Teacher wellbeing, teaching practice and student learning

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Australian teachers are increasingly experiencing high levels of workplace stress, anxiety, depression and burnout. This has led to calls for action to improve the wellbeing of Australian teachers. This mixed method study demonstrated that when teachers intentionally use four evidence-based positive psychology strategies for six weeks there were flow on effects in their wellbeing, teaching practice and students' learning. This included teachers reporting that they felt less stressed, more relaxed, more positive and more engaged with teaching. Teachers also reported becoming more student-centred in their classroom approach and focusing more on developing better relationships with their students. In addition, teachers perceived that their students were calmer in class, more engaged with learning and completed more work. This study reports statistically significant findings and has implications for future research and in informing changes to organisational and pedagogical practices which are supportive of teacher wellbeing.

Introduction

Australian teachers are increasingly experiencing high levels of workplace stress and anxiety (De Nobile, 2016; Safe Work Australia, 2020; Stapleton & Garby, 2020) as well as reporting symptoms of depression and burnout (McCallum, Price, Graham & Morrison, 2017; Stapleton & Garby, 2020). These factors have been shown to decrease teacher effectiveness, pedagogical practices and job satisfaction (Cook, Miller, Fiat, Renshaw, Frye, Joseph et al., 2017).

There have been calls for action to improve the wellbeing of Australian teachers. For example, in a recent study of 2444 Australian teachers, Heffernan, Longmuir, Bright and Kim (2019) revealed that Australian teachers are concerned about their wellbeing and as a result of this, over 50% indicated that they intend to leave the profession within the next ten years, citing burnout and stress as the key reasons (Heffernan et al., 2019). Heffernan et al. (2019) concluded that it is imperative that Australian teachers' wellbeing be addressed to ensure the strength of Australia's schooling system continues into the future. Similar recommendations were made in the Parliament of Australia (2019) *Status of the Teaching Profession* report, which recommended that attending to teacher welfare is vital to ensuring teachers are retained and professionally supported.

Although few studies have examined teacher wellbeing from a strength-based and non-deficit perspective, high levels of teacher wellbeing have been shown to have significant positive effects across several domains. In a fifteen-month longitudinal study of 432 employees at an Australian independent school (which included 239 teachers), Williams, Kern and Waters (2015) revealed that participants who possessed more hopeful and positive expectations about workplace future outcomes also demonstrated increased resilience and confidence in their ability to deal with environmental challenges. In another

study of Australian school staff, Kern, Waters, Adler and White (2014) evaluated the wellbeing levels of 153 Australian education staff in a school of which 60% were teachers. They found that staff members who were doing well across multiple wellbeing domains were also more committed to the school, and more satisfied with their health, life, and chosen occupation.

In addition, optimal employee wellbeing has organisational benefits. Although not in the context of schools, Compton and Hoffman (2020), Goh et al. (2021), and Ascenso, Perkins and Williamon (2018), all reported that individuals with high levels of wellbeing perform better at work, cope better with work place stress, have more positive workplace relationships, are more cooperative with their colleagues and are more satisfied with their jobs.

Theoretical framework: PERMA wellbeing

Leading researcher in positive psychology, Seligman (2012) stated that wellbeing can be defined as a construct which includes the elements of positive emotion, engagement, positive relationships, meaning and accomplishment, which he termed 'PERMA'. Within the PERMA model, Seligman (2012) proposed that positive emotion is the subjective measure of happiness and life satisfaction, and engagement is the subjective measure of being highly absorbed in a task. Positive relationships are relationships with others which support wellbeing, and meaning is the subjective experience of belonging to, or serving something which you believe is bigger than yourself. Accomplishment refers to experiencing achievement or success. High PERMA is considered to be a state of optimal wellbeing, which is termed 'flourishing' (Seligman, 2012).

Each of the five PERMA elements have historically been researched individually, and have each demonstrated a relationship with individual subjective wellbeing. To illustrate, the importance of positive emotions for happiness and wellbeing is a key element in the *Authentic Happiness Theory* (Seligman, 2002) and the *Broaden and Build Theory* (Fredrickson, 2004). So too, positive relationships or social support are core concepts within multiple theories, most predominantly the *Need to Belong Theory* (Baumeister & Leary, 1995) and *Self-Determination Theory* (Deci & Ryan, 1985).

