The Six Ways to Well-Being (6W-WeB):

Assessing the Frequency of and Motivation for Six Behaviours Linked to Well-Being

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Abstract

Contextual Behavioural Science (CBS) interventions focus on activating value-consistent behaviours, yet the outcomes measured in these interventions often focus on internal states. Building on past CBS work, personal strivings research, and self-determination theory, we developed a new behaviour-focused measure of valued action, the Six Ways to Well-Being (6W-WeB). This measure captures both the specific actions individuals engage in as well as why they do so (i.e., underlying values). Participants in Study 1 (American sample; $N_1 = 1800$, 60.3% female, Age: $M = 40.9$, $SD = 13.21$), Study 2 (Australian sample; $N_2 = 855$, 47.3% female, Age: $M = 38.16$, $SD = 13.35$), and Study 3 (Australian adolescent sample; $N_3 = 518$, 100% female, Age: $M = 14.29$, $SD = 1.46$) completed the 6W-WeB and theoretically-relevant criterion measures of flourishing, psychological distress, experiential avoidance, and nonattachment. Confirmatory factor analysis supported a bifactor model, with three global factors (*behaviour engagement*, *activity importance*, and *activity pressure*), and six behaviour-specific factors (*connecting with others*, *challenging oneself*, *giving to others*, *engaging in physical activity*, *embracing the moment*, and *caring for oneself*), that was invariant across gender, age, and country of sampling. The subscales of the 6W-WeB were linked to the theoretically-relevant variables in meaningful and expected ways. Additionally, in a test of known-groups validity, the 6W-WeB successfully differentiated between participants who met criteria for high psychological distress and those who did not. The results suggest that the new measure can be a clinically relevant tool, helping CBS practitioners identify the specific behaviour domains that can promote their clients' value-consistent living.

Keywords: valued action; behaviour; motivation; well-being; questionnaire validation

The benefits of experiencing relatively high levels of positive states, such as joy, and low levels of negative states, such as anxiety, have been well established (Fredrickson, 2001; Oswald, Proto, & Sgroi, 2015). For instance, positive emotions enable individuals to be more creative, productive, and optimistic (for a review, see Lyubomirsky, King, & Diener, 2005). Logically, interventions may seek to increase positive affect and decrease unhelpful negative states, but direct attempts to change internal states can, at times, be counterproductive (Ciarrochi, Atkins, Hayes, Sahdra, & Parker, 2016). Distracting oneself from negative thoughts to improve one's mood, for instance, has been shown to reduce positive affect and increase disappointment at one's mood (Ford & Mauss, 2014). In light of these findings, Contextual Behavioural Science (CBS) interventions, such as Acceptance and Commitment Therapy (ACT), shift the focus from how individuals *feel* to what they *do* in relation to those feelings (Ciarrochi et al., 2016). Even though CBS interventions do not directly target well-being or the reduction of distress symptoms, they are useful in improving well-being and treating many mental health conditions (Hooper & Larsson, 2015). These improvements, in part, occur through increases in value-consistent behaviours (Gloster et al., 2017), which are personally meaningful behaviours that tend to be intrinsically driven and not extrinsically motivated. Since such behaviours are crucial to changes in well-being and mental health, their measurement and clinical monitoring are important goals for researchers and clinicians.

Assessing Valued Action

Valued action can be thought of as comprising two components: values (i.e., things that are personally meaningful, or 'why' individuals engage in actions) and action (i.e., 'what' an individual does to live in accordance with their values). Therefore, to gain a complete understanding of an individual's valued action, one can measure 'what' specific actions an individual engages in as well as 'why' they engage in those behaviours. Most current measures of valued action tend to assess the importance of broad life domains (e.g.,

family or work), and how successfully individuals live in value-consistent ways within these domains. They tend not to measure the specific actions that enable people to live in value-consistent ways. For instance, the Valued Living Questionnaire (VLQ) assesses how much importance an individual places on ten life domains (family, intimate relationships, parenting, friends, work, education, recreation, spirituality, community life, and physical self-care) and the extent to which they have acted in line with their values in each domain that week (Wilson, Sandoz, Kitchens, & Roberts, 2010). When used in clinical settings, such a questionnaire enables the assessment of ‘why’ a client may do things (e.g., because they highly value ‘family’), but it does not provide information about ‘what’ specifically the client may do to act in accordance with their values (e.g., have dinner with their family without turning on the television). Therefore, while current valued action questionnaires have clinical utility (e.g., Dahl, Wilson, & Nilsson, 2004), they are limited by virtue of not identifying specific actions that can be the target of behaviour-focused interventions.

This limitation may be addressed by the Personal Strivings Assessment Packet (PSAP; Emmons, 1986), a measure commonly used in the personal strivings literature. The PSAP contains an idiographic component that requires respondents to generate a list of 15 personal strivings, and a quantitative component wherein each striving is scored on several dimensions (e.g., happiness, value, commitment, and importance) as well as on five rating scales assessing the reasons (extrinsic, introjected, identified, and intrinsic motives) for each striving. Developing a questionnaire similar to the PSAP could not only allow individuals to specify exactly what behaviours they engage in (the ‘what’ of valued action), but it could also assess their reasons for engaging in each behaviour (the ‘why’ of valued action). However, the PSAP is limited in that it does not systematically encourage people to evaluate all domains of valued activity. When asked to freely list personal strivings, people may selectively focus on just some domains, such as work, academics, or health, and ignore

others, such as physical health. Additionally, the PSAP focuses on future-oriented objectives that may not translate into present-moment behaviours.

A major goal of the present study is to validate a new questionnaire that measures both the ‘what’ and the ‘why’ of valued action and addresses the limitations of the PSAP. Specifically, the questionnaire utilises evidence-based question prompts (discussed in the next section) to encourage people to reflect on the full range of life domains, not just those that are salient, while also assessing present-moment behaviours that are linked to better well-being.

The ‘What’ of Valued Action

In 2008, the government of the United Kingdom, as part of the work carried out under the Foresight Project, commissioned the New Economic Foundation (NEF) to review the literature and identify the behaviours that promote well-being at the individual level. The NEF narrowed down the most important behaviours, or daily activities, to: connect (social relationships), keep learning (challenging yourself by learning new things), give (giving to others), be active (engage in physical activity), and take notice (being mindful) (Aked, 2011). This list was intentionally restricted to five actions for simplicity (to create an equivalent of the ‘five serves of fruit and vegetables a day’ for physical health). However, in addition to these five behaviours, there is also overwhelming support in the literature for the importance of self-care behaviours such as eating well and sleeping enough (Christensen, 2001; Ciarrochi, Bailey, & Harris, 2015; Haack & Mullington, 2005). While a comprehensive review of the associations between these actions and well-being is beyond the scope of this paper (see Basarkod, 2019 for a review), we provide a brief overview below.

Connecting with others and having healthy social relationships predicts well-being across cultures and ages (e.g., Huxhold, Miche, & Schüz, 2013; Lansford, Antonucci, Akiyama, & Takahashi, 2005), while the absence of good quality relationships is associated

with depression, anxiety, and loneliness (Cohen & Syme, 1985; Rowe & Kahn, 1998). Learning, or *challenging oneself*, is linked with improved health behaviours, self-efficacy, life satisfaction (Feinstein & Hammond, 2004), quality of life (Jenkins, 2011), and fewer depressive symptoms (Kirkwood, Bond, May, McKeith, & Teh, 2008). *Giving to others*, or engaging in helping behaviours, is associated with higher levels of happiness (Krueger, Hicks, & McGue, 2001), better mental health (Schwartz, Meisenhelder, Ma, & Reed, 2003), and a lower risk of premature mortality for individuals with high stress levels (Poulin, Brown, Dillard, & Smith, 2013). Being active, or *engaging in physical activity*, is linked to reduced mental ill-health, and improved well-being (Biddle & Asare, 2011), life satisfaction, and happiness (Morgan & Bath, 1998). Engaging in exercise also prevents the onset and reduces pre-existing symptoms of depression and anxiety (Biddle & Asare, 2011). Taking notice, or *embracing the moment*, is predictive of better stress reactivity (Davidson et al., 2003), positive mental states, and heightened self-knowledge (Brown & Ryan, 2003). *Caring for oneself*, such as by sleeping and eating well, has been shown to improve physical and mental health (Christensen, 2001; Ciarrochi, Bailey, et al., 2015; Haack & Mullington, 2005), while the lack of such activity is associated with lower levels of happiness and life satisfaction (Easterlin, 2003; Mehnert, Krauss, Nadler, & Boyd, 1990).

