

Measuring PERMA+ in South Australia, the State of Wellbeing: A Comparison with National and International Norms

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Abstract

In 2012 Martin Seligman recommended that South Australia take a whole-state approach to measuring and building the wellbeing of its citizens; to become the State of Wellbeing. This recommendation inspired many actions across South Australia, including the establishment of the SAHMRI Wellbeing and Resilience Centre, and substantial efforts in the education system, organizations, and government policy. This study compares the wellbeing of a large South Australian sample to samples from Australia and New Zealand, the United Kingdom, the United States, and a Global sample. Findings indicated that South Australian levels of wellbeing were higher than all other samples, with substantially higher scores for the components of Relationships, Positive Emotion, and Meaning. In addition, wellbeing was not associated with age or level of disadvantage. This study presenting South Australian norms suggests encouraging results from a systematic effort in South Australia to become the State of Wellbeing.

Keywords

PERMA+, wellbeing, PERMA, South Australia, and Seligman

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During his term as an Adelaide “Thinker in Residence”, Martin Seligman inspired South Australia to become the “first political unit in the world to deliberately measure and build the wellbeing of all citizens to reduce mental illness, increase resilience, and enable every citizen to flourish” - in short, to become the ‘State of Wellbeing’ (Seligman, 2013, p. 10). This idea, championed by the Premier of South Australia, Jay Weatherill, led to the launch of the Wellbeing and Resilience Centre (WRC) in 2015, a hybrid non-for-profit organization and research institute, housed within the Mind and Brain Theme at the South Australian Health and Medical Research Institute (SAHMRI).

In two years, the WRC has focused on wellbeing and has made inroads into building the State of Wellbeing, primarily through large-scale measurement and intervention projects aimed at building the skills and levels of wellbeing and resilience of participants. In South Australia, the WRC has worked across a range of contexts, such as the education system, at-risk youth, private businesses, large state and local government organizations, universities, transitioning workforces, and healthy ageing and the aged-care sector. With knowledge translation as the focus, staff of the WRC have presented in national and international wellbeing conferences, and in 2016 hosted the 5th Australian Positive Psychology Conference in Adelaide, South Australia. The WRC has also formed a range of international relationships and partnerships, most notably with TechWerks Pty Ltd (USA), TecMillenio University (Mexico), What Works Wellbeing (UK), H-lab (China), and Tsinghua University (China).

Throughout his residency in South Australia (Seligman, 2013), Seligman conducted a significant consultation with a diverse range of wellbeing stakeholders across the state. This encompassed over 50 meetings conducted with schools, psychologists, teachers, parents, public servants, principals, psychiatrists and large community events. Over 14,000 South Australians attended events and conferences hosted by Seligman, and learnt about positive psychology, the science of wellbeing and resilience, and the potential for the world’s first State of Wellbeing.

Seligman advocated his newly developed PERMA model (Seligman, 2012) as a guiding framework, which is based on a dashboard of five domain indicators of wellbeing; Positive emotion (P), Engagement (E), Relationships (R), Meaning (M) and Accomplishment (A). More specifically these components are: Positive emotion, such as gratitude and hope; Engagement in tasks that challenge individual strengths and produce ‘flow’ (Csikszentmihalyi & LeFevre, 1989); positive Relationships, such as those with family, friends and colleagues; Meaning derived from being a part of, and contributing to, something greater than that possible as an individual; and Accomplishment of rewarding tasks (Seligman, 2012). Previous research has indicated that high levels of each of the components of PERMA have been shown to protect against negative emotions (Garland et al., 2010), improve resilience (Tugade & Fredrickson, 2004), reduce depression (Seligman, Steen, Park, & Peterson, 2005), improve life satisfaction (Kashdan, Mishra, Breen, & Froh, 2009), protect against physical illness (Pressman & Cohen, 2005), and lower levels of stress (Cohen & Wills, 1985).

Considering the significant overlap between models of wellbeing and flourishing (Hone, Jarden, Schofield, & Duncan, 2014), the WRC also assessed the face validity and ‘marketability’ to the public when selecting a framework of wellbeing. Overall, the PERMA model of wellbeing was well received in South Australia, mainly because of its evidence-based underpinnings, its conceptual clarity, and for the notion that skills of PERMA can be learnt and built. Seligman also emphasised the importance of

measurement, with his final report recommending measurement of wellbeing as a vital component of building the State of Wellbeing. The rationale for such a recommendation being that measurement provides a statement of values, captures population interest, provides leverage for policy change, and informs evaluations of interventions (Jarden & Jarden, 2016; Seligman, 2013; Weijers & Jarden, 2013). With respect to measuring the State of Wellbeing, Seligman recommended using a measure that could be mapped directly to PERMA, and that could include measures already in use or under development in South Australia.

