Do We Know Whether We're Happier?

Corroborating Perceived Retrospective Assessments of Improvements in Well-Being

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Abstract

To what extent do our beliefs about how our well-being has improved over time correspond to observed changes? Participants ($N = 1,247$ from Qualtrics Panels) completed questionnaires measuring dispositional well-being and ill-being (depressive symptoms) at three time points over the course of one year, as well as 44 weekly assessments of state well-being and ill-being over 52 weeks. They additionally completed measures of perceived improvements in well-being and ill-being at Weeks 45 and 52 as well as a measure of broad personality traits. We estimated latent change scores and latent growth curves, which allowed us to obtain more accurate estimates of the convergence between retrospective improvements and veridical change compared to past methods utilized. Stability in both global and state well-being and ill-being were observed. People who agreed more strongly that their well-being had improved (or their ill-being had increased) tended to show greater increases in actual well-being (or ill-being) across the past year. Additionally, we observed meaningful relationships between personality traits and perceived improvements. On average, people have some insight in assessing whether they became happier (or unhappier) over one year.

Do We Know Whether We're Happier? Corroborating Perceived Retrospective Assessments of

Improvements in Well-Being

Recent research driven by the growing field of positive psychology has both defined and

explored predictors of well-being (Steel et al., 2008). However, do people have insight into

whether they have in fact become happier? On the one hand, previous research exploring self-

perceptions of personality development indicate that retrospective assessments of personality

change are moderately correlated to observed change (Oltmanns et al., 2020; Luan et al., 2017;

Robins et al., 2005; Herbst et al., 2000). On the other hand, research examining the relationship

between perceived and actual changes in domains of well-being after challenging experiences

suggests that people's perceived assessments of how they have changed may not be related to

observed change, at least when examining change over short intervals (Owenz & Fowers, 2019;

Yanez et al., 2011; Frazier et al., 2009). However, the question of how retrospective

improvements in well-being in the absence of challenging life events relate to observed changes

remains unanswered. This study aims to fill this gap by taking advantage of statistical methods

designed to assess change using latent variables and examining the relationship between actual

changes in well-being and ill-being (both at the global and experiential [daily / state] level) and

perceived improvements in well-being (i.e., participants' perceptions about whether their well-

being had changed) when reflecting on the previous year. We further examined the relationship

between trait standing on the six broad HEXACO traits and levels of perceived improvements in

well-being.

Change in Well-Being Across the Lifespan

Psychologists have defined and assessed well-being in a variety of ways (Jayawickreme et al., 2012; Jayawickreme & Pawelski, 2013). Many scholars have defined well-being in terms of either feelings of positive emotions or life satisfaction (i.e., subjective well-being [SWB]), or eudaimonic well-being [EWB]), which is concerned with well-being in a broader set of domains posited to track human flourishing, including self-acceptance, purpose in life, environmental mastery, positive relationships, competence, and autonomy. In an attempt to unify different definitions of well-being, Su and colleagues (2014) proposed a seven-dimension framework for understanding psychological well-being more broadly. This comprehensive framework combines key elements from both the SWB and EWB traditions (Su et al., 2014; Table 1). In sum, people evaluate their happiness with a broad array of domains, and researchers should use a framework that assesses multiple domains of well-being to comprehensively understand how people form perceptions of their well-being.

Although research on global subjective well-being when measured as life satisfaction and positive affect has shown this construct to be generally stable over time (Hudson et al., 2017; Luhmann et al., 2013), it has been observed to exhibit greater malleability across time compared to other constructs, such as personality traits (e.g., Denissen et al., 2019). This finding has led some researchers to term well-being a "surface characteristic" (Kandler et al., 2014), characterized by increased susceptibility to environmental influences compared to core traits. Furthermore, when examining well-being in terms of EWB domains, it has been found to vary by age among young, middle-aged and older adults (Ryff & Singer, 2008). Specifically, the domains of personal growth and purpose in life decrease across the lifespan while environmental mastery and autonomy increases. Additionally, the domains of self-acceptance and positive relations with others show moderate stability for women. These changes in EWB may be a result

of navigating and negotiating different life challenges and transitions, such as parenthood and

relocation (Ryff & Singer, 2008). These results further demonstrate the importance of clarifying

the content of well-being and invite the question of what the relationship is between perceived

improvements in well-being and observed change when taking account of the multifaceted nature

of well-being.

