

Personality Strengths as Resilience: A One-Year Multiwave Study

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Abstract

We examined how personality strengths prospectively predict reactions to negative life events. Participants were 797 community adults from 42 countries. At five points over the course of 1 year, participants completed a series of questionnaires measuring seven personality strengths (hope, grit, meaning in life, curiosity, gratitude, control beliefs, and use of strengths), subjective well-being, and frequency and severity of negative life events. Using hierarchical linear modeling with assessment periods nested within participants, results from lagged analyses found that only hope emerged as a resilience factor. To illustrate the importance of using appropriate lagged analyses in resilience research, we ran nonlagged analyses; these results suggest that all seven personality strengths moderated the effect of negative life events on subjective well-being, with greater strengths associated with healthier outcomes. To provide evidence that personality strengths confer resilience, a prospective examination is needed with the inclusion of events and responses to them. The use of concurrent methodologies and analyses, which is the norm in psychology, often leads to erroneous conclusions. Hope, the ability to generate routes to reach goals and the motivation to use those routes, was shown to be particularly important in promoting resilience.

After encountering a potentially traumatic event, the most common response by adults is resilience (Bonanno, 2005). In summarizing the field, perhaps “the great surprise of resilience research is the ordinariness of the phenomena” (Masten, 2001, p. 227). Researchers have discovered two key findings related to resilience: the presence of one or more negative life events (NLE) is not indicative of poor future functioning, and there are multiple developmental trajectories of adaptation (Masten, 2001). Despite growing interest in resilience, there is minimal clarity about which individual differences increase the likelihood that people will show a resilient response to adversity.

Resilience factors contribute to healthy outcomes during and/or following the onset of an adverse or NLE. To accurately assess antecedents of resilience, resilience factors need to be measured before an NLE occurs. Yet in the majority of studies on resilience, personality predictors of resilience are assessed concurrently with NLE, or worse, after they occurred (Bonanno & Diminich, 2013). This approach prevents temporality from being established and can lead to erroneous conclusions about what makes a person resilient. In this article, we conducted a 1-year multiwave study to examine how personality strengths prospectively protect against the effect of NLE on subjective well-being (SWB).

Resilience

Early research characterized resilience as a trait (e.g., “ego resilience”) that reflects the ability to adaptively respond to and

bounce back from adversity (Block & Block, 1980; Block & Kremen, 1996; Lazarus, 1993). Individuals higher in trait resilience tend to habitually use effective coping strategies that function as a protective reserve to draw upon when adversity arises (Fredrickson, Tugade, Waugh, & Larkin, 2003). There has even been the proposition of a “resilient personality,” representing a cluster of traits and coping strategies that contribute to healthy adjustment when confronted with setbacks (Skodol, 2010).

Several measures of trait resilience emerged from these conceptualizations (e.g., Block & Kremen, 1996; Connor & Davidson, 2003; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Smith et al., 2008; Wagnild & Young, 1993). While these measures are a tempting way to assess how resilient a person tends to be, they are limited by biases and broad item content. Memory does not possess a one-to-one correspondence with a person’s past and, instead, projects a bias that only increases over time (Walker, Skowronski, & Thompson, 2003). On average, people tend to view the past through rose-colored glasses, such that they are more likely to remember themselves as more resilient than they were. In addition, a person’s transient moods, emotions, and cognitions on the day of completing a self-report assessment can further distort their memory of prior resilience. For example, a happy mood will lead a person to view her responses to hardships as more successful than they actually

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were (Schwarz & Clore, 2003). Similarly, self-enhancement and social desirability biases may lead a person to overestimate how resilient they were during a prior hardship or hypothetically when anticipating a hardship. In terms of item content, self-report measures typically contain vague item stems (e.g., “when something unforeseen happens” or “in difficult periods”; Friborg et al., 2003) that make it impossible to discern whether a person is responding to a traumatic event (e.g., sexual assault), an everyday stressor (e.g., traffic jam), or the large number of possibilities in between. Of these limitations, perhaps most important is the assumption that resilience is constant across time and context, an assumption that is largely unfounded. A person may be resilient in response to the death of a close friend but devastated after losing a family member. Thus, caution is warranted when considering resilience as a stable trait (Bonanno & Diminich, 2013).

Rather than being a stable trait of a person, resilience has more recently been conceptualized as an interaction between an individual's unique resources and the events he or she experiences (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). Resilience is dynamic and depends on the context of life events and responses to them (Shiner & Masten, 2012). In this way, resilience is a series of mechanisms leading a person to be minimally impacted by adversity and, in turn, experience minimal functional impairment (Bonanno, 2005; Fletcher & Sarkar, 2013). A person is resilient when despite the presence of NLE, there is no sustainable decline in his or her well-being. Resilience factors, therefore, are best captured prior to NLE, with both predicting subsequent changes in SWB.

Resilience and Personality

The proposition that personality characteristics can be a source of resilience has roots in developmental research. A primary goal of developmental research is to identify what risk factors (e.g., traumatic experiences, chronic adversities) predict future psychopathology and related maladaptive outcomes. Accordingly, some researchers have turned their attention to strength-based models to examine the individual characteristics that, over time, increase the degree to which people will be resilient. Previously identified resilience factors include positive emotions (Fredrickson et al., 2003), flexible coping strategies (Bonanno, Pat-Horenczyk, & Noll, 2011), and self-enhancement biases (Bonanno, Field, Kovacevic, & Kaltman, 2002). Nonetheless, most conceptualizations suggest that at least some variance in resilient outcomes is attributable to personality (Bonanno & Diminich, 2013; Fletcher & Sarkar, 2013; Mancini & Bonanno, 2009).

