



Thinking about the best possible self: A unique individual difference characteristic

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Abstract

Two studies investigated whether thinking about the best possible future self might be an individual-difference characteristic. In Study 1, 325 adults rated themselves on items derived from the Best Possible Self activity and completed measures related to the validity of the proposed characteristic. Exploratory factor analyses suggested a one-factor structure for the proposed characteristic. A measure of the proposed trait of thinking about the future self (TOPS) was created. In Study 1, the scale had an internal consistency of .95. Associations between thinking about the best possible future self with positive affect, optimism and life satisfaction contributed information regarding construct validity. Associations with the Big Five personality dimensions contributed information regarding discriminant validity. In Study 2, 224 adults completed the TOPS scale and a measure of state positive affect. After completing the pre-test measures, participants were randomly assigned to a Best Possible Self activity or a control condition, after which they completed a state-level TOPS measure and again completed the state measure of positive affect. A confirmatory factor analysis showed a marginally acceptable fit to the results of the exploratory factor analysis of Study 1, and in Study 2 both the trait and state TOPS measures showed good internal consistency at .95 and .98 respectively. Compared to participants in the control condition, those in the Best Possible Self exercise condition scored higher on state-level thinking about the possible self and state positive affect. State-level thinking about the possible self mediated the effect of condition on positive affect. The results suggest that the proposed new characteristic of thinking about the best possible future self may be a psychological strength.

Keywords Best possible self · Life satisfaction · Positive affect · Positive psychology · Optimism · Thinking about the best possible self · TOPS scale

The Best Possible Self Exercise (King, 2001; Meevissen et al., 2011) is a widely researched beneficial positive psychology activity that involves imagining one's ideal future self. The exercise encourages imagining details of this future self, creating plans to achieve this self, and imagining emotional reactions, such as pride, if this self is achieved. In a meta-analysis of a number of studies using random assignment to condition, Heckerens and Eid (2020) found that the exercise has a significant beneficial impact on positive affect and optimism. In another meta-analysis, Schubert et al. (2019) found that the exercise has an especially strong impact on positive affect. The exercise also has beneficial effects on other

outcomes, such as increasing life satisfaction and decreasing symptoms of depression (Liau et al., 2016).

With no systematic inducement, individuals may at times think about themselves in relation to their ideal future. That is, they may consider their ideal future in the absence of prompts such as the Best Possible Self Exercise. According to Higgins' (1987) Self-Discrepancy Theory, the ideal self, which may be related to thinking about themselves in relation to their ideal future, is a central aspect of the self. Thus, the extent to which people think about their ideal future self may be an important individual-difference characteristic. The proposed characteristic may be beneficial, and if support is found for such a characteristic, it may add to the understanding of human flourishing as conceptualised by the positive psychology approach (Compton & Hoffman, 2019). The aims of the present research were 1) to explore whether thinking about the best possible future self is indeed an identifiable characteristic and 2) to develop a measure of this characteristic.

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The proposed individual-difference characteristic of thinking about the ideal future self includes cognitive components, such as imagining details of what this future self might be like and creating plans to achieve the self, and emotional components, such as expectations of happiness or pride if this self is achieved. These aspects are based on Best Possible Self Exercise research (King, 2001; Meevissen et al., 2011). The Best Possible Self Exercise may allow participating individuals to strengthen the characteristic of thinking about the ideal future self, which other individuals may develop through life experience and personal agency independent of interventions. An analogy is the development of the characteristic of self-efficacy. The individual-difference characteristic consists of the expectancy that one can bring about a good outcome, either in specific realms (Bandura, 2001) or in general (Luszczynska et al., 2005). This characteristic develops through experience (Bandura, 2001) and can also be increased through interventions (e.g., Cieslak et al., 2016).

While being unique, the proposed characteristic of thinking about one's ideal future self may have a place in the **nomological** net of traits. These traits include a future time perspective, characteristic positive affect, characteristic optimism, and the Big Five personality dimensions. Because the proposed characteristic involves envisioning the future, it may be related to the tendency to have a positive future time perspective as described by Zimbardo and Boyd (1999). A future time perspective involves the tendency to think about the future, but not necessarily in relation to the ideal future self.

A future time perspective can have various benefits. For example, in a systematic review of a number of studies focusing on the role of a future time perspective in work settings, Henry et al. (2017) found that a stronger future time perspective was associated with less psychological distress, increased employability, less intention to retire, and better work performance. A future time perspective may lead to beneficial outcomes through helping individuals frame their goals and plans and prompting the self-regulation that may be required to achieve their goals (Kooij et al., 2018).