Researchers have tested the validity of the PERMA construct with Australian adolescents (Kern, Waters, Adler & White, 2015), adults (Iasiello, Bartholomaeus, Jarden & Kelly, 2017) and school staff (Kern et al., 2014) and showed good convergent validity with existing and reliable measures of wellbeing. Goodman, Disabato, Kashdan and Kauffman (2017) found a correlation of .98 between the *PERMA Profiler* (Butler & Kern, 2016) and Diener's (1984) subjective wellbeing model.

PERMA wellbeing in teachers

Although few studies have used the PERMA framework to examine teacher wellbeing, high levels of teacher wellbeing have been shown to have significant positive effects across a number of domains. Whilst research is scarce in this area, particularly in the

Australian context, Turner and Thielking (2019a) in their phenomenological study of Australian teacher wellbeing found that when teachers consciously used positive psychology strategies in their daily teaching practice the teachers reported feeling less stressed, more relaxed, more positive and calmer in the classroom.

Internationally, PERMA is also showing promising results in the schools' context. Kun and Gadanecz (2019) used the PERMA framework to measure teacher wellbeing in their mixed methods study of 300 Hungarian teachers' workplace happiness. They concluded that teachers' perceiving work as meaningful, engaging in positive workplace relationships and a positive overall workplace climate played important roles in teachers' perceptions of workplace happiness and wellbeing. In addition, they found that workplace happiness correlated positively with all dimensions of PERMA wellbeing, as well as with the psychological capital factors of hope, self-efficacy, resilience and optimism (Kun & Gadanecz, 2019). So too, Zeng, Chen, Cheung and Peng (2019), in a correlation analysis study of 472 Chinese secondary school teachers, showed that teacher wellbeing as measured by PERMA was positively correlated with a growth mindset, perseverance of effort and work engagement.

Teacher wellbeing, teaching practice and student learning

There is a paucity of research examining the effect of teacher wellbeing on teaching practice or on student learning. In one Australian study, Turner and Thielking (2019a) found that teachers' use of positive psychology strategies to improve their wellbeing positively affected teachers' perceptions of their teaching practice and students' learning. After using four positive psychology strategies for three weeks, teachers reported feeling more engaged with teaching, spending more one-on-one time individually with their students and being more conscious of looking for positive aspects in their students. In addition, teachers perceived that they more often sought to empower their students by giving them a greater voice in the classroom and included more student lead activities. As a result, teachers reported a perception that their students took greater ownership of their learning, worked more independently and directed their own learning more often. Teachers also reported that they had an increased focus on building relationships with their students and ensuring that classroom activities were meaningful, relevant and fun for their students, and believed that these changes were due to their conscious use of positive psychology strategies (Turner & Thielking, 2019a).

Although not using a PERMA wellbeing framework, Duckworth, Quinn and Seligman (2009), examined the influence of teacher wellbeing as measured by grit (sustaining interest in an activity over an extended period of time to reach a long-term goal), life satisfaction and optimism in novice teachers at the start of the school year against their students' academic gains at the end of the year. They found that increased teacher grit and life-satisfaction were predictive of student academic gains. Similarly, Caprara, Barbaranelli, Steca and Malone (2006) found in their study of over 2000 teachers working in Italian junior high schools, that the students of teachers who had higher wellbeing levels as measured by self-efficacy and job satisfaction, received higher final grades. Importantly,

leading Australian teacher wellbeing researcher, McCallum (2021), asserted that teacher wellbeing, teacher quality and student learning outcomes are all closely linked.

Optimising wellbeing

A review of literature reveals four positive psychology strategies that align closely with PERMA wellbeing research and that contribute to optimal wellbeing in a work environment.

The first strategy is the use of an individual's character strengths in the workplace. Character strengths are positive traits that are reflected in individuals' thoughts, feelings, behaviours and dispositions (Park, Peterson & Seligman, 2004). Researchers have found that when individuals are aware of, and use their character strengths at work, they are more likely to feel positive emotions (Schutte & Malouff, 2019), experience job satisfaction, pleasure, engagement and find meaning in their work (Miglianico et al., 2020). In addition, use of character strengths in the workplace is associated with greater wellbeing, self-esteem, vitality, and lower perceived stress (Ghielen, van Woerkom & Meyers, 2018; Wood, Linley, Maltby, Kashdan & Hurling, 2011).

