The brief thriving scale: Assessing the ability to learn, grow, and find benefits in stressful events

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Abstract: While much research has focused on the ability to recover from the negative effects of stress, little has examined our potential for benefitting from stressful events. The current studies validated the Brief Thriving Scale (BTS), which assesses the ability to learn, grow, and benefit from stress. Participants were 855 undergraduate who completed the BTS, a battery of health-related measures, and the Brief Resilience Scale (BRS; Smith et al., 2008), which assesses resilience as the ability to bounce back from stress. Exploratory and confirmatory factor analyses demonstrated the construct validity of the BTS and correlation analyses supported convergent and divergent validity. Multiple regression analyses showed that the BTS was consistently related to better health when controlling for the BRS. While the BRS was a stronger predictor of negative mental health (e.g., lower negative emotion, depression), the BTS was a stronger predictor of positive mental health (e.g., higher positive emotion, meaning) and general physical health.

Keywords: Key Words: thriving, resilience, measure, stress-related growth, posttraumatic growth, well-being

> *'Between stimulus and response there is a space.*
>
> *In that space is our power to choose our response.*
>
> *In our response lies our growth and our freedom.'*
>
> *–Viktor Frankl*

1. Introduction

Stressful events have been defined as anything that happens to us that may be threatening, challenging, or harmful (Lazarus & Folkman, 1984). While we may never be completely free of stressful events, how we respond to them may play a vital role in our happiness and well-being (Schiffrin & Nelson, 2010; Zautra, 2006). Research has shown that how we cope with stress may reduce their harmful effects, such as anxiety and depression (Lazarus & Folkman, 1984; Rudenstine et al., 2022). However, we are also beginning to see how stressful events may have beneficial effects such as increasing appreciation of our lives, improving our relationships, and increasing our sense of meaning and purpose (Boales & Schuler, 2018; Tedeschi et al., 2018). Wu et al., (2019) reviewed 29 studies of adults who had experienced a major stressful event and found that 53% reported benefits. Thus, there may be at least two different aspects to the way that we respond to stressful events: (1) reducing their harmful effects and (2) learning, growing, or

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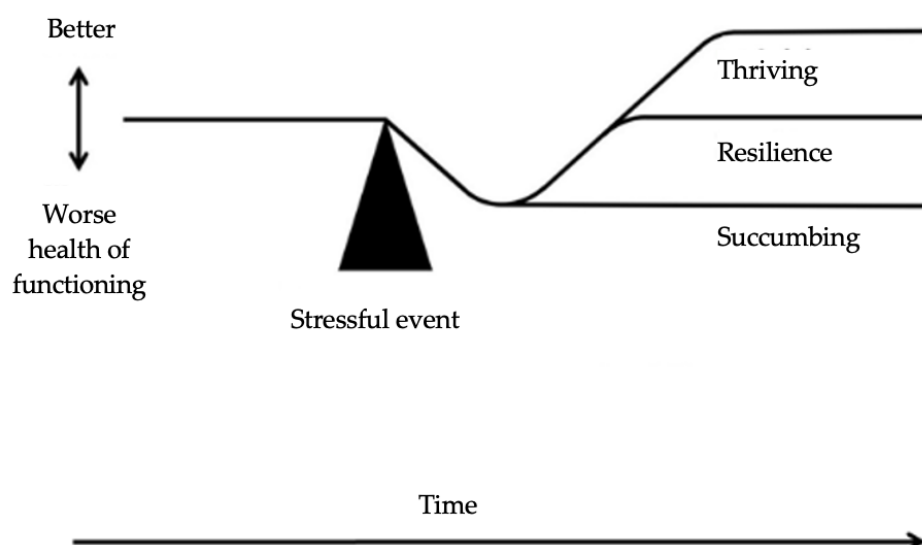University of New Mexico
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finding benefits in them.

The experience of Viktor Frankl and others like him may help us understand what it may look like to learn, grow, and find benefits in stressful events (Frank, 1963). Frankl was a psychiatrist who not only survived living in four concentration camps during World War II, he also used his experience to write a book and develop a therapeutic approach that has helped many find meaning in stress. As the quote that began this article illustrates, his experience taught him that we may have a choice about whether we grow in response to what happens to us. A more recent example of finding benefits in stress is the way that many whose lives were disrupted by the COVID-19 pandemic have come to a greater appreciation of their lives, improved relationships, or pursued a more rewarding career (El Khoury-Malhame et al., 2023).

While the word "resilience" has been used to refer to the ability to reduce the harmful effects of stress events, "thriving" has been used to describe the ability to foster the positive effects or benefits of stress (Carver, 1998; O'Leary & Ickovics, 1995). Although resilience has been defined in many ways, one of the most clear and concise definitions may be the ability to recover or bounce back from stressful events (Smith et al., 2008). The common metaphor of 'bouncing back' from stress includes the idea of returning to a previous level of health or functioning. When experiencing stressful events, people frequently report at least some psychological distress (Bonanno, 2004; Marin et al., 2011). Resilience can be seen as a means by which we reduce this distress, and other negative consequences of stress, and return to where we were when the stress began.

Although 'thriving' has also been defined in different ways, researchers studying stress and coping have suggested that it describes reaching a higher level of health or functioning as result of stress (Carver, 1998; O'Leary & Ickovics, 1995). The metaphor of bouncing back might be changed to 'bouncing forward' or 'bouncing above' a previous baseline (Haas, 2015). Figure 1 shows how these pathways may look in response to stress. After we experience a stressful event, there is often a reduction in health and functioning, which has been referred to as 'succumbing' (Carver, 1998). Resilience is shown as a return to a previous baseline (Smith et al., 2008) and thriving as reaching a higher level, that could be experienced as stress-related or posttraumatic growth (Boales & Schuler, 2018; Tedeschi et al., 2018).

