Europe's Journal of Psychology
ejop.psychopen.eu | 1841-0413

Research Reports

Lemons Into Lemonade: Development and Validation of an Inventory to Assess Dispositional Thriving

Shadi Beshai*[a], Laura D. Branco[a], Keith S. Dobson[a]

[a] Department of Psychology, University of Calgary, Alberta, Canada.

Abstract

Research indicates that health and disorder are polar opposites of the same continuum of vulnerability. Research has focused almost exclusively upon one end of this continuum, namely disorder. As such, instruments that assess adaptive dispositions (e.g., "thriving", or post-trauma growth) have rarely been developed. The purpose of this study was to develop and validate an instrument that assesses dispositional thriving. Undergraduate students (N = 289) were asked to complete the dispositional thriving inventory (DTI), in addition to a number of other instruments designed to assess adaptive (e.g., optimism, acceptance, planning, etc.) and maladaptive (depression, dysfunctional attitudes, etc.) constructs. Factor analysis revealed four orthogonal factors comprising the DTI. Results indicated that the 26-item scale is reliable (α = .88) and valid. Scores on the DTI positively correlated with optimism, and adaptive coping, and negatively correlated with depression and dysfunctional attitudes. There is some evidence that the DTI is a reliable and valid instrument. The construct of thriving has wide implications upon the onset and treatment of psychopathology.

Keywords: thriving, assessment, factor analysis, scale development, mental health

Europe's Journal of Psychology, 2013, Vol. 9(1), 62–76, doi:10.5964/ejop.v9i1.508

Received: 2012-08-08. Accepted: 2012-10-23. Published: 2013-02-28.

*Corresponding author at: Department of Psychology, University of Calgary, 2500 University Drive NW, Calgary Alberta. T2N 1N4. E-mail: sbeshai@ucalgary.ca

It has recently been recognized that understanding healthy reactions to environmental problems may benefit our understanding of disordered reactions, as these two types of reactions likely exist on a continuum of vulnerability (Widiger & Trull, 2007; Flett, Vredenburg, & Krames, 1997). Despite this fact, mental health research has focused primarily on pathology and dysfunction (for surveys of the history of clinical psychology, see Schultz & Schultz, 2011). Some efforts have been made to investigate positive factors in mental health. One of such positive factors that has been widely studied within the context of clinical psychology is optimism, a stable trait that determines one's level of confidence regarding events over the course of their life (Scheier & Carver, 1992). Optimism is associated with better coping (Nes & Segerstrom, 2006) and decreased stress following stressful events (e.g., Allison, Guichard, & Gilain, 2000; Brissette, Scheier, & Carver, 2002; Fitzgerald, Tennen, Affleck, & Pransky, 1993). It has also been linked to decreased hopelessness (e.g., Gustavsson-Lilius, Julkunen, & Hietanen, 2007) and increased resilience to negative life events (Fredrickson, Tugade, Waugh, & Larkin, 2003). Thus, the association between optimism and risk of psychopathology is well documented (Carver, Scheier, & Segerstrom, 2010).

A number of investigations have examined resilience and its relationship to other psychological constructs. Unfortunately, far fewer investigations have been conducted to examine the related construct known as "thriving". Thriving consists of the positive changes experienced or benefits perceived following adversity (Joseph & Butler,

2010). Although people commonly interpret negative events as valuable sources of insight and learning, this phenomenon only began to be formally investigated in the late 1980s. An early attempt to understand adaptive responses to adversity was made by Affleck, Tennen, Croog, and Levine (1987). In this investigation, participants who experienced a cardiac arrest were given questionnaires which assessed attributional style and perceived benefits from their experience. These participants were contacted eight years after the initial assessment, and aspects of their physical health were examined. The results of the study indicated that individuals who reported perceiving more benefits from the initial heart attack were less likely to experience a second heart attack and exhibited less morbidity at the time of the second assessment. It is important to note, however, that conclusions regarding "perceived benefits" were drawn from participants' answers to a single open-ended question. Such methods have limited validity and reliability.

A study by Davis, Nolen-Hoeksema, and Larson (1998) assessed growth in the context of bereavement. Individuals were interviewed in hospices both before and after the loss of their spouse, and levels of psychological adjustment, as well as the tendency to be optimistic or pessimistic, were examined. In post-loss interviews, participants also answered two open-ended questions about the extent to which they made meaning out of the experience of losing a loved one. One of these questions related specifically to "thriving", or post-traumatic growth. These researchers found that participants who were able to make meaning of the experience earlier in the process were less likely to experience psychological maladjustment. However, as in the Affleck et al. (1987) study, there were methodological issues in the assessment of post-traumatic growth. The use of open-ended questions and coded answers may have limited the validity and overall generalizability of the results.

To resolve these methodological issues, standardized instruments have been designed to assess positive or constructive attitudes in response to stress. The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) and the Stress-related Growth Scale (SRGS; Park, Cohen, & Murch, 1996) are examples of such instruments. Subsequent research of stress-related growth made use of these scales, which led to more easily replicable and generalizable results. A study by Weiss (2002), for instance, used the PTGI to observe post traumatic growth in women who had experienced breast cancer. A total of 98% of the women reported post-traumatic growth. The PTGI was also administered to participants' husbands, and it was found that this post traumatic growth was corroborated by the women's spouses.

Results similar to those obtained by Weiss (2002) were produced by a number of studies which assessed post-traumatic growth with questionnaires and scales rather than open-ended questions. A negative correlation between reported benefits and symptoms of post-traumatic stress has been detected in victims of general trauma (Linley, Joseph, & Goodfellow, 2008) and, more specifically, in rape victims (Frazier, Tashiro, Berman, Steger, & Long, 2004). A recent meta-analysis of 87 studies of responses to traumatic events found that individuals who reported benefits from negative experiences also exhibited fewer depression symptoms and reported higher levels of well-being (Helgeson, Reynolds, & Tomich, 2006).

