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Resilience as the ability to bounce back from stress: A neglected personal resource?

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The purpose of this study was to examine resilience, as the ability to bounce back from stress, in predicting health-related measures when controlling for other positive characteristics and resources. We assessed resilience, optimism, social support, mood clarity, spirituality, purpose in life, and health-related measures in two large undergraduate samples. In Study 1, resilience was related to both health-related measures (less negative affect and more positive affect) when controlling for demographics and other positive characteristics. In Study 2, resilience was related to all four health-related measures (less negative affect, more positive affect, less physical symptoms, and less perceived stress) when controlling for the other variables. None of the other positive characteristics were related to more than three of the six possible health-related measures when controlling for the other variables. Resilience, as the ability to bounce back, may be an important personal resource to examine in future studies and target in interventions.

Keywords: resilience; recovery; bounce back; positive affect; negative affect; perceived stress; physical symptoms

Introduction

Resilience has increasingly become a focus of research and clinical interventions in psychology and health (Block & Kremen, 1996; Bonanno, 2004; Charney, 2004; Luthar, Cicchetti, & Becker, 2000; Masten, 2001; Richardson, 2002; Tugade & Fredrickson, 2004). The ever present nature of stressful events and their effects on health will likely continue to fuel the growing interest in resilience. However, there are important barriers to advancing our understanding of resilience. First, the word 'resilience' has become associated with an increasing number of vague and imprecise meanings (Luthar et al., 2000). Second, this conceptual confusion has made it difficult to clearly understand the effects of resilience on health. Third, it is not clear how resilience is related to health-related measures beyond other important positive characteristics. The purpose of this study was to address these barriers by focusing on a seminal meaning of resilience as the ability to bounce back from stress.

Although the word 'resilience' has been given many meanings, the original meaning of the English word resilience is 'to bounce or spring back' (Simpson, 2005). The root word for resilience is the word 'resile' which combines 're' meaning 'back' and 'salire' meaning 'to jump or leap' (Simpson, 2005). The typical dictionary definitions of resilience include one that can be applied to physics or engineering such as 'the ability to bounce or spring back into shape, position, etc.' (Agnes, 2005). In addition, there is usually another definition that applies resilience to the experience of human beings such as 'the ability to recover strength, spirits, good, humor, etc., quickly' (Agnes, 2005). The definition of resilience as the ability to bounce back or recover from stress has been reflected in the work of many researchers and theorists (Carver, 1998; Tugade & Fredrickson, 2004).

In addition to bouncing back from stress, resilience has also been defined as the ability to maintain a stable equilibrium in the face of stress (Bonanno, 2004), function above the norm in spite of stress (Tusaie & Dyer, 2004), adapt positively to adversity (Luthar et al., 2000), balance internal needs and desires with the external environment (Block & Kremen, 1996), and a positive change that can emerge from the experience of trauma (Lepore & Revenson, 2004). The study of resilience as positive adaptation to adversity has a particularly rich history in research on children and adolescents successfully adapting to adversity and trauma (Garmezy, 1991; Luthar et al., 2000; Masten, 2001). Resilience has also been studied within the context of the infant (Stern, 1985) and with regard to the concept of the ego (Block & Kremen, 1996). Gjerde, Block, and Block (1986, p. 424) defined

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ego resiliency as 'an individual's dynamic capacity to modify his or her modal behavior in the face of changing environmental demand characteristics.'

Our approach in attempting to advance our understanding of resilience was to focus on a neglected but potentially important definition of resilience. While resilience as the ability to bounce back or recover may be related to other kinds of resilience, it is much narrower and there are important distinctions. First, bouncing back from stress may involve losing and regaining homeostasis rather than maintaining a stable equilibrium (Bonanno, 2004). Second, although bouncing back may involve returning to the norm, it may or may not involve functioning above the norm (Tusaie & Dyer, 2004) or emerge from a traumatic experience (Lepore & Revenson, 2004). Third, while recovery from a discrete stressor may be one form of positive adaptation to stress, it may only be a small part of the positive adaptation that may occur in the context of the ongoing adversity that may occur as part of the developmental process (Luthar et al., 2000; Masten, 2001). Finally, while the ability to bounce back may be facilitated by the ability to balance internal needs and external demands, they are not the same thing and recovery from stress may occur with or without high levels of ego resiliency (Block & Kremen, 1996).