The ‘Why’ of Valued Action

The six behaviours describe ‘what’ people do, but do not capture ‘why’ people engage in these actions. Self-determination theory (SDT) suggests that the ability of an action to promote well-being depends on the form of one’s motivation (Deci & Ryan, 1985). People thrive when they engage in behaviours they find personally meaningful and inherently enjoyable, that is, when their behaviours are autonomously motivated. For example, leisure-time physical activity, assumed to be autonomously motivated, is positively associated with subjective well-being (Jurakić, Pedišić, & Greblo, 2010) and negatively linked with mental

health disorders (Pickett, Yardley, & Kendrick, 2012). Similarly, autonomously engaging in challenging activities increases enjoyment and sense of vitality (Deci & Ryan, 1985). On the flipside, engaging in action because of controlled motivation, either to appease others or because of an internal pressure (e.g., guilt), may cause mental health to deteriorate (Deci & Ryan, 2008). Thus, not only is the form of behaviour important for well-being, but the form of motivation also matters. Putting the motivational literature into the context of third wave therapies like ACT, we consider behaviours to be ‘valued’ to the extent that they are driven by autonomous and not controlled forms of motivation.

Current Study

The aim of the current study was to develop and validate a new questionnaire called the Six Ways to Well-Being (6W-WeB). The 6W-WeB assesses the frequency and motivation for six behaviour patterns – *connecting with others*, *challenging oneself*, *giving to others*, *engaging in physical activity*, *embracing the moment*, and *caring for oneself*. In this paper, we seek to assess the factor structure of the 6W-WeB, its internal reliability, as well as its criterion validity in terms of correlations with theoretically relevant variables of flourishing, psychological distress, experiential avoidance, and nonattachment.

Past research suggests that there are individual differences in the extent to which people feel autonomy and pressure across all activity domains in their life (Ciarrochi & Bailey, 2008; Ryan & Deci, 2017). For example, some people feel high pressure and low valuing of activities across all domains. Despite these global tendencies, people can distinguish between different domains of activity, placing more importance on some behaviours compared to others (Wilson et al., 2010). For instance, people may be more autonomously motivated to connect with others than to challenge themselves. Based on this reasoning, we hypothesise that people will show both general tendencies across domains (individual differences in autonomous and controlled motivation), as well as specific

preferences within domains (e.g., preferences for connecting type activities over challenging type activities). Specifically, a bifactor model that captures three global factors, namely *behaviour engagement*, *activity importance*, and *activity pressure*, as well as six specific domain factors of behaviour (i.e., *connecting with others*, *challenging oneself*, *giving to others*, *engaging in physical activity*, *embracing the moment*, and *caring for oneself*) will fit the data well (**Hypothesis 1a**). Additionally, the bifactor model will fit the data better than the models that assume only three global factors or only six specific factors (**Hypothesis 1b**).

Based on the evidence discussed in previous sections, we hypothesise that engaging in valued action (*behaviour engagement*) will be positively correlated with flourishing and negatively correlated with psychological distress (**Hypothesis 2a**). In addition, the more one engages in activities for autonomous reasons (*activity importance*) and not for controlled reasons (*activity pressure*), the greater one's level of flourishing and lower one's level of psychological distress will be (**Hypothesis 2b**). Higher scores on the six behaviour domains will also be associated with greater levels of flourishing and lower levels of psychological distress (**Hypothesis 2c**).

Given that the 6W-WeB is aimed for use with clinical populations, it is important to show that the 6W-WeB links substantially with clinical indices of distress. We hypothesise that participants who meet criteria for high psychological distress will show lower levels of *behaviour engagement*, *activity importance*, and higher levels of *activity pressure*, while participants who do not meet such criteria will show the opposite pattern (**Hypothesis 3a**). Individuals who meet criteria for psychological distress will also have lower mean scores on the six behaviour domains compared to those who do not meet criteria (**Hypothesis 3b**).

Experiential avoidance and nonattachment are relevant for the construct validity of 6W-WeB. Experiential avoidance measures the extent to which people seek to push away unpleasant experiences, in a way that interferes with valued action (Sahdra, Ciarrochi, Parker,

& Scrucca, 2016), and nonattachment measures the extent that people let go off positive states, in a way that supports valued action (Sahdra, Ciarrochi, & Parker, 2016; Sahdra et al., 2016; Sahdra et al., 2017; Sahdra, Shaver, & Brown, 2010). Therefore, we hypothesise that the global subscales of *behaviour engagement* and *activity importance* will be negatively correlated with experiential avoidance and positively correlated with nonattachment, while the global subscale of *activity pressure* will be positively correlated with experiential avoidance and negatively linked with nonattachment (**Hypothesis 4a**). All six domain subscales will be negatively correlated with experiential avoidance and positively correlated with nonattachment (**Hypothesis 4b**).

In Study 1 of this paper, we first test the factor structure of the 6W-WeB using data from a large, representative American sample (Hypothesis 1). We then examine how each of the 6W-WeB subscales are related to the criterion measures (Hypotheses 2 and 4). We also test how the patterns of 6W-WeB subscale scores would be different for individuals who meet criteria for high psychological distress and those who do not (Hypothesis 3). We seek to replicate these findings in Studies 2 (Australian community sample) and 3 (Australian adolescent sample). Lastly, we combine data from all three samples to test the measurement invariance of the 6W-WeB factor structure across age, gender, and country, as well as the factor loadings of the 6W-WeB items on the final model's latent factors.

Study 1: Initial Validation

Participants and Design

Data from 1,800 participants from the general population in America were purchased from a professional survey company. These participants ranged in age from 18 to 65 years ($M = 40.9$, $SD = 13.21$) and 60.3% of them were female. Further demographic information regarding the ethnicity, income, and education of these participants is presented in Table 1. Participants who gave their consent on the first page of the survey (as was the case for all

subsequent studies), proceeded to answer a 30-minute-long questionnaire. For completion, the survey company offered participants a choice to either donate \$0.50 to a charity or enter a sweepstake to win \$100.

Measures

All participants completed the 6W-WeB. To reduce participant burden, we utilised a planned missing data design (e.g., Ciarrochi, Sahdra, Marshall, Parker, & Horwath, 2015), whereby the rest of the data were collected in two parts. In the first part, some participants answered mental health and CBS-related measures, while others answered questions on body image. In the second part, all participants answered questions on psychological distress, nonattachment, and body image. Therefore, out of the 1800 participants, 500 answered the flourishing and experiential avoidance questionnaires, and 1262 answered the psychological distress and nonattachment questionnaires. The data related to body image measures are not relevant to this study and are reported elsewhere (Basarkod, Sahdra, & Ciarrochi, 2018). Missing data in the confirmatory factor analysis models were dealt with using full information maximum likelihood estimation, and pair-wise deletion in all other analyses.

Ways to well-being. The Six Ways to Well-Being (6W-WeB), presented in Supplementary Materials 1A, was designed to measure the frequency of and (autonomous vs. controlled) motivation for engaging in six behavioural patterns that promote well-being. Participants were asked to report two typical ways in which they engaged in each of the following domains: *connecting with others*, *challenging oneself*, *giving to others*, *engaging in physical activity*, *embracing the moment*, and *caring for oneself*. For each example, participants rated the extent to which they were satisfied with the frequency of engagement in that activity, the extent to which they engaged in that behaviour because it was personally important or meaningful to them, and the extent to which they felt pressured to engage in that behaviour. All items were rated on a Likert type scale from 1 (*Strongly Disagree*) to 6

(*Strongly Agree*). The questionnaire had 12 qualitative and 36 quantitative items, along with an optional section where participants could report an example of an activity they felt did not fall within the six categories and rate this example on the three aforementioned scales. As this category was optional, our quantitative analyses did not include these items (we do, however, report on the idiographic responses in this category, and present these results in Study 3).