As support for this proposition, in three studies, the Big Five personality traits Extraversion and Neuroticism strongly correlated with a measure of trait resilience (Campbell-Sills, Cohan, & Stein, 2006; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005; Peng et al., 2012). However, each of these studies contains important limitations. First, resilience was measured

with a single self-report questionnaire, which fails to capture individuals' responses to ongoing NLE. Second, in studies of adults,¹ there has been minimal use of longitudinal designs (for exceptions, see Gupta & Bonanno, 2010; Weems et al., 2007). Instead, personality characteristics and resilience are typically measured simultaneously at a single time point. A positive relationship is thought to imply a causal link between a given personality characteristic and the resilient response, based on the assumption that personality is defined by temporal stability. Challenging this assumption, although personality tends to stabilize in early adulthood, changes occur across the life span in response to intentional activity and environmental stimuli (e.g., Roberts, Walton, & Viechtbauer, 2006).

Researchers have also been interested in the influence of personality on reactions to life events. At least one longitudinal study failed to find support for personality traits as a moderator of individuals' responses to life events (Yap, Anusic, & Lucas, 2012). In general, existing longitudinal studies tend to assess individuals once per year (or longer; e.g., Löckenhoff, Terracciano, Patriciu, Eaton, & Costa, 2009; Ludtke, Roberts, Trautwein, & Nagy, 2011; Specht, Egloff, & Schmukle, 2011). The problem with this strategy is that the data are unable to provide insight on the proximal effects of negative life events and the potential resiliency influence of personality. Studies that have examined the proximal effects of personality and life events on adjustment, such as the daily diary work of Longua, DeHart, Tennen, and Armeli (2009), suggest that certain personality traits buffer against the adverse effects of NLE. While promising, the studies reviewed above focused only on the higher-order Big Five dimensions (not the lower-order facets) and have yet to explore other personality characteristics that might influence people's responses to life events.

One subset of personality characteristics that appear promising as resilience factors is personality strengths. Several prominent models of personality strengths have emerged in the past decade (Buckingham & Clifton, 2001; King & Trent, 2013; Peterson & Seligman, 2004). Although terminology differs between models,² scholars agree on core features of a “personality strength”—they are positive trait-like features of personality, embodied in thought, feeling, and behavior, that promote adjustment and adaptation. When used, personality strengths increase the likelihood of desirable outcomes, but these strengths are valued in their own right, irrespective of outcomes associated with their usage. That is, the possession of a personality strength is a valued asset. In considering where personality strengths fit into a larger taxonomy of personality, we offer insights from a three-level model (McAdams, 1995). At Level 1 are the personality traits or general behavioral tendencies that individuals possess (“having”; e.g., Big Five). At Level 2 are the life projects or personal strivings that guide an individual's daily behavior and effort (“doing”). At Level 3 are the overarching life narratives with the attributions and mental interpretations about one's past, present, and future that are an individual's life story (“being”). Personality strengths are best conceptualized as a Level 1 construct in that they tend to be

stable over time and represent the central, healthy trait-like characteristics of a person. A case could be made for placing personality strengths at Level 2, in that strengths are motivational factors that lead to positive outcomes when used, but insufficient research is available to establish the link between the possession of strengths and their use and development (Biswas-Diener, Kashdan, & Minhas, 2011).

It is impractical to examine all purported personality strengths simultaneously. Researchers must identify a subset of personality strengths relevant to their research questions. Personality strengths in the current study were included if they met the criteria of trait-like features that promote adjustment, embodied in thoughts, feelings, and behaviors. For example, we did not include trait measures of one's search for meaning and rumination because they are both consistently linked with maladjustment; we did not include one's subjective level of happiness because although linked to adjustment, it does not represent a trait-like quality. The personality strengths included were as follows: hope—the ability to generate routes to reach goals (pathways) and the motivation to use those routes (agency; Snyder et al., 1991); grit—passion and perseverance toward consistent, long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007); meaning in life—the feeling that one's life has a purpose and is significant (Steger, Frazier, Oishi, & Kaler, 2006); curiosity—the desire to seek out new knowledge and experiences (Kashdan et al., 2009); gratitude—the tendency to feel appreciative of benefits in one's life (McCullough, Emmons, & Tsang, 2002); and control beliefs—the extent to which a person feels in control of whether or not good things happen to him or her (Haidt & Rodin, 1999). In addition to these measures of the possession of personality strengths, we directly assessed strength use—awareness and regular use of one's unique capacities in everyday life, which shows trait-like features (Seligman, Steen, Park, & Peterson, 2005).

A common criticism of well-being research is that strengths are often studied in isolation, which prevents meaningful comparisons. Such an approach may lead to isolated strands without a coherent framework of how strengths relate to well-being. An alternative approach is to compare multiple strengths at once, clarifying which personality strengths relate to SWB and to what degree. In this way, researchers can identify which personality strengths most strongly or uniquely relate to important outcomes, a simultaneous approach that has been used elsewhere (Sheldon, Elliot, Kim, & Kasser, 2001; Sheldon, Jose, Kashdan, & Jarden, 2015). Although the personality strengths included in this study differ in important ways, they can be compared based on their effectiveness as resilience factors that promote adjustment following adversity.

The Present Study

The goal of the present study was to advance resilience research by exploring whether certain personality strengths acted as protective factors when individuals experienced NLE. Using a large

international sample and multiwave study, we tested the extent to which possessing a personality strength buffered the effect of NLE on a person's SWB. In an effort to demonstrate temporal relationships between personality and resilience, we moved beyond single time point assessments to test within time point and 3-month lagged models.