While the development of quantitative scales was undoubtedly an important step in this line of research, it is important to note that such measures evaluate "state" levels of thriving. Thriving has been found to be related to cognitive appraisal of events (Evers et al., 2001; Fontana & Rosenheck, 1998; Park et al., 1996) and coping strategies (Armeli, Gunthert, & Cohen, 2001; Evers et al., 2001; Koenig, Pargament, & Nielsen, 1998), suggesting that there may be stable, underlying cognitive features that promote one's tendency to thrive. Indeed, cognitive-behavioral researchers, such as Clark, Beck, and Alford (1999), have long speculated about the existence of

"compensatory schemas" which, when activated, "counter the dysfunctional schemas" (p. 67). Scales such as the SRGS and the PTGI, which orient respondents to answer the items in the context of their experience with one particular traumatic event, may not provide an accurate indication of participants' general tendency to thrive. Valuable information could be gained from the development of scales that assess "trait" levels of the construct.

Secondly, the above mentioned measures are arguably narrow in their assessment of the construct of thriving. Carver (1998) defined thriving as decreased negative reactions to subsequent stressors. As such, individuals high on this disposition should theoretically exhibit a higher level of functioning or report gains in skills or knowledge as a result of experiencing a negative event. This concept is best exemplified by the personal accounts of individuals who have reported experiencing positive life changes as a result of a number of traumatic events. As such, although growth/ learning in reaction to stress is an important feature of the thriving variable, we believe that pre-post level of functioning and problem orientation are other important features which remain virtually untapped by the extant scales. Third, other scales which assess psychological health have items which measure intrapersonal resilience, which will be distinguished throughout this paper from thriving. Thriving is defined as the capacity for growth and learning when faced with personal adversity, as measured by pre-post stressor functioning, general growth, and adaptive attitudes toward stressors. Resilience, on the other hand, can be defined as the ability to return to baseline levels of functioning after experiencing trauma or adversity,

Reliable assessment of adaptive attitudes has major clinical implications. Lower levels of adaptive dispositions could predict maladaptive responses to negative life events. If this is found to be the case, therapeutic efforts which focus on the development and fostering of such adaptive dispositions could reduce the recurrence of disordered reactions to negative events. The aim of the current study was to develop and provide preliminary validation for an inventory which assesses dispositional thriving.

There is a hypothesized, positive relationship between thriving and constructs such as resilience, post-traumatic growth, optimism, internal locus of control, and positive coping. Conversely, we hypothesize that thriving is negatively associated with constructs such as depression, dysfunctional attitudes, poor functioning, and negative coping strategies (e.g., substance use, distraction, etc.). Given that thriving is defined as post-trauma growth, heightened functioning, and adaptive problem orientation, we hypothesize that the tool will exhibit a three-factor structure, with three orthogonal factors combining to form the construct.

The development of this scale represents the combined efforts of the authors of this report working collaboratively with five graduate students to produce items which capture the thriving construct, as defined above. Once the items were created and agreed upon, they were subjected to an initial pilot study, and then, based on the results of this initial study, the items were refined and used in the current investigation. In order to validate the instrument, a number of well-validated scales intended to measure constructs which are hypothesized to relate to the thriving construct (e.g., coping, optimism, depression, etc.) were used.

Development of the Dispositional Thriving Inventory

Dispositional Thriving Inventory (DTI)

The DTI is a rationally derived scale which aims to assess the extent to which people thrive in response to negative life events. Drawing upon previous studies and extant scales of psychopathology and health, the principle investigators created a number of items designed to assess functioning, appraisal of adversity, and growth in response

to adversity. The initial version of the DTI comprised 29 items, 12 of which were modified from extant scales of similar constructs (e.g., resilience, etc.), while the remaining 17 were originally created. Together, the 29 items described potential responses to negative life events (e.g., "I become a better person when I overcome difficult times"; "Going through difficult times can be a learning experience."). Each item is rated on a seven-point Likert scale, ranging from "1 – Entirely disagree" to "7 – Entirely agree." The items which were hypothesized to capture post-trauma functioning asked respondents to rate the quality of their functioning on a number of daily living tasks (e.g., work, school, relationships, etc.).

Pilot Testing

Preliminary psychometric data regarding the DTI was gathered through a pilot study conducted on a sample of 59 university students (78% female; *M* age = 22.11, *SD* = 4.16) in the context of another study. Participants completed the DTI, the CES-D and the DAS-24 in randomized order, and also underwent a negative mood induction procedure (NMIP). Throughout the study, participants were asked to provide mood ratings, which were compared to DTI scores so that relationships between dispositional thriving, baseline mood and reaction to the NMIP could be investigated. A negative correlation between DTI and CES-D scores (r = -.43, p < .05) suggested discriminant validity. Furthermore, a median split based on participants' DTI scores produced evidence related to the protective effects of thriving on mood: low scorers had a lower baseline mood ($t(57)$ = -2.31, p < 0.05) and experienced greater decreases in mood as a result of the mood induction ($t(57)$ = 2.39, p < .05) as compared to high scorers.

Method

Participants

Participants for this study were selected from the University of Calgary, Department of Psychology Research Participation System. As such, volunteers were provided with course-credit as compensation for their participation. A total of 298 students (ages 18-51) were selected for the purposes of this study. Nine students failed to provide answers to one or more measures, and as such, the data for these participants were removed from further analyses. Other exclusionary criteria included age (under 18 or over 60), primary language (other than English), and uncorrected visual impairments. Data from the 289 participants were used throughout.

The average age of respondents was 21.55 years. The sample consisted of primarily White (43.3%) and Asian (32.1%) participants, and 73.3% of the sample was female. The sample was predominantly single (89.7%), but a small proportion of participants were married (5.2%). The sample consisted primarily of full time students. Approximately 48.4% worked part time, and 16.3% of the sample worked full-time. An estimated 12.5% of the sample reported a prior diagnosis of major depression.