Retrospective Assessments of Change

One interesting question regarding people's capacity for self-knowledge is whether they

accurately estimate the extent to which they have changed in different psychological domains

across time (Vazire & Wilson, 2012). Research has suggested that people's retrospective reports

are only moderately related to observed change. For example, in one study examining

retrospective reports of personality traits, the majority of subjects (52.5%) reported stability in

their personality while 38.5% reported they changed somewhat and 9% reported they changed a

good deal over a nine-year period (Herbst et al., 2000). However, contrary to those reports,

veridical personality change was essentially equivalent across all three groups. Another study

conducted by Robins and colleagues (2005) observed that college students demonstrated

moderate accuracy in their retrospective self-assessments of personality change in four of the Big

Five domains, but while they believed they had become more extraverted, there was no evidence

for veridical change over the course of four years for this specific trait. Other research utilizing

informant and self-reports as well as retrospective and longitudinal data indicate moderate

agreement within all Big Five domains between retrospective and longitudinal reports of change

within subjects and moderate self-other agreement on retrospective reports across a time period

of 13 years (Oltmanns et al., 2020). Specifically, self-assessments of change tend to be accurate

in the domains of Openness, Extraversion, Neuroticism and Conscientiousness, providing some validity for retrospective self-reports of change.

Additionally, previous studies indicate that individual differences influence self-reported perceptions of change, including perceived malleability of personality and causes of personality change (Dweck, 2008). People higher on socially desirable traits may be more likely to believe that positive change is possible, as they attribute such growth to their high trait standing (Horberg, Kraus & Keltner, 2013). In contrast, those higher in socially undesirable traits might be less likely to believe that trait change is possible as they are aware of the obstacles holding them back from achieving such change. Broad personality traits are associated with domains of EWB (Schmutte & Ryff, 1997), and given that broad traits are viewed as socially desirable, high standing on these traits may be associated with higher levels of perceived improvements in well-being. Relatedly, a recent study examined the relationship between perceived personality change and self-reported personality traits and found high standing on all personality traits was associated with greater increases in perceived change (Cochran et al., 2020). The present study therefore builds on these findings by examining the relationship between trait standing on the HEXACO broad traits, and perceived improvements in well-being (and increases in ill-being).

In addition to personality traits, several studies have explored the extent to which people perceive changes in other psychological constructs following certain life events. Expectations of change surrounding an event can influence how people rate specific attributes pre- and post-event (Conway & Ross, 1984). Participants were asked to rate their study skills and then placed in either a study-skills program and/or a waiting list control group. After the three-week long program, participants rated their skills pre-course. Participants in the study program tended to derogate their pre-course skill levels while the control group did not exhibit this biased recall.

Comparing end of course grades between the two groups, the study skills program did not have any real effect on students' grades. This research indicates that mere expectations surrounding an event may influence how people perceive their levels of change: specifically, they derogate their pasts selves in order to view their current selves in a positive light[1]. Expanding upon this, multiple studies have found that people tend to revise their past-self evaluations in either an upward or downward way (Wilson & Ross, 2001). In retrospective assessments, as a result, people tend to view their past selves less favorably than their current selves, leading them to report inflated levels of change. Although little research has been conducted examining the veracity of retrospective reports of improvements in well-being – where individuals recall their well-being status from a previous time point - a related research literature has examined retrospective changes in well-being domains after the experience of highly distressing or traumatic events. Posttraumatic growth (PTG) is defined as the positive psychological outcomes a person experiences in the wake of negative events (Tedeschi & Calhoun, 1996). It is typically measured retrospectively in five domains related to well-being: personal strength (i.e., self-efficacy), appreciation of life, positive relationships with others, identification of new possibilities (i.e., autonomous pursuit of goals) and spirituality (Tedeschi & Calhoun, 1996). Several studies have examined the validity of these reports by comparing retrospective perceptions of PTG with prospectively assessed pre to post-event PTG. Frazier et al. (2009) found that perceived growth scores across eight weeks were only weakly related to prospectively assessed change in relevant domains ($r = .22$), whereas other researchers have observed no correlation between perceptions of PTG and prospectively assessed change after stressful life

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[1] One alternative interpretation for this finding may be that participants overestimated their abilities at the beginning, and taking the training allowed them to more accurately perceive their actual level of ability. In other words, it is possible that the lower scores represent a more accurate view versus the baseline initial (overly positive) view. We thank a reviewer for pointing out this possibility.

events (Owenz & Fowers, 2019; Yanez et al., 2011) nor between perceptions of PTG and

daily/state reports of PTG, with the exception of spirituality (Blackie et al. 2017).