We first made broad hypotheses about the set of personality strengths. When personality strengths were measured concurrently with SWB, we hypothesized that nearly all of them would be positively associated with our operationalization of resilience. On the contrary, when appropriately measured prior to SWB and NLE, we hypothesized fewer personality strengths would prospectively promote resilience.

Prior studies have found that the personality strengths included in this study relate to greater SWB at a global level, but not all may be relevant to resilience. That is, there are many pathways through which personality strengths can promote SWB, but not all may do so by mitigating the effects of NLE. Specifically, we expected the presence of hope, grit, and meaning in life before NLE to promote resilience. Past research has found that each of these three personality strengths mitigates the influence of NLE on several indicators of positive functioning, including life satisfaction (hope; Valle, Huebner, & Suldo, 2006), suicidal ideation (grit; Blalock, Young, & Kleiman, 2015), immune functioning (meaning in life; Bower, Kemeny, Taylor, & Fahey, 2003), and psychological well-being (meaning in life; Park, Edmondson, Fenster, & Blank, 2008).

We offer hypothesized theoretical mechanisms for each of these three strengths. A hopeful person believes she can achieve goals and find workable solutions around obstacles. The hopeful person might interpret NLE as another obstacle and harness her energy and problem-solving skills to prevent decreases in SWB. Grit is similar to hope, with a future orientation and a behavioral tendency to persist when obstacles occur. Gritty individuals are defined by their ability to work through hardships, and grit might be harnessed as a source of stability. We expected the Perseverance of Effort subscale to have a stronger influence than the Consistency of Interests subscale due to recent research comparing their relative effects on well-being (Bowman, Hill, Denson, & Bronkema, 2015). As for meaning in life, ascribing meaning to an NLE can help people manage the negative impact and dampen the impact on their SWB (Park, 2010). Individuals who score high on trait measures of resilience report finding more meaning in daily stressors and traumatic incidents (Tugade & Fredrickson, 2004). Taken together, we hypothesized that hope, grit, and meaning in life would act as *prospective* resilience factors by buffering the harmful effects of NLE.

METHOD

Participants and Procedures

Data were collected from 797 adults from the community who completed the International Wellbeing Study (IWBS; www.wellbeingstudy.com). Recruitment for the IWBS included

emailed and printed advertisements that were distributed to businesses, charitable organizations, various university departments, listservs, and online forums. Participants were from 42 countries, with most being from New Zealand ($n = 258$), the United States ($n = 127$), Hungary ($n = 90$), and Australia ($n = 69$). All other nationalities had fewer than 39 participants. Participants were 661 females and 136 males, with ages ranging from 18 to 81 ($M = 39$ years, $SD = 14.31$).

Upon entering the IWBS website, participants were asked to complete a series of questionnaires five times, every 3 months over the course of 1 year. The full battery of 20 scales contained 235 questions, and average completion time was 29 minutes. Participants were compensated with an entry into a drawing for one of 15 \$100 (USD) vouchers, and they were provided with a summary of their scores compared to others who completed the assessment.

Measures

Eleven scales (94 items) from the total assessment battery were used for the present analyses.³ Most participants completed the assessment battery in English (71%). Where scales were already available in one of the desired 15 languages, that language translation was used. Where no translation was available from the English version to the required language, scales were translated by a native speaker of that language who had a bachelor's degree in psychology or higher (most translators were master's or PhD students in psychology familiar with psychometrics). Scales were independently cross-checked after translation by a second translator, and areas of disagreement were identified and resolved.

Negative Life Events (NLE). An abbreviated measure of NLE was created for the purposes of the study. Although valid adult NLE measures exist, their length increases participant burden (e.g., Sarason, Johnson, & Siegel, 1978). With an already lengthy assessment battery, a brief measure was desired. Creators of the IWBS generated five broad NLE items that sought to capture the diversity of NLE experienced by adults. Participants indicated whether one of five NLE occurred during the past 3 months: (a) *You had a serious disagreement with another person*, (b) *You were injured or ill*, (c) *You experienced a significant financial loss or lost your job*, (d) *Someone you care about experienced a significant problem*, or (e) *You didn't achieve something or obtain something that you wanted*. Each event that occurred was rated from 1 (*none*) to 4 (*a lot*; 0 = the event did not occur) on "how much of a problem" it was. A composite score was created by summing the five items at baseline ($M = 7.10$, $SD = 4.30$) and each subsequent time point.

Subjective Well-Being (SWB). A composite score of SWB was created by using the five-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), the four-item Subjective Happiness Scale (SHS; Lyubomirsky & Lepper,

1999), and the 20-item Center for Epidemiological Studies–Depression Scale (CES-D; Radloff, 1977). Validity has been established in prior studies for the SWLS (Diener, Kahneman, & Helliwell, 2010), SHS (Shimai, Otake, Utsuki, Ikemi, & Lyubomirsky, 2004), and CES-D (Simon, Fleck, Lucas, Bushnell, & LIDO Group, 2004).

Conventional models of SWB (e.g., Diener et al., 1985) include positive affect, negative affect, and life satisfaction. As the IWBS did not contain measures of positive and negative affect, we followed prior research (e.g., Sheldon et al., 2015) and used happiness in place of positive affect, and depressive symptoms in place of negative affect. Both pairs show strong correlations with the other (Watson, Clark, & Tellegen, 1988). In nonclinical samples, the CES-D measures general psychological distress rather than symptoms of clinical depression (Wood, Taylor, & Joseph, 2010). Therefore, the CES-D is an appropriate indicator of SWB and not mental disorder in our sample.