Procedure

The study was advertised through the Department of Psychology Research Participation System. Students interested in participating were directed to a website link hosted by Qualtrics online survey software. After providing consent, participants completed the study measures in randomized order. At the end of the study, participants were provided with a debriefing form that offered a list of recourses for depression which could be consulted if needed.

Measures

The Center for Epidemiological Studies – Depression Scale (CES-D). The CES-D is a 20-item self-report measure designed to assess the frequency and severity of depressive symptomatology in the general population

(Radloff, 1977). The instrument utilizes a 4-point Likert scale (from “0” or “Rarely or none of the time”, to “3”, or “Most or all of the time”). Scores on this scale range from 0-60, with higher scores indicative of greater distress. A number of studies have established the psychometric soundness of the instrument with the general population (Radloff, 1977; Ross & Mirowsky, 1984), as well as among university samples (Devins et al., 1988).

Life Orientation Test – Revised (LOTR). The LOT-R (Scheier, Carver, & Bridges, 1994) is a 10-item scale designed to measure dispositional optimism, or positive outcome expectancy. The scale instructs respondents to indicate their agreement, on a 5-point Likert scale (from “0”, or “strongly disagree”, to “4”, or “strongly agree”), with the provided items. Four of the 10 items are filler items. With negatively worded items reverse scored, scores on the scale range from 0 to 30, with higher scores more indicative of higher dispositional optimism. Since its inception, the LOT-R has been widely used to measure optimism in a number of samples. The LOT-R has demonstrated sound psychometric properties (Scheier et al., 1994; Carver et al., 2010). For instance, the LOT-R correlates significantly and positively with measures of adaptive coping and subjective well-being, and negatively with measures of psychological distress (Scheier et al., 1994). Longitudinal investigations of the measure have shown that the inventory successfully predicts future physical and mental well-being (Carver et al., 2010).

Dysfunctional Attitudes Scale (24-item version). The 24-item version of the Dysfunctional Attitudes Scale (DAS-24; Power et al., 1994) is a subscaled version of forms A and B of the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978). The aim of the DAS is to examine attitudes people may hold, in particular those related to the negative cognitive schemas often seen in individuals with depression (Beck, Rush, Shaw, & Emery, 1979). Tests of the DAS on university samples have shown the scale to have an internal consistency ranging between .88 and .90 (Dobson & Breiter, 1983), and a test-retest reliability of .71 for an 8-week period (Weissman & Beck, 1978). The DAS-24 consists of 24 statements which describe attitudes people may have; respondents are asked to indicate on a seven-point scale, where “1 = totally agree,” “4 = neutral” and “7 = totally disagree,” the extent to which they identify with each particular attitude. The range of scores is 24 to 168, and more elevated scores indicate a smaller number of dysfunctional attitudes displayed. The DAS-24 correlates highly with results from the form A of the DAS (r = .90; Power et al., 1994). A study by Farmer et al. (2001) has also shown that DAS-24 scores are significantly correlated with depression symptoms as measured by the Beck Depression Inventory (BDI), r = 0.68, p < .001. The same study also found that the DAS-24 can differentiate between depressed and non-depressed individuals.

Brief COPE. The Brief COPE (Carver, 1997) is a 28-item measure designed to assess adaptive and maladaptive coping. This scale is the predecessor of the longer COPE (Carver, Scheier, & Weintraub, 1989), and is composed of 14, 2-item subscales. Only six (Active Coping, Acceptance, Planning, Denial, Substance Use, and Self-Blame) of the 14 scales were used in the current investigation. Carver (1997) found that the 14 subscales possess acceptable internal consistency (ranging from .50 to .90).

Results

Psychometric Properties

Item Evaluation. Data from 289 participants were analyzed and scale score and split-half reliabilities were calculated. The analysis revealed that Chronbach’s alpha coefficient for the 29-item scale (with negatively worded items reversed) was .88, while the split-half reliability was equivalent to .84. To reduce item redundancy, items were eliminated if their deletion resulted in an alpha coefficient that was equal to, or greater than one derived from the

intact scale. An initial reliability analysis was conducted for all 29 items and this analysis revealed that the deletion of the third item (i.e., “My relationships (romantic, familial, friendships) get better if I am facing difficult times”) did not impact the alpha coefficient (it remained static at .88), and thus this item was deleted from further analyses. A second reliability analysis was conducted with the remaining 28 items. This secondary analysis revealed that deletion of item five (i.e., “I get easily distracted during difficult times”) had no effect on the alpha coefficient, and this item was removed. A third analysis with the remaining 27 items revealed that the deletion of item 8 (e.g., “It is harder to get along with people when I am going through difficult times”) did not impact the alpha coefficient of .88. Therefore, this item was also deleted from further analyses. We chose not to eliminate any further items, as doing so resulted in the reduction of the internal reliability of the scale. Based on the above analysis, we chose to retain 26 of the original 29 items. The final 26-item version of the DTI was used in all the remaining analyses (Appendix A).

Factor Analysis. Data from 289 participants who responded to the 26 items of the DTI were subjected to an exploratory factor analysis. The initial analysis yielded five separate factors with eigenvalues greater than 1. The data evidenced sampling adequacy, as the Kaiser-Meyer-Olkin (KMO) value was .89, which exceeded the recommended cutoff value of .6 (Kaiser, 1974). Furthermore, Bartlett’s test of sphericity was significant ($p < .001$), which supports the factorability of the correlation matrix. The initial, un-rotated eigenvalues (and percent of variance explained) for each of the five factors were as follows: 8.86 (34.08%), 3.70 (14.24%), 2.28 (8.78%), 1.39 (5.32%), and 1.13 (4.34%). A parallel analysis (Horn, 1965) on a random data matrix of 26 variables by 289 respondents and 100 replications suggested the retention of four factors. The first four randomly generated eigenvalues were 1.60, 1.51, 1.44, and 1.38, all of which are below the resultant eigenvalues in the real dataset. The fifth randomly generated eigenvalue was 1.32, which exceeded the fifth eigenvalue generated from the real dataset (1.13).

