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Sense of Humor, Stable Affect, and Psychological Well-Being

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Abstract

A good sense of humor has been implicated as a quality that could contribute to psychological well-being. The mechanisms through which sense of humor might operate include helping to reappraise threats, serving as a character strength, or facilitating happiness. The current research attempts to integrate these possibilities by examining whether a good sense of humor might operate globally by helping to maintain a more stable positive affect. Stable positive affect has been shown to facilitate more effective problem solving and to build resilience. However, not all humor is adaptive humor, so we also examine the roles that different styles of humor use might play. Individual differences in humor styles were used to predict stable levels of affect. Then, in a longitudinal design, humor styles and stable affect were used to predict subsequent resilience and psychological health. The results indicated that stable affect was related to resilience and psychological well-being, and that a sense of humor that involves self-enhancing humor, humor based on maintaining a humorous perspective about one's experiences, was positively related to stable positive affect, negatively related to stable negative affect, and was mediated through stable affect in influencing resilience, well-being and distress. Thus, while a good sense of humor can lead to greater resilience and better psychological health, the current results, focusing on stable affect, find only self-enhancing humor provides reliable benefits.

Keywords: sense of humor, positive affect, resilience, psychological health, well-being

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Life is full of challenges, so possessing the skills necessary to meet these challenges can lead to a happier life and a greater sense of well-being. While there are many different skills that might be useful in supporting success and well-being, a good sense of humor has often been proposed as a personal quality capable of facilitating the achievement of psychological well-being (Lefcourt, 2001; Lefcourt & Martin, 1986; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). Over the years, researchers have identified a number of processes through which a good sense of humor might support well-being. We will briefly review the research supporting these processes and then suggest a broader model within which all of these processes might be understood. We will be asking how it is that a good sense of humor might play a role in supporting resilience and well-being, while also helping avoid psychological distress.

Sense of Humor and Appraisal of Stressors

Early sense of humor research focused on how a good sense of humor could buffer the negative impact of potential stressors (Lefcourt & Martin, 1986). When we encounter potentially stressful or threatening events and we cannot enlist the resources needed to meet these challenges, there can be psychological costs (Lazarus & Folkman,

1984). One effective strategy for limiting the negative impact of potential stressors is to effectively reappraise the event as less threatening. A good sense of humor has been proposed as one such coping strategy that could enable effective reappraisal (Dixon, 1980; Lefcourt, 2001). In a number of studies, people with better senses of humor have been shown to be able to more effectively reframe or appraise events so that they are perceived as less threatening and therefore arouse lower levels of negative affect (Abel, 2002; Abel & Maxwell, 2002; Kuiper, Martin, & Olinger, 1993; Kuiper, McKenzie, & Belanger, 1995). In addition, anecdotal evidence looking at how individuals in high stress occupations cope (e.g., Rowe & Regehr, 2010), and research on common coping strategies (Carver et al., 1993) support the perceived effectiveness of humor as a coping strategy. A good sense of humor could, it seems, allow individuals to find humor and a cause for laughter, rather than feel threatened, when faced with a potential stressor.

Sense of Humor as a Personal Strength

In addition to facilitating more positive appraisals of potential threats, a good sense of humor also could have a more global effect by allowing for a generally more positive perspective about oneself and the world (Kuiper & Martin, 1993; Lefcourt & Martin, 1986; Martin et al., 2003). A good sense of humor may be like a lens through which the world is viewed. For example, Kuiper, Martin, and Dance (1992) found that higher scores on a variety of measures of sense of humor were associated with greater satisfaction with the roles people identified as relevant to their lives. In addition, a better sense of humor was associated with higher positive affect even as either positive or negative life events were experienced at higher levels. This global perspective on life is supported by research reported by Ruch and colleagues, who have shown that a good sense of humor is associated with cheerfulness as a trait, as well as a state (Ruch & Carrell, 1998; Ruch & Kohler, 1998; Ruch, Kohler, & van Thriel, 1996). All of these associations suggest that a good sense of humor may enhance other strengths that may serve as resources when facing challenges.