Exploratory factor analysis using principal-axis factoring was performed at each time point to confirm the unidimensionality of our SWB composite. At each time point, the first initial eigenvalue was greater (≥ 2.15) than the second and third (≤ 0.45). The standardized factor loading magnitudes for satisfaction with life (.71 to .78), subjective happiness (.79 to .83), and depression (-0.73 to $-.77$) were similar across the five time points. The initial eigenvalues clearly suggest a one-factor solution, and the standardized factor loading magnitudes justify our unit-weighted composite scores. A single SWB score at baseline and each subsequent time point was taken from the average of each scale after reversing the CES-D scores and standardizing all three variables ($\alpha s = .82, .84, .80, .81, .81$).

Hope. The 12-item Adult Hope Scale (AHS; Snyder et al., 1991) measures a positive motivational state oriented toward achieving goals. The AHS assesses two facets of hope: Agency, or goal-directed energy (e.g., "I energetically pursue my goals"), and Pathways, or planning to meet goals (e.g., "I can think of many ways to get the things in life that are important to me"). Positive associations with optimism and self-esteem, and negative associations with depression and anxiety provide evidence for construct validity (Holleran & Snyder, 1990). Items were rated from 1 (*definitely false*) to 8 (*definitely true*) and summed to create a total scale score at baseline ($M = 49.49$, $SD = 8.49$) and each subsequent time point ($\alpha s = .87, .88, .88, .89, .89$).⁴

Grit. The 12-item Grit Scale (GS; Duckworth et al., 2007) measures a person's perseverance in the face of challenges, and his ambition and passion in the pursuit of long-term goals, with two subscales: Perseverance of Effort (e.g., "Setbacks don't discourage me") and Consistency of Interests (e.g., "I often set a goal but later choose to pursue a different one"; reverse coded). The negligible association between grit and IQ demonstrates its discriminant validity as a measure of effort, not ability. Grit's predictive validity is supported by relationships with achievement in academic and military settings (Duckworth et al., 2007). Items were rated from 1 (*not at all like me*) to 5 (*very much like*

Table 1 Time 1 Zero-Order Correlations, Means, and Standard Deviations

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
SWB	1. NLE												
	2. SWLS	-.35											
	3. SHS	-.24	.62										
	4. CES-D	.35	-.57	-.63									
Personality Trait	5. AHS	-.15	.50	.58	-.47								
	6. Grit-POE	-.05	.30	.35	-.32	.59							
	7. Grit-COI	-.12	.07	.11	-.21	.08	.23						
	8. MLQ-Pres.	-.06	.43	.50	-.43	.50	.42	.15					
	9. CEI	-.03	.23	.37	-.24	.55	.42	-.14	.30				
	10. GQ-6	-.12	.46	.54	-.45	.45	.27	.02	.49	.27			
	11. CBS	-.12	.40	.53	-.45	.54	.37	.07	.44	.38	.48		
	12. SUK	-.13	.44	.50	-.46	.68	.54	.11	.48	.46	.42	.45	
	Mean	7.10	22.34	4.89	13.01	49.49	3.68	3.56	25.21	31.81	35.98	16.90	54.48
	SD	4.30	7.37	1.30	10.45	8.49	0.72	0.84	6.74	7.64	5.53	3.18	8.68
	ICC	.46	.72	.80	.57	.82	.81	.79	.80	.81	.77	.74	.78

Note. SWB = subjective well-being; NLE = negative life events; SWLS = Satisfaction With Life Scale; SHS = Subjective Happiness Scale; CES-D = Center for Epidemiological Study of Depression; AHS = Adult Hope Scale; POE = perseverance of effort; COI = consistency of interests; MLQ-Pres. = Meaning in Life Questionnaire–Presence subscale; CEI = Curiosity and Exploration Inventory; GQ-6 = six-item Gratitude Questionnaire; CBS = Control Beliefs Scale; SUK = Strengths Use and Knowledge.

All correlations $\geq .07$ are statistically significant ($p < .05$).

me). Recent research suggests that each subscale may differentially relate to well-being and goal attainment (e.g., Bowman et al., 2015). We therefore calculated baseline subscale scores for Perseverance of Effort ($M = 3.68$, $SD = 0.72$) and Consistency of Interests ($M = 3.56$, $SD = 0.84$) and at each subsequent time point ($\alpha s = .73, .76, .75, .79, .77$, and $\alpha s = .82, .85, .85, .86, .88$, respectively).⁵

Meaning in Life. The 10-item Meaning in Life Questionnaire (MLQ; Steger et al., 2006) contains two five-item subscales. The Presence subscale measures the degree to which a person feels her life is meaningful (e.g., “I understand my life’s meaning”). The Search subscale measures the degree to which a person is actively searching for meaning in her life (e.g., “I am seeking a purpose or mission for my life”). Negligible associations with conformity, universalism, hedonism, and achievement demonstrate discriminant validity. The MLQ-Search subscale was excluded because prior research has shown that the MLQ-Search subscale is negatively associated with well-being (Steger et al., 2006), and it is meant to be a dynamic set of cognitive and behavioral acts as opposed to a personality strength (e.g., Steger, Kashdan, Sullivan, & Lorentz, 2008). Items from the Presence subscale were rated from 1 (*absolutely untrue*) to 7 (*absolutely true*) and summed to create a total scale score at baseline ($M = 25.21$, $SD = 6.74$) and each subsequent time point ($\alpha s = .90, .92, .92, .93, .92$).