      The present study examines the validity of people's retrospective reports of well-being

when compared to global and state well-being self-reports. Research examining this question in

different domains has found discrepancies, calling the validity of retrospective reports into

question. For example, Ellison and colleagues (2020) addressed the question of the validity of

retrospective reports of stress and self-esteem when compared to ecological momentary

assessment (EMA) reports and found significant discrepancies between the two methodologies.

Similar disagreements between retrospective and momentary reports have been noted in

individuals with borderline personality disorder (Mneimne et al., 2021; Solhan, Trull, Jahng, &

Wood, 2009).

The Present Study

      We examined the degree to which self-perceptions of improvement in well-being (and

increases in ill-being) were related to changes in global and state well-being. We assessed actual

change in well-being and ill-being at both the global and daily (state) level (Jayawickreme et al.,

2017; 2020; Prentice et al., 2020). We further assessed state changes in well-being and ill-being

in order to examine the relationship between perceived improvements in well-being and changes

in the manifestation of well-being in participants' daily lives. In a year-long study, participants

completed global measures tapping both well-being and ill-being (depression) at three time

points (while the original design of the study involved collect trait assessments of well-being at

baseline, week 45, and week 52, an administrative error by Qualtrics Panels lead to trait data

being collected at week 45 as well.) over the course of one year. In addition, they completed an

assessment measuring daily well-being and ill-being on 44 separate weekly occasions over the

course of the year. They subsequently completed measures of perceived change in well-being

and ill-being since the beginning of the study at Weeks 45 and 52. We analyzed these data by

estimating latent change scores and latent growth curves (see the Analytic Approach section

below), allowing us to obtain more accurate estimates of the convergence between retrospective

assessments of improvements and veridical change (Oltmanns et al., 2020).

We predicted that in line with past research on retrospective assessments of personality

(Oltmanns et al., 2020), participants' retrospective improvements in well-being and ill-being at

Weeks 45 and 52 would exhibit small to moderate relationships with actual change in both

global and state well-being (following Cohen, 1988). We also followed up on the work of

Cochran and colleagues (2020) and examined the relationship between assessments of HEXACO

personality traits at intake and perceived improvements in well-being at Weeks 45 and 52.

Method

Participants and Procedure

Participants were recruited online through the survey company Qualtrics. All participants

were U.S. residents aged 18 years or older and had at least 2 years of active participation in the

market research panels from which Qualtrics recruited. They were first asked to complete an

intake survey consisting of questions on life-time trauma history, mental health, well-being,

personality and demographic information. They then completed a five-minute survey each week

over the course of one year (for a total of 44 surveys, with no survey on the week of each major

U.S. holiday; the average completion rate was 27.42), as well as measures of perceived change,

mental health, well-being and personality at weeks 45 and 52. As recommended by Qualtrics,

participants were paid in line with current reward incentives at the time of data collection

(January 2016-February 2017) offered in these market research panels. Participants were compensated $0.25 for every survey completed, with a reward incentive of an additional $0.50 per survey if they completed a minimum of 40 surveys. This study was approved by Wake Forest University's Institutional Review Board (IRB00021836).

The initial sample consisted of 1,247 adults (Age in years $M = 46.17$; $SD = 14.80$; Min = 19; Max = 92). Approximately half (51%) of participants were women; 84% identified their race as White, 9% as African American/Black, 4% as Asian, and 3% as Other. At Week 52, the final survey was completed by 592 participants, 49% of whom were women. Attrition analyses are included in Supplementary Table 1. Compared to participants who remained in the study until the end, participants who did not participate at T52 were younger (43.82 vs. 48.77, $p < .001$), and scored higher on the CESD (1.80 vs. 1.66, $p < .001$). We note that these data have been used in other analyses to address different research questions (Jayawickreme et al., 2021)[2].

Measures

Global Well-being. Global well-being was measured using the Brief Inventory of Thriving (BIT; Su et al., 2014) at baseline, Week 45, and Week 52. The BIT 10-item questionnaire assessed multiple domains of SWB and EWB and asked participants to rate statements related to their global level of well-being (e.g., "I feel a sense of belonging in my community") on a scale from 1 = "Strongly disagree" to 5 = "Strongly agree." Higher scores indicate a higher level of positive functioning. As noted earlier, we consider the BIT as a global measure of well-being as it captures core dimensions of SWB and EWB at the dispositional level

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[2] While we are currently working on analyses for follow-up manuscripts, we are happy to make these data available upon request. All analyses scripts are available at
https://osf.io/bhf8s/?view_only=0444ac198e194a01be190359be8a8c4b

(see Su et al., 2014, Table 1, p. 253). The observed reliability for the BIT was $\omega_{Between}$ = .96 at

the between-person level, and ω_{Within} = .81 at the within-person level[3].