Accordingly, the WRC adopted the PERMA Profiler (Butler & Kern, 2016) as the primary measurement tool for their approach to the measurement and evaluation of wellbeing at scale. The 23-item PERMA Profiler questionnaire includes 15 items related to Seligman's PERMA model, with 8 additional items – one assessing overall wellbeing, one that assesses loneliness, three negative affect items that, respectively, assess sadness, anger and anxiety, and three health-related questions. In addition to the PERMA Profiler, the WRC have added a range of brief measures for some of the additional key drivers of wellbeing, in particular, optimism, physical activity, nutrition, and sleep (Carver, Scheier, & Segerstrom, 2010; Oddy et al., 2009; Ortega, Ruiz, Castillo, & Sjöström, 2008; Roberts, Roberts, & Duong, 2009). In combination this assessment battery is referred to as the 'PERMA+' model, where the '+' (or 'plus') elements refer to elements strongly correlated to resilience and psychological wellbeing outside of Seligman's wellbeing model: optimism (Seligman, 2006), physical activity (Hyde, Maher, & Elavsky, 2013), nutrition (Dalton & Logomarsino, 2014), and sleep (Pilcher, Ginter, & Sadowsky, 1997). The assessment methodology also allows for any additional cohort-specific drivers or dampeners of wellbeing, such as social support in aged groups (Siedlecki, Salthouse, Oishi, & Jeswani, 2014), stress in organisations (Cohen, Kamark, & Mermelstein, 1983), or peer relations in young people (Dishion, Kim, Stormshak, & O'Neill, 2014) as just some examples.¹

As a first step the PERMA Profiler was included into a representative South Australian survey with the intention of creating a baseline measure of wellbeing, allowing the WRC to compare specific cohorts against South Australian norms, assess change trends in wellbeing in South Australia overtime, unravel the specific social determinants of wellbeing in South Australia, and compare the wellbeing of South Australia to other Australian states and international data. In the following we present the baseline measurement of PERMA in South Australia compared to Australian and international norms. The intent was for PERMA+ to serve as both measure and social meme conveying wellbeing, both enhancing understanding and supporting wellbeing at scale, similar to the Slip Slop Slap health promoting message in the successful Australian anti-skin cancer campaign (Montague, Borland, & Sinclair, 2001).

Method

Participants

The sample consisted of 3,047 South Australian adults over the age of 18 (1180 men, 1867 women, Mage = 55, SD = 19.49). Participants were selected from South Australian Statistical Areas Level 1. From these areas, a starting point was randomly selected, and using a predetermined selection process

based on a ‘skip pattern’ of every fourth household, 10 dwellings were chosen. Only one individual was included per household, and that participant was the person who was last to have their birthday in that household.

Measures

Wellbeing. Wellbeing was measured using the PERMA Profiler (Butler & Kern, 2016), which uses three items for each of the five domains. For example, a Positive emotion item is “In general, how often do you feel joyful?”, and respondents answer using a 0 (Never) to 10 (Always) response scale. Demographic information was collected which included age, gender and postcode.²

Data analyses

Overall wellbeing is calculated as the average of the main 15 PERMA items and the overall happiness. Postcode was used to match participants with the Australian Bureau of Statistics’s Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) to gain a measure of socio-economic status (available at Australian Bureau of Statistics, 2017b). All statistical analysis was performed using R statistical software (v3.3.3).

Procedure

Participants completed the Health Omnibus Survey (HOS) via face-to-face interview conducted by Harrison Research (Harrison Research, 2017). Interviews were conducted from 6 September 2016 to 9 December 2016. The HOS questionnaire (composed of a total of 156 items) and methodology were approved by the University of Adelaide Human Research Ethics Committee. Non-identifiable data were provided to the WRC for analysis.

Results

Unweighted norms

Table 1 summarizes the unweighted descriptive information for the South Australian (SA) sample. See Appendix 1 for more detailed unweighted descriptive information, and Appendix 2 for weighted descriptive information.

Comparison of South Australian norms to other datasets

To examine the prevalence of wellbeing, as measured by the PERMA Profiler, we compared the South Australian data with Butler and Kerns (2016) global norms ($n = 39,154$) and samples from Australia/New Zealand ($n = 4,205$)³, the United States ($n = 18,408$), and the United Kingdom ($n = 2,317$). We also compared against a South Australia dataset where paper-based and online self-report methods were used to collect the data ($n = 1,972$). Effect sizes were calculated to investigate the differences between these samples; results are displayed in Table 3 and Figure 1.

Note that the South Australian HOS data were collected via face-to-face interviews, in contrast to the traditional online and paper-based self-report methods. To understand the potential impact of collecting wellbeing data using face-to-face methods a second sample of South Australians was

included in the analysis which used paper-based and online methods to collect wellbeing data. These data are titled “South Australia Written” in Table 3 and Figure 1.

Table 1. Unweighted descriptive information for the South Australian sample

	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>Min</i>	<i>25th</i>	<i>50th</i>	<i>75th</i>	<i>Max</i>
Full Sample									
Positive emotion	3008	7.29	7.67	1.80	0.00	6.33	7.67	8.67	10.00
Engagement	3000	7.14	7.50	1.82	0.00	6.33	7.50	8.33	10.00
Relationships	2994	7.89	8.33	1.94	0.00	7.00	8.33	9.33	10.00
Meaning	2986	7.61	8.00	1.86	0.00	6.67	8.00	9.00	10.00
Accomplishment	2977	7.36	7.67	1.77	0.00	6.67	7.67	8.67	10.00
Overall wellbeing	2910	7.50	7.88	1.53	0.88	6.81	8.00	9.00	10.00
Happiness	3026	7.85	8.00	1.85	0.00	7.00	8.00	9.00	10.00

Note. Note that the 50th percentile is the Median.

The psychometric properties of the PERMA scale

The PERMA Profiler demonstrates acceptable psychometric properties (Table 2). Of note are the low internal consistency scores seen for the Engagement and Accomplishment domains.