Social support is the second positive psychology strategy. Social support is the functional content of relationships and may include emotional support, instrumental support and informational support (Heaney & Israel, 2008). In studies of non-school settings, social support within the workplace benefits both individuals and organisations. For example, people with strong workplace social support networks experience greater subjective wellbeing, are deemed more successful, motivated, productive, creative and cooperative (De Neve, Diener, Tay & Xuereb, 2013; Field, 2016). In addition, they experience less stress at work (Foy, Dwyer, Nafarrete & Hammoud, 2019). Social support in the workplace has also been found to be a predictor of job satisfaction and engagement (Achor, 2013; Orgambidez-Ramos & Almeida, 2017). Interestingly, it has found to be the social support that we give, rather than the social support we receive, which has the greatest effect on our wellbeing (Achor, 2012: Colbert, Bono & Purvanova, 2016).

Another well-established positive psychology strategy is peoples' work-related attitudes. Researchers have found that individuals who find meaning in their work report increased workplace motivation and wellbeing (Damásio, de Melo & da Silva, 2013; Steger, Dik & Duffy, 2012) and greater engagement in work (Dan, Ro̧ca & Mateizer, 2020). Individuals also experience greater resilience (Platsidou & Daniilidou, 2021), improved work performance and enhanced job satisfaction (Geldenhuys, Laba & Venter, 2014).

Focusing on the positive aspects of one's work is the fourth positive psychology strategy. Research shows that much of the variance in individuals' wellbeing and happiness levels are due to the choices they make in how they perceive the world (Seligman, 2012). When individuals consciously choose to focus on what is going well for them, or the good things in their lives or at work, they become significantly happier and more optimistic (Achor, 2011; Seligman et al., 2005). Previous research has demonstrated that when people are asked to enact gratitude by reflecting on three good things each day they become happier

and have improved wellbeing, self-efficacy and job performance (Guo, Lam, Plummer, Cross & Zhang, 2020; Sexton & Adair, 2019).

Although very few studies have been conducted on teachers' application of positive psychology strategies to support their own wellbeing, Dreer (2020) found in a placebo-controlled study of 309 German school teachers, that teachers' use of positive psychology strategies resulted in increased job satisfaction and engagement, and a decrease in emotional exhaustion. Also, in a study of 89 German teachers Rahm and Heise (2019) found that teachers who used positive psychology strategies showed significant increases in their subjective wellbeing, feelings of *positive emotion and life satisfaction*, and a significant decrease in *negative emotions, emotional exhaustion,* and *perceived stress,* with the effects persisting for one month.

Previous research on teachers' application of positive psychology strategies and the effects on teachers' perceptions of wellbeing, teaching practice and students' learning is scarce. In this unique Australian study, the researchers invited teachers to apply these four evidence-based positive psychology strategies (using individual character strengths, providing social support, finding meaning in work and looking for positive aspects in the workplace) in their teaching practice for a period of thirty working days.

The study

In 2018 the researchers conducted a pilot qualitative study using phenomenological methods to examine the professional experience of five primary school teachers when they consciously used four positive psychology strategies for three weeks to improve their wellbeing at work (Turner & Thielking, 2019a; 2019b). In the context of that study, findings revealed that teachers' conscious use of these four positive psychology strategies positively affected their perceptions of their wellbeing, teaching practice and students' learning (Turner & Thielking, 2019a; 2019b).

This current research used a quantitative survey design to measure the effects of using positive psychology strategies which were qualitatively determined from the 2018 pilot, and to compare effects across a larger sample, over a longer period of time and with teachers from both the secondary and primary school sectors.

Participants and setting

Approval for the study was obtained from the university Human Research Ethics Committee, the state Department of Education and the Catholic Education Office. Typical sampling was selected as the most appropriate sampling method for this mixed method study. Typical sampling is a form of purposeful sampling in which the researcher studies sites that are "typical" of the situation (Creswell, 2005; Merriam & Tisdell, 2016). In this study, fourteen primary and secondary schools were identified as typical Australian schools. The researchers ensured that the schools chosen varied in their geographical location, size of student population and *Index of Community Socio-Educational Advantage* (ICSEA) (Australian Curriculum Assessment and Reporting Authority, 2020). Student

enrolment numbers ranged from 213 to 1598, geographic location varied from metropolitan to rural and ICSEA varied from 924 to 1126 (the average school ICSEA value is 1000).