To determine the orthogonality of the factors, a direct oblimin rotation with a four-factor structure was applied to the data, and the correlation matrix was examined, as suggested by Tabachnick and Fidell (2007, p. 646). As the factors evidenced low correlations with one another, the factors were deemed nearly orthogonal

To increase the interpretability of the results, a Varimax rotation was applied. The results revealed a four-factor structure with the following eigenvalues: 6.28 (24.15%), 4.07 (15.67), 2.64 (10.16), and 2.28 (8.76). Together, these four factors accounted for 58.74% of the variance in the data.

A number of factor solutions were compared in order to obtain the most optimal and theoretically sound structure. Such models were compared using criteria from Cattell’s (1966) scree test and Gorsuch’s (1997) *a priori* cut-off value for substantive loadings ($\pm$ .4). The interpretability and theoretical coherence of the different models were used to determine factor retention. Examination of the scree plot indicated that there was a clear and distinct descent beginning with the fourth factor. A three, four, and five factor solutions were seen as the most parsimonious and interpretable, given that such factors exhibited the least amount of multiple item loadings and negative items loaded meaningfully onto factors. We chose to retain the initial four factor solution for theoretical reasons, however, since this structure was the most interpretable, and the items loaded onto the four factors in a theoretically coherent manner. In addition, the three and five factor solutions did not provide better interpretations of the data as compared to the four-factor solution. Finally, the earlier parallel analysis supported the retention of four factors, and as such, corroborated the researchers’ decision.

Ten items loaded substantively onto the first of four factors. Given the themes of “learning” and “growth” which bound such items together, the first component most meaningfully represents a Learning/Growth in Adversity

factor. Seven items clustered together in the second of the four factors. Such items thematically represented achievement and functioning. As such, this factor most meaningfully conveys a latent factor of Achievement in Adversity. The third factor included substantive loadings from 5 items. Such items were negatively worded and asked respondents about their general appraisals of difficult times. As such, this factor most meaningfully represents a Negative Appraisal of Adversity construct. Finally, 6 items clustered substantively onto the fourth factor. Such items were positively worded, and represented positive or adaptive appraisals of adversity/stress. As such, this component most meaningfully signifies a Positive Appraisal of Adversity factor (see Table 1).

Table 1

Four-Factor Varimax Solution for the Dispositional Thriving Inventory

	Item	Factor 1	Factor 2	Factor 3	Factor 4
12.	I have learned important lessons.	.85			
10.	Has helped me learn more about myself.	.85			
6.	Helped shape who I am today.	.82			
26.	Can be a learning experience.	.80			
28.	I grow as a person.	.78			
15.	Opportunity for personal growth.	.77			
4.	I have learned a lot.	.76			
17.	I am a better person.	.74			
11.	I have learned nothing.	-.71			
1.	I become a better person.	.66			
14.	I can focus better.		.85		
7.	I do better in school/work.		.78		
22.	I perform worse at work/school.		-.77		
13.	I have trouble finishing tasks.		.73		
25.	I find it easier to “get things done”.		.71		
19.	I lose interest in work/school activities.		-.63	.47	
29.	I become more motivated.		.58		.44
16.	My self-esteem goes down.			.73	
9.	I cannot be happy.			.70	
23.	Just too difficult to tolerate.			.70	
2.	Always a negative experience.			.58	
21.	Challenges to be overcome.				.65
24.	Actually blessings in disguise.				.63
20.	I can see a silver lining.				.58
18.	I find it easier to focus on what is important in life.				.48
27.	I communicate better with people.				.41
	Eigenvalue (% accounted for)	**6.28 (24.15)**	**4.07 (15.76)**	**2.64 (10.16)**	**2.28 (8.76)**

Gender Differences. Mean scores, standard deviations, and mean differences between males and females for the different outcome measures used in the study can be observed in Table 2. Males scored significantly higher than females on the DTI, $t(287) = 2.30$, $p < .05$. Secondly, males scored significantly higher than females on the Acceptance subscale of the Brief COPE, $t(287) = 2.28$, $p < .05$. Third, males scored higher than females on the DAS-24, $t(287) = 2.62$, $p < .01$. Finally, females scored higher than males on the Planning subscale of the Brief COPE, $t(287) = -2.72$, $p < .01$.

Reliability. As males evidenced significantly higher dispositional thriving, we conducted separate reliability analyses for both genders. Cronbach’s alpha coefficients and split-half reliabilities were obtained for the DTI. The analyses

Table 2

Descriptive Statistics for Measures for Total Sample, Males and Females, and Mean Differences in Scale Scores Between Genders.

	Total Sample (N = 289)	Males (n = 80)	Females (n = 209)	t - test	
Measure	***M (SD)***	***M (SD)***	***M (SD)***	***t***	**Significance**
DTI	120.12 (17.89)	124.00 (20.06)	118.63 (16.79)	2.30*	p = .022
LOT-R	14.68 (3.74)	15.35 (3.61)	14.43 (3.77)	1.88	p > .05
COPE - Active	6.09 (1.36)	6.11 (1.25)	6.08 (1.40)	0.18	p > .05
COPE - Accept	6.03 (1.26)	6.30 (1.30)	5.92 (1.24)	2.28*	p = .023
COPE - Plan	6.00 (1.36)	5.65 (1.26)	6.13 (1.37)	-2.71**	p < .01
CES-D	17.27 (10.58)	15.81 (4.90)	18.37 (7.40)	-1.82	p > .05
DAS-24	97.71 (18.36)	102.76 (16.26)	95.80 (18.78)	2.62**	p < .01
COPE - Denial	3.11 (1.40)	3.16 (1.36)	3.10 (1.41)	0.34	p > .05
COPE - Substance	3.00 (1.63)	3.20 (1.82)	2.93 (1.55)	1.27	p > .05
COPE – Self-Blame	5.43 (1.73)	5.19 (1.65)	5.52 (1.75)	-1.45	p > .05

Note. DTI = Dispositional Thriving Inventory; LOT-R = Life Orientation Test – Revised; COPE – Active = Active Coping Subscale of the Brief COPE; COPE – Accept = Acceptance Subscale of the Brief COPE; CES-D = Center for Epidemiological Studies Depression Scale; DAS-24 = Dysfunctional Attitudes Scale – 24 Items; COPE – Denial = Denial Subscale of the Brief COPE; COPE- Substance = Substance Use Subscale of the Brief COPE; COPE – Self-Blame = Self-Blame Subscale of the Brief COPE.