Flourishing. We used a 12-item measure to assess flourishing (Keyes, 2006) with 3 items measuring emotional flourishing (e.g. “In the past month, how often have you felt happy?”; $\alpha = .86$), 4 items measuring psychological flourishing (e.g. “In the past month, how often did you feel good at managing the responsibilities of your daily life?”; $\alpha = .82$), and 5 items measuring social flourishing (e.g. “In the past month, how often did you feel that you had something important to contribute to society?”; $\alpha = .87$). All items were rated on a Likert type scale from 0 (*Never*) to 5 (*Every Day*).

Psychological distress. We used the General Health Questionnaire-12 (GHQ-12; Goldberg, 1992) to measure psychological distress. Each of the 12 items were rated on a 4-point scale, with labels varying across items (e.g. *not at all* to *much more than usual*). Example items include: “Have you recently lost much sleep over worry” and “have you recently been thinking of yourself as a worthless person”. The Likert method of scoring was used (scored from 0 to 3), and higher scores were indicative of greater psychological distress ($\alpha = .91$). GHQ-12 has been used in prior research to identify individuals with mental health disorders as classified by the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-V; e.g. Cornelius, Groothoff, van der Klink, & Brouwer, 2013). We used the cut-off point of 11/12 to identify individuals with high psychological distress. This cut-off has been used with both clinical (e.g. Martin & Newell, 2005) and non-clinical samples (e.g. Lundin, Hallgren, Theobald, Hellgren, & Torgén, 2016), and shows high specificity and sensitivity in identifying individuals with psychological distress (Donath, 2001).

Experiential avoidance. A 30-item short form of the Multidimensional Experiential Avoidance Questionnaire was used to measure experiential avoidance (Sahdra, Ciarrochi, Parker, & Scrucra, 2015). The measure consists of 5 items measuring each of the six subscales of avoidance: behavioural avoidance (e.g. “I avoid situations if there is a chance that I’ll feel nervous”; $\alpha = .82$), distress aversion (e.g. “I’d do anything to feel less stressed”; $\alpha = .82$), distraction and suppression (e.g. “When a negative thought comes up, I immediately try to think of something else”; $\alpha = .84$), repression/denial (e.g. “I feel disconnected from my emotions”; $\alpha = .82$), procrastination (e.g. “I won’t do something until I absolutely have to”; $\alpha = .79$), and distress endurance (e.g. “When working on something important, I won’t quit even if thing get difficult”; $\alpha = .84$). Items were rated on a Likert type scale from 1 (*Disagree Strongly*) to 6 (*Agree Strongly*).

Nonattachment. To measure nonattachment, we used the Nonattachment Scale – 7 (NAS-7; Elphinstone, Sahdra, & Ciarrochi, 2015; Sahdra, Ciarrochi, Parker, Marshall, & Heaven, 2015), a short form of the 30-item Nonattachment Scale (Sahdra et al., 2010). Each item was rated on a Likert type scale from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). Example items include: “I can enjoy pleasant experiences without needing them to last forever,” and “I can let go of regrets and feelings of dissatisfaction about the past.” Higher scores were indicative of greater nonattachment ($\alpha = .87$).

Results

Factor Structure and Reliability

All analyses were conducted in an open source statistical programme, R (R Core Team, 2015). To test the factor structure of the 6W-WeB, we conducted three confirmatory factor analyses (CFA) models using robust maximum likelihood estimation methods, as such estimates improve the accuracy of the results obtained from CFAs (Li, 2016). In keeping with commonly accepted criteria for adequate model fit, the Tucker-Lewis Index (TLI) and the

comparative fit index (CFI) should be $\geq .90$, and the root mean square error of approximation (RMSEA) should be $\leq .06$ (Hu & Bentler, 1999; Kenny, Kaniskan, & McCoach, 2014).

The first model comprised of three global factors of satisfaction with frequency (or *behaviour engagement*), autonomous motivation (or *activity importance*), and controlled motivation (or *activity pressure*) for engaging in behaviours. All satisfaction with frequency items across the six behaviours were loaded onto the first factor, all items measuring autonomy were loaded onto the second factor, and all items assessing controlled motivation were loaded onto the third factor. Additionally, all three global factors were allowed to correlate with each other. The fit indices of this model were not satisfactory: $\chi^2(591) = 6436.41$, $p < .001$, CFI = .76, TLI = .74, RMSEA = .074, 90% CI [.073 .075].

The second model comprised six domain factors – one for each of the six behaviours of *connecting with others*, *challenging oneself*, *giving to others*, *engaging in physical activity*, *embracing the moment*, and *caring for oneself*. For each domain factor, all the items for satisfaction with frequency, autonomous motivation, and controlled motivation assessing that behaviour, loaded onto that factor. All six domain factors were allowed to correlate with each other. The fit indices of this model were, again, unsatisfactory: $\chi^2(579) = 13343.74$, $p < .001$, CFI = .47, TLI = .43, RMSEA = .111, 90% CI [.109 .112].

Lastly, we tested a bifactor CFA model which consisted of the three global factors as well as the six domain factors. In a bifactor model, each item loads onto two factors. Thus, for the 6W-Web, each of the 36 quantitative items were loaded onto one global factor and one domain-specific factor. For instance, the item assessing satisfaction with frequency of engagement for connecting with others was loaded onto both the *behaviour engagement* factor and the *connecting with others* factor. The global factors were allowed to correlate with each other, the domain factors were allowed to correlate with each other, but, following best practice (Chen, West, & Sousa, 2006), the residual correlations between global and

domain factors were constrained to zero, i.e., the global and domain factors were orthogonal. This model showed close to adequate fit, substantially improving on the previous models: $\chi^2(540) = 2741.77$, $p < .001$, CFI = .91, TLI = .89, RMSEA = .048, 90% CI [.046 .049].

To examine whether there were any important sources of misfit in the bifactor model, we examined the modification indices. The top twenty modification indices are presented in Supplementary Material 2, Table S1. These indices indicated that the majority of misfit occurred within the specific behavioural factors (e.g., two pressure items within *challenging oneself*) and, therefore, did not challenge Hypothesis 1. Specifically, the misspecification lay in the residual correlations between the first and second example pressure items for the different behaviours, suggesting that pressure may be pervasive across items within the same domain. For instance, pressure felt for one instance of *challenging oneself* also tended to be felt for the second instance of *challenging oneself*. We added the residual correlations for the pressure items within each domain factor, and the model fit improved: $\chi^2(534) = 2344.01$, $p < .001$, CFI = .93, TLI = .91, RMSEA = .043, 90% CI [.042 .045]. We, therefore, used this bifactor model for all further analyses. This bifactor CFA model is represented in Figure 1.

The alpha reliability estimates for the 9 subscales of the 6W-WeB are presented in Table 2 (subscales comprised all items that loaded onto each factor, with the pressure items reverse scored for domain subscales). All subscales showed adequate internal consistency. To increase statistical accuracy, the factor loadings of the bifactor model were examined using all available data (i.e., combined samples from all three studies), and are presented in Study 3.

Correlations With Criterion Measures

To inspect how the subscales of the 6W-WeB correlated with the criterion measures of flourishing, psychological distress, experiential avoidance, and nonattachment, we conducted zero-order correlations using the scale scores of the 6W-WeB measure (calculated

as the average of all items that loaded onto each factor, with pressure items reverse scored for the domain subscales; more information in Supplementary Materials 1B) and the criterion variables. These correlations are presented in Table 2.

With respect to flourishing and psychological distress, *behaviour engagement*, *activity importance*, and the six behaviours were positively correlated with all three flourishing subscales and negatively correlated with psychological distress, while *activity pressure* had negative correlations with emotional and psychological flourishing and a positive correlation with psychological distress. These results may indicate that individuals who are more satisfied with their level of behaviour engagement, engage in activity because of autonomous rather than controlled motivation, and engage more in each of the six behaviour domains, experience greater well-being and lower psychological distress.

With regard to the experiential avoidance subscales, *behaviour engagement* had positive correlations with distraction and suppression and distress endurance, and a negative correlation with procrastination. *Activity importance* had the same pattern of correlations with the addition of a negative correlation with repression/denial. *Activity pressure* had positive correlations with behavioural avoidance, distress aversion, repression/denial, and procrastination, and a negative correlation with distress endurance. All six behaviours were positively correlated with behavioural avoidance, distress aversion, and distress endurance, and negatively correlated with repression/denial and procrastination. *Connecting with others*, *challenging oneself*, *giving to others*, and *embracing the moment* also had positive correlations with distraction/suppression. In general, these correlations indicate that individuals who do not avoid engaging in behaviours that may cause them to experience distressing emotions, seem to engage more in activities that are meaningful to them.