Informed consent was obtained from the school principals and teachers. The researchers then conducted a staff professional development workshop to explain the four positive psychology strategies (using character strengths, looking for meaning, providing social support and focusing on positive aspects), and to ask the teachers to reflect on how they are already using them. Using character strengths involved teachers identifying situations at work where they could apply their individual character strengths, for example character strengths such as, leadership, forgiveness and creativity, in their everyday work practices. Looking for meaning required teachers to consider how their work makes the world a better place, and to identify aspects of their work which they find personally meaningful. Providing social support to colleagues required teachers to identify, and act on, opportunities to provide social support to their colleagues. For this study, the researchers did not specify a type of social support teachers should provide. Instead, teachers were asked to provide the type of social support which they felt was appropriate and natural to them. Focusing on positive aspects involved the teachers reflecting on 'three good things' each day to build their level of positive emotions at work.

A core component of the research study was the intentional use of the strategies for thirty working days. After explaining the four strategies, participants were asked to share their understanding through the provision of examples. Through this discussion the researchers were able to ensure the participants understood the four strategies.

Teachers were then invited to participate in the research project which involved consciously observing and reflecting on how they are already using these strategies as well as looking for new opportunities to use these strategies during the following thirty working days. Teachers were asked to complete an online questionnaire after three weeks and again after six weeks of using the four positive psychology strategies. Two hundred teachers consented to participate in the study, of these, 119 participants responded to the online questionnaires. Data collection occurred between July and November 2019. Most of the teachers who responded to the online questionnaires were aged between 30 and 59 (69.8%) and had been teaching for between 5 and 20 years (53%). Most of the participating teachers taught secondary classes (65.9%). See Table 1, participant demographics.

Data collection and analysis

In developing the survey instrument, questions were adapted directly from the findings of the 2018 pilot study to quantitatively measure the effects of using positive psychology strategies which were qualitatively determined from the 2018 pilot. In addition, to determine if these findings were replicable with a larger participant group, across a longer period of time and with teachers from both the secondary and primary school sectors.

Table 1: Participant demographics (N=119)

		Percent
Age	22 - 29	26.1
	30 - 39	21.0
	40 - 49	24.4
	50 - 59	24.4
	60 or over	4.2
Time spent teaching	Less than 5 years	21.8
	5 - 10 years	26.1
	11 - 20 years	26.9
	Over 20 years	25.2
Year level taught	Preparatory, year 1 or year 2	29.2
	Years 3, 4, 5, or 6	38.3
	Years 7, 8, 9 or 10	41.7
	Year 11 or 12	24.2

Note: as some of the schools catered for students from Preparatory to Year Twelve, some teachers taught across both primary and secondary levels, so the 'Year level taught' total is greater than 100%.

The researchers developed the 'Teacher wellbeing, teaching practice and student learning' survey instrument for this study based on the findings of Turner and Thielking (2019a). Care was taken in designing the survey questions to ensure that they were not leading (suggesting a certain answer), loaded (emotionally charged), double barrelled (two questions in a single item) or used double negatives (Johnson & Christensen, 2008). The rating scales used for participant responses had a limited number of mutually exclusive responses (no overlap) and exhaustive responses (a category for all legitimate responses) (Johnson & Christensen, 2008).

To reduce variability, and to control for individual differences, a change in teachers' perceptions of their wellbeing, teaching practice and student learning after using the four positive psychology strategies was determined using a repeated measure design. A paired sample t-test was conducted with data from participants who completed the items at both week 3 and week 6.

The survey comprised demographic questions along with 24 Likert-type items requiring responses on a 5-point scale. In the first section, 'teacher wellbeing', there were four questions requiring responses on 5-point scales from 'Not like me at all' to 'Very much like me'. In the second section, 'teaching practice', there were fourteen questions requiring responses on a 5-point scale from 'Not like me at all' to 'Very much like me'. In the third section, 'student learning', there were six questions requiring responses on a 5-point scale from 'Never' to 'Almost always'. The questions can be seen in Table 2. Teacher Responses Week 3 and Week 6.

Scores were summed to give a total for each subscale and the entire scale. Theoretical scores ranged from 24 to 120 for the entire scale, 4 to 20 for teacher wellbeing, 14 to 70 for teaching practice, and 6 to 30 for student learning. Higher scores corresponded with

teachers' perceptions of greater wellbeing, positive change in teaching practice and improvement in student learning.

The mean and standard deviation were also calculated for each question. The internal consistency was excellent with Cronbach's alpha being >.90 pre-test and post-test for all the subscales, and the entire teacher wellbeing and teaching practice survey. While the survey is theoretically driven, the validity of the scale is unknown. A power analysis indicates that there is enough power within this sample for an 80% chance of detecting a moderate effect size of p = .50.