Curiosity. The 10-item Curiosity and Exploration Inventory-II (CEI-II; Kashdan et al., 2009) measures tendencies to seek out new knowledge and experience. Two 5-item subscales measure Stretching (seeking out new knowledge and experiences; e.g., “I actively seek as much information as I can in new situations”) and Embracing (willingness to embrace novelty and uncertainty;

e.g., “I am the type of person who really enjoys the uncertainty of everyday life”). Construct validity is supported by positive associations with psychological flexibility and openness to experience (e.g., Kashdan et al., 2013). Items were rated from 1 (*very slightly or not at all*) to 5 (*extremely*) and summed to create a total scale score at baseline ($M = 31.81$, $SD = 7.64$) and each subsequent time point ($\alpha s = .88, .88, .89, .89, .89$).

Gratitude. The six-item Gratitude Questionnaire (GQ-6; McCullough et al., 2002) was used to assess the tendency to feel grateful and appreciate benefits in life. An example item is “I have so much in life to be thankful for.” Construct validity is supported by predictive validity of well-being above and beyond the Big Five personality traits (Wood, Joseph, & Maltby, 2009) and positive associations with positive affect and meaning in life. Items were rated from 1 (*strongly disagree*) to 7 (*strongly agree*) and summed to create a total scale score at baseline ($M = 35.98$, $SD = 5.53$) and each subsequent time point ($\alpha s = .83, .83, .84, .84, .83$).

Control Beliefs. The four-item Control Beliefs Scale (CB; Bryant & Veroff, 2007) measures the degree to which a person believes that he or she can generate positive future outcomes. An example item is “In general, how much control do you feel that you personally have over whether or not good things happen to you?” Items were answered on varying 4-, 5-, and 7-point Likert scales. The four items were summed to create a total scale score at baseline ($M = 16.90$, $SD = 3.18$) and each subsequent time point ($\alpha s = .73, .77, .76, .78, .78$).

Strengths Use. The 10-item Strengths Use and Knowledge Scale (SUK; Govindji & Linley, 2007) measures the extent to which people are aware of and regularly use personal strengths.

Table 2 Lagged and Nonlagged Personality Strengths Moderating the Effect of NLE on Subjective Well-being

Personality Strength	Lagged Analyses				Nonlagged Analyses			
	Std. Coef.	95% CI	Var. Comp.	ΔR^2	Std. Coef.	95% CI	Var. Comp.	ΔR^2
NLE	-.218***	[-.243, -.193]	0.122		-.149 [†]	[-.169, -.129]	0.126	
Hope	.234***	[.199, .270]	0.248		.483 [†]	[.453, .512]	0.203	
Hope × NLE	.028*	[.007, .050]	0.455	0.005	.042 [†]	[.025, .059]	0.37	0.007
NLE	-.0212 [†]	[-.237, -.187]	0.149		-.162 [†]	[-.183, -.141]	0.165	
Strengths use	.133 [†]	[.099, .167]	0.248		.356 [†]	[.327, .386]	0.224	
Strengths Use × NLE	0.022	[-.000, .044]	0.547	0.002	.030**	[.011, .048]	0.442	0.003
NLE	-.0213 [†]	[-.238, -.188]	0.155		-.180 [†]	[-.201, -.160]	0.141	
MIL-Presence	.147 [†]	[.113, .182]	0.248		.359 [†]	[.329, .389]	0.219	
MIL-Presence × NLE	0.021	[-.001, .044]	0.546	0.002	.038 [†]	[.020, .057]	0.47	0.006
NLE	-.212 [†]	[-.237, -.187]	0.144		-.178 [†]	[-.198, -.157]	0.137	
Gratitude	.155 [†]	[.122, .188]	0.248		.363 [†]	[.334, .391]	0.22	
Gratitude × NLE	0.02	[-.002, .042]	0.526	0.002	.021*	[.003, .039]	0.43	0.002
NLE	-.215 [†]	[-.240, -.190]	0.135		-.170 [†]	[-.190, -.149]	0.132	
Control beliefs	.142 [†]	[.110, .173]	0.247		.353 [†]	[.326, .380]	0.218	
Control Beliefs × NLE	0.014	[-.007, .173]	0.529	0.002	.036 [†]	[.018, .053]	0.419	0.008
NLE	-.209 [†]	[-.234, -.184]	0.178		-.185 [†]	[-.206, -.165]	0.169	
Curiosity	.067 [†]	[.032, .103]	0.248		.291 [†]	[.261, .322]	0.227	
Curiosity × NLE	0.013	[-.010, .035]	0.616	0.001	.035 [†]	[.017, .054]	0.559	0.004
NLE	-.212 [†]	[-.236, -.187]	0.177		-.180 [†]	[-.202, -.159]	0.169	
Grit-POE	.093 [†]	[.057, .128]	0.249		.271 [†]	[.240, .302]	0.232	
Grit-POE × NLE	0.011	[-.012, .034]	0.596	0	.033 [†]	[.015, .052]	0.542	0
NLE	-.209 [†]	[-.234, -.184]	0.192		-.187 [†]	[-.209, -.166]	0.171	
Grit-COI	.045*	[.010, .080]	0.249		.032	[-.000, .063]	0.243	
Grit-COI* NLE	0.004	[-.019, .027]	0.644	0	.024*	[.005, .044]	0.656	0.004

Note. NLE = negative life events; POE = perseverance of effort; COI = consistency of interests; MIL-Presence = Meaning in Life Questionnaire–Presence subscale; Var. Comp. = variance components, with the first row the autoregressive Level 1 variance, second row nonautoregressive Level 1 (i.e., residual) variance, and third row Level 2 (i.e., intercept) variance.

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

Example items include “I know my strengths well” and “I always try to use my strengths.” Strengths use has been shown to predict vitality, positive affect, and self-esteem over time. In a comparison of positive psychology interventions, participants who used their “signature strengths” every day showed the largest and most stable increases in happiness over a 6-month period (Seligman et al., 2005). Items were rated from 1 (*strongly disagree*) to 7 (*strongly agree*) and summed to create a total scale score at baseline ($M = 54.48$, $SD = 8.68$) and each subsequent time point ($\alpha s = .89, .89, .86, .91, .91$).

