The Development and Validation of Comprehensive Inventory of Thriving (CIT) and Brief Inventory of Thriving (BIT)

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Abstract

In this article we present the development and validation of two new measures of psychological well-being: Comprehensive Inventory of Thriving (CIT) and Brief Inventory of Thriving (BIT). These measures were developed with two specific goals in mind: (1) to measure a broad range of psychological well-being constructs and represent a holistic view of positive functioning; and (2) to predict important health outcomes and are useful for researchers and health practitioners. CIT includes 18 subscales with 54 items in total, covering a broad range of well-being components. BIT has 10 items in total and can serve as an indicator of psychological well-being and a brief screening tool of mental health. The new measures were evaluated in five samples of a total of 3,191 U.S. participants with diverse demographics. CIT and BIT had excellent psychometric properties and exhibited convergent validity with existing measures of psychological well-being and discriminant validity with measures of ill-being. Both measures contributed over and above existing measures of psychology well-being in predicting a variety of health outcomes, including self-reported and objective health status, physical functioning, and health behaviors. In addition, we showed the relative importance of thriving compared to ill-being for health outcomes and the benefits of assessing individuals' positive functioning beyond ill-being. Potential uses of the new measures are discussed.

Keywords: psychological well-being, flourishing, health, scale development, Comprehensive Inventory of Thriving, Brief Inventory of Thriving

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Over the past decade, the importance of psychological well-being has been increasingly recognized by researchers, health practitioners, and the general public. An individual's positive assets and strengths, beyond the absence of diseases and negative mental states, are seen as contributing to optimal mental, physical, and social functioning (Pressman & Cohen, 2005; Seligman & Csikszentmihalyi, 2000; Seligman, Steen, Park, & Peterson, 2005). An accruing volume of research has associated psychological well-being with a variety of health outcomes. It has been shown to protect against coronary heart diseases (e.g., Rozanski & Kubzansky, 2005) and stroke (e.g., Kim, Park, & Peterson, 2011) and has been linked to increased physical health and longevity (Diener & Chan, 2011). In the meanwhile, prominent theories on psychological well-being suggested that it is a multi-dimensional construct more than positive emotions. Different yet interconnected aspects of psychological well-being, ranging from feelings of trust and belonging to a sense of accomplishment and control, are all essential for a healthier, longer, fuller, and happier life (Diener, 1984, 2000; Ryan & Deci, 2000; Ryff, 1995; Scheier & Carver, 1985; Seligman, 2011).

Despite the growing emphasis on positive functioning (e.g., Durlak, 1998; Hershberger, 2005), the focus of assessments in health and medical settings remains on ill-being. Most of the existing measures of psychological well-being (e.g., Diener, Emmons, Larsen, & Griffin, 1985; Pearlin & Schooler, 1978) concentrate on a few positive aspects rather than a broad range of psychological well-being constructs. Below we review an inclusive range of psychological well-being dimensions proposed by theories and identify gaps in the current measurement of psychological well-being. The goal of the present research is to bridge the gap by developing and validating a comprehensive measure of psychological well-being that can be used widely and is

useful for assessment in health settings. The development of such a measure is fundamental to the promotion of a positive and holistic approach to health.

Dimensions of Psychological Well-Being

The construct of psychological well-being is multifaceted and is composed of seven core theoretical dimensions: (1) subjective well-being (SWB) in the form of high life satisfaction and positive feelings, (2) supportive and enriching relationships, (3) interest and engagement in daily activities, (4) meaning and purpose in life, (5) a sense of mastery and accomplishment, (6) feelings of control and autonomy, and (7) optimism. In Table 1, we summarize these seven key dimensions of psychological well-being and corresponding constructs proposed in prominent theories of positive psychology (Diener, 1984; Ryan & Deci, 2000; Ryff, 1995; Scheier & Carver, 1985; Seligman, 2011).

Diener and colleagues (Diener, 1984, 2000; Diener & Chan, 2011) established SWB as one of the most important dimensions of psychological well-being and showed its relationship with health and longevity; Ryan and Deci (2000), in their Self-Determination Theory, identified three universal needs that are essential for facilitating constructive personality and social development and for fostering positive functioning and personal well-being—the needs for competency, relatedness, and autonomy—that map onto the dimensions of mastery, relationship, and autonomy, respectively. Ryff (1995), after reviewing theories in developmental psychology, clinical psychology, and mental health, derived six core dimensions for positive psychological functioning: self-acceptance (positive attitude toward self), positive relations with other people, autonomy, environmental mastery, purpose in life, and personal growth (having a sense of continued development and realizing potential), which correspond to the dimensions of SWB, relationship, autonomy, mastery, meaning, and optimism, respectively. Seligman's (2011) PERMA model of flourishing identified Positive emotions (SWB), Engagement, Relationship,

Meaning, and Accomplishment (mastery) as the key to happiness and well-being. In addition, Scheier and colleagues (Rasmussen, Scheier, & Greenhouse, 2009; Scheier & Carver, 1985, 1987, 1992) in a series of research demonstrated that optimism is a key predictor for physical health and an important aspect of positive functioning. These seven dimensions constitute an integrative framework of psychological well-being that we seek to measure.

Among these seven dimensions, SWB can be conceived as an internal barometer of "how life is going"—it is a gauge of the extent to which other aspects of psychological well-being or needs are fulfilled. SWB is a key ingredient to psychological well-being. The experience of wellness can enhance other aspects of psychological well-being. Other aspects of psychological well-being also serve crucial purposes as they can be construed as *psychological resources* (Hobfoll, 1989, 2002) or *psychological capital* (Luthans, Youssef, & Avolio, 2007), which function as buffers against negative impacts in life and in turn promotes better health outcomes. Enrichment of other dimensions of psychological well-being (e.g., mastery or social relations) can, through a *dynamic* and *reciprocal* relationship, enhance SWB. As such, psychological well-being has potencies in affecting behaviors directly through emotive channels. For example, higher sense of wellness can promote health behaviors or enhance physiological functioning (De Neve, Diener, Tay, & Xuereb, 2013). Alternatively, psychological well-being can enhance health outcomes indirectly via emotive-resource channels, by affecting available psychological and environmental resources (e.g., Fredrickson, 2003; Hobfoll, 1989, 2002).

Measures of Psychological Well-Being

Among the most widely used measures of psychological well-being are the Satisfaction with Life Scale (SWLS; Diener et al., 1985), the Self Mastery Scale (SMS; Pearlin & Schooler, 1978), the Life Orientation Test (LOT; Scheier & Carver, 1985; Scheier, Carver, & Bridges, 1994), the Core Self-Evaluations Scale (CSES; Judge, Erez, Bono, & Thoresen, 2003), and the

Flourishing Scale (FS; Diener et al., 2009). Although a detailed review of every existing measure of psychological well-being is beyond the scope of the current paper, we note that the measures listed above all have supporting research for their reliability and validatity and have been shown to predict important outcomes, such as better coping and physical health. Nonetheless, most of these measures focus on one or a few aspects of psychological well-being. Table 1 summarizes the corresponding psychological well-being dimensions each measure assesses and the number of items for each construct assessed. For example, the SWLS measures life satisfaction, one facet of SWB; the LOT measures the dimension of optimism; the SMS is designed to measure mastery or generalized self-efficacy, and taps into the contructs of control and optimism. The CSES was developed as an integrative effort to measure self-esteem, locus of control, neuroticism, and generalized self-efficacy—four constructs that were shown to be strongly related with a single underlining factor (Judge, Erez, Bono, &Thoresen, 2002). We classified the CSES items into the seven core dimensions of psychological well-being. Most items in CSES measure different facets of mastery, with two additional item assessing SWB and another assessing optimism.