Figure 1. The time course of resilience and thriving following the onset of a stressful event

When we consider that much of the focus of psychology in the 20th century was on reducing distress and treating psychopathology (Seligman & Csikszentmihalyi, 2000), we can understand why reducing the harmful effects of stress may have taken precedence over increasing potential benefits. Despite Han Selye having coined the word 'eustress' to describe 'good stress' (Kupriyanov & Zhdanov, 2014), the experience of stressful events has generally been viewed as something aversive and bad for our health (O'Conner et al., 2021). However, as developmental challenges such as learning to walk or finding a mate can be stressful, they may also be the impetus for some of our most valuable learning and growth (Dweck, 2006; Frankl, 1963; Tedeschi et al., 2018).

Although positive psychology and a renewed focus on happiness during the past 20 years brought a greater appreciation of positive mental health (Fredrickson, 2004; Pressman et al., 2019), this has not been fully translated into how we may adapt to stress. While the study of posttraumatic growth has begun to rectify this by studying the benefits reported following major stressors (Boales & Schuler, 2018; Tedeschi et al., 2018), the ability to learn and grow from stress has seldom been studied as a personal strength that can be fostered (Smith et al., 2008; Southwick et al., 2014). While thriving can be thought of as a process and stress-related growth as a goal (Boales & Schuler, 2018; Carver, 1998), they may also be abilities that can be taught and developed.

1.1 The Current Studies

The purpose of these studies was to develop a scale to assess this neglected but potentially important ability. Since the Brief Resilience Scale (BRS; Smith et al., 2008) is widely used to assess resilience, defined as the ability to bounce back from stress, we developed the Brief Thriving Scale (BTS) to complement it in assessing the ability to learn, grow, and benefit from stress. Our aim was to create a measure with the same anchors, language, and number of items that could be used with the BRS to assess two separate but complementary abilities that may play central roles in the positive adaptation to stress.

We had six hypotheses. They were that (1) the BTS items would form one factor and that (2) when the BTS and BRS items were examined together they would form two separate but correlated factors (Carver, 1998). If we found support for this kind of construct validity, we had several predictions regarding convergent and divergent validity. We predicted that (3) the BTS would be strongly related to perceived stress (Cohen et al., 1983), personal growth (Ryff & Keyes, 1995), and stress-related benefits (Tedeschi et al., 2018), since the BTS focuses on stress and is directed towards finding benefits and growth.

We also predicted that (4) the BTS would be strongly related to positive mental health, as broadly represented in the PERMA theory of well-being (Seligman, 2011). The growth and benefits reported in stress-related growth research overlaps with the elements of PERMA, such as increased meaning, better relationships, and engagement with new interests (Boales & Schuler, 2018; Tedeschi et al., 2018). In contrast to the BTS, we expected the BRS to be more strongly related to reductions in negative mental health (e.g., lower anxiety and depression).

Based on the differential association of the BTS and BRS with different motivation and emotion systems, we predicted that their correlations with the mental health variables would diverge. Specifically, we predicted that (5) the BTS would have stronger relationships with positive mental health while the BRS would have stronger relationships with negative mental health. Similarly, although we expected them both to be strongly related to perceived stress, we expected the BTS to have a stronger relationship with personal growth (Ryff & Keyes, 1995) and stress-related benefits (Tedeschi et al., 2018) since they are the aim of the BTS and not the BRS

(Smith et al., 2018).

Finally, because we thought the ability to benefit from stress may have broad and unique implications for health and well-being, we predicted that (6) the BTS would be related to better positive mental health, negative mental health, and general health when controlling for the BRS. Although the effects of thriving may be stronger and more direct on positive mental health, there is compelling research and theory suggesting that positive mental health may lead to increased resilience and reductions in stress which would reduce negative affect and improve physical health (Fredrickson, 2004; Pressman et al., 2019; van Steenbergen, et al., 2021).

2. Methods

2.1 Participants

The participants were 855 undergraduate students in a southwestern U.S. metropolitan area. There were 424 students in Study 1 during one semester and 431 students in Study 2 during the following semester. There was no difference in age or gender between the studies with a combined mean age of 21.31 years (*SD* = 6.15; range = 18-72) and gender distribution of 70.29% female, 29.01% male, and 0.70% other. There was also no difference in race or ethnicity between studies with the combined sample being 48.65% Hispanic, 39.30% White, 8.07% Asian, 6.08% Native American, 3.74% Black, 5.85% mixed, and 1.87% other ethnicity.

2.2 Procedures

The study was approved by the Institutional Review and there are no competing interests to declare. The participants were recruited using an online university website where students sign up to do research for course credit. They gave informed consent online before completing an online questionnaire. In addition, 253 participants completed a brief online questionnaire four weeks later including the BTS items to enable us to examine test-retest reliability.

2.3 Scale development

The development of the BTS involved defining thriving, developing criteria for the items, generating the items, selecting the final items, and examining the reliability and validity of the final scale (Hinkin, 1998). Thriving was defined as the ability to learn, grow, and benefit from stress (Carver, 1998). The criteria for the items matched the Brief Resilience Scale (Smith et al., 2008) in the number, language, and length of the items, and in including negatively worded items to reduce positive response bias. The criteria also included generating a variety of ways of referring to stressful events and the kinds of learning, growth, and benefits that could result (Tedeschi et al., 2018).

Once these criteria were established, our lab generated 24 items and rated them on how well they matched our definition of thriving and met the criteria. The final items were selected based on the ratings and their variety and balance when considered together. The next step was including them in the studies reported here to examine reliability and validity. We examined construct validity by doing exploratory factor analysis (EFA) on the Study 1 data and confirmatory factor analysis (CFA) on the Study 2 data. We also included the BRS, to examine the factor structure of the BTS and BRS together, and a full range of other measures to examine convergent, divergent, and predictive validity.

2.4 Measures

These measures included the BTS and BTS, measures assessing general physical health and

positive and negative mental health, and measures expected to be closely related to the BTS. All measures were included in both studies except for the stress-related benefits scale which was only included in Study 1. Cronbach's αs for the measures are presented in Table 1.