How stable is the ability to bounce back and how might it develop? In our model, the ability to bounce back lies on a continuum between the most stable personality characteristics (e.g., the Big Five) and specific skills used to cope with stress (e.g., situation-specific coping strategies). Rather than being a highly stable characteristic like optimism, we view the ability to bounce back as a personal resource like a sense of meaning and purpose in life or social support that is malleable and more easily modified by interventions. Also, as with a sense of purpose in life and social support, the belief that one possesses the personal resource is important and the belief that one can bounce back from stress may be critical for actually being able to do so.

There are two things that may be especially important for the ability to bounce back from stress to develop. The first thing is the coping resources that have been emphasized in coping models (e.g., Moos & Holahan, 2003) including (1) positive stable personal characteristics (e.g., optimism), (2) positive and supportive relationships, and/or (3) adaptive coping strategies. The second thing is a learning history that has been emphasized in self-efficacy models (Bandura, 1994) including (1) having successful experiences bouncing back, (2) observing similar others bouncing back, and/or (3) verbal encouragement that one can bounce back. Thus, resilience may develop when a person with a sufficient amount of coping resources comes to believe through experience, example, or encouragement that they can bounce back from stress.

Even if resilience is defined more narrowly and precisely as the ability to bounce back from stress, it is important to distinguish between resilience and other positive characteristics that may be important or related to it. When researchers have studied 'resilience,' they have often focused on the effects of stable characteristics such as optimism and other resources such as social support on health in the context of stress (Chan, Lai, & Wong, 2006; Horton & Wallander, 2001; Smith & Zautra, 2008). Even measures of 'resilience' often assess a constellation of these characteristics and resources rather than a more specific conception of resilience. For example, the Resilience Scale (Wagnild & Young, 1993) assesses equanimity, perseverance, self-reliance, meaningfulness, and existential aloneness. Similarly, the Resilience Scale for Adults assesses the dimensions of personal competence, social competence, family coherence, social support, and personal structure (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003).

There are at least two major problems with not distinguishing between resilience and other important positive characteristics and personal resources. First, the study of 'resilience' may not yield anything different from studying other characteristics and resources. Why not just continue to examine the effects of optimism and social support rather than trying to study 'resilience?' Second, not distinguishing between resilience and other important characteristics and resources makes it impossible to learn about their differential effects on health. For example, differentiating between them could enable us to determine whether resilience (e.g., as the ability to bounce back) is a stronger predictor of health and thus a more important target for interventions.

What positive characteristics and resources may be most important to examine when studying resilience as the ability to bounce back? We wanted to focus on characteristics and resources that are representative of a broad range of factors and are potentially important for health. We selected optimism and social support because they may be the most frequently studied examples of positive characteristics and social resources, respectively (Andersson, 1996; Cohen & Wills, 1985). Optimism may enhance health by promoting active coping and making it more likely that people will renew their efforts to attain their goals (Scheier, Weintraub, & Carver, 1986). Social support may enhance health by buffering stress and providing emotional and instrumental help for coping with and adapting to stressors (Cohen & Wills, 1985).

In addition, we included spirituality and a sense of meaning and purpose in life because they are potential resources that may have unique value and significance for health. Spirituality has often been

neglected in the models of resources that may have positive influences on health (Banerjee & Pyles, 2004; Piedmont, 1999). Spirituality may enhance health and well-being by enabling people to access beliefs and practices designed to bring comfort and strength in the midst of stressful events (Pargament, 1997). Similarly, a sense of meaning and purpose may be critical for surviving and thriving in the face of stress and may also facilitate health across the lifespan (Frankl, 1963; Wong & Fry, 1998).

Finally, we included an aspect of emotional intelligence called mood clarity which is the ability to be clear about what one is feeling (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). Mood clarity may be important for health and well-being both during times of stress and hardship and during times when things are going well. During times of stress, mood clarity may facilitate positive adaptation by expanding the affective information that can be used to improve coping (Davis, Zautra, & Smith, 2004; Zautra, Smith, Affleck, & Tennen, 2001). During times of low stress, mood clarity may add to the richness of life by enabling people to use their emotions to find satisfying and meaningful work and relationships (Salovey et al., 1995).