An exception to the concentration of exisiting psychological well-being measures is the FS. The FS was designed to have a broad bandwidth and was constructed to measure social-psychological prosperity to complement existing measures of SWB. As shown in Table 1, the FS has an emphasis on the relationship dimension, with three items measuring social support, respect, and contribution to others' happiness and well-being, respectively; but it also covers other dimensions including meaning, engagement, mastery, and optimism. Two dimensions of psychological well-being, SWB and autonomy, are not measured by the FS.

The Current Study

The goals of the present study are to create two reliable scales that measure a broad constellation of psychological well-being constructs and predict a variety of health outcomes.

One scale consists of a comprehensive range of subscales that each assesses one facet of psychological well-being with three items. These subscales should be unidimensional and distinguishable from each other. This scale (referred to as the Comprehensive Inventory of Thriving, or CIT) can be used for research purposes and for in-depth assessment of well-being in health settings, such as in psychiatric and clinical practices. In addition, we developed a short scale (referred to as the Brief Inventory of Thriving, or BIT), measuring the core psychological well-being dimensions with 10 items, that can be completed quickly and can be used in medical practices such as the initial assessment of patients. This brief scale is designed to give a succinct view of a patient's overall psychological strengths and weaknesses as a complement to the assessment of their general physical condition and health behaviors, and to inform medical practitioners should any intervention or referral be needed. The term *Thriving* denotes the state of positive functioning at its fullest range—mentally, physically, and socially. In particular, we use this term to name our scales to emphasize the important health outcomes associated with psychological well-being. Both scales should exhibit excellent psychometric properties and should demonstrate convergent validity with existing measures of psychological well-being and discriminant validity with measures of ill-being. We expect CIT and BIT to predict health outcomes and show incremental validity over and above existing measures of psychological well-being. Moreover, we compared the relative importance of CIT and BIT in predicting health outcomes to that of ill-being measures currently used in medical research and practice to demonstrate the value of measuring thriving in addition to ill-being in health settings.

Methods

Procedures

Assembly of the initial item pool. We used a theory-driven approach in scale development. As the first step, core dimensions and facets of psychological well-being shown to

predict health were identified from the literature. An initial set of items that measure each facet within every dimension of this broad range of psychological well-being constructs was assembled. We screened this initial set of items and selected items that were written in simple, straightforward language. We included more than twice the number of items that were needed for the scales at the initial stage in order to select those with the best psychometric properties. This resulted in 118 items in total.

Initial item testing and selection. To select items we administered the initial item pool along with measures of physical health and health behaviors to a sample of college students (Group 1). Analyses were conducted to examine the internal consistency of each scale, the covariance and factor structure of the items, and their criterion validity. On the basis of these analyses, we selected three items for each facet of psychological well-being—a total of 54 items in 18 subscales—to construct the CIT. In addition to the comprehensive scale, we selected a subset of 10 items to construct the BIT based on the content of the items, their psychometric properties, and their criterion validity for health.

Cross-validation of the scales. To validate the new scales, we made extensive efforts to collect four additional samples representing different subpopulations with diverse demographics (Group 2, 3, 4, and 5). We administered CIT and BIT along with measures of health and ill-being to the four additional groups and reexamined the reliability, covariance and factor structure, and criterion validity of the scales in the cross-validation samples. We tested and retested Group 5 over a four-month interval to examine the test-retest reliability and predictive validity of the scales. In addition, we administered CIT and BIT with established measures of psychological well-being to Group 4 to examine the convergent validity of the new scales as well as their incremental validity for predicting health outcomes.

Participants

Five groups of respondents participated in the current research. All the participants were from the U.S. Data were collected from these samples between 2012 and 2014. Details of the demographic information for each sample are listed in Table 2. All respondents in the current study have reviewed, signed, and submitted the informed consent form before their participation.

Group 1 consisted of 490 undergraduate students (mean age = 19.45) enrolled in a large Midwest university recruited through classes and the subject pool system. The participants were 58.6% female and 64.9% White (the remainder were Asian—27.6%, African American—4.9%, and Native American—0.8%). This sample was representative of individuals with varying levels of household income.

Group 2 was a sample of older adults above 60 years of age (N = 551) and Group 3 was a sample of individuals with lower socioeconomic status and an annual income lower than $20,000 ($N$ = 501). These two groups of participants were recruited to represent the individuals who are overrepresented in the population that utilize medical services.

Group 4 (N = 559) and Group 5 (N = 1090) were samples of adults representing different age groups, diverse occupations, and a wide range of income and education levels. Participants in Group 5 were first tested in January 2013 and followed up four months later in May 2013. Over 60% of the original participants provided responses to the follow-up survey. Among the participants who responded again, 144 provided inconsistent answers to one or more of the demographic questions and were subsequently excluded from our analyses. The final retest sample consisted of 517 participants.

Measures

Comprehensive Inventory of Thriving (CIT) and Brief Inventory of Thriving (BIT). The CIT has 54 items assessing 18 facets of positive functioning representing seven dimensions

of psychological well-being. Items on three scales— *Loneliness*, *(Lack of) Control*, and *Negative Emotions*—were negatively phrased. The rest of the items are phrased in a positive direction such that high scores signify that respondents view themselves positively in important areas of functioning. For example, a positively phrased item is "My life has a clear sense of purpose" (*Meaning*) and a negatively phrased item is "Other people decide most of my life decisions" (*Control*). Participants were instructed to respond to each item on a scale of 1 ("Strongly Disagree") to 5 ("Strongly Agree"). BIT was administered as part of CIT. It assesses 10 facets within six out of the seven core dimensions of psychological well-being (see Table 1). The full instruments are presented in Appendix A.

Other Measures of Psychological Well-being. Five existing measures of psychological well-being were administered to Group 4. The FS assesses five out of the seven dimensions of psychological well-being with eight items. An example item is "People respect me." The SWLS is a 5-item instrument that measures global cognitive judgments of satisfaction with one's life (e.g., "In most ways my life is close to my ideal"). Response scale for the FS and the SWLS is from 1 ("Strongly Disagree") to 7 ("Strongly Agree"). The SMS measures the extent to which people see themselves in control of the important forces that affect their lives. It includes seven items, five negatively phrased (e.g., "I have little control over the things that happen to me") and two positively phrased (e.g., "I can do just about anything I really set my mind to"). The revised edition of LOT (LOT-R) was used in the current study. The scale is composed of six items measuring optimism and four filler items that are not scored. Three items are positively phrased (e.g., "I'm always optimistic about my future") and three are negatively phrased (e.g., "I hardly ever expect things to go my way"). The CSES includes 12 items measuring one or more of the four core traits of self-evaluations (self-esteem, generalized self-efficacy, neuroticism, and locus of control), half positively phrased (e.g., "I complete tasks successfully") and half negatively

phrased (e.g., “Sometimes when I fail I feel worthless”). The SMS, the LOT-R, and the CSES are on a scale of 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). All the negatively phrased items in these scales were reversely scored such that higher scores indicate a stronger sense of psychological well-being.

Patient Health Questionnaire (PHQ). The PHQ is a self-report inventory widely used in primary care settings as a screening and diagnostic tool for common mental health disorders of depression, anxiety, somatic symptoms, alcohol use, and eating disorders. Two modules from the PHQ—the PHQ-9 (Kroenke, Spitzer, & Williams , 2001) and the GAD-7 (Spitzer, Kroenke, Williams, & Löwe, 2006)—were used to measure the severity of depression and generalized anxiety disorder, respectively. The PHQ family of scales has been shown to have good reliability and validity in clinical and non-clinical samples among various demographic groups and across different cultures (e.g., Wittkampf, Naeije, Schene, Huyser, & van Weert, 2007). We expect CIT and BIT to show discriminant validity from PHQ-9 and GAD-7. It is also our intention to demonstrate that psychological well-being, as measured by CIT and BIT, is as important as, if not more important than, ill-being for predicting health outcomes.