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

yielded high internal consistency coefficients for both males, α = .91, and females, α = .87. Similarly, high split-half reliability coefficients were obtained for both males and females (.90 and .83, respectively).

The internal consistency of the Growth subscale was .94 and .93 for males and females, respectively. Internal consistency of the Achievement subscale was .87 for females and .83 for males. Finally, the internal consistency of the Negative Appraisal subscale was .75 and .70 for males and females, respectively, while the internal consistency of the Positive Appraisal subscale was .66 and .65 for females and males, respectively.

Construct Validation

As the factors evidenced orthogonality, a total score for the DTI was obtained, and Pearson's coorelation coefficients between DTI scores and scores on other measures were calculated. Table 3 presents correlation coefficients for the entire sample. Given the statistically significant differences in scores on the DTI obtained between the genders, however, separate correlational analyses were conducted for males and females.

Life Orientation/Optimism. Pearson's correlation coefficients were calculated between the DTI and other inventories. As predicted, the DTI was significantly and positively correlated with the LOT-R for both males, $r = .38$, $p < .01$, and females, $r = .34$, $p < .01$.

Depression. Pearson's correlation coefficients, stratified by gender, were calculated between the DTI and other inventories measuring theoretically divergent constructs. As such, scores on the DTI were subjected to a correlation analysis with scores on the CES-D. As predicted, females' scores on the DTI were significantly and negatively correlated with scores on the CES-D, $r = -.38$, $p < .01$. For males, DTI scores were also significantly and negatively correlated with scores on the CES-D, $r = -.44$, $p < .01$.

Table 3

Correlation Coefficients Between Dispositional Thriving and Other Related Measures for the Entire (N = 289) Sample, Females, and Males.

Measure	DTI (*N* = 289)	DTI – Females (*n* = 209)	DTI – Males (*n* = 80)
LOT-R	.36**	.34**	.38**
COPE – Active	.32**	.29**	.33*
COPE – Accept	.28**	.26**	.33*
COPE - Plan	.24**	.26**	.30**
CES-D	-.40**	-.38**	-.44**
DAS-24	-.26**	-.30**	-.28*
COPE – Denial	-.25**	-.29**	-.18
COPE – Substance	-.19**	-.22**	-.18
COPE – Self-Blame	-.18**	-.18**	-.15

Note. DTI = Dispositional Thriving Inventory; LOT-R = Life Orientation Test – Revised; COPE – Active = Active Coping Subscale of the Brief COPE; COPE – Accept = Acceptance Subscale of the Brief COPE; CES-D = Center for Epidemiological Studies Depression Scale; DAS-24 = Dysfunctional Attitudes Scale – 24 Items; COPE – Denial = Denial Subscale of the Brief COPE; COPE- Substance = Substance Use Subscale of the Brief COPE; COPE – Self-Blame = Self-Blame Subscale of the Brief COPE. The entire correlation matrix can be obtained from the corresponding author.

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

Dysfunctional Attitudes. For females, dysfunctional attitudes (scores on the DAS-24) were significantly and negatively correlated with thriving, r = -.30, p < .01. This pattern was also obtained for men, whereby dysfunctional attitudes were significantly and negatively correlated with DTI scores, r = -.28, p < .05.

Brief COPE. Six subscales from the Brief COPE inventory were chosen, and scores on such scales were correlated with score on the DTI. For females, significant and positive correlations were obtained between DTI scores and scores on the Active Coping (r = .29, p < .01), Acceptance (r = .26, p < .01), and Planning subscales (r = .28, p < .01). Whereas significant and negative correlations were acquired between scores on the DTI and scores on the Denial (r = - .29, p < .01), Substance Use (r = - .22, p < .01), and Self-Blame (r = - .18, p < .01).

For males, significant and positive correlations were also obtained between scores on the DTI and scores on the subscales of Active Coping (r = .33, p <.01), Acceptance (r = .33, p <.01), and Planning (r = .30, p < .01). Nonsignificant, negative correlational trends were obtained between DTI scores and Denial (r = -.18, p > .05), Substance Use (r = -.18, p > .05), and Self-Blame (r = -.15, p > .05) subscale scores.

Discussion

The exploratory factor analysis revealed a four-factor structure for the DTI. Items of the scale clustered onto each of these four factors in a theoretically coherent manner. The first factor, which resembled previous measures (e.g., SRGS and PTGI) of the thriving construct, appears to assess growth/learning in reaction to adversity (dubbed as the Learning/Growth in Adversity factor). The second (appearing to measure functioning/achieving in response to stress), third (Negative Appraisal of Adversity), and fourth (Positive Appraisal of Adversity) factors represent unique sub-domains which were not adequately represented in existing scales of the thriving construct.

The 26-item DTI evidenced strong internal (.88) and split-half (.84) reliabilities. Further, scores on the scale seem to co-vary with scores on measures which assess theoretically similar and divergent constructs. For instance,

thriving scores were significantly and positively correlated with scores on optimism and adaptive coping scales. As such, it appears that as dispositional thriving increases, so do optimism, active coping, acceptance and planning. In contrast to this correlational pattern, thriving appeared to be negatively correlated with measures of psychological distress, negative attitudes, and maladaptive coping. Thus, it appears that individuals high on thriving are less likely to experience such pathological reactions to adversity. These results reveal that the DTI exhibits theoretically meaningful relationships with other constructs in the nomological network. Results from the correlational analyses provided further support for the construct validity of the DTI. Further, the modest correlation coefficient obtained between the DTI and other measures of adaptive dispositions confirms the incremental validity and orthogonality of the thriving construct.