Regarding the components of PERMA, and in the Relationship domain, the South Australian HOS sample had a higher mean score than all other samples ($M = 7.89$, $SD = 1.94$). In comparison to the South Australian HOS sample, other samples had a moderate to high effect size (all effects reported are Cohen’s d); the South Australia Written sample ($M = 7.18$, $SD = 1.98$, $d = .36$), the United States ($M = 7.02$, $SD = 2.17$, $d = .42$), the Global sample ($M = 6.90$, $SD = 2.15$, $d = .48$), Australia/New Zealand ($M = 6.90$, $SD = 2.12$, $d = .49$), and the United Kingdom ($M = 6.82$, $SD = 2.16$, $d = .52$).

Table 2. Psychometric properties of the PERMA profiler

	Positive Emotion	Engagement	Relationships	Meaning	Accomplishment	Overall
Cronbach’s α	.88	.70	.78	.87	.74	.94
Guttman’s λ_6	.83	.61	.73	.82	.70	.95
Minimum split half (β)	.77	.63	.60	.77	.73	.88
Maximum Split Half λ_4	.79	.66	.77	.79	.74	.96

The next largest difference was with Positive Emotion where a comparison of mean Positive Emotion scores revealed that the South Australian HOS sample scored the highest in Positive Emotion ($M = 7.29$, $SD = 1.80$). A calculation of effect size indicates a moderate difference between the South Australian HOS sample and all other samples; the United States ($M = 6.83$, $SD = 1.98$, $d = .24$), the South Australia Written sample ($M = 6.82$, $SD = 1.72$, $d = .27$), the Global sample ($M = 6.69$, $SD = 1.97$, $d = .32$), Australia/New Zealand ($M = 6.68$, $SD = 1.94$, $d = .33$), and the United Kingdom ($M = 6.57$, $SD = 1.99$, $d = .38$).

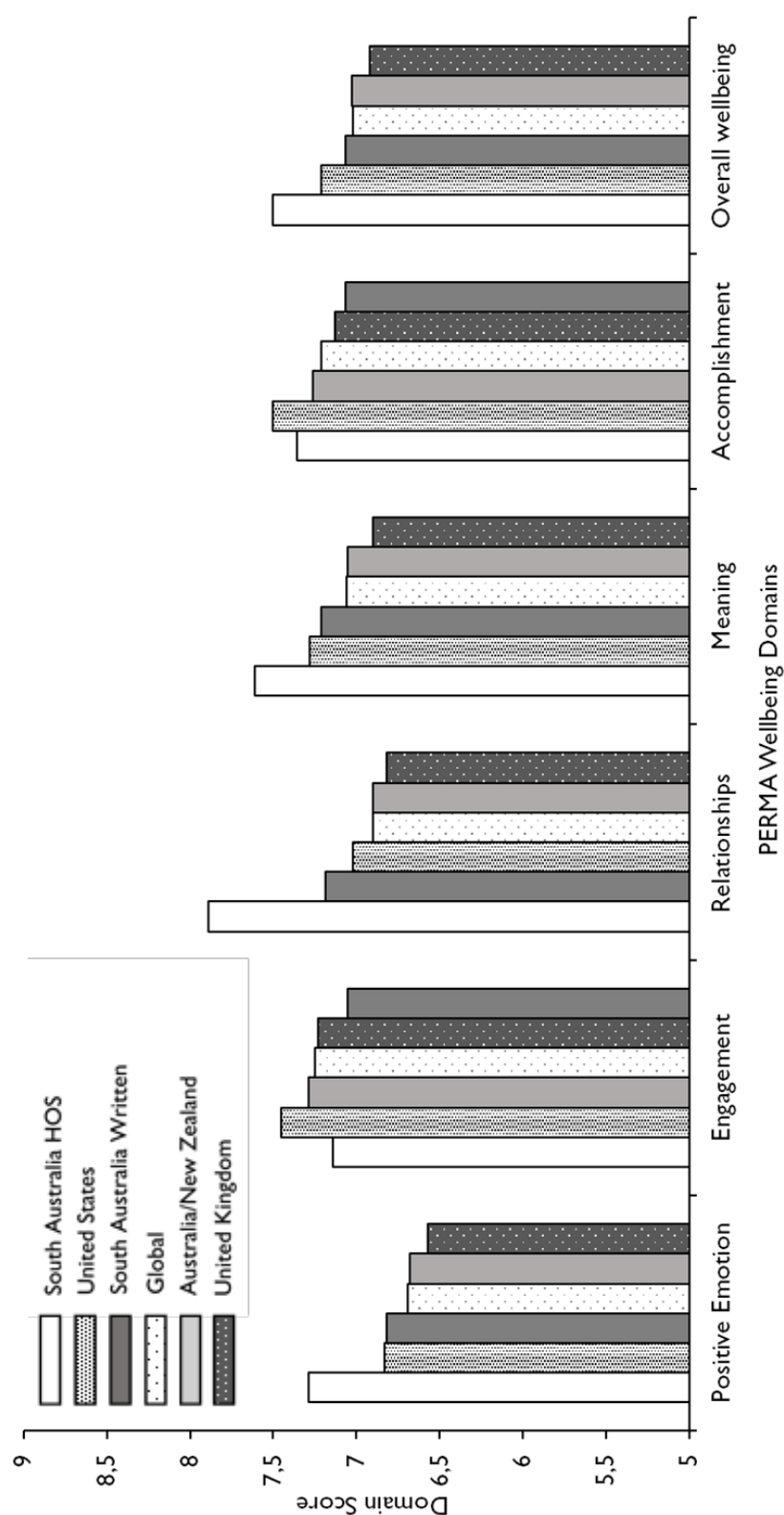


Figure 1. A comparison between six samples on the five PERMA wellbeing domains

Next the South Australian HOS sample had the highest mean score in the domain of Meaning ($M = 7.61$, $SD = 1.86$). Comparison between the South Australian HOS sample and all other samples revealed a moderate effect size; the United States ($M = 7.28$, $SD = 2.19$, $d = .16$), the South Australian Written sample ($M = 7.21$, $SD = 1.80$, $d = .22$), the Global sample ($M = 7.06$, $SD = 2.17$, $d = .27$), Australia/New Zealand ($M = 7.05$, $SD = 2.12$, $d = .28$), and the United Kingdom ($M = 6.90$, $SD = 2.22$, $d = .35$).