Behavioral Risk Factor Surveillance System (BRFSS). We measured a variety of health outcomes with selected questions from the BRFSS (Center for Disease Control and Prevention [CDC], 2011). The BRFSS is a health survey system initiated by the CDC in 1981 to monitor personal health and health risk behaviors of the U.S. adult population. It asks a wide range of questions on respondents’ general health status, specific health conditions, and a variety of health behaviors. It currently collects data monthly from all 50 states and territories and has become the standard of health surveillance. Therefore, health outcomes measured by BRFSS survey questions are excellent criteria for testing the predictive validity of the new scales. Questions regarding four types of health outcomes were administered in the current study: (1)

general health status and health-related quality of life, (2) presence of medical conditions such as high blood pressure or coronary heart disease, (3) level of physical functioning such as ability to run or to do moderate housework, and (4) health behaviors ranging from drinking fruit juice to participating in physical exercises.

Demographics. At the end of our survey, we asked respondents to report their gender, age, race and ethnicity, marital status, level of education, current occupation, and personal and household annual income.

Data Analysis

In the initial item testing and selection stage, we conducted analyses of descriptive statistics, item-total correlations, reliability, and factor structure to select items with the best psychometric properties and meaningful correlations with health outcomes. We selected three items for each subscale of CIT such that (1) each of the subscales was internally consistent with an alpha coefficient greater than .60; (2) all of the selected items had moderate to high loadings on their corresponding subscales and low loadings on other subscales; (3) items exhibited substantial positive correlations with general health status, health-related quality of life, physical functioning, and health behaviors as well as negative correlations with the number of medical conditions. We selected 10 items, each from a different subscale of CIT, to construct the BIT such that similar standards of item loadings and scale internal consistency were achieved, the scale's correlations with health outcomes were maximized, and a wide range of psychological well-being constructs was represented. In the scale validation stage, we performed reliability analysis and multi-group confirmatory factory analysis to evaluate the scales' psychometric properties across four additional samples and to examine convergent and discriminant validity of the scales. Regression analysis was used to establish the criterion validity of the scales for predicting health outcomes and their incremental validity over and above existing measures of

psychological well-being. To examine the relative importance of the new inventories of thriving and measures of ill-being for predicting health outcomes, we used relative weight analysis (Johnson, 2000).

Results

Table 3 presents norms for the subscales of CIT and the BIT, including means, standard deviations, minimum and maximum, quartiles, and skewness and kurtosis (calculated from Group 5). As expected, many scales were negative skewed (positively skewed for the negatively worded subscales of CIT), suggesting that respondents in general had positive view about their psychological well-being, especially in regard to the social support they receive and their personal accomplishments. The scales also exhibited meaningful mean differences by gender, by age, and by health condition. To conserve space, norms by gender, by age group, and by health condition are not presented in the current paper. This and other supplementary information on the new scales is provided on the first author's website.

Subscales of CIT showed good internal consistency across all five samples, with alpha coefficients ranging from .71 to .96 (see Table 4). We conducted a multi-group confirmatory factor analysis on CIT in the four cross-validation samples to test a model with (1) a latent factor representing each subscale, (2) each item loading on only their respective subscale and none of the other latent factors, (3) latent factors correlated with each other, and (4) no error covariance among the items. The model fit was excellent (χ^2 = 12757.737, *df* = 4896, $p < .01$; CFI = .94, TLI = .93, RMSEA = .049, SRMR = .037), suggesting that the subscales of CIT are correlated yet distinguishable measures of psychological well-being constructs and that the factor structure is consistent across the groups. A closer examination of the inter-correlations among the subscales of CIT (see Table 5) shows that the subscales in general were moderately correlated with each other, which again indicate that they represent relevant yet distinguishable constructs. The only

exceptions were *Meaning*, *Optimism*, and three subscales of SWB, which were highly correlated. All the items in CIT had moderate to high loadings on their respective latent factors, ranging from .60s to .90s, showing that they are good indicators of the subscales. The BIT also had great internal consistency with alpha coefficients above .90 for all four cross-validation samples (see Table 4). Principal component analysis extracted one principal component that explained 57.53% of the total variance in the items. All 10 items appeared to be good indicators of the scale, with item loadings ranging from .58 to .84. Detailed information on item statistics including loadings and item-total correlations for CIT and BIT is provided on the first author's website.

CIT and BIT both had good test-retest reliability, as shown in the diagonal of Table 5. Over the course of four months, test-retest reliability for the BIT was .83 and that for the subscales of CIT ranged from .57 to .81. The most stable subscales were *Optimism* (.81), *Life Satisfaction* (.80), *Positive Emotions* (.79), *Accomplishment* (.78), and *Community* (.78). The only subscale with test-retest reliability below .60 was *Negative Emotions* (.57).

BIT had moderate to high correlations with subscales of CIT and was most strongly correlated with those subscales from which it sampled items (e.g., *Optimism*–.88, *Meaning*–.87, and *Accomplishment*–.83). BIT and subscales of CIT demonstrated convergent validity with all the existing measures of psychological well-being. Subscales of CIT overall had the moderate to high correlations with the FS, SWLS, SMS, LOT-R, and CSES. The subscale of CIT that targets a specific facet of psychological well-being measured by an existing scale showed the strongest correlation with that scale (see the underlined correlations in Table 5). For example, the *Life Satisfaction* subscale had the highest correlation with the SWLS (.90), *Optimism* was most strongly correlated with the LOT-R (.82), and as expected, the CSES correlated substantially with several CIT subscales measuring mastery and SWB. BIT correlated strongly with all the existing psychological well-being measures, with correlations ranging from .72 with the SMS to

.82 with the FS. The high correlation between BIT and the FS is expected as they assess overlap facets of psychological well-being yet have somewhat different emphases. Most subscales of CIT and the BIT exhibited moderate negative correlations with the two measures of ill-being (moderate positive correlations for the three negatively worded subscales of CIT; see Table 5), providing evidence for their discriminant validity. The only subscales of CIT that displayed modest relationships (albeit in expected directions) with existing measures of psychological well-being and measures of ill-being were *Learning* (e.g., "I always learn something every day") and *Community* (e.g., "I invite my neighbors to my home"), indicating that they may be more peripheral rather than central aspects to the experience of psychological well-being.

Table 6 shows concurrent and predictive validity of the new scales for health outcomes (r_1 and r_2, respectively). As can be seen, the new scales had significant correlations with all of the self-reported health outcomes. BIT correlated at substantial levels with self-perception of health and number of days in the past year when mental health was not good (r = .48 and -.48, respectively). BIT also predicted various indicators of physical health and health behaviors, including number of days in the past year when physical health was not good, number of days in the past year away from usual activity, number of illnesses diagnosed by medical practitioners, level of physical functioning, as well as number of times per day drinking fruit juices and exercising (r = -.26, -.35, .19, .25, .22 and -.24, respectively). Subscales of CIT also exhibited expected correlational patterns with the health outcomes. Higher scores on the scales were associated with better self-reported health status, fewer medical problems, higher levels of physical functioning, and more frequent health behaviors. Among the most predictive subscales were *Life Satisfaction*, *Positive Emotions*, *Optimism*, and *Accomplishment*. The scales also had good predictive validity for the health outcomes four months after their initial assessment (r_2), comparable to the size of their concurrent validity (see Table 6).