Daily Well-being. Daily well-being was measured with four items that participants

completed each week (Week 2-44, 48-51). The item for appreciation of life ("Today, I felt

appreciative") was modified from a scale created to measure the relationship between state well-

being and gratitude (Emmons & McCullough, 2003). Heppner et al.'s (2008) modification of the

need satisfaction scale (Sheldon et al., 2001) was used to measure positive relationships ("Today,

I felt close and connected with other people who are important to me") and competence ("Today,

I felt very capable in what I did"). The item "Today I felt happy" was also included to more

closely align with the global measure of well-being (the BIT) as it was positively oriented.

Participants were asked to rate each statement on a scale from 1 = "Strongly disagree" and 5 =

"Strongly agree." Higher scores indicate a higher level of daily positive functioning. Following

Geldhof et al. (2014), a one-factor multi-level confirmatory factor analysis (ML-CFA) model

with fixed slopes (i.e., the loadings did not vary across individuals) fit the state well-being data

well: $\chi^2(4)$ = 79.56, p < .001; CFI = .99; RMSEA = .024; $SRMR_{Within}$ = .013; $SRMR_{Between}$ =

.012. All factor loadings were > .56 with p-values less than .001. The observed reliability for

state well-being was $\omega_{Between}$ = .94 at the between-person level, and ω_{Within} = .72 at the within-

person level.

Global Ill-Being. We assessed global levels of ill-being using the Center for

Epidemiologic Studies Depression (CES-D) Scale (Radloff, 1977). The 20-item scale is used to

measure depressive symptoms in the general population with a focus on the affective component.

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[3] We also assessed global SWB using the current life satisfaction subscale of the Temporal Satisfaction of Life scale (Pavot et al., 1998). This measure was administered at the baseline, Week 45, and Week 52 assessments. The SWB analyses can be found on p.13 of the supplementary document.

Higher scores on the CES-D indicate greater levels of ill-being. Participants were asked to respond how often they experienced certain feelings over the past week such as "I felt like everything I did was an effort" and "I thought my life had been a failure" on scale from 1 = "Rarely or none of the time (less than 1 day)" to 4 = "Most or all of the time (5-7 days)." This measure was administered at the baseline, Week 45, and Week 52 assessments. The observed reliability for global ill-being was $\omega_{Between}$ = .95 at the between-person level, and ω_{Within} = .89 at the within-person level.

   Daily Ill-Being. Daily ill-being was measured with three items that participants completed each week (Week 2-44, 48-51); "Today, all and all I was inclined to feel like a failure", "Today, I felt sad", and "Today, I thought I was no good at all". Participants were asked to rate each statement on a scale from 1 = "Strongly disagree" and 5 = "Strongly agree." Higher scores indicate a higher level of daily negative functioning. Because there were only three items, the one-factor ML-CFA was just identified and did not produce fit statistics. All factor loadings were > .52 with *p*-values less than .001. The observed reliability for state ill-being was $\omega_{Between}$ = .96 at the between-person level, and ω_{Within} = .77 at the within-person level. Descriptive statistics for all measures are found in Table 1 (and Supplementary Table 2 for state measures). There was little overall change in daily well-being and daily ill-being over time on average (see Supplementary Table 2).

   Perceived Improvements in Well-Being and Declines in Ill-Being: We used four items that tapped domains relevant to EWB that also mapped onto the daily EWB measure (competence, positive relationships, appreciation for life and gratitude). These items were "Over the last year, I became more appreciative of life," "Over the last year, I became closer and more connected with other people who are important to me," "Over the last year, I became more

capable and accomplished," and "Over the last year, I became happier." One item mapping onto the state ill-being measure was used to assess change in ill-being: "Over the last year, I became sadder." Participants were asked to indicate the level to which this change occurred in their life over the last year on scale from 1 = "Strongly Disagree" to 5 = "Strongly Agree." This item was administered in the Week 45 and Week 52 assessments. The observed reliability for perceived change in well-being was $\omega = .86$ at T45, and $\omega = .84$ at T52.