The present study had a number of strengths. First of all, although other measures of thriving and stress-related growth have been developed, the DTI represents the first attempt to measure the dispositional features of the thriving construct. In other words, whereas previous measures of thriving measured the variable in the context of the particular stressor/trauma, the DTI is the first instrument that assesses "trait" levels of the construct. Secondly, and as previously mentioned, embedded within the definition of thriving is the notion of increase in pre-post-trauma/stressor functioning. As such, we believe previous "thriving" scales were narrow in their definition and assessment of the construct, and that the DTI assesses a wider, more full range of the variable in question. Third, although the sample size was relatively modest, it produced a factorable correlation matrix. Also, the sample size proved to possess ample power, and thus, significant correlational patterns were readily observed.

Despite these strengths, the study was not without its limitations. First of all, this was a sample of convenience, and thus, relatively homogenous in composition (e.g., students, mostly single, white, and female). Given the sample's homogeneity, it is difficult to generalize the obtained results onto other samples. Secondly, although partial construct validity for the DTI was established, the study did not assess the instrument's relationship with other pertinent variables (e.g., self-esteem, anxiety, physical well-being, etc.). Third, confirmatory factor analysis of the four-factor model of the DTI is a necessary second step in establishing the scale's internal structure.

Given such limitations, a number of suggestions for future research are provided. First of all, and given the current sample's homogeneous composition, the DTI's structure, reliability and validity should be examined and established among different samples. In particular, we suggest that the scale's psychometrics and validity be confirmed among clinical and general community samples. Secondly, we believe that the thriving construct is universal, and thus, it is important to establish the validity of this construct in ethnically diverse samples.

Third, since the thriving variable is defined as an increase in the levels of pre-post adversity/stressor functioning and general growth due to stress, predictive validity of the DTI must be established to further support the instrument's psychometric soundness. It is predicted that individuals high on dispositional thriving would exhibit increases in their functioning, self-esteem and subjective well-being post stress/trauma. Furthermore, this increase would be evidenced despite the type and intensity of the stressor. Also, and given the clinical implications of the thriving variable, scores on the DTI can theoretically distinguish between resilient, thriving, and disordered populations.

Clark and colleagues (1999) have speculated about the existence of "constructive schemas" which are "designed to maximize accuracy and adaptability" (p. 68). Further, some evidence (e.g., Dozois & Dobson, 2001) indicates that individuals with depression have poorly organized positive self-referent schemas. Despite these notions and the implications they may have upon clinical application, adaptive constructs have been fairly neglected in research of psychopathology. For instance, the activation of thriving schemas may act to offset the activation of depressive

schemas. For instance, depressive schemas are said to hijack the information processing system by narrowing the focus of the sufferer upon negative stimuli in the environment (Beck, 1967). It is possible that adaptive schemas act in a similar fashion wherein information processing becomes narrowed upon positive experiences and personal growth and thus thriving becomes the likely outcome of this process. If such hypotheses are supported in future research, therapeutic protocols may benefit from enhancing the interconnectedness and activation of these so-called thriving schemas in patients.

Depending on the degree of a number of variables, and the interaction between such variables, individuals may be placed on a continuum of psychological health. In the maladaptive end of this hypothetical continuum, we observe individuals who exhibit a number of vulnerability factors, and who thus experience a psychological disorder (e.g., depression) in response to adversity and stress. In the middle of this continuum, we observe individuals who possess a balance of vulnerability and protective factors, and who are thus resilient to stress and do not readily develop psychological disorders. Finally, and near the extreme end of well-being, we observe individuals who are not only resilient to stress and adversity, but those whose dispositional faculties make them more likely to thrive and excel in the face of adversity. Quantitative instruments are needed which aid in the placement of individuals on this hypothetical continuum of psychological health. Thus far, most of these instruments have been biased to the assessment of dysfunction and vulnerability. As such, measures such as the dispositional thriving inventory are necessary in the assessment and understanding of the full range of human experience.

References

Affleck, G., Tennen, H., Croog, S., & Levine, S. (1987). Causal attribution, perceived benefits, and morbidity after a heart attack: An 8-year study. *Journal of Consulting and Clinical Psychology, 55*(1), 29-35. doi:10.1037/0022-006X.55.1.29

Allison, P. J., Guichard, C., & Gilain, L. (2000). A prospective investigation of dispositional optimism as a predictor of health-related quality of life in head and neck cancer patients. *Quality of Life Research, 9*(8), 951-960. doi:10.1023/A:1008931906253

Armeli, S., Gunthert, K. C., & Cohen, L. H. (2001). Stressor appraisals, coping, and post-event outcomes: The dimensionality and antecedents of stress-related growth. *Journal of Social and Clinical Psychology, 20*(3), 366-395. doi:10.1521/jscp.20.3.366.22304

Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects.* New York: Harper and Row.

Beck, A. T., Rush, J. A., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: The Guilford Press.

Brissette, I., Scheier, M. F., & Carver, C. S. (2002). The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of Personality and Social Psychology, 82*(1), 102-111. doi:10.1037/0022-3514.82.1.102

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267-283. doi:10.1037/0022-3514.56.2.267

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92-100. doi:10.1207/s15327558ijbm0401_6

Carver, C. S. (1998). Resilience and thriving: Issues, models, and linkages. *The Journal of Social Issues, 54*(2), 245-266. doi:10.1111/j.1540-4560.1998.tb01217.x

Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical Psychology Review, 30*(7), 879-889. doi:10.1016/j.cpr.2010.01.006

Cattell, R. B. (1966). The Scree Test for the number of factors. *Multivariate Behavioral Research, 1*, 245-276. doi:10.1207/s15327906mbr0102_10

Clark, D. A., Beck, A. T., & Alford, B. B. (1999). *Scientific foundations of cognitive theory and therapy of depression.* New York: John Wiley and Sons.