We further examined the incremental validity of CIT and BIT over and above existing measures of psychological well-being for predicting all the health outcomes in the current study. Table 7 presents, for each health outcome, the amount of variance explained (R^2) by each existing measure of psychological well-being and the additional variance accounted for (ΔR^2) by CIT. In addition, we calculated the percentage of ΔR^2 within the total R^2 in each cell as an index for CIT's incremental contribution to explaining a health outcome after controlling for an existing measure of psychological well-being. We averaged this index across every health outcome and each measure to understand for which criterion and over which existing measure did CIT contribute more (or less). In sum, CIT showed substantial incremental validity over all the existing measures of psychological well-being. For example, it explained an additional 6% of variance in participants' perception of their general health status over the FS, 10% in the number of times seeing a doctor in the past year, and 10% in the diagnosis of a mental or behavioral disorder. The overall percentage of ΔR^2 contributed by CIT within total R^2 across the entire range of health outcome was 59.63%, meaning that CIT's incremental contribution to explaining the health outcomes exceeded the initial contribution of any existing measure. This percentage was even higher for objective measures of health outcomes, including the number of times seeing a doctor (84.34%), number of medical illnesses (61.60%), physical functioning (61.02%), and health behaviors (e.g., 70.34% for times per day participating in physical activities). The same statistics were reported for BIT in Table 7. BIT exhibited incremental validity over existing measures of psychological well-being for most health outcomes. The overall percentage of ΔR^2 contributed by BIT within total R^2 across the entire range of health outcome was 23.48%. Importantly, BIT improved upon the FS in predicting the health outcomes (mean ΔR^2/Total R^2=20.08%), evidencing the difference of the BIT from the FS and its unique predictive power.

Table 8 presents results on the relative importance of thriving and ill-being for health outcomes. Each column of the table shows the relative importance weights (*RIW*s) for the predictors of each health outcome as well as the total variance accounted for (R^2) in that health outcome. The *RIW* represents the percentage of variance in R^2 that is explained by each construct (e.g., thriving) in relation to other correlated constructs (e.g., depression) and indexes the relative importance of this construct for the outcome *in comparison with* other constructs. The *RIW* for the CIT was calculated as the sum of *RIW*s for all the subscales of CIT *relative to* ill-being (in this case depression and anxiety). Importantly, thriving, as measured by the CIT, was more important than depression and anxiety for perception of general health status, mental health and physical health, as well as physical functioning (*RIW*s ranged from 42.1% to 75.4%). CIT showed overwhelming importance compared to depression and anxiety for health behaviors (*RIW*s ranged from 89.8% to 98.5%). BIT also contributed substantially to the health outcomes compared to measures of depression and anxiety. These findings suggest that an integrative approach to measuring individuals' positive functioning can greatly enhance our understanding about health outcomes, beyond what can be learned from measures of ill-being.

Discussion

The present research developed two integrative measures of psychological well-being—CIT and BIT—that have potential to be used widely. We validated the scales across U.S. samples with diverse demographics. We presented evidence for the reliability and validity of the scales. Overall, CIT and BIT had excellent psychometric properties. The scales were internally consistent. Both scales exhibited expected factor structures and demonstrated convergent and discriminant validity with established instruments. Both scales showed good concurrent and predictive validity for physical health, health behaviors, and health-related quality of life. Most

importantly, the new measures showed substantial contribution to health outcomes over and above existing measures of psychological well-being and measures of ill-being.

One feature that distinguishes CIT from existing measures of psychological well-being is that it endorses a holistic perspective of positive functioning. Thriving, as assessed by CIT, is broadly defined to include seven different dimensions of positive functioning and eighteen facets within these dimensions (see Table 1). To thrive in life is not only marked by feelings of happiness, or a sense of accomplishment, or having supporting and rewarding relationships, but is a collection of all these aspects. In the current research, we embraced this integrative view of psychological well-being, thoroughly reviewed existing theories and measures, and constructed CIT from an exhaustive list of items that reflect a broad range of psychological well-being constructs. As a result, CIT has demonstrated substantial incremental validity over existing measures of psychological well-being, even measures that is designed to comprehensively assess psychological well-being such as the FS. CIT can provide comprehensive feedback for users regarding their overall functioning and mental health and can highlight their strengths as well as areas that need improvement.

With their association with physical health and health behaviors, CIT and BIT showed promise for being used in health and medical settings. Importantly, our study used objective as well as subjective criteria of health outcomes, showing that the new measures of thriving not only correlated with the perceiption of being healthy, but also were predictive of actual physical conditions and health behaviors. The predictive validity of the scales for health outcomes are substantial and have important implications from a practical perspective. For example, individuals in our U.S. samples on average reported six days per month that their physical health was not good (see the first author's website for descriptive statistics for all the health outcomes). However, happier people whose score was 1 point higher on the *Positive Emotions* subscale

reported only three and a half days not feeling good physically, compared to eight and a half days for those whose score was 1 point below the average. Similarly, individuals in our samples on average reported close to five days per month that poor health conditions kept them away from doing their usual activities. For people whose score was 1 point below average on the *Positive Emotions* subscale, it was close to eight days; yet for the happier people, it was less than 2 days. As such, our scales can be very useful for identifying areas of strengths and potential areas of risks for individuals so that active steps may be taken to improve certain aspects psychological well-being to achieve better health. We recommend that users refer to the norms of the scales in Table 3 as a guideline for identifying psychological strengths and risks. A score above the 75th percentile signifies an area of strength, whereas a score below the 25th percentile alerts an area of risk and the need for intervention or referral. A score between the 25th and 75th percentile indicates that an area is within the common range.

Although the current study does not, of course, indicate causal directions between health and psychological well-being, there is now sufficient evidence showing that various aspects of psychological well-being can and does influence physical and mental health (e.g., De Neve et al., 2013; Diener & Chan, 2011; Rasmussen, Scheier, & Greenhouse, 2009; Tay, Tan, Diener, & Gonzalez, 2013), thus justifying interventions to improve psychological well-being when the goal is to enhance physical health. There are multiple pathways through which psychological well-being may influence health outcomes. First, psychological well-being may influence physiological functioning, and in turn, impact health and longevity. For example, positive affect was found to be associated with reduced neuroendocrine, cardiovascular, and inflammatory activity and smaller fibrinogen response to stress (Steptoe, Wardle, & Marmot, 2005); optimism was found to be associated with lower ambulatory blood pressure (Räikkönen, Matthews, Flory, Owens, & Gump, 1999). Second, individuals with higher psychological well-being are more

likely to directly engage in health behaviors (De Neve, et al., 2013), such as comsumption of healthy diet, maintenance of appropriate level of physical activity, and proper self-management for chronicle illnesses, which benefit health and protect against diseases (e.g., Tay et al., 2013). Third, individuals who experience greater psychological well-being—being happier, engaged, and optimistic—are less likely to engage in self-harm behaviors such as abusive consumption of alcolho and suicidal attempts. Therefore, higher psychological well-being can directly affect physical health.