More recently, in developing a model focusing on positive personal strengths, rather than on pathologies, Peterson and Seligman (2004) proposed a set of virtues based on the presence of different character strengths. They identified 24 character strengths that supported six broad virtues. These character strengths and virtues were assumed to influence how satisfied and fulfilled individuals would feel with their lives. Humor was included as a character strength that helped to support the virtue of transcendence. In their model, transcendence represents those strengths that allow for finding meaning and feeling connected to the wider universe. Humor, as a character strength, was defined as liking to joke and laugh and sharing humor with others. Higher levels of character strengths were assumed to be associated with greater life satisfaction (Peterson & Seligman, 2004), and in two studies involving large samples across three countries, humor, assessed as a character strength, was positively related to life satisfaction and other well-being indicators (Peterson, Ruch, Beermann, Park, & Seligman, 2007; Ruch et al., 2010). Thus, it appears that a good sense of humor can provide the foundation for a more positive worldview and greater personal strength, enabling a link to well-being.

Sense of Humor and Maintaining Happiness

Yet another way in which a good sense of humor might contribute to overall well-being is as a behavioral tendency to engage in acts that promote happiness. Being happy is associated with many desirable outcomes, including better relationships, stronger immune responses, and greater creativity (Lyubomirsky, King, & Diener, 2005); and individuals' happiness is at least partially under their control (Lyubomirsky, Sheldon, & Schkade, 2005). Lyubomirsky (2001) found that dispositionally happy individuals tended to engage in behaviors that supported their stable happiness levels. Some of the behaviors identified as enhancing happiness included expressing gratitude, engaging

in altruism, counting one's blessings, and maintaining an optimistic outlook. In an extensive series of studies, researchers have examined how increasing the frequency of performing relevant behaviors can increase happiness (see Lyubomirsky & Layous, 2013 for a review). In addition, a meta-analysis of 51 studies looking at possible interventions to encourage happiness-supporting activities that trained positive thoughts, feelings, and behaviors found support for the effect of small positive acts as ways of elevating well-being and reducing depression (Sin & Lyubomirsky, 2009). Although increasing humor behaviors was not used in any of these intervention studies, previous research has found humor as a character strength was correlated with happiness (Ruch et al., 2010), and a good sense of humor was related to cheerfulness (Ruch & Carrell, 1998), so humor-related behaviors could be another avenue to support happiness. Recent evidence also has demonstrated that efforts to enhance humor uses by training humor skills have found that humor skills can be learned and that increases in humor uses are associated with increases in perceived self-efficacy, optimism (Crawford & Caltabiano, 2011), and state and trait cheerfulness (Falkenberg, Buchkremer, Bartels, & Wild, 2011).

Sense of Humor and Resilience

How might these roles for humor in supporting well-being be integrated? Recently, Kuiper (2012) has provided a carefully constructed argument for a good sense of humor as a personal quality that could contribute to psychological resilience in a number of ways. Resilience involves possessing a set of personal qualities that allows a person to thrive even when faced with adversity (Connor & Davidson, 2003). Resilient individuals more effectively manage stress and recover more quickly following adversities (Windle, 2011). Kuiper (2012) highlights many of the same processes discussed above to propose that a good sense of humor should be considered as a valuable component of personal resilience. Being able to positively reappraise stressors and use humor to cope, relying on humor as a character strength, and using humor behaviors to support or enhance one's own stable happiness are all ways that employing humor effectively can support a resilient personal style. Having developed greater resilience, well-being can then be protected from commonly experienced threats and challenges.

Humor Styles: All Humor Uses are not Created Equal

Using humor 'effectively' is a key factor in understanding a sense of humor as a positive and constructive personal style. Kuiper (2012) points out how important it is to look at exactly how humor is used as part of any analysis of sense of humor as a link to well-being. Although many studies have found that sense of humor is associated with the benefits outlined above, other studies have failed to find a relationship (e.g., Kuiper & Borowicz-Sibenik, 2005; Kuiper, Grimshaw, Leite, & Kirsh, 2004; Porterfield, 1987), and some have reported a negative relationship (Kerkkänen, Kuiper, & Martin, 2004). The humor styles model outlined by Martin et al. (2003) was proposed as a framework for better identifying and appreciating the potentially maladaptive uses of humor and for distinguishing these styles from the constructive and adaptive styles of humor that are more likely to have psychological benefits. The humor styles model assumes there are four main humor styles and that how humor is used can lead to positive or negative interpersonal and intrapersonal effects. Affiliative and aggressive humor styles are primarily directed at others. Affiliative humor is a positive humor style that involves sharing humor through jokes or witty remarks, without insulting or harming anyone. Aggressive humor, on the other hand, uses humor to attack or demean others in order to elevate oneself. The other two styles represent humor that is more self-directed. Self-enhancing humor is used to support oneself by using humor to maintain a positive perspective of one's life. Self-defeating humor involves making fun of oneself, engaging in excessive self-ridicule, in order to gain acceptance from others.