Findings and discussion

The aim of this study was to quantitatively measure the effects of using positive psychology strategies which were qualitatively determined from the 2018 pilot, and to compare effects across a larger sample, over a longer period of time and with teachers from both the secondary and primary school sectors. Table 2 shows the mean and standard deviation of participant's paired responses at week 3 and at week 6 to each of the items in the teacher wellbeing, teaching practice and student learning survey. In addition, the week 3 and week 6 total mean, standard deviation and *p* value for each data set is shown. Overall teacher responses to the individual items related to teacher wellbeing, teaching practice and student learning revealed a teacher-perceived improvement across all of these areas.

Table 2: Comparison of teacher responses in Week 3 and Week 6

	Week 3		Week 6		
	M	SD	M	SD	*p*
Since using the four positive psychology strategies, I am calmer in the classroom	3.79	0.69	4.21	0.59	
Since using the four positive psychology strategies, I am more positive at work	3.82	0.83	3.97	0.63	
Since using the four positive psychology strategies, I am more relaxed at work	3.50	0.83	3.82	0.58	
Since using the four positive psychology strategies, I am less stressed at work	3.53	0.90	3.82	0.58	
Total teacher wellbeing (n=34)	**14.73**	**2.72**	**15.79**	**1.88**	**.038**
Since using the four positive psychology strategies, I am more consciously looking for positive aspects in my students	4.15	0.86	4.21	0.64	
Since using the four positive psychology strategies, I am giving the students more positive feedback about their work	4.00	0.78	4.18	0.80	
Since using the four positive psychology strategies, I am more engaged with teaching	4.00	0.74	4.00	0.70	
Since using the four positive psychology strategies, I have become more conscious of the needs of my students such as the need to have a break, or more time to complete their work	3.88	0.77	3.82	0.90	

Since using the four positive psychology strategies, I have focused more on making my lessons deeper and more meaningful, engaging and enjoyable for students	3.15	0.86	3.91	0.51	
Since using the four positive psychology strategies, I have spent more one-on-one time individually with my students	3.74	0.93	4.00	0.82	
Since using the four positive psychology strategies, the quality of my lessons has improved	3.68	0.77	3.88	0.64	
Since using the four positive psychology strategies, I have developed better relationships with my students	3.65	0.81	3.97	0.72	
Since using the four positive psychology strategies, I understand my students better	3.62	0.78	3.97	0.63	
Since using the four positive psychology strategies, I have more often included student's ideas, feedback and interests into my lessons	3.71	0.91	3.68	0.88	
Since using the four positive psychology strategies, I have been surprised at the work which my students were able to produce independently	3.44	0.89	3.50	0.96	
Since using the four positive psychology strategies, my classroom has become more of a partnership between the students and myself, that is, I give my students greater voice in the classroom	3.44	0.89	3.50	0.90	
Since using the four positive psychology strategies, I have included more student lead activities	3.29	0.84	3.29	0.91	
Since using the four positive psychology strategies, I have focused less on the set curriculum	3.15	0.86	3.35	1.01	
Total teaching practice (n=34)	**51.56**	**7.63**	**53.26**	**7.40**	**.167**
Since using the four positive psychology strategies, my students have been calmer, more engaged with learning	3.64	1.06	3.74	0.96	
Since using the four positive psychology strategies, my students have demonstrated improvement in their work and confidence	3.58	0.90	3.91	0.90	
Since using the four positive psychology strategies, my students have completed more work.	3.55	1.09	3.79	0.95	
Since using the four positive psychology strategies, my students have worked independently more often	3.30	1.16	3.88	0.91	
Since using the four positive psychology strategies, my students have taken greater ownership of their learning	3.21	1.05	3.88	0.84	
Since using the four positive psychology strategies, my students have directed their own learning more often	3.15	1.03	3.50	0.83	
Total student learning (n=33)	**20.42**	**5.27**	**22.67**	**4.83**	**.006**
Overall scores (n=33)	**86.85**	**13.83**	**91.73**	**12.84**	**.026**

Teachers' perceived wellbeing

There was a statistically significant positive difference in mean teacher perceived wellbeing scores between week 3 (M = 14.73 SD =2.72, n = 34) and week 6 (M = 15.79, SD = 1.88, n = 34), $t(33)$ = 2.160, p = .038. Teachers reported that the application of positive

psychology strategies resulted in greater perceived wellbeing at week 6 in comparison to week 3.