Five personality dimensions, extraversion, agreeableness, conscientiousness, emotional stability, and openness, underlie many individual differences (Digman, 1990). These Big Five dimensions are related to specific characteristics ranging from addictive tendencies (Dash et al., 2019) to preferences in reading (Schutte & Malouff, 2004). If thinking of one's ideal future self is a unique individual-difference construct, it should not share so much variance with any of the Big Five characteristics as to make it redundant with that characteristic, thus supporting divergent validity of the proposed individual-difference characteristic of thinking of one's ideal self.

Heckerens and Eid (2020) found that in a number of studies the Best Possible Self exercise had a significant beneficial impact on positive affect and optimism. Thus, one might

expect that individuals who characteristically think about their ideal future self might have a generally higher level of positive affect and a higher level of optimism. Positive affect and optimism can both be traits as well as momentary states (Kluemper et al., 2009; Watson et al., 1988).

A state-trait hierarchical model of personality posits a reciprocal relationship between state and trait manifestations of characteristics (Goldberg, 1993; Schutte et al., 2003). A high level of a trait may make it more likely that momentary state manifestations of the characteristic occur. Further, repeated experiences of momentary states of a characteristic may over time lead to the development of a more lasting and stable trait reflecting the characteristic. The proposed characteristic of thinking about the ideal future self may fit such a hierarchical model of personality in that it may be both a trait and a state. Both of these levels of the individual-difference characteristic may be measurable.

Aims and Hypotheses

The aims of the present research were to investigate whether thinking about the best possible future self may be an individual-difference characteristic and to develop a reliable and valid measure of the characteristic. Study 1 examined the possible structure of the characteristic of thinking about the best possible future self and examined the construct validity of a trait-level measure of the characteristic by determining associations with positive and negative affect, life satisfaction, optimism, positive future time perspective, symptoms of depression, anxiety, and stress, as well as discriminant validity through little if any association with the Big Five personality characteristics of extraversion, agreeableness, emotional stability, conscientiousness, and openness to experience.

Using a different sample of participants, Study 2 evaluated the previously found factor structure of the measure through confirmatory factor analysis, examined the internal consistency of the trait-level measure, assessed the reliability of a state-level measure of thinking about the best possible self based on the trait-level measure, and investigated the measure's sensitivity to change as a result of participation in the Best Possible Self Exercise.

Even though thinking about the best possible self has not been examined as an individual difference characteristic, a synthesis of findings of results of the Best Possible Self Exercise provides a platform for hypotheses relating to the proposed construct of thinking about the best possible self.

The hypotheses were as follows:

1. The construct of thinking about the best possible future self would be an identifiable construct consisting of one factor or inter-correlated factors.

2. A trait-level measure of thinking about the best possible future self would show good internal consistency. Streiner (2003) suggested that a Cronbach's alpha of .80 or greater indicates good internal consistency.
3. More thinking about the best possible future self would be associated with more general positive affect and less general negative affect, greater life satisfaction, more optimism, a greater positive future time perspective, and fewer symptoms of depression, anxiety, and stress.
4. Thinking about the best possible future self would not be redundant with any of the Big Five personality characteristics, providing some evidence of discriminant validity. McGrath et al. (2020) suggested that correlations of over .60 indicate possible redundancy between constructs; while significant correlations of .50 or less indicate constructs are related but distinct.
5. A state-level measure of thinking about the best possible future self would show good internal consistency, and higher state scores would be associated with higher scores on the trait-level measure. Associations between state and trait level measures would be expected based on a hierarchical model of personality.
6. The construct of thinking about the best possible future self would show change at the state level when individuals completed a Best Possible Self exercise, with intervention group participants showing higher scores after the intervention than participants in a control group.
7. Thinking about the best possible future self at the state level as prompted by participation in a Best Possible Self exercise would mediate the impact of the exercise on positive affect.

Study 1: Exploratory Factor Analysis and Concurrent Validity

Methods

Participants and Procedure

After approval from the institution's ethics review board, a convenience sample of 325 university students from Australia completed the measures. These undergraduate students were a mix of traditional and mature age students. Participants were informed that they would be asked to provide information about the way they view themselves and that their responses would be anonymous. The online research software used in the study kept participants anonymous. Participation was online. All participants provided informed consent. The mean age of participants was 33.20, $SD = 9.51$; 240 were female and 85 were male. Participants rated themselves on the Thinking of the Possible Self pool of 17 items, as

explained below. Randomly assigned subsets of 69 to 71 participants also completed measures of constructs related to construct and discriminant validity of the Thinking of the Possible Self characteristic. These were measures of positive and negative affect, life satisfaction, optimism, future time perspective, symptoms of depression, anxiety and stress, and the Big Five personality characteristics of extraversion, agreeableness, emotional stability, conscientiousness, and openness to experience. The data for Study 1 is located at [10.25952/2F5fff6db468caa](https://doi.org/10.25952/2F5fff6db468caa).