  Personality. Participants self-reported their current personality trait standing at intake using the brief HEXACO Inventory (de Vries, 2013). This scale consisted of 24 items measuring the six-dimensional HEXACO personality model, with four questions for each personality trait. Participants responded to each question about their current personality on a 5-point Likert scale from 1 "Strongly Disagree" to 5 "Strongly Agree." Descriptive statistics for personality trait standing at intake can be found in Table 1.

Analytic Approach

  We conducted analyses using MPlus Version 7 (Muthén & Muthén, 2012). The analyses used robust maximum likelihood estimation and full-information maximum likelihood (FIML) to deal with missing data. Standardized coefficients are reported.

  To assess actual change in global well-being, and CESD across Weeks 0, 45, and 52, we estimated three time-point latent growth curve (LGC) models with perceived change predicting the linear slope (Bollen & Curran, 2006; see Figure 1). To supplement these analyses and ensure that changes between Weeks 0 and 45 followed a similar pattern to the linear trend modeled by the LGC across all three weeks, we estimated a two time-point latent change score (LCS) model with perceived change predicting change scores (McArdle, 2009; See Supplementary Figure 1). These models are shown in the Supplemental Material. LGC and LCS models both produce

latent change estimates, but LGCs requires three or more time points, whereas LCSs are used for two time points. We used an LCS for the Weeks 0 to 45 data, and could not use an LGC, because there were only two time points.

To assess the concordance between perceived and actual change in state well-being and state ill-being, we fit latent curve models with 40 time points for the models with the Week 45 latent growth curve models and 44 time points for the models with the Week 52 latent change score models in which perceived change predicted the linear slope. Each outcome was tested in a separate model, and we tested two sets of models, with and without including age, gender, and negative life events as covariates. Finally, we examined correlations between the perceived change variables and HEXACO personality traits.

Results

Relationship Between Actual Change & Perceived Improvement in Well-Being and Ill-Being

Fit statistics from the models with latent growth curves are presented in Table 2. Descriptive statistics for the Latent Change Score models are shown in the Supplementary materials (Supplemental Table 5). The relationships between perceived change in well-being and ill-being and state and global well-being and ill-being are reported in Table 4[4]. Overall, small to moderate correlations were observed between perceived change assessments of well-being and ill-being and veridical changes at both the global and daily level (following Cohen, 1988). The strength of the observed relationships was additionally similar at Weeks 45 and 52 (see Table 4 and Supplementary Tables 6 and 7).

Relationship between Personality and Perceived Improvement in Well-being and Ill-being

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[4] Similar results were obtained when we controlled for age and gender (see supplementary table).

The relationships between personality and perceived change in well-being and ill-being are reported in Table 1. Consistent with Cochran et al. (2020)'s findings for the relationship between broad trait standing and perceived personality change, the HEXACO traits were associated with perceived changes in well-being and ill-being, with the exception of the relationships between Openness and perceived ill-being at Week 45 and 52.

Discussion

The goal of this study was to analyze the degree to which self-perceptions of improvement in well-being (and increases in ill-being) were related to changes in global and state well-being. People's overall levels of global well-being remained stable over the course of the year, in line with past research (Luhmann et al., 2013). Additionally, state well-being remained stable over the course of the year. These results extend those of Hudson and colleagues (2017), who found similar stability for daily affect. The present results suggest that this stability extends to daily assessments of EWB and provide additional evidence for the empirical similarities between SWB and EWB (e.g., Disabato et al., 2016). However, people also perceived improvements in well-being at Weeks 45 and 52 (i.e., means of 3.62 and 3.64 for well-being, with the anchor for "3" being "neither agree nor disagree"). The fact that people reported improvements overall is consistent with the view that people view their past selves less favorably than their current selves, as discussed earlier. Nevertheless, we found that people who agreed more strongly that their well-being had improved tended to show greater increases in actual well-being across the past year. We similarly found that people who agreed more strongly that their ill-being had increased tended to show increases in actual ill-being across the past year (as assessed by the CES-D).

Changes in daily well-being and ill-being were additionally found to be associated with perceived improvements in well-being and ill-being. These results differ from previous studies assessing the relationship between trait and state PTG (Blackie et al., 2017). One explanation for these findings was that the current study employed statistical methods designed to assess change using latent variables (Oltmanns et al., 2020). Additionally, it may be that retrospective reports may genuinely be less valid in the context of PTG than general well-being. Overall, these results provide moderate validity evidence for retrospective assessments of perceived improvement (and depreciations) in well-being.