In-depth analyses of teacher responses at week 6 to the items: I am calmer in the classroom; I am more positive at work; I am more relaxed at work; and I am less stressed at work were conducted. In particular, teachers who responded 'very like me' or 'somewhat like me'; 'neutral' and 'not much like me'; or 'not like me at all' were collated. Figure 1 shows that most teachers indicated a high degree of wellbeing following the conscious use of positive psychology strategies. The greatest improvement was seen in response to the item 'I am more positive at work' with 79.1% of respondents indicating this was somewhat/very much like them at Week 6.
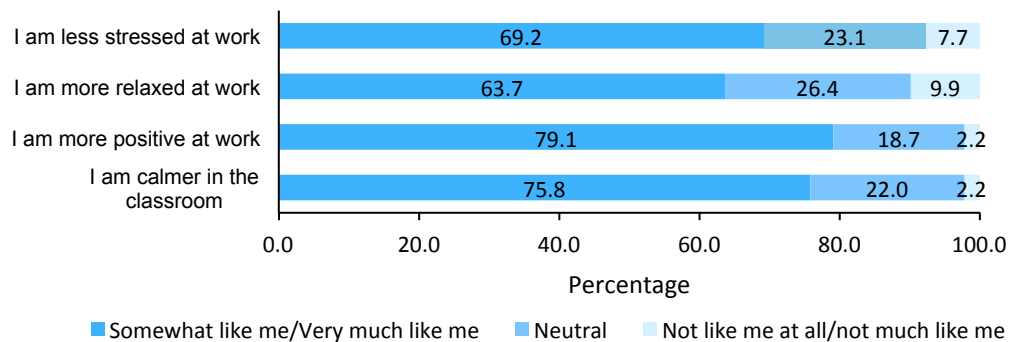
Figure 1: Percentages of three-point responses to
'Teacher wellbeing' items, week 6 (n = 91)

Teaching practice

There was no statistical difference in mean teaching practice scores between week 3 ($M =$ 51.56 $SD = 7.63$, $n = 34$) and week 6 ($M = 53.26$, $SD = 7.40$, $n = 34$), $t(33) = 1.413$, $p = .167$. Teachers did not report that the application of positive psychology strategies resulted in more or less perceived changes to teaching practice at week 6 in comparison to week 3, meaning that the impact of positive psychology strategies remained constant.

Analyses of teacher responses at week 6 to the teaching practice items show that the majority of teachers indicated a high degree of improvement in their teaching practice following the conscious use of positive psychology strategies. The greatest improvement was seen in response to the item 'I am more consciously looking for positive aspects in my students' with 85.7% of respondents indicating this was somewhat/very much like them at Week 6.
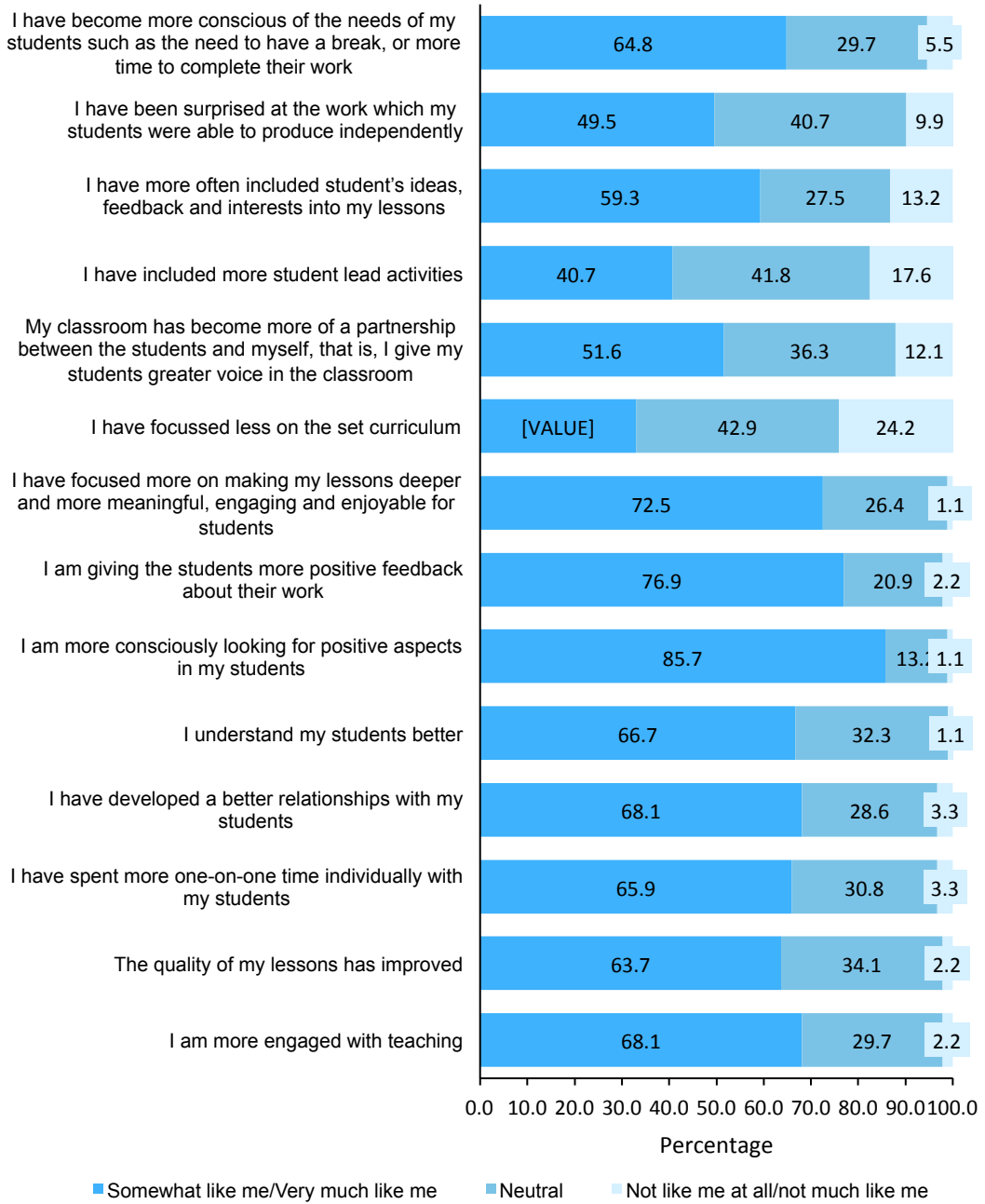
Figure 2: Percentages of three-point responses to 'Teaching practice' items, week 6
(n = 91