Regarding the Accomplishment domain, the South Australian HOS sample had the second highest mean score ($M = 7.36$, $SD = 1.77$). The United States sample had the highest mean score for Accomplishment with a small effect size ($M = 7.50$, $SD = 1.74$, $d = -.08$). In general, a small difference in mean and effect size was observed in comparison between the South Australian HOS sample and all other samples; Australia/New Zealand ($M = 7.26$, $SD = 1.74$, $d = .06$), the Global sample ($M = 7.21$, $SD = 1.78$, $d = .08$), the United Kingdom ($M = 7.13$, $SD = 1.75$, $d = .13$), and the South Australian Written sample ($M = 7.06$, $SD = 1.51$, $d = .18$).

For the last PERMA component, Engagement, the South Australian HOS sample scored the second lowest in the domain of Engagement ($M = 7.14$, $SD = 1.82$). In comparison, the United States ($M = 7.45$, $SD = 1.68$, $d = -.18$) scored the highest followed by Australia/New Zealand ($M = 7.29$, $SD = 1.68$, $d = -.09$), the Global sample ($M = 7.25$, $SD = 1.71$, $d = -.06$), and the United Kingdom ($M = 7.23$, $SD = 1.73$, $d = -.03$). The South Australian Written sample ($M = 7.05$, $SD = 1.51$, $d = .05$) scored slightly lower than the South Australian HOS sample. When compared to the South Australian HOS sample, all effects sizes were small to negligible.

Lastly, the South Australia HOS sample had the highest mean score in overall wellbeing ($M = 7.50$, $SD = 1.53$). A small to medium effect size was observed between the South Australia HOS sample and all other samples; the United States ($M = 7.21$, $SD = 1.66$, $d = .18$), the South Australian Written sample ($M = 7.07$, $SD = 1.44$, $d = .29$), Australia/New Zealand ($M = 7.03$, $SD = 1.62$, $d = .30$), the Global sample ($M = 7.02$, $SD = 1.66$, $d = .30$), and the United Kingdom ($M = 6.92$, $SD = 1.67$, $d = .36$).

The relationship between wellbeing and demographic indicators in South Australia

The observed correlation between the five PERMA domains of wellbeing, age, and the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) are displayed in Table 4.

No correlations greater than .09 are observed between the PERMA wellbeing domains and IRSAD, however all were statistically significant. Similarly, only small correlations are observed between the PERMA wellbeing domains and age, with the strongest correlation between Engagement and age ($r = -.14$).

Discussion

Using a large representative South Australian sample, we have reported the first set of norms for PERMA in South Australia. These norms will form a baseline measure of wellbeing, according to Seligman's PERMA model, for the State of Wellbeing, which will allow the monitoring of wellbeing over time.

Results from Butler and Kern (2016) allowed for comparisons of these South Australian PERMA norms, with data from Australia and New Zealand, the United States, the United Kingdom, Global norms and a South Australian sample using online and paper-based methods. Our findings suggest that, compared to other geographical locations, South Australia recorded higher levels of overall wellbeing, with greater prevalence of Relationships, Positive Emotion, and Meaning indicators. As there is scant literature investigating the relative difference in wellbeing between populations, it is difficult to interpret the practical significance of the effect sizes presented here. However, reporting these results may establish a basis for future research to further investigate the differences in wellbeing among populations and establish the practical differences that relate to statistical significance among and across populations.

Table 4. Means, standard deviations, and correlations of PERMA domains, IRSAD and age

Variable	M	SD	1	2	3	4	5	6	7	8
1. Positive Emotion	7.29	1.80								
2. Engagement	7.14	1.82	.64**							
3. Relationships	7.89	1.94	.65**	.48**						
4. Meaning	7.61	1.86	.80**	.62**	.60**					
5. Accomplishment	7.36	1.77	.67**	.61**	.49**	.76**				
6. Happiness	7.85	1.85	.86**	.57**	.67**	.75**	.61**			
7. Overall Wellbeing	7.50	1.53	.90**	.79**	.78**	.90**	.83**	.85**		
8. IRSAD	971.50	71.87	.08**	.06**	.05*	.08**	.09**	.04*	.08**	
9. Age	54.67	19.49	-.02	-.14**	.01	-.06**	-.09**	.01	-.06**	-.02

Note. * indicates $p < .05$; ** indicates $p < .01$. M and SD are used to represent mean and standard deviation, respectively. "Overall wellbeing" is the average of the main 15 PERMA items and the overall happiness item.