The HEXACO personality traits were also found to be consistently related to assessments of perceived improvements and depreciations (with the exception of Openness and Honesty-Humility). Consistent with past research (e.g., Schimmack et al., 2004), the strongest relationships were observed for Extraversion (people higher in Extraversion reported more perceived improvements in well-being), and Neuroticism (people higher in Neuroticism reported higher levels of perceived increases in ill-being). We note that these results mirror Oltmanns and colleagues' (2020) finding that being more extraverted, open, and conscientious was positively associated with perceiving change in those traits.

We note that one limitation of many assessments of perceived change is that they provide no opportunity to provide a negative rating (Jayawickreme et al., 2021; see also Boals et al., 2022). While the measures we utilized in the current study did allow for participants to disagree with the question of whether they had experienced improvements or depreciation, we note that such disagreement could either reflect a decrease in well-being (or ill-being) or no change. We further caution that the wording of these questions likely captures the degree of *confidence* in their belief that they changed in their well-being over the course of the year, rather than indexing

the *degree* of perceived change they experienced (Blanton & Jaccard, 2006; Tay & Jebb, 2018).

An adapted measure that allows for such responses may exhibit higher levels of corroboration

with veridical change, especially if the analytic approach utilized here is adopted. To provide two

examples of such an assessment, participants could be asked to retrospect and fill out the

questionnaire as their past selves from one year ago would have and compare these retrospective

scores with current scores; or participants could indicate whether they had increased or decreased

on each well-being dimension, with no change as the midpoint (e.g., "Over the last year, I

became: [much less happy; slightly less happy; neither happier or less happy; slightly happier;

much happier"]; see Boals & Schuler (2018) and Hudson & Fraley (2016) for examples of these

measures)[5].

      We also acknowledge that our perceived improvement measures did not capture the same

breadth of content as the global measures we employed. For example, the perceived

improvement measure of well-being comprised of only four items to tap the core dimensions of

well-being. The Brief Inventory of Thriving, in contrast, was a more comprehensive

measurement of well-being that captures multiple elements of SWB and EWB. Future studies

may build on our results by analyzing perceived and actual changes in specific domains of well-

being to better understand if perceptions of improvements and depreciations are more accurate

for specific domains (i.e., environmental mastery).

      While previous studies have assessed retrospective self- perceptions of personality

change over extended periods of time, similar studies assessing the relationship between

perceptions of change in well-being and actual change in well-being across extended periods of

time are currently lacking. While our study examined the relationship between perceived and

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[5] We thank a reviewer for suggesting these options.

veridical improvements in well-being over one year, future research should explore the effect of

temporal distance on the validity of such perceptions. We should also note that selective attrition

on the CESD may bias the observed results, given that higher levels of psychological distress

may be associated with lower levels of corroboration between perceived improvements and

observed change (Gunty et al., 2011).

Finally, we note that the reliabilities of the 24-item HEAXCO Inventory used in this

study were not high (with the marginal exception of extraversion). Similar reliabilities for this

measure were observed in the original scale validation study (de Vries, 2013). While the

observed relationships between personality traits and perceived improvements were consistent

with past findings, we acknowledge that these results should be interpreted with caution.

In conclusion, the goal of this study was to analyze the degree to which self-perceptions

of improvement in well-being (and increases in ill-being) were related to changes in global and

state well-being. The results indicate that people perceived moderate levels of improvements in

their well-being over the year, and that these reports were somewhat related to prospectively

assessed changes in global well-being. Additionally, perceptions of improvement in well-being

at the state level were moderately related to actual changes in state level well-being. Personality

was also found to be associated with perceptions of improvements/depreciations in well-being.

In terms of its implications for personality assessment, this study provides initial validity

evidence for retrospective assessments of general improvements in well-being and highlight the

possible value of such assessments as secondary assessments of change when multiple

assessments are not possible. When it comes to well-being, the present results suggest that

people have some insight into how they have changed. Note, however, that here actual change is

operationalized as a linear difference between well- and ill-being measures at a starting point and

an endpoint. Even the state-level latent growth curve model had perceived change predicting a linear slope, which represents a first-order increase or decrease in well- and ill-being across the study period. Thus, while it may be the case that retrospective measures of subjective change align with differences in well-being when the latter is conceptualized as a difference between beginning and end points, it remains to be seen whether this alignment remains when considering more complicated patterns of change (e.g., Ellison et al., 2020). It may be the case, for instance, that retrospective memory of a traumatic event's temporary or cyclical effects on well-being disagrees with the patterns one might report in real time.

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Declaration of Interest Statement

All authors have no interests to declare.