Moreover, psychological well-being can affect health outcomes indirectly via environmental resources which not only improve health-related behaviors, but also help cope with stressful events and buffer against negative impacts on health. According to the "Broaden-and-Build" theory, people with higher positive emotions tend to develop a broader thought-action repetoire for building physical, intellectual, psychological, and social resources, which lead to long-term improvements in health and faster recovery from negative impacts on health (Fredrickson, 2003). A complementary perspective on resources can be drawn from Hobfoll's (1989, 2002) Conservation of Resources model. This model identifies different types of socio-emotional resources that help individuals be stress resilient. Many aspects of psychological well-being such as relationships and optimism, by nature, can be construed as psychological resources. In addition, there are external environmental resources which psychological well-being can generate. For example, positive emotions may expose individuals to certain social physical environments with more abundant social support (e.g., happier people tend to have more friends and higher quality marriages; Lucas, 2007; Myers, 2000); other external resources may include increased finances, better jobs, and better living conditions (e.g., Lyubomirsky, King, & Diener, 2005), all of which lead to enhanced health outcomes. Further, it has been suggested that there are positive feedback spirals, such that personal well-being improves the environment (e.g.,

well being of surrounding others), which in turn contributes to personal well-being (e.g., Fowler & Christakis, 2008; Fredrickson, 2000), multiplying the gains in health. Therefore, individuals with higher psychological well-being can improve health via affecting their social and physical environments and resources. Future research needs to examine these pathways through which psychological well-being affect health as well as the dynamic and reciprocal effect of health on psychological well-being.

Relative weight analysis showed that thriving, as measured by CIT and BIT, contributed substantially, and in many cases more, to health outcomes compared to depression and anxiety. These findings highlight that assessing a broad range of psychological well-being constructs can provide greater insight about health outcomes than using ill-being measures alone. Based on this evidence, we argue that a global, complete conceptualization of health is more than the absence of illness or negative feelings. Psychological well-being is an important component of health and contributes to healthy behaviors and better physical health. Measuring psychological well-being in the initial assessment in medical and health settings can provide additional information over the screening of ill-being. CIT and BIT can serve as very useful tools for medical and health practitioners in the initial evaluation of and continual work with their patients.

Although the current study focused on the relationship between thriving and physical health and health behaviors, the contribution of thriving is unlikely to be limited to only health outcomes. We envision that the CIT and the BIT can be applied to a variety of contexts beyond medical and health settings, such as in schools or organizations. As an extension to this study, our future research will examine the dynamic and reciprocal relationship between thriving and important organizational outcomes, including job performance or turnover intentions. The CIT and the BIT may be applied as an assessment tool in organizational training and development with the goal to enhance employee psychological well-being and relevant work outcomes.

Reliability and validity evidence for the two new inventories of thriving provided in this study is preliminary. Our ongoing research will continue this investigation by examining the psychometric property and predictive validity of the measures across different cultures around the world and will validate the measures with other sources of data, such as clinical ratings or informant reports. Moreover, we will use the CIT, a multi-faceted, comprehensive measure of psychological well-being, to examine the structure of psychological well-being and the relationship among its different aspects. We invite more researchers and practitioners to evaluate and validate the inventories of thriving and use them as vehicles to address additional research questions within and beyond health settings.

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Table 1

Core dimensions of psychological well-being and corresponding constructs from prominent positive psychology theories, existing measures of psychological well-being, and the new measures of thriving

	SWB	Relationship	Meaning	Engagement	Mastery	Optimism	Autonomy
Prominent Positive Psychology Theories							
Diener (1984)	SWB						
Ryan & Deci's (2000) Self-Determination Theory		Need for relatedness			Need for competency		Need for autonomy
Ryff's (1995) Theory of Psychological Well-being	Self-acceptance	Positive relations with other people	Purpose in life		Environmental mastery		Autonomy
Seligman's (2011) PERMA model	Positive emotions	Relationship	Meaning	Engagement	Accomplishment		
Scheier & Carver (1985)						Optimism	
Existing Measures*							
Flourishing Scale (Diener et al., 2009)		Relationship (3)	Meaning (1)	Engagement (1)	Self-esteem (1), Mastery (1)	Optimism (1)	
Satisfaction with Life Scale (Diener et al., 1985)	Satisfaction with life (5)						
Self Mastery Scale (Pearlin & Schooler, 1978)					Self-efficacy (4)	Pessimism (1)	Control (2)
Life Orientation Test (Scheier et al., 1994)						Optimism (6)	
Core Self-Evaluations Scale (Judge et al., 2003)	Satisfaction with self (1) Depression (1)				Self-esteem (2), Self-efficacy (3), Control (4)	Pessimism (1)	
Current Measures*							
Comprehensive Inventory of Thriving (CIT)	Life satisfaction (3), Positive emotions (3), Negative emotions (3)	Support (3), Community (3), Trust (3), Respect (3), Loneliness (3), Belonging (3)	Meaning (3)	Engagement (3)	Skill (3), Learning (3), Self-efficacy (3), Self-worth (3), Accomplishment (6)	Optimism (3)	Control (3)
Brief Inventory of Thriving (BIT)	Life satisfaction (1), Positive emotions (1)	Support (1), Belonging (1)	Meaning (1)	Engagement (1)	Self-worth (1), Self-efficacy (1), Accomplishment (1)	Optimism (1)	

Note. *The number in the parenthesis following each construct is the number of items that measures the construct.

Table 2

Demographic information for five U.S. samples

		Group 1 (N=490)	*Group 2 (N=551)*	*Group 3 (N=501)*	*Group 4 (N = 559)*	*Group 5 (N=1090)*
Gender	Male	199 (40.6%)	210 (38.1%)	169 (33.7%)	278 (49.7%)	511 (46.9%)
	Female	287 (58.6%)	311 (56.4%)	292 (58.3%)	281 (50.3%)	577 (52.9%)
Age	16 – 24	479 (97.8%)	0 (0.0%)	173 (34.6%)	120 (21.5%)	176 (16.1%)
	25 – 39	6 (0.8%)	0 (0.0%)	166 (33.2%)	263 (47.0%)	240 (25.9%)
	40 – 59	0 (0.0%)	0 (0.0%)	236 (23.6%)	135 (24.2%)	374 (34.3%)
	60 +	0 (0.0%)	514 (93.3%)	0 (0.0%)	41 (7.3%)	257 (23.8%)
Race	Black	24 (4.9%)	29 (5.3%)	64 (12.8%)	41 (7.3%)	112 (10.3%)
	White	318 (64.9%)	482 (87.5%)	356 (71.1%)	460 (82.3%)	894 (82.0%)
	Asian	135 (27.6%)	7 (1.3%)	25 (5.0%)	33 (5.9%)	60 (5.5%)
	Native American	4 (0.8%)	2 (0.4%)	9 (1.8%)	7 (1.3%)	18 (1.7%)
Ethnicity	Hispanic	41 (8.4%)	14 (2.5%)	56 (11.2%)	42 (7.5%)	110 (10.1%)
	Non-Hispanic	444 (90.6%)	505 (91.7%)	403 (80.4%)	517 (92.5%)	968 (88.8%)
Marital Status	Married	3 (0.6%)	318 (57.7%)	85 (17.0%)	213 (38.1%)	498 (45.7%)
	Domestic Partner	12 (2.4%)	21 (3.8%)	27 (5.4%)	44 (7.9%)	57 (5.2%)
	Single	467 (95.3%)	33 (6.0%)	287 (57.3%)	256 (45.8%)	373 (34.2%)
	Divorced	0 (0.0%)	92 (16.7%)	54 (10.8%)	40 (7.2%)	120 (11.0%)
	Widowed	0 (0.0%)	57 (10.3%)	7 (1.4%)	6 (1.1%)	39 (3.6%)
Educational Attainment	No high school diploma or GED	0 (0.0%)	15 (2.7%)	55 (11.0%)	7 (1.3%)	45 (4.1%)
	High school diploma or GED	178 (36.3%)	141 (25.6%)	152 (30.3%)	86 (15.4%)	227 (20.8%)
	Vocational or Trade school degree	0 (0.0%)	39 (7.1%)	24 (4.8%)	30 (5.4%)	81 (7.4%)
	Completed some college	269 (54.9%)	160 (29.0%)	137 (27.3%)	183 (32.7%)	322 (29.5%)
	College degree	31 (6.3%)	105 (19.1%)	77 (15.4%)	190 (34.0%)	283 (26.0%)
	Graduate work or Graduate degree	6 (1.2%)	61 (11.1%)	15 (3.0%)	63 (11.3%)	131 (12.0%)
House Income	Less than $20,000	122 (24.9%)	65 (11.8%)	413 (82.4%)	133 (23.8%)	292 (26.7%)
	$20,000 – 39,999	28 (5.8%)	221 (40.1%)	0 (0.0%)	144 (25.8%)	218 (20.0%)
	$40,000 – 59,999	44 (9.0%)	130 (23.6%)	0 (0.0%)	100 (17.9%)	208 (19.1%)
	$60,000 – 79,999	47 (9.6%)	47 (9.0%)	0 (0.0%)	81 (14.5%)	143 (13.15)
	$ 80,000 – 99,999	47 (9.6%)	31 (6.0%)	0 (0.0%)	33 (5.9%)	77 (7.1%)
	$100,000 +	173 (35.2%)	27 (5.0%)	0 (0.0%)	67 (12.0%)	124 (11.3%)