Analysis Plan

An exploratory factor analysis using the maximum likelihood method and a quartimax rotation investigated the structure of the pool of items. Nunnally (1978) recommended a sample size of at least 10 participants per item for factor analysis, and empirical investigations by Arrindell and Van der Ende (1985) indicated a sample size of 20 times the number of factors is adequate for reliable factor analysis. Thus, assuming that the number of factors resulting from the item pool would not be greater than 10, the number of participants in the present study was appropriate for factor analysis according to either of these criteria. A quartimax rotation magnifies the underlying structure of a pool of items by making large loadings especially large and small loadings especially small (Akhtar-Danesh, 2017); this type of rotation may give good insight into the nature of a construct through a parsimonious approach to identifying an interpretable structure of a construct (Akhtar-Danesh, 2017).

A power analysis, with power set at .80, indicated that bivariate correlations require a sample of approximately 50 participants to identify significant medium to large effect sizes, such as $r = .4$. Pearson's r correlations tested the hypotheses related to convergent and discriminant validity of thinking of the possible future self.

Measures

Thinking of the Possible Future Self We created the item pool for the Thinking of Possible Self (TOPS) scale to assess the characteristic of reflecting on the best possible future self based. The items were based on the theoretical conceptualization of the Best Possible Self and instructions for the Best Possible Self exercise (King, 2001) and on suggestions, supported by research evidence, that encouraging participants to focus on a domain such as social relationships and to imagine and visualize details relating to how they might reach the best possible self and anticipated reactions to reaching the best possible self are useful components of reflecting on this self (Enrique et al., 2018; Meevissen et al., 2011). The basic instructions for the Best Possible Self exercise are as follows, "Think about your life in the future. Imagine that you

Have succeeded at accomplishing all of your life goals. Think of this as the realisation of all your life dreams.” (King, 2001, p. 801). King (2001) found beneficial effects from the exercise, which included focus on achieving goals and experience of positive emotions as part of the imagined self. Enrique et al. (2018) in their study of the Best Possible Self exercise included reflection on the self in important life domains, including the social realm and found that the exercise increased positive future expectations. Meevissen et al. (2011) found that the deeper processing resulting from encouraging imagery as part of the Best Possible Self exercise led to beneficial outcomes. Readability of the items as assessed by the Flesh Kincaid rating scale was at grade level 6.

Participants in the study rated themselves on the extent to how well each of 17 items described them for the period of the past month using a seven-point scale on which higher scores indicated more reflection on the future self. Table 1 presents the items. The Appendix shows the instructions to participants. The results section shows the measure resulting from the exploratory factor analysis and the descriptive statistics for the scale.

Positive and Negative Affect The trait-level, with a past month timeframe, Positive and Negative Affect Schedules (PANAS; Watson et al., 1988) assessed trait-level positive and negative affect. The measures consist of emotion descriptors, such as

“inspired” and “enthusiastic” for the Positive Affect Scale. Previous research has shown the measures to have good reliability and validity (Watson et al., 1988). In the current sample, internal consistency as assessed by Cronbach’s alpha was .89 for positive affect and .88 for negative affect.

Satisfaction with Life The Satisfaction with Life Scale (Diener et al., 1985) assessed general life satisfaction. A representative item is “In most ways my life is close to my ideal.” The measure has previous evidence of good internal consistency and validity (Pavot & Diener, 1993). In the current sample, internal consistency as assessed by Cronbach’s alpha was .87.

Optimism The Life Orientation Test (Scheier et al., 1994) assessed the trait of optimism. A typical item is “Overall, I expect more good things to happen to me than bad.” The scale has previous evidence of reliability and validity (Chiesi et al., 2013). In the current sample internal consistency, as assessed by Cronbach’s alpha, was .87.