Student learning

There was a statistically significant positive difference in mean student learning scores between week 3 (*M* = 20.42, *SD* = 5.27, *n* = 33) and week 6 (*M* = 22.67, *SD* = 4.83, *n* = 33) scores for mean student learning, *t*(32) = 2.917, *p* = .006. Teachers reported that the application of positive psychology strategies resulted in perceived improvement in students' learning at week 6 in comparison to week 3.

Responses at week 6 to the teacher perception of student learning items shows that the majority of teachers indicated a high degree of improvement in their perception of student learning following the conscious use of positive psychology strategies. The greatest improvement was seen in response to the item 'My students have demonstrated improvement in their work and confidence' with 69.7% of respondents indicating this was sometimes/almost always occurring at Week 6.
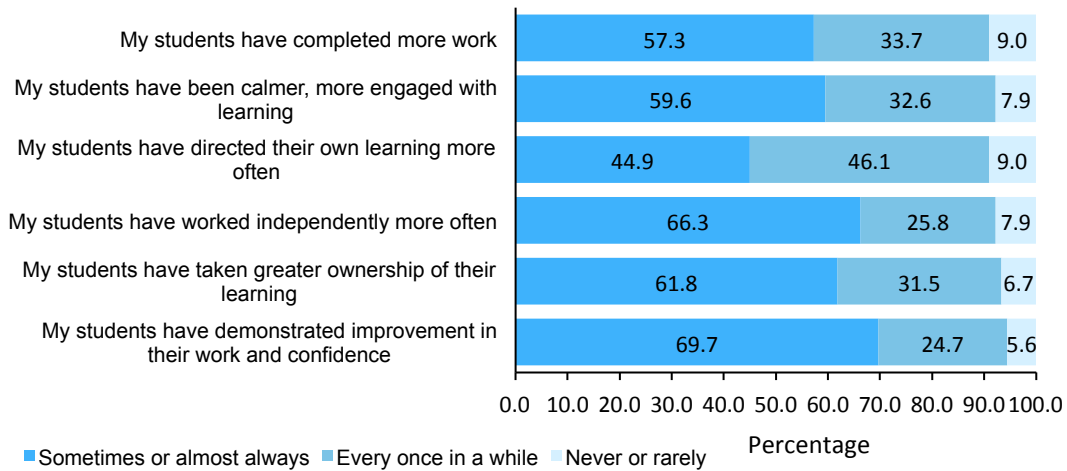

Figure 3: Percentages of three-point responses to 'Student learning' items, week 6 (n = 91)

Overall scores

When considering the data all together, there was a statistically significant positive difference between overall scores week 3 (*M* = 86.85, *SD* = 13.83, *n* = 33) and week 6 (*M* = 91.73, *SD* = 12.84, *n* = 33) mean total scores, *t*(32) = 2.339, *p* = .026. Teachers reported that the application of positive psychology strategies resulted in perceived overall improvement at week 6 in comparison to week 3.