Table 3

Norms of the Comprehensive Inventory of Thriving (CIT) and the Brief Inventory of Thriving (BIT)

	N	*Mean*	*SD*	*Min.*	*25th percentile*	*50th percentile*	*75th percentile*	*Max.*	*Skewness*	*S.E.*	*Kurtosis*	*S.E.*
CIT												
Support	1090	4.18	0.81	1.00	4.00	4.00	5.00	5.00	-1.40	.074	2.82	.148
Community	1090	3.32	0.98	1.00	2.67	3.33	4.00	5.00	-0.35	.074	-0.23	.148
Trust	1090	3.43	0.87	1.00	3.00	3.67	4.00	5.00	-0.55	.074	0.36	.148
Respect	1089	3.96	0.71	1.00	3.67	4.00	4.33	5.00	-0.99	.074	2.40	.148
Loneliness	1090	2.46	1.08	1.00	1.67	2.33	3.00	5.00	0.48	.074	-0.52	.148
Belongingness	1090	3.38	0.96	1.00	3.00	3.33	4.00	5.00	-0.50	.074	0.00	.148
Flow	1090	3.90	0.75	1.00	3.67	4.00	4.33	5.00	-0.81	.074	1.51	.148
Skill	1090	3.63	0.95	1.00	3.00	3.67	4.00	5.00	-0.57	.074	0.03	.148
Learning	1090	3.81	0.79	1.00	3.33	4.00	4.33	5.00	-0.60	.074	0.63	.148
Lack of Control	1090	2.07	1.03	1.00	1.00	2.00	2.67	5.00	0.91	.074	0.20	.148
Accomplishment	1090	3.30	1.06	1.00	2.67	3.33	4.00	5.00	-0.46	.074	-0.45	.148
Self-efficacy	1090	4.02	0.79	1.00	3.67	4.00	4.67	5.00	-1.13	.074	2.04	.148
Self-worthy	1090	3.71	0.89	1.00	3.33	4.00	4.33	5.00	-0.68	.074	0.46	.148
Meaning	1089	3.71	0.98	1.00	3.00	4.00	4.33	5.00	-0.78	.074	0.34	.148
Optimism	1090	3.77	0.98	1.00	3.33	4.00	4.33	5.00	-0.89	.074	0.51	.148
Life satisfaction	1089	3.40	1.06	1.00	2.67	3.67	4.00	5.00	-0.55	.074	-0.39	.148
Positive emotions	1090	3.68	1.01	1.00	3.00	4.00	4.00	5.00	-0.82	.074	0.29	.148
Negative emotions	1090	2.71	0.58	1.00	2.33	2.67	3.00	5.00	1.01	.074	1.91	.148
BIT	1090	3.71	0.78	1.00	3.30	3.80	4.20	5.00	-0.78	.074	0.68	.148

Table 4

Internal consistency of the subscales of Comprehensive Inventories of Thriving (CIT) and the Brief Inventory of Thriving (BIT) by sample

Factor	Group 1	Group 2	Group 3	Group 4	Group 5
CIT					
Support	0.82	0.90	0.90	0.90	0.91
Community	0.78	0.79	0.78	0.81	0.83
Trust	0.71	0.78	0.82	0.85	0.86
Respect	0.77	0.86	0.85	0.83	0.86
Loneliness	0.79	0.86	0.85	0.83	0.87
Belongingness	0.81	0.87	0.87	0.83	0.88
Flow	0.79	0.84	0.83	0.77	0.83
Skill	0.90	0.84	0.85	0.89	0.91
Learning	0.79	0.82	0.79	0.76	0.80
Lack of Control	0.85	0.90	0.90	0.91	0.93
Accomplishment	0.88	0.94	0.93	0.94	0.95
Self-efficacy	0.79	0.83	0.85	0.85	0.87
Self-worthy	0.81	0.88	0.86	0.86	0.87
Meaning	0.87	0.88	0.88	0.92	0.92
Optimism	0.77	0.89	0.87	0.92	0.91
Life satisfaction	0.83	0.92	0.91	0.92	0.92
Positive emotions	0.93	0.92	0.92	0.95	0.95
Negative emotions	0.94	0.95	0.93	0.96	0.96
BIT	0.75	0.90	0.92	0.92	0.93

Table 5

Correlations among the Comprehensive Inventory of Thriving (CIT) subscales, the Brief Inventory of Thriving (BIT), existing measures of psychological well-being, and measures of ill-being

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CIT																										
1 Support	**.83**																									
2 Community	.40	**.78**																								
3 Trust	.43	.64	**.76**																							
4 Respect	.63	.52	.68	**.69**																						
5 Loneliness	-.47	-.32	-.34	-.48	**.71**																					
6 Belongingness	.48	.69	.67	.63	-.44	**.71**																				
7 Flow	.58	.54	.53	.65	-.43	.61	**.70**																			
8 Skill	.42	.53	.48	.55	-.45	.57	.70	**.76**																		
9 Learning	.40	.51	.38	.48	-.27	.47	.63	.63	**.66**																	
10 Lack of Control	-.27	-.01	-.05	-.27	.53	-.13	-.22	-.21	-.08	**.61**																
11 Accomplishment	.45	.55	.53	.55	-.52	.62	.60	.66	.50	-.20	**.78**															
12 Self-efficacy	.53	.46	.42	.62	-.46	.56	.71	.61	.63	-.31	.62	**.69**														
13 Self-worthy	.54	.61	.53	.67	-.52	.66	.71	.76	.62	-.19	.72	.73	**.70**													
14 Meaning	.57	.55	.53	.67	-.62	.63	.70	.67	.56	-.28	.75	.70	.86	**.75**												
15 Optimism	.55	.51	.54	.64	-.57	.63	.67	.59	.56	-.27	.73	.76	.74	.83	**.79**											
16 Life satisfaction	.54	.52	.55	.59	-.64	.63	.61	.61	.51	-.24	.82	.66	.73	.84	.83	**.81**										
17 Positive emotions	.53	.53	.56	.65	-.64	.64	.69	.61	.54	-.29	.71	.68	.73	.81	.86	.85	**.80**									
18 Negative emotions	-.43	-.30	-.35	-.49	.73	-.44	-.50	-.42	-.34	.55	-.49	-.53	-.52	-.62	-.67	-.62	-.73	**.57**								
19 BIT	.63	.57	.56	.68	-.61	.72	.74	.70	.55	-.29	.83	.77	.80	.87	.88	.87	.87	-.32	**.83**							
20 FS	.65	.49	.53	.70	-.55	.57	.67	.64	.51	-.30	.62	.68	.69	.71	.73	.67	.72	-.33	.82	--						
21 SWLS	.41	.46	.40	.50	-.55	.58	.51	.46	.20	-.32	.73	.54	.62	.72	.70	.90	.73	-.46	.81	.74	--					
22 SMS	.46	.26	.37	.54	-.60	.49	.51	.44	.27	-.66	.60	.69	.53	.56	.69	.60	.64	-.52	.72	.70	.59	--				
23 LOT-R	.42	.35	.44	.57	-.62	.58	.56	.44	.26	-.48	.66	.65	.60	.65	.82	.68	.75	-.57	.79	.76	.68	.75	--			
24 CSES	.44	.33	.36	.55	-.68	.56	.57	.51	.26	-.57	.71	.69	.60	.70	.76	.73	.78	-.56	.81	.78	.71	.85	.82	--		
25 PHQ-9	-.28	-.24	-.29	-.33	.59	-.35	-.35	-.36	-.18	.37	-.42	-.39	-.41	-.46	-.46	-.49	-.56	.46	-.52	--	--	--	--	--	--	
26 GAD-7	-.23	-.23	-.27	-.28	.51	-.32	-.27	-.28	-.12	.33	-.37	-.33	-.34	-.39	-.41	-.44	-.51	.43	-.45	--	--	--	--	--	.85	--