2.4.1 Positive adaptation to stress

The items and instructions for the administration of the BTS and BRS are included in the Appendix along with a recommended order for using them together.

Thriving - the *Brief Thriving Scale* (BTS; e.g., 'I usually discover ways to benefit from stressful events') assessed thriving with six items on a 1-5 scale.

Resilience - the *Brief Resilience Scale* (BRS; Smith et al., 2008; e.g., 'I tend to bounce back quickly after hard times') assessed resilience with six items on a 1-5 scale

2.4.2 General health

The general health scale of *The PERMA Profiler* (Butler & Kern, 2016) assessed general physical health over the past two weeks with three items (e.g., 'How satisfied are you with your current physical health?') on a 0-10 scale.

2.4.3 Negative mental health

Anxiety - the *GAD-7* (Spitzer et al., 2006) assessed this over the past two weeks with seven items (e.g., 'Feeling nervous, anxious, or on edge') on a 0-3 scale.

Depression – the *PHQ-8* (Kroenke et al., 2001) assessed this over the past two weeks with eight items (e.g., 'Feel down, depressed, or hopeless') on a 0-3 scale.

Negative Affect – the negative affect scale of the *Positive and Negative Affect Schedule* (Watson et al., 1988) assessed this with 10 items (e.g., 'Afraid') on a 1-5 scale.

Negative Emotion – the negative emotion scale of *The PERMA Profiler* (Butler & Kerns, 2016) assessed this over the past two weeks with three items (e.g., 'How often do you feel sad?') on a 0-10 scale.

2.4.4 Positive mental health

Accomplishment – the accomplishment scale of *The PERMA Profiler (Butler & Kern, 2016)* assessed this over the past two weeks with three items (e.g., 'How often do you achieve the important goals you set for yourself?') on a 0-10 scale.

Engagement - the engagement scale of *The PERMA Profiler (Butler & Kern, 2016)* assessed this over the past two weeks with three items (e.g., 'How often do you become absorbed in what you are doing?') rated on a 0-10 scale.

Happiness - the happiness item (e.g., 'Taking all things together, how happy would you

say that you are?') of *The PERMA Profiler* (Butler & Kern, 2016) assessed this over the past two weeks on a 0-10 scale.

Meaning – the meaning scale of *The PERMA Profiler (Butler & Kern, 2016)* assessed this over the past two weeks with three items (e.g., 'To what extent do you lead a purposeful and meaningful life?') on a 0-10 scale.

Overall Well-Being – this is a summary score from *The PERMA Profiler* (Butler & Kern, 2016) that includes the 16 items from the positive emotions, engagement, relationships, meaning, and accomplishment scales and the happiness item.

Positive Affect – the positive affect scale of the *Positive and Negative Affect Schedule* (Watson et al., 1988) assessed this over the past two weeks with 10 items (e.g., 'Inspired') on a 1-5 scale.

Positive Emotion – the positive emotion scale of *The PERMA Profiler* (Butler & Kern, 2016) assessed this over the past two weeks with three items (e.g., 'How often do you feel joyful?') on a 0-10 scale.

Relationships – the relationship scale of *The PERMA Profiler* (Butler & Kern, 2016) assessed this over the past two weeks with three items (e.g., How satisfied are you with your personal relationships?) on a 0-10 scale.

2.4.5 Thriving specific

Perceived Stress – the Perceived Stress Scale (Cohen et al., 1983) assessed this over the past two weeks with 10 items (e.g., 'How often have you felt nervous and stressed?') on a 0-4 scale.

Personal Growth – the personal growth scale of the *Scales of Psychological Well-Being* (Ryff & Keyes, 1995) assessed this with three items (e.g., 'For me, life has been a continuous process of learning, changing, and growth') on a 1-6 scale.

Stress-Related Benefits – this was created for this study based on the kinds of benefits reported in studies of stress-related and posttraumatic growth (Boals & Schuler, 2018; Tedeschi et al., 2018). Participants were asked 'How much have you learned, grown, or benefited from stressful events in the following ways?' and responded to eight items (e.g., 'I have become stronger and more confident') on a 0-6 scale.

2.5 Statistical analyses

Exploratory and confirmatory factor analyses (e.g., EFA & CFA) tested the first two hypotheses about the factor structure of the BTS items alone and the BTS and BRS items together. The EFAs used principal axis factoring with an oblimin rotation. The CFAs used maximum likelihood estimation, one loading was set to 1.0 for each latent variable, and no error terms were correlated. The goodness of fit tests included the RMSEA (root mean square error of approximation), CFI (comparative fit index), and TLI (Tucker-Lewis index). The criteria for a good fit were below .06 for the RMSEA and above .95 for the CFI and TLI (Hu & Bentler, 1999). These indices and the χ^2 difference test were used to compare the fit of similar models.

The third, fourth, and fifth hypotheses were tested by comparing the size of zero-order correlations. Cohen's (1988) guidelines were used to establish a threshold of .400 for a moderately strong and .500 for a strong correlation. Fisher's *z* transformations were used in computing mean correlations and tests for significant differences between correlations. Absolute values were used to compute means of correlations and loadings of difference valance. The sixth hypothesis was tested with multiple regression analyses to predict the health measures from the BTS and BRS. Finally, path analyses examined an overall model of the effects of the BTS and BRS on health mediated by perceived stress. All analyses were conducted using *SPSS Statistics* 28.0 and *SPSS AMOS* 28.0. The criterion selected for statistical significance was p < .05.

3. Results

The descriptive statistics for the combined data from both studies are displayed in Table 1. Cronbach's α for both the BTS and BRS was .861, although slightly higher for the BTS in Study 1 (.857 vs. .845) and slightly lower in Study 2 (.865 vs. .876). The four-week test-retest reliability for the BTS was .761 for the 253 participants who completed it twice. Cronbach's αs for this group

were .848 for the first and .889 for the second administration.