The results revealed that the majority of teachers confirmed Turner and Thielking's (2019a) previous pilot study findings that teachers' conscious application of four positive psychology strategies resulted in teachers' reporting improved perceived wellbeing, teaching practice and students' learning three weeks after consciously applying the strategies in their daily professional practice. In addition, this study extends the pilot

findings by demonstrating that these improvements are consistent across a larger participant group, including teachers from both secondary and primary schools, and that teacher's perception of improvement in their subjective wellbeing and students' learning continued to increase between weeks 3 and weeks 6 after they initially began using the four positive psychology strategies. Also, teachers reported that the impact of positive psychology strategies remained constant between weeks 3 and weeks 6 with regard to teaching practice.

Although few in number, previous studies have also indicated that teachers' use of positive psychology strategies improves their perceptions of wellbeing. Wessels and Wood's (2019) action research study of South African rural primary school teachers, found that the teacher participants experienced improvement in their perceived wellbeing as a result of using positive psychology strategies. Kun and Gadanecz (2019) in their study of 300 Hungarian teachers' workplace happiness concluded that optimising traits such as hope, self-efficacy, resilience and optimism through the use of positive psychology strategies may be one of the most effective ways to enhance teachers' workplace wellbeing.

There is a paucity of research on teachers' application of positive psychology strategies and the effects on the teachers' perceptions of resultant change in their pedagogical practice and students' learning. The findings from this study and Turner and Thielking's (2019a) study are unique. Further research is required to confirm and better understand these findings.

Limitations

Limitations of this study include the short time frame and small number of participants. This research was conducted in schools in one Australian state, therefore findings cannot be generalised to the national population of teachers; however, findings may be applicable in other similar contexts. Further large scale, national and international studies, in a variety of school contexts and which run over a longer period of time are recommended.

Also, participants in this study self-reported which may cause problems with validity as participants may not be honest, may lack introspective ability or may misunderstand the questions (Barker, Elliott & Pistrang, 2002). Another limitation of this study was the lack of a control group which means there is an inability to account for the degree of variance that using the positive psychology strategies may have contributed to teachers' experiences, over and above other factors, such as ideas and constructs already present in participants' minds, for example, social constructivism and student-centred learning. In addition, systemic issues which may impact on teacher wellbeing were not addressed, or accounted for, in this study.

Due to the limited number of participants who completed the survey at both week 3 and week 6, a further limitation of this study is that there was insufficient data available to enable a factor analysis and validation of the survey. However, the internal consistency

was excellent with Cronbach's alpha being >.90 pre-test and post-test for all the subscales, and the entire scale. It is recommended that future studies include validation of the 'Teacher wellbeing, teaching practice and student learning' survey.

Finally, it should be noted that further research is required to objectively measure the subjective changes reported in this study. It is recommended that future research in this field should include qualitative and quantitative methods to facilitate greater understanding of the actual effect on teachers' wellbeing, pedagogical practice and students' learning when teachers use positive psychology strategies to improve their wellbeing. Future studies could also include student perceptions of changes in their learning and empirical measurement of teacher wellbeing, teaching practices and engagement and student learning outcomes.

Conclusion

This research used a quantitative survey design to determine if the findings from the Turner and Thielking's (2019a) pilot study were replicable across a longer period of time, with a larger participant group of teachers and with teachers from both the secondary and primary school sectors. This study supported previous findings by Turner & Thielking (2019a, 2019b) and demonstrated that teachers' perceived that their wellbeing, pedagogical practice and student learning was positively enhanced through their application of positive psychology strategies.

The findings of this study have implications for future research and in informing changes to organisational and pedagogical practices which are supportive of teacher wellbeing. This may include providing teachers with sufficient time to engage in wellbeing programs and the implementation of programs that utilise positive psychology strategies in the teaching context. The application of positive psychology strategies to improve teacher wellbeing has rarely been implemented and studied (Dreer, 2020), and this study makes a valuable contribution to a field in which there is a paucity of research.

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