These findings give support to the notion that South Australia is succeeding in becoming the State of Wellbeing. Although our findings do not allow inference of causation, one reason for increased levels of wellbeing may be due to the 'wellbeing literacy' in South Australia - as a result of the Seligman residency (Seligman, 2013). Since the residency, there have been concerted broad efforts to improve wellbeing across the state, especially in the education system, private organisations, local and state government policy, and these efforts may well be reflected in the findings presented here. For example, positive education is becoming well accepted throughout both the private and public education system in South Australia. Many South Australian educators have participated in wellbeing and resilience training from providers such as the University of Pennsylvania, Geelong Grammar School, TechWerks LLC, and the WRC. Other initiatives such as Kidsmatter and MindMatters have been operating within the education system in the state for over 15 years (Wyn, Cahill, Holdsworth, Rowling, & Carson, 2000) with wellbeing policy and practice in the public education system continuously evolving over this time. Communities of positive education practice have now developed through active metro and regional coalitions of principals and the establishment of the South

Australian chapter of the Positive Education Schools Association (PESA), which regularly hosts events and practical workshops to upskill school staff in positive psychology skills and relevant practices in education. Finally, the South Australian Department for Education and Child Development has launched its Wellbeing for Learning and Life Framework (DECD, 2016) at the 5th Australian Positive Psychology Conference and has developed a measure of the wellbeing of students (Years 6-9) across the state, to be used to inform future interventions and policy change. In its third year, this measure has reached 97% of students in participating schools from all sectors. As mentioned above, the Premier of South Australia Jay Weatherill has been a champion of building wellbeing and resilience in South Australia. In addition to the establishment of the Wellbeing and Resilience Centre, the state government has developed a 'State of Wellbeing' policy and strategy which focuses on a wide range of areas such as public health, supportive infrastructure, thriving communities, positive education, and increasing connection to nature (Government of South Australia, 2017). Several local governments have committed to wellbeing, most notably the Adelaide City Council (Adelaide City Council, 2016), and the Look North project (a partnership of the Cities of Port Adelaide Enfield, Salisbury, and Playford; Government of South Australia, 2016). A South Australian Commission of Mental Health has also been recently formed to develop strategies and reforms to strengthen mental health and importantly, wellbeing, in South Australia and improve access to quality care and support (South Australia Mental Health Commission, 2016). The conceptual linking of constructs of both wellbeing and resilience, launched in the name of the WRC in 2015, is now used broadly across the society.

Adelaide, the capital of South Australia, represents over 77% of the South Australian population (Australian Bureau of Statistics, 2015) and consistently scores highly in measures of liveability and quality of life (The Economist Intelligence Unit, 2016). Such factors may also influence the high levels of wellbeing in South Australia compared to the rest of Australia. Adelaide's small relative city size and low population density (Australian Bureau of Statistics, 2016) compared to other capital cities in Australia may also play a role, as aspects such as high density have been linked to social pathologies and psychopathy (Choldin & Roncek, 1976).

Interestingly, South Australia performs quite poorly in some Australian state comparisons, such as unemployment rates (Australian Bureau of Statistics, 2017c) and psychological distress (Australian Bureau of Statistics, 2017a), which do not appear to have largely influenced the levels of wellbeing in the state. Such a result is a possible indication of the dual-continuum model of mental health (Keyes, 2005), which states that mental illness and mental health are not separate ends of the same spectrum, but exist as two related, but distinct, phenomena. In other words, although South Australian's still may struggle with high levels of unemployment and psychological distress, their levels of wellbeing remain higher than average; quite possibly because of good quality relationships, experience of positive emotion, and a sense of meaning.

Finally, wellbeing was not strongly related to age or levels of socio-economic disadvantage in this cohort. The relationship between aging and subjective wellbeing is conflicting (Steptoe, Deaton, & Stone, 2015). A U-shaped relationship between subjective wellbeing and age has been found in English speaking, high-income countries such as Australia with the lowest levels in those aged 45-54 years (Deaton, 2007). However, it is noted that this pattern is not universal, with specific populations

showing no change, increases, and decreases in wellbeing with age (Steptoe et al., 2015). Whilst there was a weak correlation between Engagement and age (correlation = -0.14), such associations were not observed in other PERMA domains, which may signify that the relationship between age and wellbeing becomes less obvious when using a multi-faceted conceptualisation of wellbeing.

Despite social disadvantage being strongly linked to mental illness and psychological distress (Enticott, Meadows, Shawyer, Inder, & Patten, 2016), it is well established that level of personal income provides only a small moderating effect in individual wellbeing, particularly in developed countries (Diener & Seligman, 2004). Povey, Boreham, and Tomaszewski (2016) found that there was a significant, but small, relationship between social disadvantage and a multi-faceted model of social wellbeing. However, it appears that using a more holistic approach (PERMA+) to measuring wellbeing may have diminished the significance of the relationship between disadvantage and wellbeing.

Limitations of this study include the use of the PERMA Profiler and the methodologies by which the data were collected. The PERMA Profiler is a relatively new tool which has not been investigated for appropriateness across various age groups or diverse cohorts. Also the discrepancy between the collection methodologies between the HOS data (face-to-face interview) and Butler and Kern's (2016) research (online survey) may have influenced the results, and the extent of the influence between these two approaches is unknown. OECD guidelines (2013) suggest that face-to-face wellbeing data collection may confer social desirability bias leading to higher reporting of subjective wellbeing. We suggest that this potential bias may be mitigated somewhat by Butler and Kern (2016) using data collected through the Authentic Happiness website (www.authentichappiness.sas.upenn.edu) where respondents are 'wellbeing seekers' who may have been more likely to have higher average levels of wellbeing than the representative and randomly selected HOS participants. In addition, and interestingly, variations were observed between the South Australian HOS sample and the South Australian Written sample indicating that the method of data collection may have an influence on the data. However, in the domains of Positive Emotion, Relationships and Meaning, both the South Australian HOS sample and the South Australian Written sample score in the top three samples in those domains. This finding indicates that there is a level of continuity between the two samples which suggests that the impact of measurement may only be amplifying the general trends seen in South Australia.