Thus, we examined the role of optimism, social support, spirituality, purpose in life, and mood clarity in relation to a measure of resilience as the ability to bounce back from stress. We examined them in two large undergraduate samples as predictors of health-related measures. For the first study, we selected both positive and negative affect as the health-related variables because they have each been uniquely related to mental and physical health (Pressman & Cohen, 2005). For the second study, we added physical symptoms because they may more closely approximate physical health in undergraduates (Kroenke, Spitzer, & Williams, 2002) and perceived stress because we thought that it would likely be strongly affected by the ability to bounce back (Cohen, Kamarck, & Mermelstein, 1983). Our main hypotheses were that resilience, as the ability to bounce back, would be related to better scores on the health-related measures in each study both alone (e.g., zero-order correlations) and when controlling for the other positive characteristics and resources.

Methods

Participants and procedures

The participants were two samples of undergraduate students from the University of New Mexico in Albuquerque, New Mexico. The Human Research Review Committee at the University of New Mexico approved the studies and informed consent was obtained by trained research assistants. For both studies, all of the participants were given course credit for participating in the research. Also for both studies, participation in the study involved coming to the research lab of the first author and completing a questionnaire with the measures listed and described below. The first study was conducted during the fall of 2007 and included 289 participants, while the second study was conducted during the spring of 2008 and included 259 participants.

Measures

Resilience

The Brief Resilience Scale. This scale, shortly BRS, (Smith et al., 2008), was used to assess resilience as the ability to bounce back from stress. There are three positively worded items (e.g., 'I tend to bounce back quickly after hard times') and three negatively worded items (e.g., 'It is hard for me to snap back when something bad happens'). The items were scored on a five-point scale from 1 = 'strongly disagree' to 5 = 'strongly agree.' Resilience was assessed in both studies and Cronbach's alpha was 0.86 in Study 1 and 0.84 in Study 2.

While the BRS is a self-report measure that involves the participant's perception of their ability to bounce back from stress, there is recent evidence that this measure may be associated with behavioral outcomes related to recovery from stress. Smith et al. (2009) found that it was related to the ability of healthy women to habituate to heat and cold pain stimuli. Specifically, women who reported a greater ability to bounce back from stress were able to habituate more quickly to painful stimuli than women who reported a lesser ability to bounce back.

Other positive characteristics

Optimism. The Life Orientation Test Revised (LOTR; Scheier, Carver, & Bridges, 1994) was used to assess generalized outcome expectancies. There are three positively worded items (e.g., 'I'm always optimistic about my future') and three negatively worded items (e.g., 'I hardly ever expect things to go my way'). The items were scored on a five-point scale from 1 = 'strongly disagree' to 5 = 'strongly agree.' Optimism was assessed in both studies and Cronbach's alpha was 0.78 in Study 1 and 0.76 in Study 2.

Mood clarity. The mood clarity subscale of the Trait Meta-Mood Scale (TMMS; Salovey et al., 1995) assessed the degree to which participants believe that they are clear about what they are feeling. There are six positively worded items (e.g., 'I am rarely confused about how I feel') and five negatively worded items

(e.g., 'I can't make sense out of my feelings'). The items were scored on a five-point scale from 1 = 'strongly disagree' to 5 = 'strongly agree.' Mood clarity was assessed in both studies and Cronbach's alpha was 0.87 in Study 1 and 0.83 in Study 2.

Purpose in life. The purpose in life subscale of the Scales of Psychological Well-Being (Ryff & Keyes, 1995) assessed the belief that one's life has meaning and purpose. There are three positively worded items (e.g., 'I have a sense of purpose and direction in life') and four negatively worded items (e.g., 'I don't have a good sense of what I am trying to accomplish in life'). The items were scored on a six-point scale from 1 = 'strongly disagree' to 6 = 'strongly agree.' Purpose in life was assessed in Study 2 and Cronbach's alpha was 0.79.

Social support. The Interpersonal Support Evaluation List (ISEL; Cohen, Mermelstein, Kamarck, & Hoberman, 1985) was used to assess social support. There are six positively worded items (e.g., 'When I need suggestions on how to deal with personal problems, I know someone I can turn to') and six negatively worded items (e.g., 'I feel there is no one I can share my most private worries and fears with'). The items were scored on a four-point scale from 1 = 'definitely false' to 4 = 'definitely true.' Social support was assessed in both samples and Cronbach's alpha was 0.84 in Study 1 and 0.89 in Study 2.