Future Time Perspective The Short Zimbardo Future Time Perspective Scale (Zhang et al., 2013) assessed the extent to which participants had a general future time perspective. A representative item is “When I want to achieve something, I set goals and consider specific means for reaching those goals.” The scale has previous evidence of reliability and

Table 1 Items and factor loadings

Item	Original Factor 1	Solution Factor 2	One Factor Solution
1. imagined my ideal future	.72	-.15	.72
2. pictured my best possible self	.79	-.09	.80
3. thought about how wonderful it would be to achieve my best possible self	.85	-.17	.83
4. thought about realising my life dreams	.80	-.24	.81
5. considered the details of my best possible self	.83	-.19	.84
6. felt happy as I pictured what it would be like to achieve my best possible self	.89	.20	.88
7. felt proud as I imagined reaching my best possible self	.85	-.15	.85
8. felt excited as I pictured my best possible self	.90	-.18	.90
9. analysed what I have to do to reach my best possible self	.79	.24	.78
10. created a plan to achieve my best possible self	.78	.50	.75
11. set goals that will help me reach my best possible self	.80	.51	.76
12. thought about how my best possible self relates to values important to me	.69	.21	.69
13. considered how meaningful my life will be when I achieve my best possible self	.76	.04	.76
14. thought about what my reaching my best possible self would mean to other people	.52	.21	.53
15. thought about how I might work with other people in reaching my best possible self	.69	.17	.69
16. reflected on what I have already done to work toward attaining my best possible self	.71	.15	.72
17. considered how my best possible self can build on how I am now	.76	.01	.77

validity (Zhang et al., 2013). In the current sample internal consistency, as assessed by Cronbach's alpha, was .83.

Mental Health Indicators The Depression, Anxiety, and Stress Scales (DASS-21; Henry & Crawford, 2005) assessed symptoms of depression, anxiety and stress. Previous research indicates that the scales have good reliability and evidence of validity (Henry & Crawford, 2005). In the current sample internal consistency, as assessed by Cronbach's alpha, was .89 for depression, .89 for anxiety, and .84 for stress.

Big Five Personality Dimensions The Big Five Inventory (John & Srivastava, 1999) assessed the Big Five personality dimensions. The inventory has previous evidence of reliability and validity (John & Srivastava, 1999). In the current sample, Cronbach's alpha for each of the five dimensions was as follows: extraversion, .84; agreeableness, .77; conscientiousness, .84; emotional stability, .88; and openness, .80.

Results

Descriptive Statistics

The mean score for positive affect as assessed by the PANAS was 33.56, $SD = 8.65$ and the mean score for negative affect was 22.44, $SD = 7.48$. The mean score for life satisfaction was 20.59, $SD = 7.06$. The mean score on the Life Orientation scale assessing optimism was 16.61, $SD = 4.79$. The mean score on the future time perspective scale was 10.88, $SD = 2.62$. Means and standard deviations on the DASS were as follows: depression, mean = 15.31, $SD = 6.45$; anxiety, mean = 13.92, $SD = 6.39$; and stress, mean = 17.82, $SD = 5.95$.

Means and standard deviations for the Big Five dimensions were as follows: extraversion, mean = 23.01, $SD = 6.09$; agreeableness, mean = 34.79, $SD = 4.84$; conscientiousness, mean = 32.77, $SD = 5.96$; emotional stability, mean = 25.70, $SD = 6.54$; and openness, mean = 34.97, $SD = 5.49$.

Exploratory Factor Analysis of the TOPS Scale

An exploratory factor analysis, using the maximum likelihood method and a quartimax rotation, examined the structure of the pool of items. The statistical program SPSS was used for this analysis. For the analysis the responses of the first 190 participants to enter the study were used. The Kaiser-Meyer-Olkin measure of sampling adequacy was .93, and Bartlett's test of sphericity was significant at $p < .0001$; both results suggested the sample was appropriate for exploratory factor analysis.

Both the scree plot and Eigenvalue results over one initially suggested two factors. The first factor, with an eigenvalue of 10.63, accounted for 62.52% of the variance. The second factor, with an eigenvalue of 1.40 accounted for 8.24% of the

variance. Table 1 shows initial factor loadings. The two items with high Factor 2 loadings had even higher loadings on Factor 1.

To evaluate further the number of factors in the data, we completed a parallel analysis (Horn, 1965), which compared the number of factors suggested by eigenvalues with the number suggested by the mean eigenvalues in a large number of runs with randomly created data. A parallel analysis indicates that the number of factors in a data set is the number of actual-data eigenvalues that are larger than the parallel eigenvalues based on random data with the same N and number of variables (Zwick & Velicer, 1986). With 1000 runs, we found that the first and second highest mean random-data eigenvalues were 1.55 and 1.44. Because only the first actual-data eigenvalue (10.63) was higher than the parallel random-data eigenvalue (1.55), we concluded that our data are best described as having only one factor.

A second factor analysis using the maximum likelihood method with a quartimax rotation and specifying one factor showed high loadings on all items (see Table 1). Based on this one-factor solution, which showed that all items had a high loading on the factor, all 17 items were included in the final Thinking of the Possible Self (TOPS) scale.