RESULTS

Analytic Overview

To take full advantage of our multiple repeated measures over time, data were analyzed using multilevel modeling in SPSS 19.0. This procedure nests the five measurement time points within individuals to account for the dependencies inherent with repeated measures. We standardized all variables to z -scores to allow regression coefficients to be interpreted as standardized coefficients. This resulted in grand-mean centering and a combination of both between- and within-person associations between variables. We used an autocorrelated error structure to allow

measurements at closer time points to be more highly correlated (Bolger & Laurenceau, 2013). We estimated only a random effect for intercepts, as none of our hypotheses concerned random effects for slopes.

The primary predictor (NLE) and personality strength moderators were grand mean centered to enhance interpretation of the main effects after the product term is included (Preacher, Curran, & Bauer, 2006). In multilevel modeling, random effects from less complex models can be used to calculate variance explained in the outcome variable (La Huis, Hartman, Hakoyama, & Clark, 2014). To calculate total variance explained, we used the equation from Snijders and Bosker (1994) that combines the Level 1 and Level 2 variance explained. As suggested, any negative variance explained was reported as zero.

We first tested a simple multilevel model where the frequency and intensity of past NLE predicted SWB. We expected to find a significant negative relationship. Next, we computed grand-mean centered product terms between the NLE variable and each personality strength. Because there are benefits (e.g., statistical control) and costs (e.g., multicollinearity) to analyzing each strength separately, or in tandem, we performed both analyses. In the first stage of analyses, separate multilevel models were tested with three predictors: the main effect for NLE, the main effect for the personality

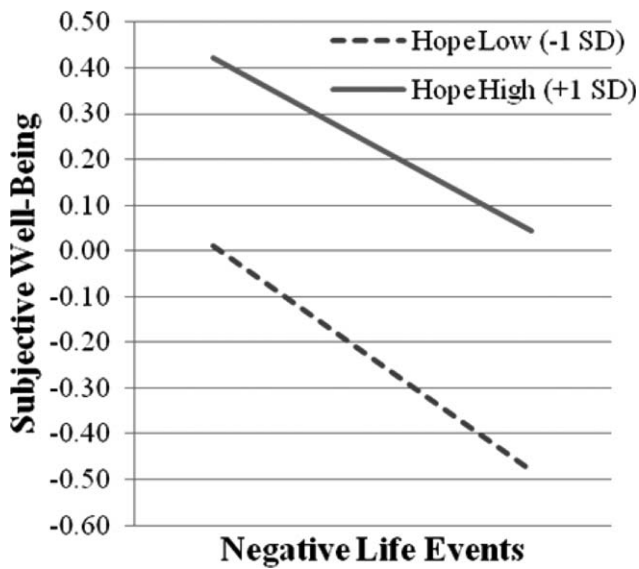


Figure 1 Simple slopes of negative life events on subjective well-being at low and high levels of lagged hope.

strength, and the associated product term.⁶ Therefore, eight multilevel models were run (with separate models for the two grit subscales). In the second stage, a single multilevel model was tested using simultaneous entry of all predictors and moderation effects (17 total) to determine which predictors had the strongest *unique* moderation effect of NLE on SWB. We probed significant moderation effects by calculating simple slopes at low and high levels of the personality strength according to Preacher et al. (2006).

Of critical importance to note is that we conducted lagged analyses, such that (a) personality strengths were measured 3 months prior to SWB and (b) participants reported on NLE that occurred in between the personality and SWB assessments. This set up the proper temporal sequence (personality strengths, NLE, SWB), allowing for a true test of the resilience process. To illustrate the importance of establishing temporal precedence when studying resilience, we conducted seven identical analyses where we did not use lagged analyses (i.e., we used measures all from the same time point). In this case, the personality strength predictors were measured at the same time as NLE and SWB outcome. Although these analyses make less conceptual sense, they are relatively commonplace in the resilience literature. We present them to show how misleading nonlagged or cross-sectional tests of resilience can be.

Descriptive Statistics

Means, standard deviations, and correlations at Time 1 are presented in Table 1. These descriptive statistics were similar across the five time points. In addition, the intra-class correlations are reported from null multilevel models. The SWB and personality strength variables all show strong stability over time, with most of the variance between persons.

Main Effect of Negative Life Events

At baseline, 93.6% of participants endorsed at least one of the NLE; on average, 52.3% of participants endorsed any given NLE. These relative frequencies were similar across all five time points. As expected, greater frequency and intensity of negative life events over the past 3 months prospectively predicted worse SWB (*Std. Coef.* = $-.190$, $t = -17.38$, $p < .001$; variance explained = .032). We proceeded to test which personality strengths weakened this relationship.

Moderating Effects of Lagged Personality Strengths

When each of the seven personality strengths was tested separately in different models (i.e., Stage 1), only hope emerged as a significant moderator. Hope attenuated the harmful effects of negative life events on SWB (*Std. Coef.* = $.028$, $t = 2.57$, $p < .01$). Variance explained by the product terms is displayed in the ΔR^2 column in Table 2. Table 2 also presents the fixed effects and their associated significance for each personality strength and product term.