Table 1. Descriptive statistics for the study variables

	M	*SD*	**Skewness**	**Kurtosis**	**Range**	**Cronbach's α**
Positive Adaptation to Stress						
Brief Thriving Scale (BTS)	3.82	.693	-.520	.433	1.00-5.00	.861
Brief Resilience Scale (BRS)	3.35	.784	-.361	-.156	1.00-5.00	.861
Negative Mental Health						
Negative Affect[a]	2.41	.752	.425	-.366	1.00-4.70	.855
Negative Emotion[b]	4.57	2.09	.069	-.710	0.00-10.00	.753
Anxiety[c]	2.04	.786	.709	-.315	0.00-3.00	.911
Depression[d]	2.00	.725	.695	-.238	0.00-3.00	.887
Positive Mental Health						
Positive Affect[a]	3.45	.801	-.299	.492	1.10-5.00	.898
Overall Well-Being[e]	7.05	1.60	-.611	-.089	1.81-10.00	.939
Positive Emotion[b]	6.74	1.84	-.582	.044	1.00-10.00	.871
Engagement[b]	7.11	1.59	-.680	.581	0.33-10.00	.590
Relationships[b]	6.88	2.17	-.606	-.259	0.33-10.00	.777
Meaning[b]	7.18	2.06	-.802	.249	0.00-10.00	.890
Accomplishment[b]	7.35	1.75	-.823	.589	0.67-10.00	.823
Happiness[b]	7.03	2.00	-.812	.476	0.00-10.00	-
General Health[b]	6.56	2.24	-.601	-.302	0.00-10.00	.907
Thriving-Related						
Perceived Stress[f]	2.88	.670	-.078	-.340	0.10-3.70	.870
Personal Growth[g]	4.96	.870	-.542	-.601	2.00-6.00	.651
Stress-Related Benefits	5.38	1.15	-.555	-.075	1.00-7.00	.888

Note. [a]Subscale of the *Positive and Negative Affect Schedule.* [b]Subscale of *The PERMA Profiler.* [c]*GAD-7.* [d]*PHQ-8.* [e]Mean of the items for the *Positive Emotions, Engagement, Relationships, Meaning, Accomplishment,* and *Happiness* subscales from *The PERMA Profiler.* [f]*Perceived Stress Scale.* [g]Subscale of the *Scales of Psychological Well-Being.* [h]Created for this study.
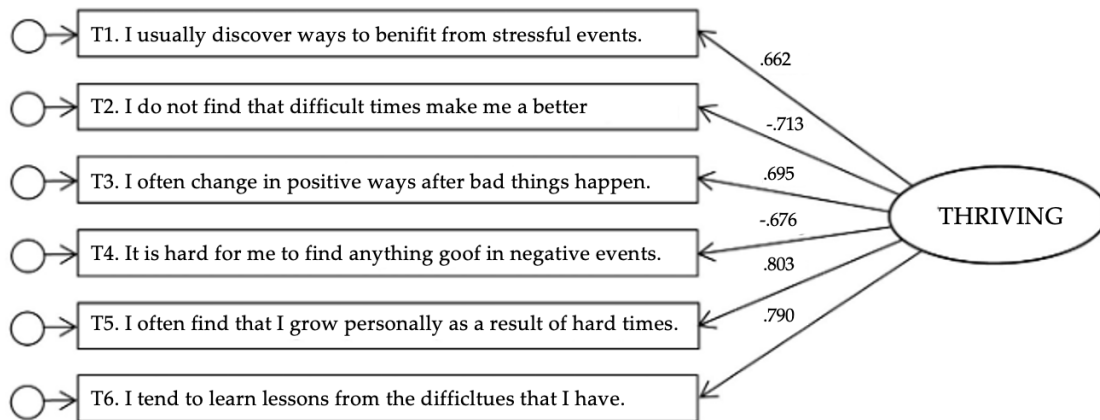
Table 2. Descriptive statistics and exploratory factor analyses of the brief thriving scale items in Study 1 (n = 424)

	M	*SD*	Factor Loadings	[a]Item-Total *r*
T1. I usually discover ways to benefit from stressful events.	3.60	.989	.705	.773
T2. I do not find that difficult times make me a better person.	2.10	.885	-.661	-.734
T3. I often change in positive ways after bad things happen.	3.71	.870	.683	.745
T4. It is hard for me to find anything good in negative events.	2.27	.974	-.657	-.745
T5. I often find that I grow personally as a result of hard times.	3.96	.859	.801	.814
T6. I tend to learn lessons from the difficult times that I have.	3.95	.824	.756	.785

Note. [a]All correlations were significant at *p* < .001.

The first hypothesis that the BTS items would load on one factor was strongly supported by both EFA on Study 1 and CFA on Study 2 data. Table 2 shows the EFA loadings and item means, standard deviations, and item-total correlations. The items all loaded on the same factor with an eigenvalue of 3.529 accounting for 58.82% of the variance. The absolute value of the factor loadings ranged from .657 to .801 with a mean of .711. Figure 2 displays the CFA model tested on the Study 2 data. The model met the criteria for a good fit on all indices: RMSEA = .036, CFI = .992, TLI = .995. The χ^2 (9, N = 431) was 13.999 (p = .122). The absolute value of the standardized factor loadings ranged from .662 to .803 with a mean of .723.

