinary least squares regression lines with their 95% confidence intervals (dashed red lines).

In addition, teachers' age, number of years working, and work fraction affected their self-efficacy scores, with the highest self-efficacy being in teachers aged between 60 and 70 years, teachers who had been teaching for 15–19 years, and full-time teachers. Also, teachers with higher safety scores also had higher self-efficacy scores, indicating that teachers believed they were able to teach effectively when they felt safe. However, their belief in their ability to produce desired educational outcomes for their students decreased when they felt unsafe at work.

Although there is a paucity of research on teacher self-efficacy during the COVID-19 pandemic, one Austrian study, Kast et al. (2021), revealed that teachers had lower self-efficacy beliefs around supporting low socioeconomic students and low education background students during home learning. Similarly, in this current study, less than one-third of participants reported feelings of self-efficacy in terms of assisting families (30.44%) and motivating students (32.0%). This is concerning as it could be argued that assisting families and motivating students are essential skills for teachers working in online learning environments. Therefore, further research is required to better understand and address this phenomenon.

4.3 | Stress

In the context of this study, teachers' responses indicated that they were experiencing feelings of stress during the COVID-19 pandemic. This was largely perceived by respondents to be the result of increased pressures in workload, due to the shift to online learning, with 91.49% of teachers surveyed "agreeing" that their workload had become more demanding during this time increasing their stress levels. Problematically, our findings also suggest that this may be driving some teachers to reconsider their continued engagement in the profession.

The emerging literature on the impact of the COVID pandemic on teaching suggests that the negative impact of increased stress due to workload during the pandemic is not restricted to Australia, but is part of a larger international trend. Studies undertaken in the United States (Pressley et al., 2021) and Germany (Klapproth et al., 2020) also have made similar findings, with both studies concluding that the more time teachers spent engaging in remote teaching the more stressed they were. This, we feel, is an important finding. Teaching stress, particularly due to increases in workload is often cited as a reason for leaving the profession (Buchanan et al., 2013; Harmsen et al., 2018; Laming & Horne, 2013; Mason & Poyatos Matas, 2015). With Australia's demand for teachers increasing (Weldon, 2015) coupled with Australia's historical teacher attrition problems (Garoni & Lampert, 2021), the impact of COVID 19 could potentially be disastrous. Thus, it is essential that support is given to teachers, particularly due to the continuing uncertainty of future teaching practices as the world "learns" to live with COVID. Thus, we recommend an approach that carefully balances the need for school closures, with the requirements to quickly shift learning online while ensuring teachers are well versed in computer technology and see that teaching staff are provided with adequate resources to teach in an online environment. This we feel will greatly help to reduce teacher stress and anxiety, and reduce any potential teacher burnout helping to lower possible increases in attrition rates.

4.4 | Safety

In the context of this study, teachers' responses indicated that they were feeling unsafe during the COVID-19 pandemic. All safety questions had two possible responses, "safe" or "unsafe." When asked if they were asked about social distancing, 95.93% of teachers indicated that they felt "unsafe" in the classroom, 73.09% felt "unsafe" in the playground, and 60.57% felt "unsafe" in the staff room. When asked how they felt as a teacher in the current teaching environment, 70.97 responded "unsafe." As expected, teachers' safety scores correlated positively with their stress scores ($p = 0.360$, $p < .01$) and negatively with their well-being scores (Mankin = -0.342 , $p < .01$).

While feelings of safety during the COVID pandemic have received less interest, there is some emerging literature that confirms our findings. For example, studies by both Pressley et al. (2021) and Matthews et al. (2020) suggest that teacher safety from COVID is a major concern for teachers returning to the classroom. While our study was conducted during the beginning of the COVID 19 pandemic in Australia, initial responses as well as international findings suggest that many teachers may be feeling concerned for their safety increasing stress levels

and negatively impacting their sense of well-being. Further research would help to elucidate what impact feelings of safety may have on teachers moving into the future.

4.5 | Limitations

The COVID pandemic was felt very differently by teachers across Australia, with states and territories experiencing lockdowns at different times and lasting for widely different periods. While the eastern coast of Australia, containing its two largest population centers, NSW and Victoria, has seen the greatest impact (Victoria has endured around 265 days in lockdown, while NSW endured just over 100), the Western coast experienced only minimal disruption to teaching, with schools remaining open for the majority of the pandemic due to exceedingly low infection numbers. Due to this, it is difficult to create a general picture of teacher experience during the COVID pandemic. Further to this, schools remained open to vulnerable students and students whose parents were classified as front-line workers. This meant that, overall, teachers were required to teach both online and work face to face, further emphasizing the diverse environment that Australian teachers found themselves teaching in. By the time this survey was released, most teachers would have experienced teaching online at some point during 2020.

Further to this, correlation does not equal causation and one limitation of this study is that it has not been possible to determine the cause and effect with regard to the relationships between teacher well-being, self-efficacy, safety, and stress identified in this study. Also, it is not possible to account for the degree to which COVID-19 contributed to these findings nor the impact of other systemic issues that may impact teacher well-being, stress, and self-efficacy in this study. In addition, this study used online convenience sampling, which may not be representative of the population. Further studies of different populations using a variety of research methods are recommended to confirm and better understand these findings.

5 | CONCLUSION

The findings of this study reveal that during the COVID-19 pandemic, teachers were experiencing low levels of positive emotions, high levels of negative emotions, high levels of stress, and often felt unsafe at work. In addition, whilst teacher self-efficacy was strong in some respects, for example, classroom management and helping students believe they can do well at school, other aspects of teacher self-efficacy, such as assisting families and motivating students, were lower. Teacher well-being is negatively correlated with stress, positively correlated with self-efficacy, and negatively correlated with safety. Self-efficacy is negatively correlated with stress and safety and is positively correlated with stress.

It is hoped that this study will inform future research in the area of teacher well-being, stress, self-efficacy, and safety during times of crisis such as international pandemics, and further develop our understanding of teachers' experiences and how to best support teachers during such times.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

ORCID

Paulina Billett  <http://orcid.org/0000-0003-3938-637X>

Kristina Turner  <http://orcid.org/0000-0002-0585-9207>

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