Spirituality. This was assessed using three items that have frequently been used to assess dispositional spirituality and religiosity (Fetzer Institute, 1999). These items are (1) 'to what extent do you consider yourself a spirituality person?,' (2) 'to what extent do you consider yourself a religious person?,' and (3) 'how often do you attend spiritual/religious services?' The first two items were scored on a seven-point scale from 1 = 'not at all' to 7 = 'a great deal' and the third item was scored from 1 = 'never' to 7 = 'more than once a week.' Spirituality was assessed in both studies and Cronbach's alpha was 0.78 in Study 1 and 0.74 in Study 2.

Health-related measures

Physical symptoms. The Patient Health Questionnaire (PHQ-15; Kroenke et al., 2002) includes 15 items assessing whether a person has been experiencing any one of 15 physical symptoms (e.g., 'headaches,' 'poor appetite,' 'dizziness,' and 'stomach pain'). The participants were asked how much they had been bothered by each of these symptoms in the past 4 weeks. Each symptom is responded to on a three-point scale from 0, 'not bothered at all' to 2, 'bothered a lot.' Physical symptoms were assessed in Study 2 and Cronbach's alpha was 0.75.

Perceived stress. The Perceived Stress Scale (PSS; Cohen et al., 1983) was used to assess perceived stress experienced over the previous month. The scale includes 10 questions (e.g., 'in the last month, how often have you felt that you were on top of things?') that were responded to on a four-point scale from 0, 'never' to 4, 'very often.' Perceived stress was assessed in Study 2 and Cronbach's alpha was 0.89.

Positive and negative affect. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to assess both positive and negative affect during the past 2 weeks. There were 10 positive affect items (e.g., 'active,' 'enthusiastic') and 10 negative affect items (e.g., 'nervous,' 'upset') responded to on a five-point scale from 1, 'very slightly or not at all' to 5, 'extremely.' Positive and negative affects were assessed in both samples. Cronbach's alpha for positive affect was 0.86 in Study 1 and 0.88 in Study 2. Cronbach's alpha for negative affect was 0.82 in Study 1 and 0.84 in Study 2.

Statistical analyses

Correlation analyses were used to examine the zero-order relationships between resilience and the other positive characteristics, health-related measures, and demographic variables (age, gender, and ethnic minority status). Hierarchical multiple regression analyses were used to assess the additive and relative contributions of the (1) demographic characteristics, (2) positive characteristics other than resilience, and (3) resilience in predicting each of the health-related measures. Only the variables that had significant zero-order correlations with the health-related measures were entered as potential predictors in the hierarchical multiple regression analyses.

Results

Table 1 displays the descriptive statistics for the variables for both studies. Both samples had a mean age of 21 years, were about two-thirds female, and about half ethnic minority. Of the ethnic minority participants in Study 1, 65% were Hispanic, 6% were Native American, 6% were Asian American, 5% were African American, and 18% were mixed or other ethnicities. Of the ethnic minority participants in Study 2, 56% were Hispanic, 15% were Native American, 7% were Asian American, 4% were African American, and 18% were mixed or other

ethnicities. The only significant differences between the two samples on the means of any of the variables were that the participants in Study 1 were higher on spirituality and low in negative affect than the participants in Study 2 ($p < 0.05$).

Study 1

Table 2 displays the correlations among the variables for Study 1. Resilience and all of the other positive characteristics and resources except for spirituality were related to both less negative affect and more positive affect. In addition, age was related to less negative affect and female gender was related to less positive affect. Resilience was also related to age and male gender and was positively related to optimism, social support, and mood clarity. Age was also positively related to optimism and mood clarity. Optimism, social support, and mood clarity were all positively correlated with each other. Finally, spirituality was related to female gender, ethnic minority status, and optimism.

Table 1. Demographic characteristics for Studies 1 and 2.*

	Study 1 ($n = 289$)		Study 2 ($n = 259$)	
	M	SD	M	SD
Demographics				
Age	20.56	4.71	21.09	4.29
Female gender (%)	67.5		64.0	
Ethnic minority (%)	49.1		57.1	
Positive characteristics				
Resilience	3.61	0.72	3.55	0.67
Optimism	3.57	0.74	3.62	0.72
Social support	3.46	0.48	3.38	0.54
Mood clarity	3.60	0.63	3.65	0.56
Spirituality	2.91[a]	1.18	2.77[a]	1.09
Purpose in life	–	–	4.19	0.70
Health-related measures				
Negative affect	1.73[b]	0.55	1.94[b]	0.63
Positive affect	3.49	0.65	3.52	0.68
Physical symptoms	–	–	1.43	0.27
Perceived stress	–	–	2.26	0.83

Note: *Means sharing a superscript are significantly different at $p < 0.05$.