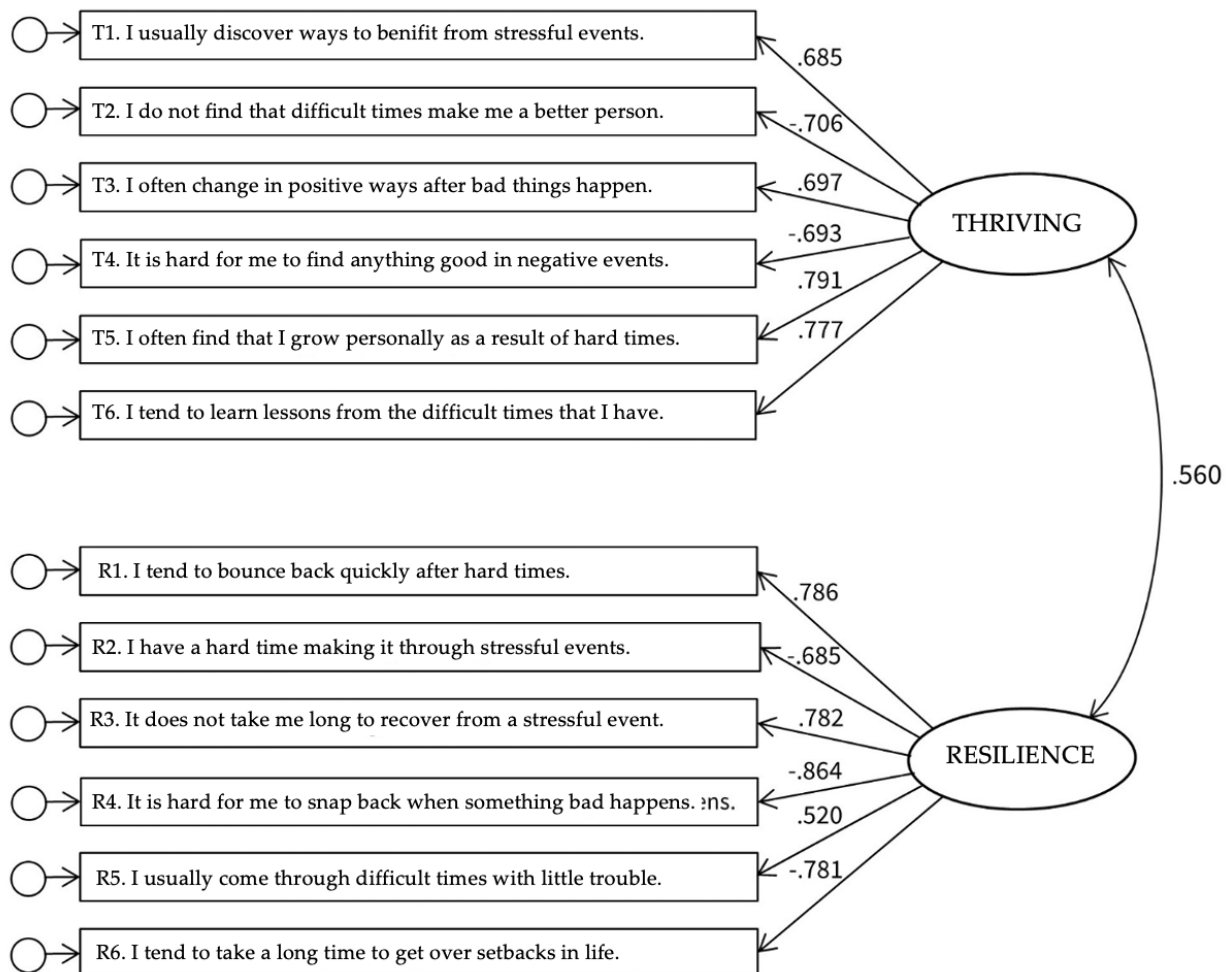**Figure 2. Confirmatory analysis of the brief thriving scale in Study 2 (n = 431)**

The second hypothesis that the BTS and BRS items together would have a two correlated factor structure was also supported by EFA in Study 1 and CFA in Study 2. Table 3 shows the EFA loadings and item-total correlations. The first factor included only the BRS items with an eigenvalue of 5.425 accounting for 45.20% of the variance. The second factor included only the BTS items with an eigenvalue of 1.575 accounting for 13.13% of the variance. The correlation between factors was .603. The absolute value of the BTS item loadings ranged from .535 to .875 with a mean of .688 and the BRS loadings ranged from .444 to .823 with a mean of .681. Figure 3 displays the CFA model tested on the Study 2 data with the standardized factor loadings. The model met the good fit criteria on all indices: RMSEA = .048, CFI = .978, TLI = .973. The χ^2 (53, N = 431) was 106.50 (p < .001). The correlation between the thriving and resilience latent factors was .560. The absolute value of the BTS item loadings ranged from .685 to .791 with a mean of .725 and the BRS loadings ranged from .520 to .864 with a mean of .736.

Table 3. Exploratory factor analyses of the brief thriving scale and brief resilience scale items in Study 1 (n = 424)

	Factor Loadings		[a]Item-Total *r*	
	1	2	BRS	BTS
R1. I tend to bounce back quickly after hard times.	.645	.146	.781	.514
R2. I have a hard time making it through stressful events.	-.652	.042	-.721	-.356
R3. It does not take me long to recover from a stressful event.	.719	.017	.777	.438
R4. It is hard for me to snap back when something bad happens.	-.823	.022	-.818	-.472
R5. I usually come through difficult times with little trouble.	.444	.056	.612	.312
R6. I tend to take a long time to get over setbacks in my life.	-.804	.044	-.796	-.441
T1. I usually discover ways to benefit from stressful events.	.151	.616	.496	.773
T2. I do not find that difficult times make me a better person.	-.004	-.651	-.369	-.734
T3. I often change in positive ways after bad things happen.	.053	.648	.419	.745
T4. It is hard for me to find anything good in negative events.	-.194	-.535	-.481	-.745
T5. I often find that I grow personally as a result of hard times.	-.104	.875	.407	.814
T6. I tend to learn lessons from the difficult times that I have.	-.067	.800	.394	.785

Note. [a]All correlations were significant at *p* < .001 and all comparisons of correlations between BTS and BRS are significantly different at *p* <.001.

Figure 3. Confirmatory factory analysis of the items of the brief thriving scale and the brief resilience scale in Study 2 (n = 431)

Next, we tested a one factor model to compare with the two correlated factor model. This model was different in that the BTS and BRS items were indicators of one rather than two latent variables. None of the fit statistics met the criteria for a good fit: RMSEA = .163, CFI = .744, TLI = .693. The χ^2 (54, N = 431) was 671.55 (p = <.001). The fit indices and the χ^2 difference test showed that the two correlated factor model had a significantly better fit (χ^2 (1, N = 440) = 565.05 (p = <.001).