To probe the significant moderating effect of hope, we calculated the slope between NLE and SWB at one standard deviation above and below the sample mean of hope (i.e., simple slopes; Preacher et al., 2006). The effect of NLE was statistically significant at all three levels of hope; however, the effect was smaller in magnitude at higher levels of hope. At one standard deviation below the mean of hope, the NLE slope was strongest (*Std. Coef.* = $-.246$, $t = -17.1$, $p < .001$). At the mean of hope, the NLE slope was weaker (*Std. Coef.* = $-.218$, $t = -15.1$, $p < .001$). At one standard deviation above the mean, the NLE slope was even weaker (*Std. Coef.* = $-.190$, $t = -10.9$, $p < .001$). Figure 1 presents the simple slopes at one standard deviation above and below the mean of hope.

As a conservative test of hope's significance, all personality strengths and their associated product terms were entered into a single model predicting SWB (i.e., Stage 2). Hope's moderating effect remained statistically significant after controlling for the moderating influences of other strengths (*Std. Coef.* = $.045$, $t = 2.34$, $p < .05$). No other personality strength product terms were significant, indicating no suppression effects (Tzelgov & Henik, 1991).

Nonlagged Analyses

In the nonlagged analyses, personality strengths were measured *after* the NLE had occurred and at the same time as the outcome SWB (i.e., misleading analysis). Results showed that each strength significantly moderated the effects of NLE on SWB, such that NLE were less harmful. The results are presented in identical fashion to the nonlagged results (Table 2).

Correction for Multiple Comparisons

The large number of null hypothesis significance tests in the present study, 14, indicates the high risk for false positive (i.e., Type I) error. When one hypothesis test is conducted with an alpha level of .05, the probability of an incorrect rejection of the null hypothesis is 5%; this probability increases as the number of hypothesis tests increases.⁷ Because controlling for the false positive rate via the Bonferroni correction reduces statistical power, we controlled for the false *discovery* rate instead via the Benjamini-Hochberg (B-H) correction (Benjamini & Hochberg, 1995). The false discovery rate ensures—of the hypothesis tests that were statistically significant—the probability of an incorrect rejection of the null hypothesis is 5%. The false discovery rate preserves statistical power while preventing a large number of erroneous significant effects. However, the procedure has a greater probability of Type I error compared with Bonferroni correction. With this new analytic approach, the following effects were no longer statistically significant: nonlagged effects for consistency of interests and gratitude. Accordingly, these effects should be interpreted with caution.

DISCUSSION

There is good reason to suggest that the most common reaction to adverse life events is resilience (e.g., Bonanno, 2005; Masten, 2001). Less is known about individual differences that increase the likelihood of resilient responses. Cross-sectional designs are a good first step, but alone they are insufficient to test scientific theories. Failure to properly account for temporal precedence can lead to erroneous conclusions about how personality strengths promote resilience in response to NLE. Results from the nonlagged analyses in the present study would lead readers to conclude that increasing almost any personality strength can promote resilience.

Lagged analyses, however, yielded a different conclusion about the effects of personality strengths on the relationship between NLE and SWB. In prospective models testing seven personality strengths, only hope emerged as a statistically significant resilience factor. Hope remained the only significant predictor when we tested all personality strengths simultaneously. Results from our longitudinal study suggest that for individuals low on hope, NLE were especially detrimental to future SWB; for individuals high on hope, NLE still decreased SWB, but to a lesser degree.

The Hopeful Person Is Resilient

We hesitate to emphasize the resilience power of hope over all the other personality traits. The moderation effect sizes for other personality traits (i.e., gratitude, meaning in life, strengths use) are similar to hope, and hope's statistical significance may be partially attributable to the large sample size. More favorable than the significant versus nonsignificant dichotomy, the confidence intervals for each product term provided demonstrate how

similar the moderation effects are for each personality trait (Cumming, 2013). Nonetheless, hope had the largest moderating effect and was the only statistically significant personality strength, and thus we offer suggestions for why hope might act as a resilience factor.

Hope is not synonymous with optimism, which is limited to the expectation of positive future outcomes (Bryant & Cven-gros, 2004). Hope, in contrast, captures the belief that multiple paths can be taken to flexibly manage obstacles, and there is sufficient vitality to put these plans into action to make progress toward meaningful goals (e.g., Snyder et al., 1991); in some ways, the operationalization of hope is similar to conceptual descriptions of psychological flexibility (i.e., the ability to pursue valued aims despite the presence of pain and other obstacles; Kashdan & Rottenberg, 2010). Our results extend prior cross-sectional research that suggests hope attenuates the relationship between NLE and depression symptoms (Visser, Loess, Jeglic, & Hirsch, 2013), as well as research into the treatment of post-traumatic stress disorder that suggests hope can buffer the most severe events of loss and adversity (Gilman, Schumm, & Chard, 2012).

How might hope act as a resilience factor? Researchers suggest that a hopeful person does four things: positively interprets failures, identifies goals, identifies resources for goal attainment, and addresses barriers to goal attainment (Snyder, 1995; Snyder et al., 1991). Each of these strategies may promote resilience. Positively interpreting failures allows a hopeful person to use external attributions to explain and persist through setbacks. For example, many NLE (including an item from our measure: "You didn't achieve something or obtain something that you wanted") involve thwarted goal attainment. The hopeful person might attribute this failure to poor strategy rather than lack of ability. In the face of setbacks, hopeful individuals use their goal-oriented flexibility to discover and implement new strategies to find success.

The Other Personality Strengths

Contrary to expectations, grit and meaning in life did not act as significant resilience factors against NLE. We expected gritty individuals to persist through NLE with smaller dips in SWB because of their ability to persevere through adversity, but this was not borne out in our results. Gritty people have high rates of goal attainment and success, but research is less clear on how grit promotes SWB. It may be that the relationship between SWB and grit is best explained by goal attainment (which is better captured by the pursuit within the construct of hope), or that grit is most helpful for SWB when paired within particular personality configurations. Our measure captured a broad range of NLE, with only one item related to thwarted goal attainment. It is possible that the protective effects of grit may be strongest in the context of NLE that are related to goal attainment.