Table 3 displays the results of the hierarchical multiple regressions predicting the health-related measures (e.g., negative and positive affect) in Study 1. At Step 1 for negative affect, age was related to less negative affect. After adding the other positive characteristics at Step 2, optimism and mood clarity were related to less negative affect. At Step 3, resilience and mood clarity were related to less negative affect. The variance accounted for was 2% by age at Step 1, an additional 14% when adding the other positive characteristics at Step 2, and an additional 2% when adding resilience at Step 3.

At Step 1 for positive affect, female gender was related to less positive affect. After adding the other positive characteristics at Step 2, optimism, social support, and mood clarity were all related to more positive affect and female gender was related to less positive affect. At Step 3, resilience, optimism, and social support were all related to more positive affect. The variance accounted for was 2% by gender at Step 1, an additional 17% when adding the other positive characteristics at Step 2, and an additional 8% when adding resilience at Step 3.

Overall, in the final steps of the hierarchical regression in Study 1, resilience was related to both less negative and more positive affect, mood clarity was related to less negative affect, and optimism and social support were both related to more positive affect. The predictors accounted for a significant amount of variance in both positive and negative affect (27% and 18%, respectively), and the beta weights were significant for both positive and negative affect ($\beta = 0.33$ and $\beta = -0.19$, respectively).

Study 2

Table 4 displays the correlations among the variables for Study 2. Resilience and all of the other positive

Table 2. Correlations among the main variables in Study 1.

		1	2	3	4	5	6	7	8	9	10
1	Negative affect	–									
2	Positive affect	−0.09	–								
3	Resilience	−0.34**	0.46**	–							
4	Age	−0.13*	0.09	0.16**	–						
5	Female gender	0.04	−0.12*	−0.14*	−0.02	–					
6	Ethnic minority	0.08	−0.11	−0.07	−0.06	−0.05	–				
7	Optimism	−0.28**	0.37**	0.38**	0.17**	−0.05	−0.12	–			
8	Social support	−0.26**	0.27**	0.23**	0.03	0.11	−0.01	0.41**	–		
9	Mood clarity	−0.34**	0.28**	0.47**	0.18**	−0.07	−0.02	0.34**	0.38**	–	
10	Spirituality	−0.04	0.11	0.00	0.04	0.22**	0.26**	0.15*	0.06	0.07	–

Note: *$p < 0.05$; **$p < 0.01$.

characteristics and resources except for spirituality were related to less negative affect, physical symptoms, perceived stress, and more positive affect. Resilience also was related to male gender and was positively related to optimism, social support, mood clarity, and purpose in life. In addition, age was related to less negative affect, female gender was related to more physical symptoms, and ethnic minority status was related to less perceived stress. Optimism, social support, mood clarity, and purpose in life were positively correlated with each other. Finally, spirituality was related to female gender, ethnic minority status, and optimism.

Table 3. Multiple regression analyses predicting the health-related measures from demographics, psychosocial resources, and resilience in Study 1.

	Negative affect	Positive affect
Step 1		
Age	−0.13*	–
Female gender	–	−0.13*
Ethnic minority	–	–
F	4.78*	4.67*
R^2	0.02	0.02
Step 2		
Age	−0.06	–
Female gender	–	−0.14**
Ethnic minority	–	–
Optimism	−0.14*	0.27**
Social support	−0.11	0.13*
Mood clarity	−0.25**	0.13*
F	13.27**	16.38**
R^2	0.16	0.19
Step 3		
Age	−0.05	–
Female gender	–	−0.10
Ethnic minority	–	–
Optimism	−0.09	0.18**
Social support	−0.11	0.13*
Mood clarity	−0.18**	0.01
Resilience	−0.19**	0.33**
F	12.61**	20.60**
R^2	0.18	0.27

Notes: Standardized beta weights are shown in the rows for each variable. *$p < 0.05$; **$p < 0.01$.