Davis, C. G., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology, 75*(2), 561-574. doi:10.1037/0022-3514.75.2.561

Devins, G. M., Orme, C. M., Costello, C. G., Binik, Y. M., Frizzell, B., Stam, H. J., & Pullin, W. M. (1988). Measuring depressive symptoms in illness populations: Psychometric properties of the Center for Epidemiologic Studies Depression (CES-D) Scale. *Psychology & Health, 2*(2), 139-156. doi:10.1080/08870448808400349

Dobson, K. S., & Breiter, H. J. (1983). Cognitive assessment of depression: Reliability and validity of three measures. *Journal of Abnormal Psychology, 92*(1), 107-109. doi:10.1037/0021-843X.92.1.107

Dozois, D. J. A., & Dobson, K. S. (2001). Information processing and cognitive organization in unipolar depression: Specificity and comorbidity issues. *Journal of Abnormal Psychology, 110*(2), 236-246. doi:10.1037/0021-843X.110.2.236

Evers, A. W. M., Kraaimaat, F. W., van Lankveld, W., Jongen, P. J. H., Jacobs, J. W. G., & Bijlsma, J. W. J. (2001). Beyond unfavorable thinking: The Illness Cognition Questionnaire for Chronic Diseases. *Journal of Consulting and Clinical Psychology, 69*(6), 1026-1036. doi:10.1037/0022-006X.69.6.1026

Farmer, A., Harris, T., Redman, K., Mahmood, A., Sadler, S., & McGuffin, P. (2001). The Cardiff Depression Study: A sib-pair study of dysfunctional attitudes in depressed probands and healthy control subjects. *Psychological Medicine, 31*(4), 627-633. doi:10.1017/S0033291701003932

Fitzgerald, T. E., Tennen, H., Affleck, G., & Pransky, G. S. (1993). The relative importance of dispositional optimism and control appraisals in quality of life after coronary artery bypass surgery. *Journal of Behavioral Medicine, 16*(1), 25-43. doi:10.1007/BF00844753

Flett, G. L., Vredenburg, K., & Krames, L. (1997). The continuity of depression in clinical and nonclinical samples. *Psychological Bulletin, 121*(3), 395-416. doi:10.1037/0033-2909.121.3.395

Fontana, A., & Rosenheck, R. (1998). Psychological benefits and liabilities of traumatic exposure in the war zone. *Journal of Traumatic Stress, 11*(3), 485-503. doi:10.1023/A:1024452612412

Frazier, P., Tashiro, T., Berman, M., Steger, M., & Long, J. (2004). Correlates of levels and patterns of positive life changes following sexual assault. *Journal of Consulting and Clinical Psychology, 72*(1), 19-30. doi:10.1037/0022-006X.72.1.19

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotion following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology, 84*(2), 365-376. doi:10.1037/0022-3514.84.2.365

Gorsuch, R. L. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of Personality Assessment, 68*(3), 532-560. doi:10.1207/s15327752jpa6803_5

Gustavsson-Lilius, M., Julkunen, J., & Hietanen, P. (2007). Quality of life in cancer patients: The role of optimism, hopelessness, and partner support. *Quality of Life Research, 16*(1), 75-87. doi:10.1007/s11136-006-9101-4

Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A metaanalytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology, 74*(5), 797-816. doi:10.1037/0022-006X.74.5.797

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179-185. doi:10.1007/BF02289447

Joseph, S., & Butler, L. D. (2010). Positive changes following adversity. *PTSD Research Quarterly, 21*(3), 1-8.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31-36. doi:10.1007/BF02291575

Koenig, H. G., Pargament, K. I., & Nielsen, J. (1998). Religious coping and health status in medically ill hospitalized older adults. *The Journal of Nervous and Mental Disease, 186*(9), 513-521. doi:10.1097/00005053-199809000-00001

Linley, P. A., Joseph, S., & Goodfellow, B. (2008). Positive changes in outlook following trauma and their relationship to subsequent posttraumatic stress, depression, and anxiety. *Journal of Social and Clinical Psychology, 27*(8), 877-891. doi:10.1521/jscp.2008.27.8.877

Nes, L. S., & Segerstrom, S. C. (2006). Dispositional optimism and coping: A meta-analytic review. *Personality and Social Psychology Review, 10*(3), 235-251. doi:10.1207/s15327957pspr1003_3

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality, 64*(1), 71-105. doi:10.1111/j.1467-6494.1996.tb00815.x

Power, M. J., Katz, R., McGuffin, P., Duggan, C. F., Lam, D., & Beck, A. T. (1994). The Dysfunctional Attitude Scale (DAS): A comparison of forms A and B and proposals for a new subscaled version. *Journal of Research in Personality, 28*(3), 263-276. doi:10.1006/jrpe.1994.1019

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401. doi:10.1177/014662167700100306

Ross, C. E., & Mirowsky, J. (1984). Components of depressed mood in married men and women: The Center for Epidemiologic Studies Depression Scale 1. *American Journal of Epidemiology, 119*(6), 997-1004.

Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16*(2), 201-228. doi:10.1007/BF01173489

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063-1078. doi:10.1037/0022-3514.67.6.1063

Schultz, D. P., & Schultz, S. E. (2011). *A history of modern psychology*. Belmont, CA: Thomson Wadsworth.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Upper Saddle River, NJ: Pearson Allyn & Bacon.

Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*(3), 455-471. doi:10.1002/jts.2490090305

Weiss, T. (2002). Posttraumatic growth in women with breast cancer and their husbands: An intersubjective validation study. *Journal of Psychosocial Oncology, 20*(2), 65-80. doi:10.1300/J077v20n02_04

Weissman, A. N., & Beck, A. T. (1978). *Development and validation of the Dysfunctional Attitudes Scale: A preliminary investigation*. Paper presented at the annual meeting of the American Educational Research Association, Toronto, ON.