In terms of nonattachment, *behaviour engagement*, *activity importance*, and all six behaviours were positively correlated, while *activity pressure* was negatively correlated with

nonattachment. These results suggest that individuals who are able to let go off and not cling on to positive experiences, appear to be more behaviourally active and do so because of autonomous reasons.

Known-Groups Validity

To test whether individuals who meet criteria for psychological distress and those who do not would respond differently to the 6W-WeB, we divided the sample into two subgroups based on their scores on the GHQ-12. Individuals with scores of 12 and over met the criteria for high psychological distress, while those with scores of 11 and under did not (Donath, 2001). We compared these two subgroups on their standardised scale scores of *behaviour engagement*, *activity importance*, and *activity pressure*, as well as the six behaviour domains. The results from these comparisons are represented visually in Figure 2 through bar plots with 95% confidence intervals. Individuals experiencing high psychological distress tended to have lower scores on *behaviour engagement* and *activity importance*, and higher scores on *activity pressure*, compared to individuals who did not meet criteria. They also had lower scores on the six behaviours. These comparisons reveal that individuals who had lower levels of satisfaction with their behaviour engagement, engaged in activity because of controlled rather than autonomous reasons, and had lower levels of engagement in the six behaviours, were also likely to experience higher levels of psychological distress, compared to individuals who showed the opposite pattern of scores on the 6W-WeB subscales.

Study 2: Replication in a Large Australian Sample

Participants and Design

Data from 855 respondents from a representative sample of Australian adults were purchased from a professional survey company. These participants had the same age range as the previous sample, i.e. 18-65 ($M = 38.16$, $SD = 13.35$) and 47.3% of them were female. Information regarding their ethnicity, income, and education is presented in Table 1. The

survey company determined the incentives based on various factors (such as length of survey and target acquisition difficulty) and incentives could include cash, gift cards, or sweepstakes entrance. The survey took approximately 20 minutes to complete.

Measures

All participants in this study answered the 6W-WeB as well as the measures of flourishing (emotional flourishing $\alpha = .91$; psychological flourishing $\alpha = .84$; social flourishing $\alpha = .89$) and psychological distress ($\alpha = .92$).

Results

Factor Structure and Reliability

We tested the bifactor model of the 6W-WeB to inspect whether this model showed good fit to the data in an independent, Australian sample. The bifactor model (which included the correlated residuals from Study 1) fit the data adequately in this independent sample: $\chi^2(534) = 1399.92, p < .001$, CFI = .93, TLI = .91, RMSEA = .044, 90% CI [.041 .046]. The alpha reliability estimates for the 9 subscales are presented in Table 3.

Correlations With Theoretically-Relevant Measures

We conducted zero-order correlations using the scale scores of the 6W-WeB measure and scale scores of the criterion measures. These results are presented in Table 3. Showing similar patterns of correlations as in Study 1, *behaviour engagement*, *activity importance*, and the six behaviour subscales had positive correlations with all three flourishing subscales and negative correlations with psychological distress. *Activity pressure* was negatively correlated with emotional and psychological flourishing, and positively correlated with psychological distress. As in Study 1, these results indicate that participants who reported greater satisfaction with their level of behaviour engagement, engaged in activity because of autonomous rather than controlled motivation, and had greater engagement in the six behaviour domains, tended to experience greater well-being and lower psychological distress.

Known-Groups Validity

We compared individuals who met criteria for high psychological distress with those who did not, using the cut off scores of 11/12 on the GHQ-12. Figure 2 visually represent these results through bar plots with 95% confidence intervals. The standardised 6W-WeB scale scores of participants in the two groups differed in the same pattern as was observed in Study 1, on all three global scales and all six domain scales. These results imply that the 6W-WeB may be able to differentiate between individuals experiencing psychological distress and those who do not.

Study 3: Replication in an Adolescent Australian Sample

Participants and Design

Data were gathered from a convenience sample that consisted of 518 respondents from an all-girls private high school in Sydney, Australia. Participants were from grades 7-11, with an age range of 12-17 ($M = 14.29$, $SD = 1.46$). The survey took approximately 30 minutes to complete. Questions about ethnicity, income, and education were not asked in this sample.

Measures

All participants completed the 6W-WeB questionnaire as well as the flourishing (emotional flourishing $\alpha = .87$; psychological flourishing $\alpha = .79$; social flourishing $\alpha = .84$) and nonattachment ($\alpha = .83$) questionnaires.

Results

Factor Structure and Reliability

The final bifactor model of 6W-WeB showed adequate fit to the data in this third, independent sample: $\chi^2(534) = 1034.44$, $p < .001$, CFI = .91, TLI = .90, RMSEA = .043, 90% CI [.039 .046]. The alpha reliability estimates for the subscales of the 6W-WeB are reported in Table 4. All subscales again showed adequate internal consistency.

Correlations With Theoretically-Relevant Measures

We conducted zero-order correlations using the scale scores of the 6W-WeB measure and flourishing and nonattachment scales. These results are presented in Table 4. In this adolescent sample, *behaviour engagement*, *activity importance*, and the six behaviour subscales again had positive correlations with flourishing, while *activity pressure* had negative correlations with all three flourishing subscales. These results indicate that participants who were more satisfied with their level of engagement in the behaviours, were motivated for autonomous reasons rather than controlled reasons, and engaged more in the six behaviours, tended to report higher levels of flourishing.

Nonattachment had positive correlations with *behaviour engagement*, *activity importance*, and the six behaviours, and a negative correlation with *activity pressure*. As in Study 1, these results further suggest that nonattached individuals may be more engaged in behaviours and do so because these behaviours are personally important to them.

Analyses Using the Combined Sample

In order to accurately examine the factor loadings and measurement invariance of the 6W-WeB, we combined data from Studies 1, 2, and 3A. This was done as increasing the sample size increases the statistical accuracy of the covariance and variance estimates, which in turn reduces the error of estimation (Jackson, Gillaspay Jr, & Purc-Stephenson, 2009). In addition, we report the most frequent responses to the open-ended questions for each study.

Factor loadings. The factor loadings of the 6W-WeB bifactor model using the combined samples are presented in Supplementary Material 3, Table S2. As expected in a bifactor model, the factor loadings of the items on the domain factors were smaller than the factor loadings of the items on the global factors. This is because the latent global factors partial out the variance that is common among all the items that load onto it, before the factor

loadings of items on the latent domain factors are examined. Overall, the factor loadings of the 6W-WeB bifactor model were satisfactory.

Measurement invariance. We tested the measurement invariance of the 6W-WeB bifactor model across gender, age groups, and countries (i.e., America and Australia). Measurement invariance assesses whether the questionnaire measures the same construct across all groups. Multiple group CFAs were used where gender was split into male (N = 1163) and female (N = 2007) (3 participant had missing gender data), age was split into two groups: 12 to 38.5 (N = 1851) and 38.5 to 65 (N = 1322), and country was split into America (N = 1800) and Australia (N = 1373). Five levels of invariance were tested: configural invariance models test the same underlying measurement structure, but all parameters are free to vary across groups; loading invariance models hold factor loadings constant across groups; intercept invariance models hold both factor loadings and intercepts constant across groups; residual invariance models hold factor loadings, intercepts, and residuals equal across groups; and means invariance models hold factor loadings, intercepts, residuals and means equal across groups. Table 5 shows the fit indices for these invariance models across gender and age. Results indicate that the 6W-WeB bifactor model was invariant across gender, age, as well as countries, as the fit indices of the model were acceptable even at the means invariance level.

Word frequency tabulation. To examine the typical ways in which participants engaged in each of the six behavioural domains in each study, the frequencies with which words appeared in participants' qualitative responses were calculated. The methodology used to calculate these word frequencies, along with the top 20 most frequently reported words in each of the six domains as well as in the 'other' category, are presented in Supplementary Material 4 (Tables S3-S5). As an example, the top three examples reported in Study 1 for *connecting with others* were "friend", "talk", and "phone"; "learn", "cook", and "work" for

challenging oneself; “donate”, “volunteer”, and “help” for *giving to others*; “walk”, “play”, and “gym” for *engaging in physical activity*; “enjoy”, “watch”, and “attention” for *embracing the moment*; and “eat”, “sleep”, and “healthy” for *caring for oneself*. Results indicate that the majority of frequently reported words did not overlap between domains, i.e., the actions that individuals engaged in each of the domains seemed to be distinct. Additionally, the majority of words reported in the ‘other’ category were already captured by the six behaviour domains, such as “care”, “read”, and “family,” suggesting that the 6W-WeB largely captured valued action.