Conclusion

This study has established wellbeing norms, according to the PERMA+ model of wellbeing, for South Australia and has compared them to the prevalence of wellbeing in diverse populations. The finding that some elements of PERMA – Relationships, Meaning, and Positive Emotions - are higher in South Australia compared to Australia/New Zealand, United Kingdom, United States, and global norms supports the proposition that South Australia's efforts to systematically measure and build wellbeing, at scale, and to become the State of Wellbeing are having an impact in increasing state-wide wellbeing. The finding that neither age nor level of disadvantage are related to PERMA wellbeing indicators justifies the Wellbeing and Resilience Centre's approach to building the State of Wellbeing by working across all levels of advantage and disadvantage and across the life course.

Although the evidence suggests that South Australia has higher levels of wellbeing than other geographical locations, it is largely unclear why this is and the degree to which this difference is a result of the data collection method. Further empirical research is required to understand, a) the impact of data collection techniques on individual and aggregated wellbeing scores, b) how South Australia wellbeing compares to other developed nations, and c) the specific drivers of these wellbeing outcomes. Furthermore, this study investigated the relationship between age, socio-economic status and wellbeing and found evidence to suggest that neither age nor socioeconomic status is strongly related with levels of wellbeing. Follow up measures of wellbeing in the same individual participants will also be an important factor in understanding wellbeing trends across South Australia.

This work has introduced a range of future research directions, such as the development of a national multifaceted measure for wellbeing in Australia, understanding the appropriateness of the PERMA Profiler across age groups and diverse cohorts, and investigating the effect of social desirability bias in wellbeing research.

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Notes

¹The relationship between the PERMA Profiler and the 'plus' elements is the subject of a forthcoming publication. In addition, more recently the WRC has expanded its assessment approach to capture a greater number of drivers of wellbeing, and the context within which wellbeing sits.

²Postcode was used to match participants with the Australian Bureau of Statistics' Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) to gain a measure of socio-economic status (available at Australian Bureau of Statistics, 2017b).

³It is likely that this data includes a small proportion of South Australians. If the combined New Zealand and Australian population is 28.4 million, and the South Australian population is 1.7 million, this is likely to be approximately 2.5% of this sample, or 105 of these 4,205 individuals.

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Appendix A

Unweighted PERMA-profiler norms for South Australia

	N	Mean	Median	SD	Min	25th	50th	75th	Max
Full Sample									
Positive emotion	3008	7.29	7.67	1.80	0.00	6.33	7.67	8.67	10.00
Engagement	3000	7.14	7.50	1.82	0.00	6.33	7.50	8.33	10.00
Relationships	2994	7.89	8.33	1.94	0.00	7.00	8.33	9.33	10.00
Meaning	2986	7.61	8.00	1.86	0.00	6.67	8.00	9.00	10.00
Accomplishment	2977	7.36	7.67	1.77	0.00	6.67	7.67	8.67	10.00
Happiness	3026	7.85	8.00	1.85	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	2910	7.50	7.88	1.53	0.88	6.81	7.88	8.62	10.00
Gender: Male									
Positive emotion	1159	7.19	7.67	1.86	0.33	6.33	7.67	8.33	10.00
Engagement	1159	7.03	7.33	1.85	0.00	6.00	7.33	8.33	10.00
Relationships	1154	7.66	8.00	2.05	0.00	6.67	8.00	9.33	10.00
Meaning	1154	7.52	8.00	1.93	0.00	6.67	8.00	9.00	10.00
Accomplishment	1151	7.37	7.67	1.72	0.33	6.67	7.67	8.67	10.00
Happiness	1167	7.74	8.00	1.93	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	1131	7.40	7.75	1.59	1.06	6.70	7.75	8.50	10.00
Gender: Female									
Positive emotion	1849	7.35	7.67	1.76	0.00	6.67	7.67	8.67	10.00
Engagement	1841	7.21	7.67	1.79	0.00	6.33	7.67	8.33	10.00
Relationships	1840	8.04	8.67	1.86	0.00	7.25	8.67	9.33	10.00
Meaning	1832	7.67	8.00	1.82	0.00	6.67	8.00	9.00	10.00
Accomplishment	1826	7.36	7.67	1.79	0.00	6.67	7.67	8.67	10.00
Happiness	1859	7.92	8.00	1.79	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	1780	7.57	7.88	1.49	0.88	6.88	7.88	8.62	10.00
Age: Under 18									
Positive emotion	32	7.62	8.00	1.95	2.33	6.83	8.00	9.00	10.00
Engagement	33	7.63	7.67	1.38	4.67	6.67	7.67	8.67	10.00
Relationships	32	8.16	9.00	2.09	0.33	7.58	9.00	9.33	10.00
Meaning	32	7.47	7.67	2.27	0.00	6.67	7.67	9.08	10.00
Accomplishment	32	7.24	7.50	2.08	0.33	6.58	7.50	8.67	10.00
Happiness	33	7.97	8.00	2.27	1.00	7.00	8.00	10.00	10.00
Overall wellbeing	30	7.75	8.28	1.73	2.44	7.12	8.28	8.98	9.75
Age: 18-24									
Positive emotion	177	7.40	7.67	1.63	0.33	6.67	7.67	8.33	10.00
Engagement	177	7.57	8.00	1.66	1.00	6.67	8.00	8.67	10.00
Relationships	178	7.96	8.33	1.78	1.00	7.00	8.33	9.33	10.00
Meaning	176	7.62	8.00	1.72	0.67	6.67	8.00	9.00	10.00
Accomplishment	175	7.43	7.67	1.47	3.00	6.67	7.67	8.67	10.00
Happiness	178	7.87	8.00	1.59	1.00	7.00	8.00	9.00	10.00
Overall wellbeing	174	7.61	7.94	1.40	1.88	6.94	7.94	8.67	10.00