Table 5 displays the results of the hierarchical multiple regressions predicting the health-related measures (e.g., negative affect, positive affect, physical symptoms, and perceived stress) in Study 2. At Step 1 for negative affect, age was related to less negative affect. After adding the other positive characteristics at Step 2, optimism, mood clarity, and social support were related to less negative affect. After adding resilience at Step 3, resilience, mood clarity, and social support were related to less negative affect. The variance accounted for was 2% by age at Step 1, an additional 15% when adding the other positive characteristics at Step 2, and an additional 5% when adding resilience at Step 3.

At Step 1 for positive affect, there were no demographic variables related to positive affect. When considering the other positive characteristics at Step 2, purpose in life and optimism were related to more positive affect. At Step 3, resilience, purpose in life, and social support were related to more positive affect. The variance accounted for was 31% by the other positive characteristics at Step 2 and an additional 9% when adding resilience at Step 3.

At Step 1 for physical symptoms, female gender was related to more physical symptoms. At Step 2, optimism and mood clarity were related to less physical symptoms and female gender was related to more physical symptoms. At Step 3, resilience and optimism were related to less physical symptoms and female gender was related to more physical symptoms. The variance accounted for was 9% by age at Step 1, an additional 11% by the other positive characteristics

Table 4. Correlations among the main variables in Study 2.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Negative affect	–												
2 Positive affect	−0.13*	–											
3 Physical symptoms	0.47**	−0.18*	–										
4 Perceived stress	0.52**	−0.48**	0.37*	–									
5 Resilience	−0.38**	0.48**	−0.39**	−0.51**	–								
6 Age	−0.16*	−0.05	−0.06	−0.12	0.11	–							
7 Female gender	0.03	−0.10	0.30**	0.08	−0.26**	0.00	–						
8 Ethnic minority	−0.03	0.08	0.00	−0.15*	0.09	0.00	0.03	–					
9 Optimism	−0.30**	0.44**	−0.30**	−0.50**	0.44**	0.06	−0.02	0.08	–				
10 Social support	−0.23**	0.31**	−0.15*	−0.29**	0.17**	0.07	0.07	0.01	0.30**	–			
11 Mood clarity	−0.36**	0.34**	−0.29**	−0.49**	0.47**	0.14*	−0.02	0.02	0.43**	0.26**	–		
12 Spirituality	−0.08	0.11	−0.03	−0.11	0.04	0.02	0.09	0.21**	0.15*	0.19**	0.00	–	
13 Purpose in life	−0.17**	0.50**	−0.15*	−0.36**	0.25**	0.03	0.11	0.08	0.47**	0.34**	0.39**	0.17**	–

Note: *$p < 0.05$; **$p < 0.01$.

at Step 2, and an additional 2% when adding resilience at Step 3.

At Step 1 for perceived stress, ethnic minority status was related to less perceived stress. At Step 2, optimism, mood clarity, and ethnic minority status were related to less perceived stress. At Step 3, resilience, optimism, and mood clarity were related to less perceived stress. The variance accounted for was 2% by ethnic minority status at Step 1, an additional 34% by the other positive characteristics at Step 2, and an additional 6% when adding resilience at Step 3.

Overall in the final steps in Study 2, resilience was related to less negative affect, physical symptoms, and perceived stress and more positive affect. Mood clarity was related to less negative affect and perceived stress, optimism was related to less physical symptoms and perceived stress, and social support was related to less negative affect and more positive affect. In addition, female gender was related to less physical symptoms. The variables accounted for a significant amount of variance in positive affect, negative affect, perceived stress, and physical symptoms (40%, 22%, 42%, and 22%, respectively). Finally, the beta weights for resilience were significant for positive affect, negative affect, perceived stress, and physical symptoms ($\beta = 0.34$, -0.24, -0.27, and -0.19, respectively).

Discussion

The purpose of this study was to examine resilience, as the ability to bounce back from stress, in predicting health-related measures when controlling for other important positive characteristics and resources. Our main hypotheses were that resilience, as the ability to bounce back, would be related to better scores on the health-related measures, both alone and when controlling for the other positive characteristics and resources. In Study 1, resilience was related to both health-related measures (less negative affect and more positive affect) alone and when controlling for the other variables. In Study 2, resilience was related to all four health-related measures (less negative affect, more positive affect, less physical symptoms, and less perceived stress) alone and when controlling for the other variables.