Discussion

Using three independent samples, we aimed to (i) validate the factor structure of the Six Ways to Well-Being (6W-WeB), (ii) examine its construct validity in terms of correlations with theoretically-relevant variables of flourishing, psychological distress, experiential avoidance, and nonattachment, and (iii) compare individuals who had high psychological distress with those who did not. Results from Study 1 showed that the bifactor model was superior to alternate models with only three global factors or only six domain factors. The fit of the bifactor model was shown to be adequate in all three studies, confirming Hypothesis 1. This model was invariant across age and gender groups, as well as across countries, and the alpha reliability estimates and factor loadings were satisfactory. The correlations of the 6W-WeB with theoretically-relevant variables were in line with Hypotheses 2 and 4. Lastly, comparisons between participants who met criteria for high psychological distress indicated that the 6W-WeB could indeed differentiate between individuals from these two subgroups, confirming Hypothesis 3.

With regard to our first major aim, the results presented in this paper indicate that the bifactor structure of the 6W-WeB fit the data well in three independent samples with varied demographic features. Further, measurement invariance tests suggest that the 6W-WeB can

be reliably used among males and females as well as young and old participants in both America and Australia. Interestingly, the modification indices indicated that some of the misspecification of the bifactor model lay in the correlated residuals between the first and second *activity pressure* items within each behaviour domain. These residual correlations could imply that felt pressure is pervasive across different activities within the same domain; if an individual feels pressured to challenge themselves in one way, they may also feel pressured to challenge themselves in other ways. These findings are consistent with past research. One study showed that students who had higher levels of controlled motivation in one subject at school also had higher controlled motivation in other subjects (Ratelle, Guay, Vallerand, Larose, and Senécal (2007). Further, the correlation between controlled motivation in different subject areas was higher than the correlations for either identified or autonomous motivation across subjects.

In our study, the pervasiveness of controlled motivation is also evident in the factor loadings of items on the latent constructs; items on the global factor of *activity pressure* had the largest factor loadings. These factor loadings suggest that most of the variance in items assessing pressure may be attributed to the global factor of *activity pressure* and that there is little variance left over in these items to be accounted for by the specific behaviour domains.

The word frequency tabulation of the idiographic responses was also in line with the factor structure of the 6W-WeB. Specifically, the little overlap between examples reported in each of the six domains suggests that the six domains are most likely distinct. Additionally, the results suggest that a wide range of human valued action is captured by the six domains; the responses in the ‘other’ category were not novel.

With regard to the correlations of the 6W-WeB subscales with theoretically-relevant variables, *behaviour engagement* was associated with better mental health and well-being. According to a popular model of well-being, 50% of the variance in well-being is thought to

be accounted for by biological indicators, 10% by demographics, and the remaining 40% by engaging in intentional activity (Lyubomirsky, Sheldon, and Schkade, 2005). The behavioural activation (BA) literature provides evidence for the positive association between intentional activity and well-being (see Mazzucchelli, Kane, & Rees, 2010 for a meta-analysis). The aim of BA is to bring individuals into contact with positive reinforcements associated with behaviours by increasing their level of engagement in activity, which in turn, improves their well-being. The results of our study are in line with previous findings in so far as being satisfied with one's engagement in activity (i.e. thinking that one is engaging in activities enough) is related to higher well-being and lower psychological distress.

Activity importance was positively associated with mental health and well-being, while *activity pressure* showed the opposite pattern. Previous studies have reported similar results wherein individuals who act autonomously have higher levels of well-being and lower levels of mental illness, while those who engage in action because of controlled motivation experience greater levels of mental illness (Ryan & Deci, 2017; Sheldon & Kasser, 1995). The link between autonomous motivation and better mental health is further supported by our comparisons between individuals who met criteria for psychological distress and those who did not; the former had lower mean scores on *behaviour engagement* and *activity importance* than the latter while the opposite pattern was observed for the mean scores on *activity pressure*. In addition, psychologically distressed individuals also had lower mean scores for all six behaviour domains in both Studies 1 and 2.

In the three studies presented in this paper, all six behaviour subscales were consistently related to positive mental health outcomes. In terms of clinical utility, these results suggest that one may seek to increase autonomous engagement in any of the domains that the client chooses. Interestingly, *connecting with others* and *engaging with physical activity* had the strongest correlations with flourishing and psychological distress. These

results are consistent with past evidence that underline the importance of social relationships and exercise for improved mental health and well-being (Azar, Ball, Salmon, & Cleland, 2008; Biddle & Ekkekakis, 2005; Endo, Heine, & Lehman, 2000). For instance, a prospective study showed that a primary social network of less than three people predicts mental illness in the future, even after controlling for the presence of previous mental health disorders (Brugha et al., 2005), while a daily diary study showed that individuals have higher levels of life satisfaction on days they exercise compared to days they do not (Maher et al., 2013).

In terms of experiential avoidance, the distress endurance subscale had the strongest correlations with 6W-WeB; it was positively correlated with *behaviour engagement*, *activity importance*, and the six behaviours, and negatively correlated with *activity pressure*. These correlations are of particular interest and relevance to CBS clinicians as distress endurance can be understood as a proxy for psychological flexibility. Psychological flexibility implies that an individual can act in value-consistent ways even in the face of internal difficulties (Hayes, Strosahl, & Wilson, 2011). Having distressing thoughts and emotions in the face of difficulty may not be a barrier for meaningful activity for such individuals, allowing them to lead a more value-consistent life, in turn benefitting their well-being.

While psychological flexibility usually involves enduring what is difficult in order to do something that is meaningful, nonattachment involves a flexible way of relating to one's experiences without clinging on to positive (or avoiding negative) aspects of life (Sahdra et al., 2015). In Studies 1 and 3, nonattachment was positively correlated with *behaviour engagement*, *activity importance*, and the six behaviours, and negatively correlated with *activity pressure*. Our results suggest that individuals who are aware of the fleeting nature of experiences and do not cling to positive emotions, events, and ideals, are presumably more engaged in activities and do so because these actions are consistent with their values. Nonattached individuals may be more able to move towards meaningful action in their

everyday life, without being held back by expectations of what their experiences should ideally be. The pattern of results we observed is consistent with past research showing that nonattachment is linked with lower levels of depression and anxiety (Sahdra et al., 2010), better mental health (Ciarrochi, Sahdra, Yap, & Dicke, 2018), and high pro-sociality (Sahdra, Ciarrochi, Parker, Marshall, et al., 2015).

Overall, the results of the three studies presented in this paper suggest that the 6W-WeB may have treatment utility for clinicians (Ciarrochi, Zettle, et al., 2015). By using the 6W-WeB, clinicians can identify the specific ways in which their client engages in six behaviour domains that capture a wide range of valued action. Further, the clinician will have insight into why their client engages in each action, enabling the clinician to capitalise on behaviours that are motivated by autonomous reasons. They could also explore if, and why, their client experiences controlled motivation to engage in action. The 6W-WeB could, therefore, not only identify behaviours that may form the target of intervention, but it could also provide information about the function of the behaviours the client engages in. The measure can, therefore, help a clinician to orient their clients towards valued actions, the central point of ACT interventions (Hayes, Strosahl, & Wilson, 2011).

Even people who do not suffer from a clinical disorder could reflect on the typical behaviours they engage in in their everyday lives, by completing the 6W-WeB. The 6W-WeB may provide a starting point of self-reflection; an examination of what the individual does, what they could do more of, and why they do what they do. Such self-reflection may enable individuals to change their behaviours, if needed, by engaging in the six domains of behaviour for autonomous reasons.

Although our studies show that the nine subscales of the 6W-WeB are linked with indices of well-being in expected ways, longitudinal research is needed to accurately call these behaviours ‘ways’ to well-being. Longitudinal studies can help assess the extent to

which autonomously engaging in the six behaviours over time improve well-being and mental health, and provide evidence for causal ordering. We would expect the 6W-WeB to predict well-being, as previous longitudinal research has consistently shown valued action and autonomously motivated behaviour to be important for well-being (Gloster et al., 2017; Ryan & Deci, 2017). Longitudinal research could also highlight the beneficial nature of some behaviours over others, enabling clinicians to reliably start behavioural activation in one domain (perhaps *connecting with others*) that could then be broadened out to the other five.