Note. Test-rest reliability of CIT and BIT are shown in the diagonal in bold. Underlined correlations show evidence for convergent validity for CIT and BIT.

Table 6

Concurrent and predictive validity of the Comprehensive Inventory of Thriving (CIT) and the Brief Inventory of Thriving (BIT) for health outcomes

	General perception of one's own health status		Number of days when physical health is not good		Number of days when mental health is not good		Number of days away from usual activities		Number of times seeing a doctor in the past year		Hospitalized during the past year (Yes/No)		Diagnosed with a mental or behavioral disorder (Yes/No)		Number of medical illnesses		Physical function		Times drinking 100% PURE fruit juices per day		Servings of fruit and vegetables ate per day		Times participating in physical activities or exercises per day	
	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2	r_1	r_2
BIT	.48	.50	-.26	-.26	-.48	-.50	-.35	-.36	-.16	-.14	-.05	-.02	-.24	-.31	-.19	-.28	.25	.28	.22	.22	.16	.11	.24	.21
CIT																								
Support	.25	.30	-.09	-.07	-.23	-.22	-.18	-.17	-.02	.01	-.02	-.01	-.08	-.07	-.08	-.10	.19	.16	.08	.15	.14	.12	.10	.09
Community	.27	.31	-.09	-.09	-.24	-.25	-.13	-.17	-.07	-.05	-.03	-.04	-.10	-.12	-.06	-.13	.07	.11	.22	.23	.12	.08	.21	.19
Trust	.28	.33	-.14	-.14	-.27	-.27	-.17	-.21	-.06	-.05	-.06	-.06	-.11	-.13	-.02	-.10	.06	.13	.11	.14	.10	.07	.16	.18
Respect	.29	.31	-.15	-.15	-.31	-.33	-.23	-.27	-.08	-.07	-.05	-.06	-.13	-.18	-.06	-.10	.12	.15	.12	.18	.15	.18	.12	.14
Loneliness	-.33	-.32	.23	.25	.44	.44	.33	.33	.14	.09	.09	.03	.25	.26	.18	.19	-.23	-.19	-.05	-.02	-.07	-.11	-.08	-.05
Belongingness	.34	.38	-.17	-.20	-.33	-.37	-.22	-.25	-.09	-.11	-.01	.00	-.16	-.17	-.09	-.20	.12	.15	.15	.14	.10	.05	.17	.08
Flow	.36	.38	-.14	-.13	-.28	-.31	-.19	-.19	-.07	-.08	-.03	-.02	-.16	-.23	-.09	-.20	.19	.22	.14	.18	.14	.14	.18	.20
Skill	.35	.37	-.17	-.16	-.32	-.33	-.23	-.21	-.08	-.08	-.06	-.05	-.17	-.24	-.10	-.18	.19	.24	.16	.20	.14	.12	.25	.23
Learning	.26	.30	-.06	-.08	-.16	-.21	-.12	-.17	-.04	-.08	-.03	-.11	-.05	-.17	-.05	-.11	.16	.17	.16	.16	.17	.14	.23	.27
Lack of Control	-.09	-.11	.06	.08	.21	.20	.20	.20	.02	-.03	.06	-.02	.12	.12	.03	.04	-.12	-.09	.09	.09	-.05	-.10	.02	-.03
Accomplishment	.41	.40	-.22	-.19	-.40	-.44	-.28	-.29	-.12	-.10	-.03	.01	-.20	-.28	-.13	-.20	.16	.20	.24	.23	.14	.09	.25	.22
Self-efficacy	.34	.41	-.18	-.18	-.35	-.41	-.28	-.29	-.13	-.10	-.01	.00	-.17	-.27	-.17	-.22	.24	.26	.14	.16	.09	.02	.18	.19
Self-worthy	.37	.38	-.21	-.23	-.37	-.37	-.27	-.25	-.12	-.12	-.08	-.05	-.19	-.25	-.14	-.22	.21	.26	.21	.21	.16	.12	.22	.21
Meaning	.37	.40	-.18	-.19	-.41	-.42	-.27	-.28	-.10	-.12	-.04	-.02	-.21	-.30	-.13	-.20	.17	.21	.20	.18	.19	.16	.23	.24
Optimism	.42	.45	-.24	-.24	-.44	-.46	-.31	-.33	-.16	-.14	-.05	-.02	-.22	-.29	-.18	-.26	.23	.27	.17	.16	.14	.09	.20	.17
Life satisfaction	.46	.46	-.28	-.23	-.47	-.47	-.33	-.32	-.18	-.15	-.05	.00	-.23	-.28	-.18	-.25	.21	.24	.23	.19	.14	.10	.23	.18
Positive emotions	.46	.46	-.27	-.25	-.53	-.52	-.37	-.37	-.17	-.16	-.07	.00	-.30	-.34	-.19	-.27	.23	.26	.17	.16	.12	.08	.19	.17
Negative emotions	-.14	-.20	.09	.17	.33	.37	.22	.25	.04	.05	.07	.03	.19	.29	.08	.06	-.09	-.10	.00	.01	-.07	-.19	-.01	-.09

Note. r_1 = concurrent validity, r_2 = predictive validity with an interval of 4 months between time 1 and time 2.