Widiger, T. A., & Trull, T. J. (2007). Plate tectonics in the classification of personality disorders: Shifting to a dimensional model. *The American Psychologist, 62*(2), 71-83. doi:10.1037/0003-066X.62.2.71

Appendix

Dispositional Thriving Inventory (DTI)

The following statements refer to attitudes people might have toward difficult times in their lives. Difficult times are periods of stress and negativity that can come about due to a negative life event or a personal problem. Think about your past experience with such situations and read the statements below. Indicate how much you agree with each on the following 7 point scale:

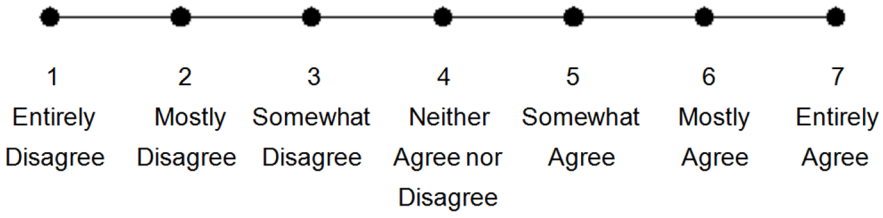

Figure A1.

	Entirely Disagree						Entirely Agree
1. I become a better person when I overcome difficult times.	1	2	3	4	5	6	7
2. Going through difficult times is always a negative experience.	1	2	3	4	5	6	7
3. I have learned a lot by going through difficult experiences in my life.	1	2	3	4	5	6	7
4. My experience with difficult times helped shape who I am today.	1	2	3	4	5	6	7
5. I do better in school/work during difficult times.	1	2	3	4	5	6	7
6. I can't be happy if I'm faced with difficult times in my life.	1	2	3	4	5	6	7
7. Going through difficult times has helped me learn more about myself.	1	2	3	4	5	6	7
8. I have learned nothing from difficult times I have gone through in life.	1	2	3	4	5	6	7
9. I have learned important lessons from difficult times in my life.	1	2	3	4	5	6	7
10. I have trouble finishing tasks during difficult times.	1	2	3	4	5	6	7
11. I can focus better on tasks during difficult times.	1	2	3	4	5	6	7
12. Going through difficult times in life can be an opportunity for personal growth.	1	2	3	4	5	6	7
13. My self-esteem goes down with every new problem that I face in my life.	1	2	3	4	5	6	7
14. I am a better person because of the difficult times I faced in my life.	1	2	3	4	5	6	7
15. I find it easier to focus on what is important in life during difficult times.	1	2	3	4	5	6	7
16. I lose interest in work/school activities during difficult times.	1	2	3	4	5	6	7
17. I can see a silver lining in whatever problem I may face.	1	2	3	4	5	6	7
18. I see major life problems as challenges to be overcome.	1	2	3	4	5	6	7
19. It is harder to get along with people when I am going through difficult times.	1	2	3	4	5	6	7
20. Some of life's problems are just too difficult to tolerate.	1	2	3	4	5	6	7
21. Most of life's problems are actually blessings in disguise.	1	2	3	4	5	6	7

	Entirely Disagree						Entirely Agree
22. I find it easier to 'get things done' during difficult times.	1	2	3	4	5	6	7
23. Going through difficult times can be a learning experience.	1	2	3	4	5	6	7
24. I communicate better with people during difficult times.	1	2	3	4	5	6	7
25. I grow as a person when I'm faced with difficult times in my life.	1	2	3	4	5	6	7
26. I become more motivated during difficult times.	1	2	3	4	5	6	7

About the Authors

Shadi Beshai is a Ph.D. Candidate in the Program of Clinical Psychology at the University of Calgary, Canada. His research program investigates the cross-cultural applicability of cognitive theories of depression. This work will potentially be expanded to the investigation of the efficacy and dissemination of these therapeutic modalities with culturally diverse samples. Shadi is also highly interested in comparing depressive and normative reactions (e.g., resilience and thriving) to significant adversity. Shadi's research has lead to five published articles, a book chapter on relapse prevention in depression, and several conference presentations. Shadi has received several awards and scholarships, including the Canadian Psychological Association's Academic Excellence Award. He is currently finishing his doctoral dissertation and supervising a number of Honours students at the University of Calgary.

Laura D. Branco graduated in 2011 from the Psychology Honours Program at the University of Calgary, Canada. Her Honours thesis focused on the development of an inventory to assess cognitive defenses against depression, which was the initial step in the development the Dispositional Thriving Inventory. Laura is interested in Cognitive Psychology, and is currently working as a Research Coordinator in a Cognitive Psychology Laboratory in Brazil. Laura has received a number of scholarships and undergraduate awards in completing her Bacholar's degree. She is looking forward to starting her graduate training in psychology in the upcoming year.

Dr. Keith Dobson is a Professor of Clinical Psychology at the University of Calgary in Canada. Dr. Dobson's research has focused on both cognitive models and mechanisms in depression, and the treatment of depression, particularly using cognitive-behavioural therapies. He has participated in several trials of the treatment of acute depression, as well as prevention of depression. A current focus of his work is on the prediction and prevention of relapse in depression. Dr. Dobson's research has resulted in over 160 published articles and chapters, 9 books, and numerous conference and workshop presentations in many countries. In addition to his research in depression, he has written about developments in professional psychology and ethics, and has been actively involved in organized psychology in Canada, including a term as President of the Canadian Psychological Association. He is the Past-President of both the Academy of Cognitive Therapy, and the International Association for Cognitive Psychotherapy. He is also a principal investigator for the *Opening Minds* program of the Mental Health Commission of Canada, with a focus on stigma reduction related to mental disorders. Among other awards, he has been given the Canadian Psychological Association's Award for Distinguished Contributions to the Profession of Psychology.