Descriptive Statistics for the TOPS Scale

The mean score on the TOPS scale was 87.2, $SD = 20.78$. Women had a mean score of 86.75, $SD = 21.43$, while men had a mean score of 88.33, $SD = 18.95$; $t(281) = -51$, $p = .57$, partial eta squared = .01. Younger participants had higher scores than older participants, $r(282) = .24$, $p = .001$.

The scale had internal consistency of .96 as assessed by Cronbach's alpha, calculated after the factor analysis was completed. Correlations of each item with the total of the other items ranged from .68 to .84. The scale alpha coefficient when items were individually deleted was similar for all items, with all items having rounded values of .96. These results suggest that all items contributed to the overall internal reliability of the scale.

Concurrent Validity

Pearson's r correlations examined the associations between the characteristic of thinking of the best possible future self, as assessed by the TOPS scale, and constructs predicted to be related to this characteristic, namely general high positive affect, high optimism, high life satisfaction, low negative affect, a future time orientation, and fewer symptoms of depression, anxiety and stress. The correlations were based on responses from groups of 69 to 71 participants. Associations between thinking of the best possible future self and these constructs were as follows: positive affect, .58, $p = .0001$; optimism, .28, $p = .02$; life satisfaction, .43 $p = .0001$; negative affect, .15; p

= .23; future time orientation, .20, $p = .09$; symptoms of depression, $-.23$, $p = .06$; symptoms of anxiety, $-.09$, $p = .42$; and symptoms of stress, $-.27$, $p = .02$. Thus, thinking of the best possible future self was significantly associated with greater positive affect, more life satisfaction, greater optimism, and less stress.

Discriminant Validity

Pearson's r correlations examined the associations between the characteristic of thinking of the best possible future self, as assessed by the TOPS scale, and the Big Five personality dimensions. Associations between thinking of the best possible future self with the dimensions were as follows: extraversion, .12, $p = .34$; agreeableness, .25, $p = .03$; conscientiousness, .09, $p = .47$; emotional stability, .02, $p = .89$; and openness, .12, $p = .34$. Thus, thinking of the best possible future self was significantly associated with the personality dimension of agreeableness, but not the other dimensions. The shared variance of thinking about the best possible future self and each of the Big Five dimensions was low.

Study 2: Confirmatory Factor Analysis, State TOPS Scale, and Sensitivity to Change

Study 1 provided some evidence that the extent to which a person thinks about the best possible self is a unique individual difference characteristic that is measurable. The purpose of Study 2 was to provide more information regarding this characteristic through a confirmatory factor analysis, investigating whether the characteristic can manifest itself as a temporary state as well as a more lasting trait, and examining whether the characteristic changes in line with theoretical expectations. Benefits of the Best Possible Self exercise (Heckerens & Eid, 2020; Liao et al., 2016; Schubert et al., 2019) are thought to arise because the exercise prompts reflection of the best possible self; thus, participation in the exercise would be expected to impact the state-level individual difference characteristic of thinking about the best possible self.

Participants and Procedure

After approval from the institution's ethics review board, a sample of 224 undergraduate university students was recruited. The students were a mix of traditional age and mature age students. Participants were informed that they would be asked to provide information about the way they view themselves and would participate in a brief exercise. Responding was anonymous. Participation was online. All participants provided informed consent. The mean age of participants was 34.12, $SD = 10.54$; 165 were female, 57 were male, and two did not

specify gender. Participants rated themselves on the Thinking of the Possible Self (TOPS) items and their present (state) affect. After completing these measures they were randomly assigned to either a Best Possible Self Exercise condition or a control condition in which they wrote about their plans for the next day; participants in the control condition were instructed to imagine going through their day, starting with the morning and ending with the night. This control condition was intended to equalize time orientation between the two groups. After participating in either the Best Possible Self Exercise condition or the control condition, participants rated themselves on a state version of the TOPS scale for which they reflected on their perceptions at the present time after having completed participation in their respective conditions and participants also again reported their present (state) affect. The data for Study 2 is located at [10.25952/2F5fff701c5bdec](https://doi.org/10.25952/2F5fff701c5bdec).

Analysis Plan

Confirmatory factor analysis (CFA) examined the fit of the item structure to the exploratory factor analysis results reported in Study 1. The number of participants in the present study, 224, was adequate for structural equation modeling, with some experts suggesting that having over 200 cases is sufficient for such modeling (e.g., Kline, 2010). As recommended by some experts (e.g., Rae, 2008), latent parcels, each comprised of 4 or 5 items, rather than individual items, were used for the CFA. For scale related CFA, parcels may be appropriate when items have high associations with the overall concept (Little et al., 2013), as was shown to be the case in Study 1 for the items comprising the measure. Good fit may be indicated by CFI and TLI values of .95 or higher and a RMSEA of .05 or less; acceptable fit may be indicated by CFI and TLI values of .90 or higher and a RMSEA of .08 or less (McDonald & Ho, 2002).