Table 7

Incremental validity of the Comprehensive Inventory of Thriving (CIT) and the Brief Inventory of Thriving (BIT) over existing measures of psychological well-being in predicting health outcomes

	General perception of one's own health status	Number of days when physical health is not good	Number of days when mental health is not good	Number of days away from usual activities	Number of times seeing a doctor in the past year	Hospitalized during the past year (Yes/No)	Diagnosed with a mental or behavioral disorder (Yes/No)	Number of medical illnesses	Physical functioning	Times drinking 100% PURE fruit juices per day	Servings of fruit and vegetables ate per day	Times participating in physical activities or exercises per day	***Mean* ΔR^2/Total R^2**
Incremental validity of CIT over	(R^2 explained by each scale for each health outcome/ΔR^2 contributed by CIT)												
FS	.20/.06	.04/.04	.29/.15	.16/.07	.01/.10	.00/.06	.07/.10	.01/.05	.04/.04	.01/.07	.04/.04	.05/.08	**59.31%**
SWLS	.18/.08	.04/.04	.27/.17	.14/.10	.01/.10	.00/.06	.09/.08	.02/.05	.03/.05	.02/.07	.02/.05	.06/.07	**56.39%**
SMS	.16/.10	.06/.04	.30/.16	.18/.08	.03/.09	.01/.06	.08/.10	.02/.05	.04/.05	.00/.08	.02/.06	.02/.11	**63.06%**
LOT-R	.16/.09	.03/.04	.32/.13	.14/.09	.02/.09	.00/.07	.11/.06	.02/.04	.02/.06	.01/.07	.01/.06	.02/.11	**63.75%**
CSES	.21/.06	.04/.04	.39/.08	.20/.05	.03/.09	.01/.06	.13/.06	.03/.04	.03/.05	.02/.07	.01/.06	.03/.10	**55.62%**
***Mean* ΔR^2/Total R^2**	**29.48%**	**47.61%**	**30.59%**	**32.49%**	**84.34%**	**91.63%**	**46.46%**	**61.60%**	**61.02%**	**85.66%**	**74.30%**	**70.34%**	**59.63%**
Incremental validity of BIT over	(R^2 explained by each scale for each health outcome/ΔR^2 contributed by BIT)												
FS	.20/.04	.04/.01	.29/.07	.16/.04	.01/.00	.00/.00	.07/.04	.01/.01	.04/.00	.01/.01	.04/.00	.05/.01	**20.08%**
SWLS	.18/.06	.04/.01	.27/.10	.14/.06	.01/.00	.00/.00	.09/.02	.02/.01	.03/.01	.02/.01	.02/.01	.06/.01	**18.43%**
SMS	.16/.08	.06/.00	.30/.10	.18/.04	.03/.00	.01/.00	.08/.03	.02/.01	.04/.01	.00/.02	.02/.01	.02/.05	**28.79%**
LOT-R	.16/.07	.03/.01	.32/.07	.14/.06	.02/.00	.00/.00	.11/.01	.02/.00	.02/.02	.01/.01	.01/.01	.02/.05	**31.40%**
CSES	.21/.04	.04/.01	.39/.03	.20/.02	.03/.00	.01/.00	.13/.00	.03/.00	.03/.01	.02/.01	.01/.01	.03/.03	**18.69%**
***Mean* ΔR^2/Total R^2**	**24.09%**	**14.51%**	**18.74%**	**20.69%**	**7.49%**	**11.82%**	**18.87%**	**22.35%**	**21.99%**	**47.22%**	**30.89%**	**43.04%**	**23.48%**

Table 8

Results from relative weight analysis of the Comprehensive Inventory of Thriving (CIT) and the Brief Inventory of Thriving (BIT) and measures of ill-being for health outcomes

	General perception of one's own health status	Number of days when physical health is not good	Number of days when mental health is not good	Number of days away from usual activities	Number of times seeing a doctor in the past year	Hospitalized during the past year (Yes/No)	Diagnosed with a mental or behavioral disorder (Yes/No)	Number of medical illnesses	Physical functioning	Times drinking 100% PURE fruit juices per day	Servings of fruit and vegetables ate per day	Times participating in physical activities or exercises per day
Relative Importance Weight (RIW)												
CIT (total)	**75.4**	**55.4**	**54.1**	**49.9**	**58.7**	**42.1**	**42.7**	**56.6**	**68.8**	**92.8**	**96.2**	**96.4**
Depression	17.4	30.0	20.6	30.1	26.6	39.8	24.1	29.9	21.8	5.2	1.3	1.6
Anxiety	7.2	14.6	25.3	20.0	14.7	18.1	33.2	13.5	9.4	2.0	2.5	2.0
Total R^2	.31	.18	.47	.27	.09	.06	.21	.12	.14	.12	.06	.11
Relative Importance Weight (RIW)												
BIT	**54.9**	**23.3**	**24.1**	**21.6**	**19.6**	**5.7**	**11.2**	**19.5**	**34.7**	**82.7**	**86.6**	**89.4**
Depression	30.9	50.5	35.8	46.9	50.7	64.6	39.5	54.8	45.7	12.1	7.1	6.2
Anxiety	14.2	26.1	40.2	31.6	29.7	29.7	49.3	25.7	19.6	5.2	6.3	4.5
Total R^2	.28	.14	.44	.26	.06	.04	.19	.08	.10	.07	.03	.07

Appendix A. Comprehensive Inventory of Thriving and Brief Inventory of Thriving (*)

Please indicate your agreement or disagreement with each of the following statements using the scale below:

1 Strongly Disagree
2 Disagree
3 Neither Agree nor Disagree
4 Agree
5 Strongly Agree

I. Relationship	
Support	1. There are people I can depend on to help me
	2. There are people who give me support and encouragement
	3. There are people who appreciate me as a person (*****)
Community	1. I pitch in to help when my local community needs something done
	2. I invite my neighbors to my home
	3. I look for ways to help my neighbors when they are in need
Trust	1. I can trust people in my society
	2. People in my neighborhood can be trusted
	3. Most people I meet are honest
Respect	1. People respect me
	2. People are polite to me
	3. I am treated with the same amount of respect as others
Loneliness	1. I feel lonely
	2. I often feel left out
	3. There is no one I feel close to
Belonging	1. I feel a sense of belonging in my community (*****)
	1. I feel a sense of belonging in my state or province
	2. I feel a sense of belonging in my country
II. Engagement	
Engagement	1. I get fully absorbed in activities I do
	2. In most activities I do, I feel energized (*****)
	3. I get excited when I work on something
III. Mastery	
Skills	1. I use my skills a lot in my everyday life
	2. I frequently use my talents
	3. I get to do what I am good at everyday
Learning	1. I learned something new yesterday
	2. Learning new things is important to me
	3. I always learn something everyday
Accomplishment	1. I am achieving most of my goals (*****)
	2. I am fulfilling my ambitions
	3. I am on track to reach my dreams

Self-Efficacy	1. I can succeed if I put my mind to it (*****)
	2. I am confident that I can deal with unexpected events
	3. I believe that I am capable in most things
Self-Worth	1. What I do in life is valuable and worthwhile (*****)
	2. The things I do contribute to society
	3. The work I do is important for other people
IV. Autonomy	
Control	1. Other people decide most of my life decisions (R)
	2. The life choices I make are not really mine (R)
	3. Other people decide what I can and cannot do (R)
V. Meaning	
Meaning and Purpose	1. My life has a clear sense of purpose (*****)
	2. I have found a satisfactory meaning in life
	3. I know what gives meaning to my life
VI. Optimism	
Optimism	1. I am optimistic about my future (*)
	2. I have a positive outlook on life
	3. I expect more good things in my life than bad
VII. Subjective Well-Being	
Life satisfaction	1. In most ways my life is close to my ideal
	2. I am satisfied with my life
	3. My life is going well (*****)
Positive feelings	1. I feel positive most of the time
	2. I feel happy most of the time
	3. I feel good most of the time (*****)
Negative feelings	1. I feel negative most of the time (R)
	2. I experience unhappy feelings most of the time (R)
	3. I feel bad most of the time (R)

Note. Reversely scored items are noted with an (R). Items from the BIT are marked as an asterisk (*****). The CIT subscales may be used alone or in combination with each other. Dimension names and subscale titles are presented for clarification purpose and were removed during data collection in the current study.