Age: 25-34									
Positive emotion	393	7.36	7.67	1.49	1.00	6.67	7.67	8.33	10.00
Engagement	392	7.44	7.67	1.48	0.00	6.67	7.67	8.33	10.00
Relationships	392	8.13	8.67	1.67	1.67	7.33	8.67	9.33	10.00
Meaning	393	7.82	8.00	1.58	1.33	7.00	8.00	9.00	10.00
Accomplishment	393	7.55	7.67	1.43	1.67	7.00	7.67	8.67	10.00
Happiness	393	7.95	8.00	1.50	2.00	7.00	8.00	9.00	10.00
Overall wellbeing	391	7.68	7.94	1.22	2.56	7.12	7.94	8.56	9.62
Age: 35-44									
Positive emotion	381	7.30	7.67	1.77	0.33	6.33	7.67	8.67	10.00
Engagement	382	7.19	7.67	1.72	1.33	6.33	7.67	8.33	10.00
Relationships	382	7.92	8.33	1.91	0.33	7.00	8.33	9.33	10.00
Meaning	379	7.72	8.00	1.81	0.00	6.83	8.00	9.00	10.00
Accomplishment	380	7.45	7.67	1.68	0.67	6.67	7.67	8.67	10.00
Happiness	382	7.83	8.00	1.85	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	376	7.56	7.94	1.52	1.81	6.88	7.94	8.62	10.00
Age: 45-54									
Positive emotion	436	7.17	7.67	1.80	0.00	6.33	7.67	8.33	10.00
Engagement	435	7.22	7.67	1.79	0.00	6.33	7.67	8.33	10.00
Relationships	435	7.61	8.33	2.02	0.00	6.67	8.33	9.00	10.00
Meaning	436	7.62	8.00	1.82	0.67	7.00	8.00	9.00	10.00
Accomplishment	436	7.44	7.67	1.63	1.00	6.67	7.67	8.67	10.00
Happiness	439	7.66	8.00	1.99	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	428	7.46	7.75	1.53	1.06	6.75	7.75	8.52	10.00
Age: 55-64									
Positive emotion	535	7.16	7.67	1.90	0.00	6.33	7.67	8.33	10.00
Engagement	533	7.15	7.33	1.88	0.00	6.33	7.33	8.67	10.00
Relationships	530	7.60	8.00	2.13	0.00	6.67	8.00	9.33	10.00
Meaning	537	7.48	8.00	2.06	0.00	6.67	8.00	9.00	10.00
Accomplishment	531	7.31	7.67	1.82	1.67	6.33	7.67	8.67	10.00
Happiness	538	7.71	8.00	1.96	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	520	7.38	7.78	1.66	1.06	6.67	7.78	8.56	10.00
Age: 65+									
Positive emotion	1054	7.35	7.67	1.89	0.00	6.33	7.67	8.67	10.00
Engagement	1048	6.90	7.33	1.95	0.00	6.00	7.33	8.33	10.00
Relationships	1045	8.04	8.67	1.92	0.00	7.00	8.67	9.67	10.00
Meaning	1033	7.56	8.00	1.90	0.00	6.67	8.00	9.00	10.00
Accomplishment	1030	7.24	7.67	1.96	0.00	6.33	7.67	8.67	10.00
Happiness	1063	7.97	8.00	1.85	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	991	7.47	7.81	1.59	0.88	6.69	7.81	8.62	10.00