Finally, we tested a two uncorrelated factor model to also compare with the two correlated factor model. The only difference was the removal of the correlation between the two latent variables. Although better than the one factor model, none of the indices met the criteria for a good fit: RMSEA = .086, CFI = .930, TLI = .914. The χ^2 (54, N = 440) was 226.33 (p = <.001). The fit indices and the χ^2 difference test showed that the two correlated factor model again had a significantly better fit (χ^2 (1, N = 440) = 119.83 (p = <.001).

While the analyses for the first two hypotheses involved separating the Study 1 and 2 data for the EFAs and CFAs, the rest of the analysis were conducted with the combined data from both studies. The first part of the third hypothesis that the BTS would be strongly correlated (e.g., r = .500 or more) with the BRS, perceived stress, personal growth, and stress-related benefits was supported. The correlation of the BTS with the BRS was .535. Table 3 shows that the correlations between the BTS and the other three variables were all above .500. The mean correlation of the

absolute value of all four variables was .557. The second part of the third hypothesis that the BTS would have at least a moderately strong correlation (e.g., r = .400 or more) with positive mental health was also supported. Table 3 also shows their correlations with the BTS, which ranged from .411 to .587 and had a mean of .510.

Since the stress-related benefits measure had the strongest correlation with the BTS of any variable and it was created for this study, the items are displayed in Table 5 with their means, standard deviations, correlations with the BTS and BRS, and factor loadings. The factor loadings are from principal axis factoring with an oblimin rotation. One factor emerged with an eigenvalue of 4.736 accounting for 59.20% of the variance and the mean factor loading was .727.

The fourth hypothesis that the BTS would be more strongly related to positive than negative mental health was generally supported. Table 4 shows that all eight correlations of the BTS with positive mental health measures (range = .411-.587) were larger than all four correlations with the negative mental health measures (range = .311-.408). The mean of the absolute value of the correlations was .510 for positive and .368 for negative mental health. Of the 32 correlations, 29 of the differences between them were significant at p < .05, 28 were at p < .01, and 25 were at p < .001.

Table 4. Correlation and multiple regression statistics for the relationship of the brief thriving scale and brief resilience scale with the other study variables in Studies 1 and 2 (n = 855)[a]

	[b]Correlation *r*		[c]Regression *b*		[d]Regression R² Change		[e]Regression R² Total
	BTS	**BRS**	**BTS**	**BRS**	**Add BTS**	**Add BRS**	**BTS & BRS**
Negative Mental Health							
Negative Affect[f]	-.311***z	-.468***z	-.085*	-.423***	.005*	.127***	.224***
Negative Emotions[g]	-.408***z	-.506***z	-.192***	-.403***	.026***	.115***	.282***
Anxiety[h]	-.357***z	-.467***z	-.150***	-.387***	.016***	.107***	.234***
Depression[i]	-.392***x	-.460***x	-.204***	-.350***	.030***	.088***	.241***
Positive Mental Health							
Positive Affect[f]	.522***x	.474***x	.377***	.273***	.101***	.053***	.326***
Overall Well-Being[j]	.587***z	.506***z	.443***	.270***	.141***	.052***	.397***
Positive Emotions[g]	.530***	.518***	.355***	.328***	.090***	.077***	.358***
Engagement[g]	.490***z	.389***z	.395***	.177***	.111***	.022***	.262***
Relationships[g]	.411***z	.315***z	.339***	.134***	.082***	.012***	.181***
Meaning[g]	.559***z	.453***z	.443***	.217***	.141***	.034***	.346***
Accomplishment[g]	.511***x	.460***x	.371***	.262***	.098***	.049***	.310***
Happiness[g]	.459***	.471***	.289***	.315***	.059***	.070***	.281***
General Health[g]	.365***x	.306***x	.282***	.155***	.057***	.017***	.150***
Thriving Specific							
Perceived Stress[k]	-.528***y	-.602***y	-.289***	-.449***	.060***	.145***	.423***
Personal Growth[l]	.511***z	.332***z	.468***	.079*	.155***	.004*	.265***
Stress-Related Benefits	.643***z	.473***z	.550***	.168***	.209***	.019***	.433***

Note. [a]Stress-related benefits were only assessed in Study 1. [b]BTS and BRS correlations sharing a superscript are significantly different: x = p < .05, y = p < .01, z = p < .001. [c]Standardized betas. [d]Additional variance explained when adding BTS or BRS. [e]Total variance explained by both the BTS and BRS. [f]Subscale of the *Positive and Negative Affect Schedule.* [g]Subscale of *The PERMA Profiler.* [h]GAD-7. [i]PHQ-8. [j]Mean of the items for the *Positive Emotions, Engagement, Relationships, Meaning, Accomplishment,* and *Happiness* subscales from *The PERMA Profiler.* [k]*Perceived Stress Scale.* [l]Subscale of the *Scales of Psychological Well-Being.* [m]Created for this study. *p < .05, **p < .01, ***p < .001.
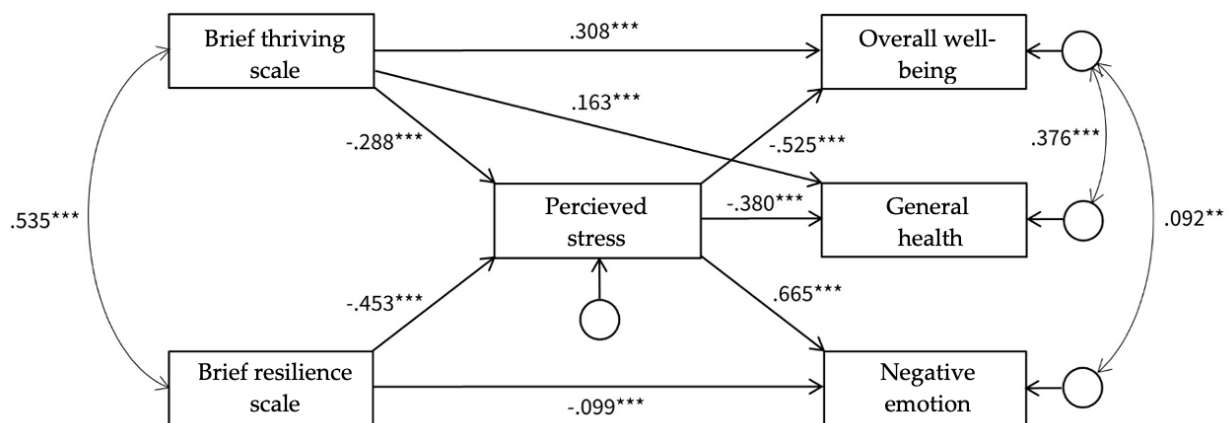
The fifth hypothesis that, compared with the BRS, the BTS would be more strongly related to positive mental health, personal growth, and stress-related benefits and less strongly related to negative mental health was also generally supported. Table 4 displays these correlations with