A power analysis for a two-group comparison, with power set at .80, and a medium effect size expected, $d = .50$, indicates that 100 participants, with 50 per group is adequate for such an analysis. Thus, the present sample was appropriate for between-group comparisons. Analysis of Covariance (ANCOVA), as recommended by Tabachnick and Fidell (2007) for between-group analyses with covariates related to outcome measures, examined the impact of the Best Possible Self exercise on state-level thinking about the future self, positive affect, and negative affect.

A mediation analyses using PROCESS Model 4 (Hayes, 2012) examined whether state-level thinking about the future self mediated the impact of condition on state level positive affect. A power analysis, with power set at .80, and a medium expected effect size, indicated that a minimum of 68 participants is required for such an analysis.

Measures

Thinking of the Possible Self (TOPS) Scale The items comprising this trait-level measure of thinking about the possible self are described in Study 1. Internal consistency in the Study 2 sample, as assessed by Cronbach's alpha, was .95. After participating in the Best Possible Self exercise or control condition, respondents also rated themselves on the same items in regard to their present experience after participation in their condition. This set of ratings comprised a *state* level assessment of the characteristic of thinking about the possible self. Internal consistency, as assessed by Cronbach's alpha, of the state-level TOPS measure was .98. This rating of items reflecting the future self construct for a longer period of time to capture a trait-level characteristic and rating of items for the present to capture the state level of the characteristic is similar to the approach used to assess trait and state level manifestations of other constructs, such as positive and negative affect (Watson et al., 1988).

Positive and Negative Affect Schedules The state-level Positive and Negative Affect Schedules (PANAS; Watson et al., 1988) assessed state positive and negative affect pre and post intervention. Internal consistency as assessed by Cronbach's alpha was .89 and .93 for pre and post respectively for positive affect; and .87 and .84 for pre and post respectively for negative affect.

Results

Descriptive Statistics

The mean score on the trait-level TOPS scale at pre-intervention was 86.37, $SD = 20.79$. Women had a significantly higher score, with a mean score of 88.64, $SD = 19.25$, while men had a mean score of 80.61, $SD = 22.84$; $t(281) = 2.62, p = .009$. The mean score on the state level TOPS scale was 66.36, $SD = 33.76$. The Pearson's r correlation between the state assessment of thinking about the possible self and trait-level thinking about the possible self was .35, $p = .001$; the association at post-test between state-level thinking about the possible self and state-level positive affect was .64; $p = .001$. These correlation results provide some evidence regarding the validity of the state measure.

For state-level positive affect, the overall mean score was 31.37, $SD = 8.55$ at pre-test and 31.23, $SD = 10.92$ at post-test. For state-level negative affect, overall the mean score was 16.81, $SD = 6.94$ at pre-test and 14.14, $SD = 5.93$ at post-test.

Confirmatory Factor Analysis

The statistical program AMOS was used to conduct the confirmatory factor analysis. The confirmatory factor analyses

showed the following model fit indices: CFI = .91, TLI = .91, and RMSEA = .11 (.09, .12). Thus, based on the responses of this sample of participants, the CFA fit indices suggested an acceptable fit based on the CFI and TLI values, but a poor fit based on the RMSEA value. Thus, the fit indices together may indicate a marginally acceptable fit with the structure suggested by the exploratory factor analysis of responses of the first sample of participants.

Sensitivity to Change and Mediating Effect of Thinking of the Future Self on Positive Affect

Analysis of Covariance (ANCOVA) examined the impact of the Best Possible Self Exercise on state-level thinking about the future self, positive affect, and negative affect. Table 2 shows the mean scores for the Best Possible Self Exercise group and the control group pre and post.

As trait-level thinking about the future self at pre-test was associated with the post-test measure of state-level thinking about the future self (see section 3.2.1), trait-level thinking about the future self served as a covariate in the ANCOVA examining the impact of the intervention on state-level thinking about the future self. The ANCOVA showed that participants in the Thinking about the Best Possible Future Self Exercise condition had significantly higher scores on state-level thinking about the future self than participants in the control condition, $F(2,221) = 36.91, p = .0001$, partial eta squared = .14.

Pre-test state-level positive affect was significantly associated with post state positive affect, $r = .62, p = .0001$, and served as a covariate in the ANCOVA examining the impact of the intervention on state positive affect. This ANCOVA showed that participants in the Thinking about the Best Possible Future Self Exercise condition had significantly higher positive affect at post-intervention than participants in the control condition, $F(2,221) = 16.24, p = .001$, partial eta squared = .42.