Appendix B

Weighted PERMA-profiler norms for South Australia

	N	Mean	Median	SD	Min	25th	50th	75th	Max
Full Sample									
Positive emotion	3014	7.41	7.67	1.67	0.00	6.67	7.67	8.67	10.00
Engagement	3010	7.30	7.67	1.72	0.00	6.33	7.67	8.33	10.00
Relationships	3009	8.03	8.33	1.79	0.00	7.00	8.33	9.33	10.00
Meaning	2999	7.72	8.00	1.76	0.00	7.00	8.00	9.00	10.00
Accomplishment	2992	7.49	7.81	1.63	0.00	6.67	7.81	8.67	10.00
Happiness	3029	7.95	8.00	1.73	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	2941	7.63	7.94	1.41	0.88	7.00	7.94	8.63	10.00
Gender: Male									
Positive emotion	1479	7.35	7.67	1.71	0.33	6.67	7.67	8.67	10.00
Engagement	1479	7.26	7.67	1.72	0.00	6.33	7.67	8.33	10.00
Relationships	1476	7.88	8.33	1.84	0.00	7.00	8.33	9.33	10.00
Meaning	1472	7.65	8.00	1.81	0.00	7.00	8.00	9.00	10.00
Accomplishment	1468	7.49	7.67	1.62	0.33	6.67	7.67	8.67	10.00
Happiness	1485	7.87	8.00	1.77	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	1453	7.56	7.88	1.45	1.06	6.94	7.88	8.56	10.00
Gender: Female									
Positive emotion	1535	7.47	7.67	1.63	0.00	6.67	7.67	8.67	10.00
Engagement	1531	7.33	7.67	1.72	0.00	6.67	7.67	8.67	10.00
Relationships	1533	8.17	8.67	1.73	0.00	7.33	8.67	9.33	10.00
Meaning	1527	7.79	8.00	1.70	0.00	7.00	8.00	9.00	10.00
Accomplishment	1524	7.49	8.00	1.64	0.00	6.67	8.00	8.67	10.00
Happiness	1543	8.03	8.00	1.68	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	1489	7.69	8.00	1.37	0.88	7.06	8.00	8.68	10.00
Age: Under 18									
Positive emotion	69	7.93	8.39	1.82	2.33	7.33	8.39	9.00	10.00
Engagement	71	7.73	8.00	1.35	4.67	6.80	8.00	8.67	10.00
Relationships	70	8.27	9.00	1.99	0.33	8.00	9.00	9.33	10.00
Meaning	68	7.71	8.00	2.14	0.00	6.96	8.00	9.33	10.00
Accomplishment	68	7.41	7.67	1.96	0.33	6.67	7.67	8.67	10.00
Overall wellbeing	65	7.92	8.38	1.63	2.44	7.17	8.38	9.00	9.75
Happiness	71	8.25	9.00	2.11	1.00	7.63	9.00	10.00	10.00
Age: 18-24									
Positive emotion	397	7.46	7.67	1.53	0.33	6.67	7.67	8.33	10.00
Engagement	397	7.64	8.00	1.56	1.00	6.67	8.00	8.67	10.00
Relationships	400	8.00	8.33	1.75	1.00	7.00	8.33	9.33	10.00
Meaning	395	7.62	8.00	1.67	0.67	6.67	8.00	9.00	10.00
Accomplishment	392	7.51	7.67	1.42	3.00	6.67	7.67	8.67	10.00
Happiness	400	7.92	8.00	1.52	1.00	7.00	8.00	9.00	10.00

Overall wellbeing	389	7.66	7.94	1.34	1.88	6.94	7.94	8.63	10.00
Age: 25-34									
Positive emotion	500	7.42	7.67	1.45	1.00	6.67	7.67	8.33	10.00
Engagement	500	7.42	7.67	1.56	0.00	6.67	7.67	8.33	10.00
Relationships	500	8.19	8.67	1.58	1.67	7.33	8.67	9.33	10.00
Meaning	500	7.78	8.00	1.61	1.33	7.00	8.00	9.00	10.00
Accomplishment	500	7.55	7.75	1.46	1.67	7.00	7.75	8.67	10.00
Happiness	500	7.97	8.00	1.46	2.00	7.00	8.00	9.00	10.00
Overall wellbeing	499	7.69	7.91	1.18	2.56	7.13	7.91	8.50	9.63
Age: 35-44									
Positive emotion	467	7.36	7.67	1.69	0.33	6.67	7.67	8.67	10.00
Engagement	468	7.22	7.67	1.72	1.33	6.33	7.67	8.33	10.00
Relationships	468	8.05	8.33	1.78	0.33	7.33	8.33	9.33	10.00
Meaning	465	7.76	8.33	1.79	0.00	7.00	8.33	9.00	10.00
Accomplishment	466	7.48	7.67	1.65	0.67	6.67	7.67	8.67	10.00
Happiness	468	7.90	8.00	1.77	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	461	7.62	8.00	1.47	1.81	6.94	8.00	8.63	10.00
Age: 45-54									
Positive emotion	493	7.30	7.67	1.66	0.00	6.67	7.67	8.33	10.00
Engagement	491	7.34	7.67	1.65	0.00	6.67	7.67	8.33	10.00
Relationships	492	7.83	8.33	1.83	0.00	7.00	8.33	9.00	10.00
Meaning	493	7.77	8.00	1.68	0.67	7.00	8.00	9.00	10.00
Accomplishment	492	7.55	8.00	1.52	1.00	7.00	8.00	8.67	10.00
Happiness	495	7.85	8.00	1.84	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	486	7.59	7.88	1.40	1.06	6.95	7.88	8.56	10.00
Age: 55-64									
Positive emotion	454	7.35	7.67	1.80	0.00	6.67	7.67	8.41	10.00
Engagement	453	7.27	7.67	1.80	0.00	6.33	7.67	8.67	10.00
Relationships	452	7.85	8.33	1.94	0.00	7.00	8.33	9.33	10.00
Meaning	457	7.68	8.00	1.93	0.00	7.00	8.00	9.00	10.00
Accomplishment	453	7.47	8.00	1.70	1.67	6.67	8.00	8.67	10.00
Happiness	456	7.88	8.00	1.89	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	445	7.57	7.94	1.53	1.06	6.81	7.94	8.69	10.00
Age: 65+									
Positive emotion	633	7.47	7.67	1.77	0.00	6.67	7.67	8.67	10.00
Engagement	629	6.99	7.33	1.89	0.00	6.00	7.33	8.33	10.00
Relationships	626	8.16	8.67	1.81	0.00	7.00	8.67	9.67	10.00
Meaning	621	7.72	8.00	1.79	0.00	7.00	8.00	9.00	10.00
Accomplishment	620	7.40	7.67	1.85	0.00	6.67	7.67	8.67	10.00
Happiness	638	8.11	8.00	1.74	0.00	7.00	8.00	9.00	10.00
Overall wellbeing	595	7.60	7.88	1.49	0.88	6.90	7.88	8.69	10.00