Table 5. Multiple regression analyses predicting the health-related measures from demographics, psychosocial resources, and resilience in Study 2.

	Negative affect	Positive affect	Physical symptoms	Perceived stress
Step 1				
Age	−0.16*	–	–	–
Female gender	–	–	0.30**	–
Ethnic minority	–	–	–	−0.15*
F	6.63*	–	25.85**	5.61*
R^2	0.02	–	0.09	0.02
Step 2				
Age	−0.11	–	–	–
Female gender	–	–	0.30**	–
Ethnic minority	–	–	–	−0.11*
Optimism	−0.17*	0.21**	−0.21**	−0.31**
Social support		0.10	−0.05	−0.10
Mood clarity	−0.26**	−0.10	−0.18**	−0.31**
Purpose in life	0.06	0.33**	0.01	−0.06
F	11.10**	30.43**	13.55**	29.90**
R^2	0.17	0.31	0.20	0.36
Step 3				
Age	−0.10	–	–	–
Female gender	–	–	0.25**	–
Ethnic minority	–	–	–	−0.09
Optimism	−0.09	0.11	−0.15*	−0.22**
Social support	−0.13*	0.11*	−0.05	−0.10
Mood clarity	−0.18**	−0.02	−0.12	−0.22**
Purpose in life	0.05	0.34**	0.01	−0.07
Resilience	−0.24**	0.34**	−0.19**	−0.27**
F	11.78**	34.84**	12.93**	30.79**
R^2	0.22	0.40	0.22	0.42

Notes: Standardized beta weights are shown in the rows for each variable. *$p < 0.05$; **$p < 0.01$.

The most important finding of this study may be that resilience was related to all of the health-related measures in both studies controlling for the other positive characteristics and resources and the demographic variables. Resilience was related to both positive and negative affect suggesting that it is a personal resource that may affect both of what may be relatively independent domains of affective health (Smith & Zautra, 2008; Watson et al., 1988). And while it is not surprising that it was related to less perceived stress, its relationship with less physical symptoms suggests that it may play an important role in physical health. In addition, while resilience was related to all six health-related measures in the final step of models; optimism, mood clarity, and social support were only related to three of six; purpose in life was related to only one of four possible health-related measures; and spirituality was related to no health-related measure. Adding resilience to the prediction equations had a particularly strong impact in reducing the effects of optimism and mood clarity which had predicted six and five health-related measures, respectively, without resilience in the equation.

Why was the resilience measure more consistently associated with the health-related measures than the other positive characteristics and resources? First, the target domain is stress which may represent all of the hardships and challenges that a person may face and which have strong implications for emotion and health (Zautra, 2003). In contrast, optimism, mood clarity, purpose in life, and spirituality may be broadly important but not as specifically salient to the domain of stress. While social support is more specific to stress, it is sometimes confounded with how much stress a person has in their life reducing the negative relationship between social support and health (Cohen, Underwood, & Gottlieb, 2000). Second, the target behavior of the resilience measure is bouncing back or recovery from stress. Although stress may not always result in the development of a diagnosable mental or physical health problem (Bonanno, 2004), the subjective experience of human beings is that they frequently experience discrete stressful events that can affect them for a discernible period of time. Thus, the fact that the resilience measure targeted behavior specifically related to these discrete events may also have given it more consistent predictive power than measures that target a broader range of behavior.

While these reasons may help to explain the value of resilience in relation to other positive characteristics and resources, there may be another factor that may have either detracted from or enhanced the ability of our measure of resilience to predict the health-related measures. That is, it was based on subjective report and not more objective measures of how successfully people recover from real-life stressors. Asking people how well they bounce back requires respondents to think of a variety of stressful situations and to distinguish bouncing back from a variety of possible confounds such as affective variability, emotional reactivity, and self-esteem stability. Although there is preliminary evidence that the measure we used may be related to behavioral outcomes related to stress recovery (Smith et al., 2009), the measure has not yet been fully validated in a paradigm designed solely to examine resilience (Tugade & Fredrickson, 2004). Thus, it is possible that this measure may not accurately reflect what actually happens after a person is affected by a stressful event.