Pre-test state negative affect was significantly associated with post state-level negative affect, $r = .64, p = .0001$, and served as a covariate in the ANCOVA examining the impact of the intervention on state negative affect. This ANCOVA showed no significant difference in negative affect between participants in the Thinking about the Best Possible Future Self Exercise condition and participants in the control condition, $F(2,221) = .00, p > .05$, eta squared = .00.

A mediation analyses examined whether state-level thinking about the future self mediated the impact of conditions on state level positive affect. In this analysis condition was the independent variable (with the Thinking about the Best Possible Future Self condition coded as 1 and the control condition coded as 2), pre-test state positive affect was the covariate, state level thinking about the future self was the mediator, and post-test state positive affect was the dependent

Table 2 Means and SDs for thinking of the possible self, positive affect, and negative affect pre and post-intervention

Outcome	Best possible self exercise condition (<i>n</i> = 110)		Control condition (<i>n</i> = 114)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Pre Intervention				
Trait-Level Thinking of Possible Self ^a	86.11	21.35	86.61	20.33
State Positive Affect	30.63	8.87	32.1	8.21
State Negative Affect	15.83	6.84	17.73	6.93
Post Intervention				
State-Level Thinking of Possible Self ^b	78.41	31.39	54.73	31.97
State Positive Affect	32.89	11.22	29.63	10.43
State Negative Affect	13.64	5.44	14.63	6.34

^a Assessed at general trait level only at pre

^b Assessed at state level in relation to experience at post

variable. Thinking about the future self significantly mediated the impact of the Best Possible Self Exercise compared to the control condition on positive affect, with an effect of -4.12 , 95% CI $(-5.71, -2.76)$, $Z = -5.41$, $p = .0001$.

Discussion

Thinking about the best possible future self may be an individual-difference characteristic. Exploratory and confirmatory factor analyses of items based on the Best Possible Self Exercise and research associated with the activity (King, 2001; Meevissen et al., 2011) suggested that the extent to which individuals think about their best possible future self is an identifiable construct. The exploratory factor analysis of the theoretically and empirically based items assessing the construct suggested a one-factor solution. The confirmatory factor analysis showed a marginally acceptable fit with the structure suggested by the exploratory factor analysis. A cautious interpretation of these factor analytic results is that the items used to assess the characteristic of thinking about the best possible future self reflect a somewhat uniform construct, but that the items may also represent some additional aspects of the self. Thus, the results of the two studies provided some support for the hypothesis that thinking about the best possible future self would be an identifiable construct.

The present research also involved creating a measure of the individual-difference characteristic of thinking about the best possible self. The hypothesis that such a measure could have good internal consistency, as is indicated by a Cronbach's alpha of .80 or higher Streiner (2003) was confirmed by Cronbach's alphas of .95 for the trait level measure of the construct in two samples and a Cronbach's alpha of .98 for a state level measure of the construct in one sample.

The hypothesis that thinking about the best possible future self as assessed by the newly developed scale would be associated with more general positive affect and less general negative affect, greater life satisfaction, more optimism, a greater positive future time perspective, and fewer symptoms of depression, anxiety, and stress was tested in Study 1. Study 1 found significant associations of trait-level thinking about the future self with and more positive affect, greater optimism, and higher life satisfaction as well as fewer symptoms of stress. There was a non-significant weak trend of an association with having a future time perspective. Thinking about the best possible future self was not significantly associated with less negative affect, or fewer symptoms of anxiety or depression.

Thus, the hypothesis related to associations of thinking about the best future self with other constructs was only partially supported. In regard to future time perspective, it may be that a future time perspective consists of many considerations regarding the future that do not include the ideal self. In regard to the non-significant associations of thinking about the best possible future self with less negative affect, or fewer symptoms of anxiety or depression, it is notable that these other constructs involve undesirable states, while the significant associations involve desirable states. Perhaps thinking about the best possible future self facilitates development of desirable states but has little impact on undesirable states.

The associations of thinking about the best possible future self with positive affect, optimism and life satisfaction mirror findings regarding the impact of the Best Possible Self activity. This activity may activate thinking about the best possible future self, inducing similar effects to the natural occurrence of the individual-difference characteristic.

The hypothesis that thinking about the best possible future self would be a construct distinct from the Big Five personality characteristics was supported through Study 1 findings of

only a small amount of shared variance between the proposed new characteristic and each of the Big Five characteristics. These findings also provided some evidence of discriminant validity of the measure of thinking about the best possible self. According to McGrath et al. (2020) correlations of .50 or less indicate constructs are related but distinct. None of the associations between thinking of the best possible future self and the Big Five characteristics approached correlations of .50.