Our results are limited in generalisability due to the characteristics of our sample. While we attempted to test the pattern of scores for individuals with likely mental health problems based on previously established cut-offs, our sample was from the general population. The 6W-WeB should also be tested in non-western samples, although we would expect it to perform similarly in such samples. Past research has provided cross-cultural support for the links between (autonomous and controlled) motivation and well-being (Ryan & Deci, 2017), as well as between valued activity and well-being (Hooper & Larson, 2015).

Despite these limitations, our studies lend support to the factor structure, content validity, criterion validity, and usability of the 6W-WeB. Our results add to the existing literature on valued action by (i) providing evidence for six specific behaviours domains that are linked to well-being, (ii) indicating that the more individuals are satisfied with their frequency of engagement in these six behaviours the more likely they are to experience well-being, and (iii) suggesting that if individuals engage in action because of autonomous rather than controlled motivation, they experience greater levels of well-being. Importantly, our results suggest that the 6W-WeB may facilitate clinical interventions by focusing clinicians on the specific behaviours that need to be targeted, allowing them to work with clients in meaningful ways.

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Figure 1. Bifactor model of the Six Ways to Well-Being

Note. Eng = behaviour engagement; Imp = activity importance; Prs = activity pressure; Cnn = connecting with others; Chl = challenging oneself; Gvn = giving to others; Phy = engaging in physical activity; Emb = embracing the moment; Crn = caring for oneself

Figure 2. Bar plots with 95% confidence intervals comparing subgroups of participants who scored ≥ 12 on the General Health Questionnaire-12 and those who scored ≤ 11 , for Studies 1 and 2. Top panel presents standardised scale scores for global subscales of the 6W-WeB and the bottom panel shows standardised scale scores for domain subscales of the 6W-WeB.

Note. Engagement = behaviour engagement; Importance = activity importance; Pressure = activity pressure; Con = connecting with others; Chal = challenging oneself; Give = giving to others; Phys = engaging in physical activity; Emb = embracing the moment; Care = caring for oneself.

Table 1

Demographic Information for Samples From Studies 1 and 2.

	Study 1	Study 2
Total N	1800	855
Ethnicity (%)		
Caucasians	66.9	74
African American	10.2	-
Hispanic	10.2	-
Asian	-	15.9
Indigenous Australians/New Zealanders	-	2.7
Other	12.8	7.4
Income (%)	(USD)	(AUD)
<20,000	18.6	8.9
20,001-60,000	46	35.9
60,001-100,000	24.2	31.9
>100,000	11.1	23.3
Other	0.2	-
Education (%)		
High School	24.2	33.1
College Diploma	58	32.3
Graduate Degree	17.8	34.6

Table 2

Alpha reliability estimates of the 6W-WeB subscales and the zero-order correlations between the scale scores of the 6W-WeB subscales and scale scores of criterion variables in Study 1.

	Eng	Imp	Pres	Con	Chal	Give	Phys	Emb	Care
α	.90	.88	.94	.77	.76	.75	.76	.77	.76
Emo F	.40***	.33***	-.11*	.28***	.29***	.26***	.31***	.24***	.24***
Psych F	.44***	.34***	-.14**	.31***	.31***	.28***	.35***	.25***	.28***
Soc F	.42***	.22***	.07	.15***	.22***	.12**	.25***	.10*	.14**
GHQ-12	-.31***	-.27***	.30***	-.33***	-.32***	-.28***	-.35***	-.28***	-.35***
BehAvd	.01	-.08	.31***	-.15***	-.17***	-.17***	-.15**	-.20***	-.18***
DisAver	.03	-.05	.28***	-.11*	-.12**	.09*	-.09*	-.18***	-.19***
DstSup	.22***	.15***	.00	.13**	.19***	.13**	.07	.11*	.07
RepDen	.02	-.17***	.49***	-.33***	-.20***	-.27***	-.22***	-.35***	-.31***
Probst	-.23***	-.23***	.38***	-.33***	-.35***	-.29***	-.31***	-.29***	-.31***
DisEndr	.40***	.39***	-.24***	.38***	.41***	.32***	.32***	.37***	.31***
NAS-7	.43***	.50***	-.24***	.44***	.42***	.42***	.33***	.37***	.40***

Note. Keyes' flourishing measure subscales: Emo F = emotional, Psych F = psychological,

Soc F = social; GHQ-12 = General Health Questionnaire-12; Multidimensional Experiential

Avoidance Subscale – 30 subscales: BehAvd = behavioural avoidance, DisAver = distress

aversion, DstSup = distraction and suppression, RepDen = repression/denial, Probst =

procrastination subscale, DisEndr = distress endurance; NAS-7 = Nonattachment Scale – 7.

Eng = behaviour engagement; Imp = activity importance; Pres = activity pressure; Con =

connecting with others; Chal = challenging oneself; Give = giving to others; Phys = engaging

in physical activity; Emb = embracing the moment; Care = caring for oneself.

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

Table 3

Alpha reliability estimates of the 6W-WeB subscales and the zero-order correlations between the scale scores of the 6W-WeB and scale scores of criterion variables in Study 2.

	Eng	Imp	Pres	Con	Chal	Give	Phys	Emb	Care
α	.90	.89	.94	.77	.76	.80	.74	.77	.75
Emo F	.41***	.34***	-.12***	.30***	.30***	.26***	.32***	.24***	.28***
Psych F	.46***	.39***	-.17***	.37***	.35***	.32***	.35***	.30***	.32***
Soc F	.38***	.27***	.05	.20***	.20***	.16***	.27***	.09**	.17***
GHQ-12	-.38***	-.27***	.20***	-.28**	-.33***	-.25***	-.31***	-.26***	-.31***

Note. Keyes' flourishing measure subscales: Emo F = emotional, Psych F = psychological, Soc F = social; GHQ-12 = General Health Questionnaire-12.

Eng = behaviour engagement; Imp = activity importance; Pres = activity pressure; Con = connecting with others; Chal = challenging oneself; Give = giving to others; Phys = engaging in physical activity; Emb = embracing the moment; Care = caring for oneself

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

Table 4

Alpha reliability estimates of the 6W-WeB subscales and the zero-order correlations between the scale scores of the 6W-WeB and scale scores of criterion variables in Study 3.

	Eng	Imp	Pres	Con	Chal	Give	Phys	Emb	Care
α	.85	.86	.91	.82	.79	.79	.75	.81	.73
Emo F	.41***	.33***	-.25***	.32***	.32***	.27***	.35***	.26***	.30***
Psych F	.43***	.34***	-.24***	.34***	.35***	.28***	.36***	.23***	.27***
Soc F	.41***	.33***	-.22***	.33**	.31***	.27***	.34***	.21***	.29***
NAS-7	.42***	.39***	-.34***	.35***	.37***	.39***	.39***	.36***	.29***

Note. Keyes' flourishing measure subscales: Emo F = emotional, Psych F = psychological, Soc F = social flourishing; NAS-7 = Nonattachment Scale – 7;

Eng = behaviour engagement; Imp = activity importance; Pres = activity pressure; Con = connecting with others; Chal = challenging oneself; Give = giving to others; Phys = engaging in physical activity; Emb = embracing the moment; Care = caring for oneself

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

Table 5

Summary of goodness of fit for measurement invariance structural equation models of the Six Ways to Well-Being final bifactor model (including modification indices) across gender, age, and countries, in the combined sample.