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Table 1

Descriptive statistics for perceived change, well-being, ill-being, and personality

	M	SD	$\omega_{Between}$	ω_{Within}	1	2	3	4	5	6	7	8	9	10
1. Perceived Change in Well-Being at T45	3.62	0.84	0.86	-	-									
2. Perceived Change in Well-Being at T52	3.64	0.77	0.84	-	0.76	-								
3. Perceived Change in Ill-Being at T45	2.19	1.14	-	-	-0.46	-0.40	-							
4. Perceived Change in Ill-Being at T52	2.17	1.14	-	-	-0.43	-0.48	0.67	-						
5. Global Well-Being at T0	3.61	0.83	0.96	0.81	0.53	0.47	-0.43	-0.47	-					
6. Global Well-Being at T45	3.61	0.83	"	"	0.72	0.59	-0.52	-0.50	0.76	-				
7. Global Well-Being at T52	3.61	0.80	"	"	0.64	0.63	-0.51	-0.56	0.75	0.86	-			
8. CES-D at T0	1.73	0.60	0.95	0.89	-0.31	-0.24	0.48	0.52	-0.65	-0.53	-0.54	-		
9. CES-D at T45	1.70	0.59	"	"	-0.37	-0.30	0.68	0.61	-0.56	-0.57	-0.55	0.77	-	
10. CES-D at T52	1.67	0.58	"	"	-0.36	-0.37	0.60	0.66	-0.55	-0.55	-0.61	0.76	0.83	-
11. Average State Well-Being	3.56	0.61	0.94	0.72	0.71	0.66	-0.52	-0.51	0.60	0.69	0.68	-0.46	-0.50	-0.52
12. Average State Ill-Being	1.93	0.77	0.96	0.77	-0.43	-0.40	0.62	0.64	-0.50	-0.55	-0.54	0.62	0.65	0.66
13. Honesty-Humility	3.91	0.70	0.50	-	0.07	0.11	-0.07	-0.15	0.12	0.10	0.12	-0.17	-0.10	-0.13
14. Neuroticism	2.94	0.69	0.40	-	-0.15	-0.11	0.31	0.30	-0.38	-0.36	-0.33	0.41	0.37	0.38
15. Extraversion	3.75	0.76	0.68	-	0.37	0.30	-0.28	-0.33	0.51	0.51	0.50	-0.42	-0.35	-0.37
16. Agreeableness	2.90	0.63	0.43	-	0.21	0.19	-0.16	-0.18	0.27	0.28	0.28	-0.22	-0.19	-0.17
17. Conscientiousness	3.62	0.67	0.54	-	0.22	0.13	-0.15	-0.18	0.33	0.30	0.29	-0.26	-0.17	-0.19
18. Openness	3.45	0.74	0.61	-	0.16	0.12	-0.04	0.00	0.13	0.17	0.17	0.01	-0.02	-0.03

Note. With a sample size of $N = 1,247$, correlations of .056 are significant at $p < .05$.

Table 2

Latent Growth Model Fit Statistics

Latent Growth Model	χ^2	*df*	*p*	RMSEA	RMSEA 90% CI	CFI	SRMR
State Well-Being T0-T52	2101.89	1070	<.001	0.029	.027 - .031	0.946	0.062
Global Well-Being T0-T52	7.57	4	0.109	0.027	.000 - .056	0.995	0.048
State Ill-Being T0-T52	1675.79	1070	<.001	0.022	.020 - .024	0.958	0.044
CES-D T0-T52	12.40	4	0.015	0.041	.016 - .068	0.989	0.023

Table 3

Latent Change Descriptive Statistics

Outcome	ΔT1-52		
	M	*Var*	*GRR*
State Well-Being	0.00*	0.00***	0.79
Global Well-Being	0.00	0.00***	0.50
State Ill-Being	0.00*	0.00***	0.75
CES-D	0.00**	0.00*	0.33

Note. Variance point estimates rounded to two decimal points. Latent change variables are linear slope terms from latent growth curves (LGCs). GRR = Growth Rate Reliability (Rast & Hofer, 2014). While some of these reliability estimates are below the conventional cutoff of .70, it should be noted that growth curve models use latent variables adjusted for measurement error that produce "true" growth estimates (Singer & Willett, 2003).