The hypothesis, based on a hierarchical model of personality, that state-level thinking about the best possible future self would be associated with trait-level thinking about the best possible future self was supported by the findings of a significant association between the two in Study 2. Providing confidence in the measure of state-level thinking about the best possible future self was the internal consistency of .98 of the state level measure. A hierarchical model of personality (Goldberg, 1993) posits that trait level individual-difference characteristics make state manifestations of the characteristic more likely and that over time state level experiences of a characteristic may build a more permanent trait.

The hypothesis that state-level thinking about the best possible future self would change in response to participation in the Best Possible Self Exercise was supported in Study 2. Participants randomly assigned to a Best Possible Self exercise reported more thinking about the best possible self after the intervention than participants in a control group. The findings of Study 2 also supported the hypothesis that thinking about the best possible future self at the state level as prompted by the Best Possible Self exercise would mediate the impact of the exercise on positive affect. Participants assigned to the Best Possible Self exercise experienced more positive affect as well as a higher level of thinking about the possible self after the exercise than control participants; the higher level of thinking about the possible self linked participation in the exercise with the higher level of positive affect.

Heckerens and Eid (2020) reported that studies of the Best Possible Self exercise have found that participation in the exercise results in greater positive affect. The theoretical reason proposed for this greater positive affect is that the exercise encourages thinking about the future self, and this in turn increases positive affect. The mediation analysis results of Study 2 support this reasoning.

The findings of the studies are limited by exclusive use of self-report and the risk of response biases inflating correlations. Correlations comprising the construct and divergent validity analyses may be unstable due to the relatively small number of participants contributing to each analysis (Schönbrodt & Perugini, 2013). Participants in both studies were a mix of traditional aged and mature aged university students, and more women than men participated. Finally, it is unknown to what extent the construct of thinking about the best possible future self is meaningful and measurable in cultures much different from the culture of Australia.

Recognition of the characteristic of thinking about the best self as well as the measurement of the characteristic may be beneficial in various applied and clinical settings. For example, in Study 1, participants who scored lower on thinking about the best possible self reported experiencing more stress, and those who scored higher on thinking about the possible self reported more optimism and positive affect. In Study 2, participants in the Best Possible Self exercise condition scored higher on thinking about the possible self and experienced more positive affect than participants in the control condition, with thinking about the possible self linking participation in the respective conditions to positive affect. These findings suggest that recognition of the characteristic of thinking about the possible self may have relevance for interventions intended to assist individuals in building resources and in improving their quality of life.

Future research focusing on thinking about the best possible self might investigate how this characteristic relates to other aspects of the self. For example, research regarding the relationship between thinking about the best possible self and motivation in different realms of life as well the relationship between the characteristic and goal setting may provide useful information regarding motivation and goal setting processes. Future research on the construct could examine associations with observer ratings and with observable behaviour. Future research might further explore the moderating effect of characteristics such as lasting negative affect or depression on the effectiveness of interventions targeting thinking about the best possible self. Longitudinal studies could also examine changes in the construct level as individuals' age and what other changes accompany any alterations in thinking about the best possible self. Multivariate models, such as ones using logistic regression, could further explore the relationships between thinking about the best possible self and other constructs. Additionally, studies could examine the value of the construct in other cultures.

Preliminary evidence provides some support for a newly identified individual-difference characteristic, thinking about the best possible future self. This characteristic may be a psychological strength alongside other positive psychology characteristics, such as compassion, self-efficacy and signature strengths. Such positive characteristics can be identified and encouraged, leading to increased well-being and flourishing (Lopez et al., 2018). Likewise, identification and fostering of thinking about the best possible future self may lead to beneficial results in various realms of life.

Appendix: Instructions to Respondents for completing the TOPS Scale

Most people at times think about themselves in relation to their short term or longer term ideal future. This wished for

or ideal self in the future has been called the ‘best possible self’.

When people imagine their ideal future self (best possible self), they can have a variety of thoughts, experience different emotions, and do various things.

Please read each of the items below and using the 7-point scale indicate to what extent each of the items describes what you experienced **during the past month**.

Does not at all describe my experience 1 2 3 4 5 6 7
Describes my experience well.

Note: For the state version of the TOPS scale the phrase ‘during the past month’ was replaced with the phrase ‘just now’.

Data Availability Please see doi provided in Study 1 and Study 2.

Declarations

Conflicts of Interest/Competing Interests Not applicable.

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