	Chi square	df	CFI	TLI	RMSEA [90% CI]
Age					
Step 1: Configural invariance	4250.99	1068	.92	.91	.043 [.042 .044]
Step 2: Loadings invariance	4349.20	1131	.92	.91	.042 [.041 .043]
Step 3: Intercepts invariance	4430.42	1158	.92	.91	.042 [.041 .043]
Step 4: Residuals invariance	4577.71	1194	.92	.91	.042 [.041 .043]
Step 5: Means invariance	4638.60	1203	.92	.91	.042 [.041 .043]
Gender					
Step 1: Configural invariance	4330.15	1068	.92	.91	.044 [.043 .045]
Step 2: Loadings invariance	4369.29	1131	.92	.91	.043 [.041 .044]
Step 3: Intercepts invariance	4462.22	1158	.92	.91	.042 [.041 .044]
Step 4: Residuals invariance	4577.71	1194	.92	.91	.042 [.041 .043]
Step 5: Means invariance	4638.60	1203	.92	.91	.042 [.041 .043]
Country					
Step 1: Configural invariance	4160.32	1068	.93	.91	.043 [.042 .044]
Step 2: Metric invariance	4348.61	1131	.92	.92	.042 [.041 .043]
Step 3: Scalar invariance	4424.73	1158	.92	.92	.042 [.041 .043]
Step 4: Residuals invariance	4567.68	1194	.92	.92	.042 [.041 .043]
Step 5: Means invariance	4524.25	1203	.92	.92	.042 [.041 .043]

Note. CFI = comparative fit index; TLI = Tucker Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval.

Supplementary Materials 1A:**The Six Ways to Well-Being Questionnaire****Life Activity Survey****Instructions:**

You will be asked a series of questions about the activities you engage in. To answer these questions, please focus on behaviours that:

- 1) You typically engage in.
- 2) Are observable from the outside.
- 3) You actually engage in, rather than those you think you should engage in.

You will first be asked to report examples of behaviours, after which you will be asked to rate each of these on three scales. Please select a number from 1 to 6 on these scales to rate the extent to which you agree with it.

CON: Typical ways in which I connect with others.

Think of the typical ways in which you connect with the people around you. How do you connect with family, friends, neighbours, community groups, or other people?

Examples: having conversations, interacting on the internet, doing activities together, celebrating, going out together, etc.

1. Here is an example of how I typically connect with others:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

2. Here is a second example of how I typically connect with others:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

CHAL: Typical ways in which I challenge myself.

Think of the typical ways in which you challenge yourself and learn new things.

Examples: Trying something new, learning a musical instrument, trying to cook your favorite food, fixing something, developing your skills, taking on new responsibilities, signing up for an online course, etc.

1. Here is an example of how I typically challenge myself:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

2. Here is a second example of how I typically challenge myself:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

GIVE: Typical ways in which I give to others.

Think of the typical ways in which you give to and/or help others.

Examples: Helping someone to do something, volunteering, making a donation, doing something kind for a friend or stranger, working for a cause, etc.

1. Here is an example of how I typically give to others:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

2. Here is a second example of how I typically give to others:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

PHYS: Typical ways in which I engage in physical activity.

Think of the typical ways in which you engage in physical activities.

Examples: Going for a walk or a jog, cycling, going to the gym, dancing, playing sports with friends, etc.

1. Here is an example of how I typically engage in physical activity:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

2. Here is a second example of how I typically engage in physical activity:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

EMB: Typical ways in which I embrace the moment.

Think of the typical ways in which you get fully involved in the present moment.

Examples: Being curious, catching sight of something beautiful, noticing something unusual, enjoying and appreciating food, paying full attention to another person, and, in general noticing the world around you and what you are feeling. Just about any activity can involve embracing the moment.

1. Here is an example of how I typically embrace the moment:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

2. Here is a second example of how I typically embrace the moment:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

CARE: Typical ways in which I care for myself.

Think of the typical ways in which you care for yourself.

Examples: Maintaining a healthy diet, getting enough sleep or doing something relaxing after a hard day.

1. Here is an example of how I typically care for myself:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

2. Here is a second example of how I typically care for myself:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

Other behaviours I engage in (Optional).

Is there any other activity that you engage in, that does *not* fit into any of the previously mentioned categories:

- 1) Connecting with Others
- 2) Challenging Myself
- 3) Giving to Others
- 4) Being Physically Active
- 5) Embracing the Moment
- 6) Caring for Myself.

If so, please describe this 'other' behaviour below and rate it on the same three scales as before.

Another behaviour that I typically engage in:

a) I am satisfied with how frequently I do this.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

b) This is personally important or enjoyable. I do it because I want to do it.

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

c) I feel pressured to do this (e.g., from others or from a sense of guilt).

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

Supplementary Material 1B:**Six Ways to Well-Being Questionnaire Description and Scoring Instructions****Scale description:**

This is a measure that assesses valued activity in 6 behavioural domains: Connecting with Others, Challenging Oneself, Giving to Others, Physical Activity, Embracing the Moment, and Self-Care.

Connecting with Others: This is how you connect with the people around you (such as family, friends, neighbours, or community groups).

Examples: having conversations, interacting on the internet, doing activities together, celebrating, going out together, etc.

Challenging Oneself: This is how you challenge yourself and learn new things.

Examples: Trying something new, learning a musical instrument, trying to cook your favorite food, fixing something, developing your skills, taking on new responsibilities, signing up for an online course, etc.

Giving to Others: This is how you give to others or help others.

Examples: Helping someone to do something, volunteering, making a donation, doing something kind for a friend or stranger, working for a cause, etc.

Physical Activity: This is how you engage in physical activity/exercise.

Examples: Going for a walk or a jog, cycling, going to the gym, dancing, playing sports with friends, etc.

Embracing the Moment: This is how you get fully involved in the present moment.

Examples: Being curious, catching sight of something beautiful, noticing something unusual, enjoying and appreciating food, paying full attention to another person, and, in general noticing the world around you and what you are feeling. Just about any activity can involve embracing the moment.

Self-Care: This is how you care for yourself.

Examples: Maintaining a healthy diet, getting enough sleep or doing something relaxing after a hard day.

For each of the six domains, respondents will need to report two examples of the typical ways in which they engage with that behaviour domain. Each example, then, has to be rated on three scales: satisfaction with the frequency of behavioural engagement, autonomous motivation (or importance), and controlled motivation (or pressure).

Initial analysis has revealed the measure to fit well to a bi-factor CFA model. This means that each of the 36 items (2 examples x 3 rating scales x 6 domains) will load on one global factor as well as one domain factor. The 3 rating scales form the global factors of Frequency, Importance, and Pressure. The 6 domains of behaviour form the 6 domain factors.

Scoring:

The **global factors** are scored by taking the mean of all items of that scale.

E.g., the Frequency factor is scored by taking the mean of items: CON 1a, CON 2a, CHAL 1a, CHAL 2a, GIVE 1a, GIVE 2a, PHYS 1a, PHYS 2a, EMB 1a, EMB 2a, CARE 1a, CARE 2a.

The importance factor is scored by averaging items 1b and 2b for each example, and the pressure factor is scored with items 1c and 2c.

To score the **domain factors**, all pressure items need to first be reverse scored ($7 - \text{item score} = \text{reverse score}$). Each of the domain factors are scored by taking the mean of the frequency, importance, and reverse-scored pressure items for that domain.

E.g., the Connecting factor is scored by averaging: CON 1a, CON 2a, CON 1b, CON 2b, CON 3a (reversed), CON 3b (reversed).

Supplementary Material 2:
Modification Indices

Table S1

Top 20 modification indices from the 6W-WeB bifactor model in Study 1.

Item ₁	Operation	Item ₂	Scaled modification index
Emb1Pres	~~	Emb2Pres	157.60
Care2Freq	~~	Care2Imp	125.94
Care2Imp	~~	Care2Pres	103.71
Chal2Freq	~~	Chal2Imp	99.39
Con2Imp	~~	Con2Pres	90.94
Care1Pres	~~	Care2Pres	82.67
Phys1Pres	~~	Phys2Pres	78.52
Emb2Freq	~~	Emb1Imp	73.80
Chal2Imp	~~	Chal2Pres	71.49
Give2Imp	~~	Give2Pres	70.90
Con1Pres	~~	Con2Pres	67.32
Con1Imp	~~	Con2Pres	64.94
Phys2Imp	~~	Phys2Pres	64.40
Give1Imp	~~	Give2Pres	63.82
Phys2Freq	~~	Phys2Imp	62.43
Give1Pres	~~	Give2Pres	61.69
Con2Freq	~~	Con2Imp	60.66
Phys1Freq	~~	Phys1Imp	57.76
Give1Imp	~~	Give1Pres	54.45
Give1Freq	~~	Give1Imp	54.34

Note. The ‘~~’ operation indicates a residual covariance between Item₁ and Item₂.