superscripts indicating significant differences between the BTS and BRS. The mean correlation with the positive mental health measures was .510 for the BTS and .450 for the BRS. The BTS correlations were larger for seven out of eight measures and significantly larger at $p < .001$ for meaning, engagement, relationships, and overall well-being and at $p < .05$ for positive affect and accomplishment. As expected, the correlations with personal growth and stress-related benefits were also larger for the BTS and significant at $p < .001$. Finally, the mean correlations with the negative mental health measures were larger for the BRS than the BTS (means = -.475 vs. -.368, respectively) and all differences were significant at $p < .001$.

The sixth hypothesis that the BTS would predict health when controlling for the BRS was also supported. Table 4 shows the standardized beta weights for the BTS when entered with the BRS in multiple regression analyses predicting each health measure and the additional variance explained when each was added to the other. The BTS and the BRS were each still significantly related to all other variables when controlling for the other. The mean standardized betas for the BTS and BRS, respectively, were .377 and .247 for the positive mental health measures, .200 and .350 for the negative mental health measures, and .282 and .155 for general health.

Finally, we conducted a path analysis of the effects of the BTS and BRS on health. Overall well-being, negative emotion, and general health were included as dependent variables to provide a broad representation of health. Perceived stress was included as a mediator because it is related to all aspects of health and the BTS and BRS are relevant for stress. Figure 4 shows the final model with non-significant paths deleted and the standardized beta weights. The model showed a very good fit: RMSEA = .023, CFI = .999, TLI = .996 and the χ2 (4, N = 866) = 5.818 (p = .213). The total effects were larger for the BTS on general health and overall well-being (e.g., .272 vs. .172 and .459 vs. .238, respectively) and larger for the BRS on negative emotion (e.g., -.400 vs. -.191). Perceived stress mediated 61.5% of the combined total effects of the BTS and BRS on general health, 53.9% on general health, and 83.9% on negative emotion.

Figure 4. Path Analysis of the effects of the brief thriving scale and the brief resilience scale on overall well-being, negative emotion, and general health with perceive stress as a mediator (n = 855)

Note. the mode fit statistics were RMSEA = .020, CFI = .999, TLI = .997, and x^2 (4, N = 855) = 5.333 (p = 2.55). The standardized beta weights are shown. **p < .01, *** p < .001.

Table 5. Descriptive statistics for the stress-related benefit items, factor loadings, and correlations with the brief thriving scale and brief resilience scale in Study 1 (n = 424)

			Factor	ᵃCorrelations r	
Stress-Related Benefits	M	SD	Loading	BTS	BRS
1. I developed a greater appreciation of life.	5.75	1.33	.772	.517[z]	.381[z]
2. I became a stronger and more confident person.	5.52	1.39.	.790	.582[z]	.464[z]
3. I developed better relationships with others.	5.22	1.53.	.759	.478[y]	.322[y]
4. I experienced growth in my spiritual life.	4.66	2.08	.486	.365[y]	.237[y]
5. I developed an interest in new things.	5.13	1.63.	.714	.462[x]	.379[x]
6. I became a kinder and more loving person.	5.26	1.50	.763	.461[y]	.348[y]
7. I found more meaning and purpose in life.	5.33	1.60	.835	.604[z]	.401[z]
8. I became a wiser and more mature person.	5.96	1.12	.693	.488[z]	.341[z]

Note. ᵃAll correlations were significant at p < .001. The BTS and BRS correlations sharing a superscript are significantly different as follows: x = $p < .05$, y = $p < .01$, z = $p < .001$.

4. Discussion

The purpose of these studies was to examine the reliability and validity of a new measure of thriving in relation to a complementary measure of resilience. While the BRS assesses resilience as the ability to bounce back from stressful events, the BTS assesses thriving as the ability to learn, grow, and benefit from stress. The BTS showed good internal consistency and test-retest reliability. The validity hypotheses were all generally supported. The BTS demonstrated strong construct validity with a one factor structure alone and a two factor structure when analyzed with the BRS. The BTS also showed convergent and divergent validity with the expected variables including divergence from the BRS on its relationship with positive and negative mental health, personal growth, and stress-related benefits. In addition, the BTS demonstrated incremental predictive validity in relation to all of the health measures when controlling for the BRS. Finally, the path analysis lent support to the complementary nature of the BTS and BRS in that their effects were mediated by perceived stress and their strongest effects were on different aspects of health.