The hypothesis that meaning in life would be a resilience factor was not supported. We expected individuals high in trait

meaning in life to be better equipped to find meaning in negative life experiences. One possibility for the presence of small effects is that the NLE occurred in the very domains of life that individuals tended to derive meaning from. Rather than protect against NLE, their sense of meaning may instead have been compromised by the setback. Further, meaning in life was measured irrespective of the NLE, which makes it unclear whether individuals cultivated a sense of meaning from their life experiences or derived meaning from something else. Global judgments of meaning in life (as used in this study) may be less effective than more contextualized approaches (e.g., daily diary studies) that offer explanations for what experiences individuals derive meaning from or how life events interact with people's sense of global meaning in life (e.g., Heine, Proulx, & Vohs, 2006; Park, 2010).

Although the other personality strengths tested were non-significant resilience factors, these should not be discarded as irrelevant to resilience. Most research on resilience and personality has used the Big Five traits, and there is value in moving beyond these higher-level factors to include personality strengths, which have been robustly linked to SWB. Additionally, the effect of a given personality strength is likely context dependent, such that its effectiveness depends on the specific situation in which it is deployed. Further, people possess different combinations of strengths. Future research should examine how certain strength profiles influence resilience. Certain combinations have been shown to predict resilience better than any single strength (e.g., Kleiman, Adams, Kashdan, & Riskind, 2013), including personality strengths not included in the current study that have been linked to effectively managing NLE, such as optimism (Scheier, Weintraub, & Carver, 1986).

LIMITATIONS

Several study limitations warrant discussion. Resilience is a broad construct that can be measured in several ways. The present study measured resilience as a person's SWB in response to NLE, which differs from models that measure resilience as change or loss in functioning. Future research could include occupational, social, and physical functioning as outcomes in addition to SWB (McKnight & Kashdan, 2009). Our measure of adversity was limited to a pre-established list of NLE, and it is possible that other important NLE occurred throughout the course of the study. Most measures of NLE include events that are assumed to be severe (e.g., illness, job loss), but responses to daily stressors also contribute to resilience (Davis, Lueken, & Lemery-Chalfant, 2009) by inoculating individuals for future, potentially severe stressors. Additionally, the emphasis on NLE excludes the possibility that seemingly positive events influence resilience (e.g., a job promotion with increased responsibilities and expectations).

We used a global measure of well-being (Diener and colleagues' [1985] model of SWB). Results may have differed if

specific facets of well-being were analyzed separately, such as Ryff's psychological well-being model (1989) or measures of psychological dysfunction (e.g., anxiety); notably, evidence suggests that these various dimensions tend to load strongly on a single dimension of well-being (e.g., Disabato, Goodman, Kashdan, Short, & Jarden, in press).

CONCLUSION

Among seven candidate personality strengths, this study found that only hope operates prospectively as a resilience factor. We offered multiple explanations related to goal pursuit, flexibility, and attainment to explain why hope buffers against NLE. Every human being seeks to handle adversity with aplomb such that their quality of life is only temporarily disrupted before returning to normalcy or even improving from lessons learned. This work offers new insights into personality dimensions, with the potential to increase the probability of desired outcomes.

The current study demonstrates that researchers, practitioners, and policy makers must carefully attend to measurement and analytical strategies when interpreting resilience research. Research must move beyond trait resilience questionnaires and cross-sectional designs. Misleading findings could result in resource expenditures with minimal gains in understanding and/or improving desirable outcomes.

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Notes

1. Research on child and adolescent resilience is more often longitudinal in nature, likely because of the assumed changes in personality over that developmental period.
2. One common term is *character strengths*; however, character strengths are defined by consideration of morality and virtue (Peterson & Seligman, 2004). For instance, why would perseverance, one of the character strengths in the Peterson and Seligman taxonomy, be considered a moral virtue, whereas the dimension of Conscientiousness in the Big Five is not? We believe this taxonomy of character strengths reflects a narrow framework, as there are plenty of adaptive personality traits that are central to the field that appear to

be strengths (e.g., Emotional Stability, Openness to Experience, Agreeableness).

3. Copies of all scales and items used in the International Wellbeing Study are available at the study website: <http://www.wellbeingstudy.com>.

4. We conducted identical analyses using the Agency and Pathways subscales separately and found similar results. In nonlagged analyses, Hope-Agency ($b = .002$, $t = 4.75$, $p < .001$) and Hope-Pathways ($b = .002$, $t = 4.39$, $p < .001$) both moderated the effect of NLE on SWB. In lagged analyses, Hope-Agency ($b = .001$, $t = 2.62$, $p < .01$) and Hope-Pathways ($b = .001$, $t = 2.42$, $p < .05$) both moderated the effect of NLE on SWB.

5. We conducted identical analyses using a total scale score for grit and found similar results. In nonlagged analyses, grit moderated the effect of NLE on SWB ($b = .012$, $t = 3.84$, $p < .001$). In lagged analyses, grit was not a significant moderator ($b = .003$, $t = .82$, $p = .41$).

6. Although the main effect of each personality strength was not of substantive interest, Cohen (1978) showed it is important to control for the main effect of the moderating variable. This prevents arbitrary scale dependency from impacting the effect size and statistical significance of the product term.

7. If all 19 hypothesis tests were completely independent, the study-wide false positive rate would be $1 - (1 - .05)^{19} = .62$ (Tabachnick & Fidell, 2001). When hypothesis tests are highly dependent, as in the present study, the rate is much lower. Unfortunately, an exact rate is never known due to the unknown dependency parameter.

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