**Supplementary Material 3:
Factor Loadings**

Table S2

Factor loadings for each factor of the Six Ways to Well-Being using the combined sample.

	Eng	Imp	Pres	Con	Chal	Give	Phys	Emb	Care
Con1Freq	.57			.52					
Con2Freq	.65			.36					
Chal1Freq	.59				.51				
Chal2Freq	.68				.33				
Give1Freq	.55					.48			
Give2Freq	.62					.39			
Phys1Freq	.53						.59		
Phys2Freq	.63						.44		
Emb1Freq	.59							.55	
Emb2Freq	.64							.44	
Care1Freq	.48								.61
Care2Freq	.64								.33
Con1Imp		.45		.71					
Con2Imp		.62		.46					
Chal1Imp		.43			.74				
Chal2Imp		.60			.46				
Give1Imp		.44				.66			
Give2Imp		.53				.53			
Phys1Imp		.45					.67		
Phys2Imp		.52					.49		
Emb1Imp		.50						.68	
Emb2Imp		.58						.55	
Care1Imp		.44							.70
Care2Imp		.60							.39
Con1Pres			.71	-.33					
Con2Pres			.77	-.21					
Chal1Pres			.71		-.33				
Chal2Pres			.73		-.16				
Give1Pres			.71			-.29			
Give2Pres			.75			-.26			
Phys1Pres			.71				-.27		
Phys2Pres			.72				.18		
Emb1Pres			.75					-.25	
Emb2Pres			.77					-.21	
Care1Pres			.70						-.30
Care2Pres			.75						-.15

Note. Eng = behaviour engagement; Imp = activity importance; Pres = activity pressure; Con = connecting with others; Chal = challenging oneself; Give = giving to others; Phys = engaging in physical activity; Emb = embracing the moment; Care = caring for oneself

Supplementary Material 3: Word Frequency Tabulation

To examine idiographic responses, a series of word frequency tables were constructed using the following R packages: tidytext (Silge & Robinson, 2016), tm (Feinerer & Hornik, 2017), and SnowballC (Bouchet-Valat, 2013). For each behaviour domain, all responses on both examples for each behaviour domain were converted into a text document that was then pre-processed to remove capital letters, punctuation, and numbers. Stop words, i.e. words such as ‘a’, ‘the’, ‘or’, were removed using the “smart” lexicon in the tidytext package (Silge & Robinson, 2016). Words that did not provide meaningful information about valued action were also removed (presented on next page). The remaining words were then reduced to their stems, i.e. words representing different forms of the same word were reduced to their core. For instance, the words ‘behave’, ‘behaviour’, ‘behaviours’, and ‘behaving’ were reduced to ‘behav’. These stems were then manually converted into a complete word (some stems were not proper words, e.g., ‘behav’ instead of ‘behave’). If a participant repeated the same word within the same example, that instance of the word was counted only once towards the total frequency count of that word. Therefore, the final frequency score for each word represented the number of examples in which that word was reported. The top 20 words for each behaviour domain are presented in Tables S6-S8.

References

- Bouchet-Valat, M. (2013). *SnowballC: Snowball stemmers based on the C libstemmer UTF-8 library*. R package version 0.5.1. <https://CRAN.R-project.org/package=SnowballC>
- Feinerer, I., & Hornik, K. (2017). *tm: Text Mining Package*. R package version 0.7-3. <https://CRAN.R-project.org/package=tm>
- Silge, J., & Robinson, D. (2016). tidytext: Text mining and analysis using tidy data principles in r. *The Journal of Open Source Software*, 1. doi: 10.21105/joss.00037

The following words were deleted from the six domain factor word clouds:

"adequate", "adequately", "afternoon", "afternoons", "alot", "amount", "avoid", "back",
"basic", "basically", "big", "bring", "busy", "cant", "common", "commonly", "daily", "day",
"days", "dont", "easily", "end", "ending", "engage", "ensure", "even", "every", "everyday",
"extend", "extensive", "extra", "extras", "favorite", "favorites", "favourite", "favourites",
"feel", "feeling", "feels", "find", "finding", "finds", "frequent", "frequently", "friday", "full",
"fully", "happen", "havent", "high", "hour", "hours", "ive", "keep", "keeping", "leave",
"length", "list", "long", "longer", "loose", "lose", "lot", "lots", "low", "min", "minute",
"minutes", "monday", "month", "months", "morning", "mornings", "next", "night", "nights",
"nil", "nill", "open", "pay", "place", "plenty", "previous", "proper", "properly", "put", "puts",
"regular", "regularly", "saturday", "set", "short", "shorter", "small", "space", "start",
"starting", "stay", "stuff", "sunday", "take", "takes", "taking", "theyr", "thing", "things",
"thursday", "time", "times", "timing", "tuesday", "typical", "typically", "way", "ways",
"wednesday", "week", "weeks", "what", "wont", "wouldnt", "wrong", "year".

Table S3

Top 20 most frequent words reported by participants in Study 1.

Connecting with Others	Challenging Oneself	Giving to Others	Physical Activity	Embracing the Moment	Caring for Oneself	Other
friend	learn	donate	walk	enjoy	eat	care
talk	cook	volunteer	play	watch	sleep	read
phone	work	help	gym	attention	healthy	family
facebook	read	friend	run	food	exercise	give
converse	recipe	money	work	beautiful	diet	connect
text	food	make	dog	notice	relax	love
family	make	people	exercise	listen	walk	spend
internet	skill	charity	jog	picture	food	help
call	fix	work	bike	love	watch	play
social	play	family	weight	nature	maintain	challenge
interact	exercise	food	dance	people	drink	make
people	goal	church	ride	play	shower	work
email	online	clothes	swim	good	work	embrace
media	book	kind	yoga	family	bath	people
dinner	walk	listen	lift	walk	good	moment
person	project	neighbour	friend	sit	read	good
active	class	care	clean	curious	make	active
visit	push	stranger	sport	life	rest	watch
message	game	homeless	house	spend	water	friend
online	home	cook	hike	sunset	vitamin	prayer

Table S4

Top 20 most frequent words reported by participants in Study 2.

Connecting with Others	Challenging Oneself	Giving to Others	Physical Activity	Embracing the Moment	Caring for Oneself	Other
friend	learn	donate	walk	enjoy	eat	care
talk	cook	volunteer	gym	watch	healthy	play
converse	work	help	play	food	sleep	friend
social	skill	charity	run	attention	diet	read
family	food	friend	exercise	notice	exercise	challenge
facebook	study	people	work	curious	relax	connect
phone	read	work	swim	listen	food	active
internet	play	make	sport	beautiful	maintain	game
media	exercise	money	dog	appreciate	good	work
interact	fix	family	jog	people	shower	give
people	develop	food	garden	family	drink	people
online	goal	listen	bike	friend	make	love
connect	push	advice	friend	play	work	spend
chat	make	kind	dance	walk	walk	watch
meet	recipe	offer	ride	love	watch	garden
text	improve	cook	cycle	photo	health	listen
call	response	support	home	nature	clean	physical
dinner	online	children	soccer	good	read	travel
work	gym	care	yoga	laugh	gym	video
person	task	good	house	life	fit	life

Table S5

Top 20 most frequent words reported by participants from the adolescent sample in Study 3.

Connecting with Others	Challenging Oneself	Giving to Others	Physical Activity	Embracing the Moment	Caring for Oneself	Other
friend	learn	help	play	enjoy	sleep	care
converse	skill	friend	sport	appreciate	healthy	active
talk	work	kind	walk	attention	eat	friend
people	develop	people	netball	notice	relax	challenge
active	response	volunteer	run	beautiful	diet	family
social	school	donate	dance	food	make	connect
interact	sport	make	friend	people	exercise	make
school	cook	charity	school	curious	maintain	work
media	goal	school	dog	friend	care	physical
internet	hard	work	gym	world	hard	happy
family	study	money	tennis	person	good	kind
sport	push	stranger	touch	photo	food	enjoy
weekend	instrument	family	row	life	school	moment
make	play	support	swim	surround	sport	sport
text	active	offer	hockey	family	bed	help
meet	music	house	weekend	live	active	school
online	comfort	happy	jog	make	work	person
play	zone	listen	train	listen	balance	hard
catch	people	community	soccer	phone	break	embrace
spend	make	homework	team	unusual	watch	positive