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

Table 4

Standardized path coefficients of perceived change predicting actual changes in well-being and ill-being

Outcome	Perceived Change at T52
State	
Well-Being	0.27***
Ill-Being	0.16**
Global	
Well-Being (BIT)	0.28***
Ill-Being (CES-D)	0.27**

Note. Changes at T52 are slopes from latent growth models (LGCs; see Figure 1). The perceived change measures were general vs. specific (e.g., there was one general perceived change in well-being measure vs. a domain-specific measure for state well-being; see Measures in the Methods section for more details).

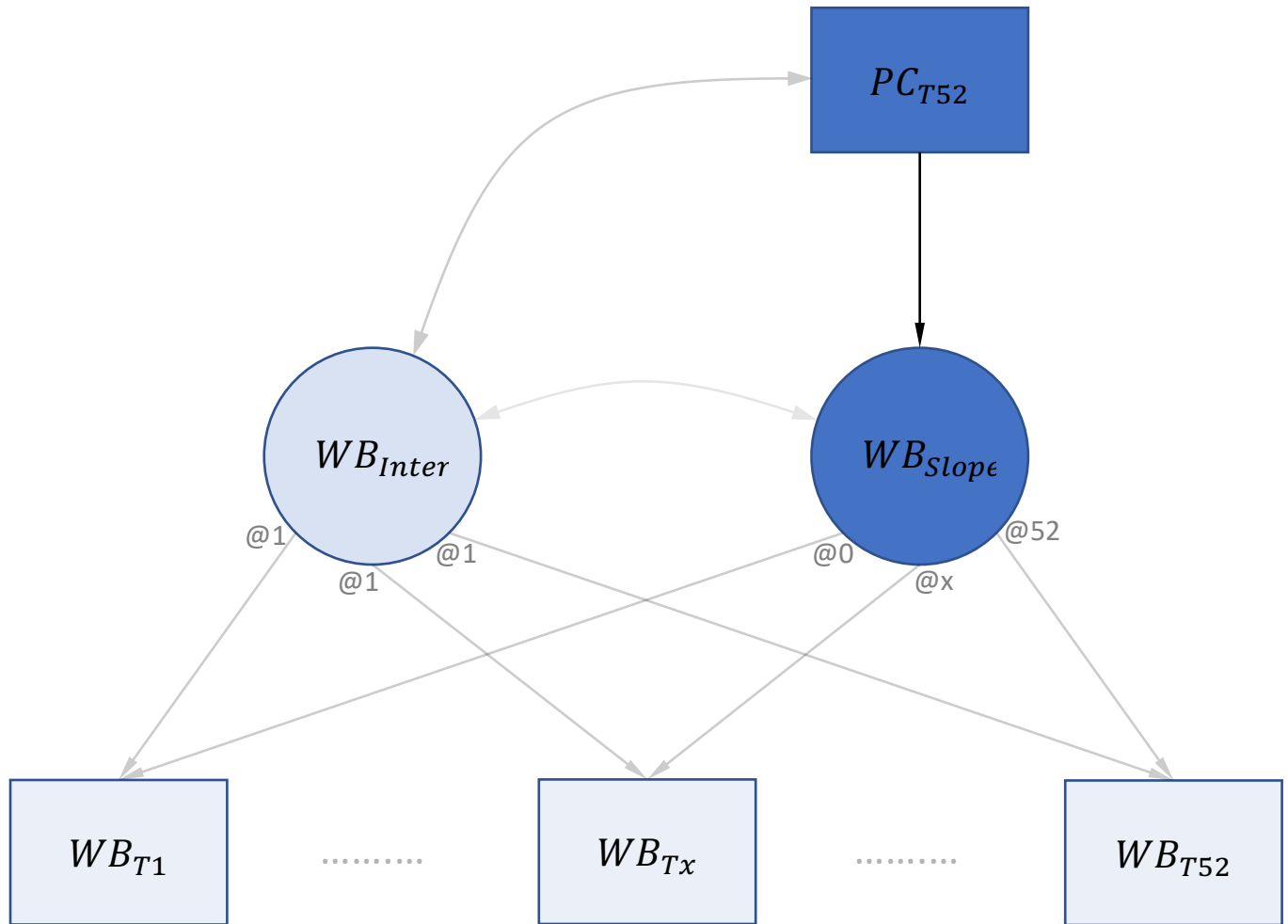*p* < .05. **p* < .01. ***p* < .001.

Figure 1. Latent Growth Curve (LGC) illustration with perceived change predicting actual

change.

Note. PC = Perceived Change. WB = Well-Being.

Figure Captions

Figure 1. Latent Growth Curve (LGC) illustration with perceived change predicting actual

change.