The primary contribution of this study may be its strong support for the idea that positive adaptation to stress may involve both the ability to bounce back and the ability to find benefits in stress (Carver, 1998; O'Leary & Ickovics, 1995). Just as the BRS was developed to bring greater conceptual precision to the study of resilience, so the BTS may enable us to accurately measure and begin to better understand a complementary but distinct human capacity. While resilience and thriving are both relevant for adapting to stress, the factor analyses suggest they are not the same, the correlation analyses indicate they may have different implications for positive and negative mental health, and the multiple regression analyses show they may each explain unique variance in health that would be lost if they were not both assessed.

Our results also highlight the differential effects of the BTS and BRS on positive and negative mental health in adapting to stressful events (Watson et al., 1999; Zautra, 2006). While the main consideration in responding to stressful events has often been reducing their negative consequences, it may also be important to consider the beneficial effects of stress, especially on the elements of well-being. The biggest differences between the correlations of the BTS and BRS with the positive mental health measures were not on positive affect or positive emotion, but on the meaning, engagement, and relationship elements of PERMA. This suggests that the ability to learn, grow, and find benefits in stress may especially have value in relation to eudaimonic well-

being (Seligman, 2011).

In addition, research on posttraumatic- and stress-related growth has primarily involved reporting the growth and benefits that may occur as the result of a traumatic or major stressor in the past (Boales & Schuler, 2018; Tedeschi et al., 2018). In contrast, the BTS is the only measure we are aware of that focuses on the ability to grow and find benefits from the kinds of stressful events that will continue to occur in the future. Although the BTS was strongly related to personal growth and stress-related benefits, which may be primarily about what has already happened, the BTS may have greater value in predicting positive adaptation in the future and in identifying an exceptionally useful and fruitful ability for dealing with the vicissitudes of life.

4.1 Implications

The most important implication of these studies may be that there is now a measure for a neglected but important aspect of the positive adaptation to stress. The benefits of focusing on resilience as a human strength have included both increasing our understanding of resilience and developing interventions that may foster it (Bonanno, 2004; Southwick et al., 2016). In contrast, while studies have shown that posttraumatic- or stress-related growth does frequently occur (Tedeschi et al., 2018), there has been little research on whether the ability to benefit from stress may be a strength that can be taught and developed. Since the experience of stressful events is such an inherent and integral part of being human, the ability to learn and grow in response to stress may be an important strength, especially in relation to positive mental health.

Another important implication is that it is now possible to study resilience and thriving together as complementary abilities both vital for successful adaptation to stress (Carver, 1998). Using the BRS to assess resilience and the BTS to assess thriving in the same study may have several advantages. First, assessing both may explain more variance in overall mental health and well-being because they differentially affect positive and negative mental health. Second, since it is possible that resilience and thriving may be increased by different interventions, assessing both may help identify and understand what fosters each. Third, because the BTS and BRS have similar items and the same anchors, they can efficiently be assessed by including them together in the same section of a questionnaire. The Appendix includes a suggested order for the combined items in what is called the Positive Adaptation to Stress Scale (PASS).

4.2 Limitations and future directions

The limitations of this study include that the participants were undergraduate students, although the sample size was ethnically diverse. While there was a relatively large SD and range in age, future research could benefit by establishing norms for the BTS by including a larger proportion of middle-aged and older adults. A second limitation is the lack of a follow-up questionnaire that would make it possible to examine the predictive utility of the BTS over time. Future studies could address this by including multiple assessments, ideally during a time of increasing stress or chronic stress. A third limitation involves the cognitive biases that may affect the accuracy of recalling and reporting on the ability to learn, grow, and benefit from stress (Boales & Schuler, 2018). This could be addressed by including observer reports, examining physiological substrates, and relating BTS to measures of benefits over time.

Finally, future research should examine the possible mechanisms underpinning resilience and thriving and how they might be addressed in different interventions. Since resilience is focused on reducing the harmful effects of stress, it may involve mechanisms and interventions that reduce psychological distress such as decreased distorted thinking and relaxation techniques (Nakao et al., 2021). Since thriving is focused more on increasing elements of well-being such

meaning, accomplishment, and positive relationships, it may involve more of the kinds of activities and interventions developed in positive psychology, such as identifying and using strengths, noticing and savoring good things, and writing about a best possible future (Rashid & Seligman, 2018). Just as there are differences in the kinds of events and experiences that may increase positive and negative affect (Zautra, 2006), so there may also be important differences in what fosters thriving and resilience.

5. Conclusions

The BTS may fill an important gap in understanding our potential for adapting and responding well to the inevitable stress of our lives. Rather than only focusing on recovering from or reducing the negative effects of stress, the BTS may be a reliable and valid way to begin to better understand our potential for learning, growing, and benefitting from stress events. Just as the study of resilience has helped us better understand how to reduce the negative effects of stressful events, so the study of thriving may shed new light on how we can learn, grow, and benefit

Conflict of interest statement

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Data availability statement

N/A.

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Appendix

The Brief Thriving Scale (BTS)

Instructions: Use the following scale and circle one number for each statement to indicate how much you disagree or agree with each of the statements.

   1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

T1. I usually discover ways to benefit from stressful events.
T2. I do not find that difficult times make me a better person.
T3. I often change in positive ways after bad things happen.
T4. It is hard for me to find anything good in negative events.
T5. I often find that I grow personally as a result of hard times.
T6. I tend to learn lessons from the difficult times that I have.

Note. Items T2 and T4 are reverse coded.

The Brief Resilience Scale (BRS)

Instructions: Use the following scale and circle one number for each statement to indicate how much you disagree or agree with each of the statements.

   1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

R1. I tend to bounce back quickly after hard times.
R2. I have a hard time making it through stressful events.
R3. It does not take me long to recover from a stressful event.
R4. It is hard for me to snap back when something bad happens.
R5. I usually come through difficult times with little trouble.
R6. I tend to take a long time to get over setbacks in my life.

Note. Items R2, R4, and R6 are reverse coded.

The Positive Adaptation to Stress Scale (PASS)

The following is a recommended order for combining the BTS and BRS into one scale assessing the ability to positively adapt to stress: R1, T1, R4, T2, R3, T3, R6, T4, R5, T5, R2, T6