At the same time, the unique and consistent relationship found between this measure and the health-related measures may still reflect an important phenomenon. Just as measures of perceived social support have tended to be stronger in predicting health than enacted social support (Cohen et al., 2000), so the beliefs of people about their ability to be resilient may also be closely tied to their health. The construct of self-efficacy may provide a useful comparison in that it is often a strong predictor of important health-related measures but involves a person's beliefs about how well they can do something rather than their actual performance (Bandura, 1994). In the same way, a person's beliefs about how well they can bounce back from stress may be an important predictor of health regardless of how closely it mirrors reality. In fact, it may be useful to think about what happens after a stressful event as an important domain of self-efficacy (e.g., resilience self-efficacy).

Although we cannot draw any conclusions about the direction of the relationship between resilience and health because of the cross-sectional nature of our data, our findings are consistent with the notion that resilience could be related to improvements in health. Moreover, there are important reasons for suspecting that the actual or perceived ability to bounce back may lead to better health. The actual ability to bounce back might improve health by reducing the amount of time and/or the extent to which the organism is under stress. This could result in less damaging effects on the body from reduced activation of the physiological stress response and less allostatic load over the long run (McEwen, 1998). This could also result in more time and energy for pursuing positive activities and engagements that can 'broaden-and-build' additional resources for improving coping and problem solving (Fredrickson, 2001). The perceived ability to bounce

back more quickly and easily may improve health by making it more likely that a person will accept challenges that may eventually promote a more happy and fulfilling life. In addition, as with optimism and self-efficacy (Carver & Scheier, 2002), the belief that one can bounce back may increase the likelihood of engaging in adaptive, approach coping strategies rather than maladaptive, avoidant coping strategies when faced with stressful situations.

Implications

There are several important implications for future research and the development of interventions. First, the ability to bounce back should be examined in prospective studies with other positive characteristics and health-related measures. These studies could address the stability of the measure and how it is influenced by and influences other positive characteristics and health-related measures. Second, the ability to bounce back from stress should be studied using both self-report and other more objective measures (e.g., behavioral assessments, significant-other reports, and measures of health across time) to compare the effects of the perceived versus the actual ability to bounce back from stress. Third, the value of resilience as the ability to bounce back should be compared to other resilience constructs to determine how they are related and interact (Friborg et al., 2003; Wagnild & Young, 1993). This would help to determine what measures to use in different contexts and whether to focus on narrower or broader aspects of resilience.

The results of these studies could have important implications for interventions addressing the ability to bounce back. If the ability to bounce back is prospectively related to better health outcomes following stress, an important next step may be to try to manipulate it and observe the results. If the self-reported or perceived ability to bounce back is the most important target, then interventions might boost these perceptions by a variety of methods similar to those elucidated for self-efficacy (Bandura, 1994). If the actual ability to bounce back is the most important target, then interventions that focus on specific preparations for real life situations such as the skills acquisition and rehearsal phase of stress inoculation training may be useful (Meichenbaum, 1985). Either way, focusing on something specific like the ability to bounce back versus something more general such as optimism or purpose in life might be a way to make the most efficient use of valuable intervention time.

Limitations

This study has several limitations. Two of the most important limitations have already been touched on. First, we used a self-report measure which cannot ascertain how well this measure corresponds to how well the participants actually recover from real-life stressors. Second, all of the measures were assessed at the same time making it impossible to determine the temporal or causal relationships among the variables. In addition, both of the samples were undergraduate students, making it difficult to generalize the results to a broader age range or those with specific health problems. At the same time, both samples were ethnically diverse with relatively high proportions of Hispanic and Native Americans. Third, the measure of spirituality was limited to only a few items and may not have captured all of the aspects of spirituality that may be related to resilience. Finally, although we tried to include a representative sample of positive characteristics and resources related to health, there are many things that we did not include such as empathy, altruism, creativity, wisdom, gratitude, and forgiveness (Peterson & Seligman, 2004).

Conclusion

Resilience is an increasingly important construct in the study of psychology and health. However, there are many definitions of resilience including bouncing back from stress, adapting positively to adversity, maintaining a stable equilibrium during stress, and functioning above the norm in spite of stress. We focused on resilience as the ability to bounce back from stress because it is a precise and specific definition close to the original meaning of the word. We found that it was related to all of the health-related measures which were more than any of the other positive characteristics or resources when controlling for all of the significant predictors of each health-related measure. Thus, resilience as the ability to bounce back may be a uniquely important personal resource and should be the focus of further study and possibly a target in interventions.

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