A considerable body of research has demonstrated that the adaptive and maladaptive humor styles are often related in different ways to other personal qualities and outcome measures. Beermann and Ruch (2009) found that only

the adaptive humor styles were associated with humor as a character strength. Cann and colleagues found that while the self-enhancing humor style was related to lower perceived past and anticipated future stress, and to higher levels of happiness, hope, and optimism, a self-defeating humor style showed the opposite pattern (Cann & Etzel, 2008; Cann, Stilwell, & Taku, 2010). Multiple studies have found that higher levels of adaptive humor styles are associated with lower depression and higher self-esteem, while higher levels of the maladaptive humor styles tended to be predictive of greater depression and lower self-esteem (Kuiper et al., 2004; Martin et al., 2003). Thus, any model hoping to provide evidence for the role of humor must clearly differentiate between adaptive and maladaptive humor styles.

Sense of Humor and Positive Emotions

Although Kuiper (2012) suggests a structure based on resilience for understanding the many ways that a good sense of humor can play a role in enhancing or protecting well-being, an alternative perspective also can provide a framework for appreciating the positive relationships of a good sense of humor with coping, life satisfaction, happiness, and resilience. All of these relationships might be understood within the context of the Broaden and Build theory of positive emotions (see Fredrickson, 2001, 2013). The Broaden and Build theory proposes that positive emotions, as opposed to neutral or negative emotions, facilitate a wider array of perspectives, allowing for more flexible, creative, integrative, and efficient thinking (see also Isen, 1987). Among the ten positive emotions that Fredrickson identifies as occurring with relatively high frequency is amusement, an experience also labeled mirth by other researchers (Martin, 2007), and it reflects the positive affective experience associated with exposure to humor.

Fredrickson (2013) believes that positive emotional responses have evolved because they enable the expanded awareness that often allows for identifying more effective strategies for problem solving. Research has supported a number of benefits of experiencing positive emotions, including easier task switching (Wang & Guo, 2008), better appreciating benefits gained from adversity (Hart, Vella, & Mohr, 2008), and greater trust in close others (Dunn & Schweitzer, 2005). The Broaden and Build theory also assumes that the benefits of experiencing positive emotions extend beyond the transient experience of the emotion by building affective resources that can contribute to personal effectiveness and enhanced resilience (e.g., Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Fredrickson, Tugade, Waugh, & Larkin, 2003; Tugade & Fredrickson, 2004).

Tugade and Fredrickson (2007) outline the ways in which regulation of positive emotions, using strategies to create or maintain a positive affective state, can, in the process, strengthen resilience. One of the strategies they note is the use of humor to cope with stressors, but it also may be the case that using humor across a variety of situations, not just for coping, can contribute to maintaining more stable positive emotions. Therefore, if a good sense of humor can help to maintain stable positive affect, then the desirable outcomes of effective coping, resilience, and life satisfaction should follow. A number of the studies have shown that appropriate humor uses can lead to higher levels of reported positive affect (Geisler & Weber, 2010; Kuiper, Martin, & Dance, 1992; Ong, Bergeman, Bisconti, & Wallace, 2006). Crawford and Caltabiano (2011) also found that training humor uses resulted in higher levels of positive affect, even over a three-month follow-up.

Thus, the current research investigates the possible associations between individual differences in humor styles and stable affect, and the links, either directly or indirectly through stable affect, between humor styles and outcomes like resilience, life satisfaction, and psychological distress. Using a longitudinal design, humor styles were measured

as a personal quality, and then stable affect was identified by assessing affect ratings over multiple days. Finally, after a delay of approximately one month, the outcome variables were assessed.

The clearest prediction is that a self-enhancing humor style should be related to stable affect, such that a high self-enhancing style should support positive affect. Previous research also suggests that a self-defeating style might be associated with higher negative affect (Cann & Etzel, 2008; Cann, Stilwell, & Taku, 2010). The possible relationships of the other humor styles with stable affect are less clear. It is possible that affiliative or aggressive humor uses might contribute to positive affect, just based on their being associated with more humor and amusement in one's life. On the other hand, previous research has not found any associations between these humor styles and outcomes like hope, happiness, and optimism (Cann & Etzel, 2008; Cann, Stilwell, & Taku, 2010). To identify the relationships that might exist between humor styles, affect, and the outcomes of resilience, well-being, and psychological distress, we use a path analysis approach so both direct paths and indirect paths of influence can be evaluated. The path model and the tested paths are depicted in Figure 1.

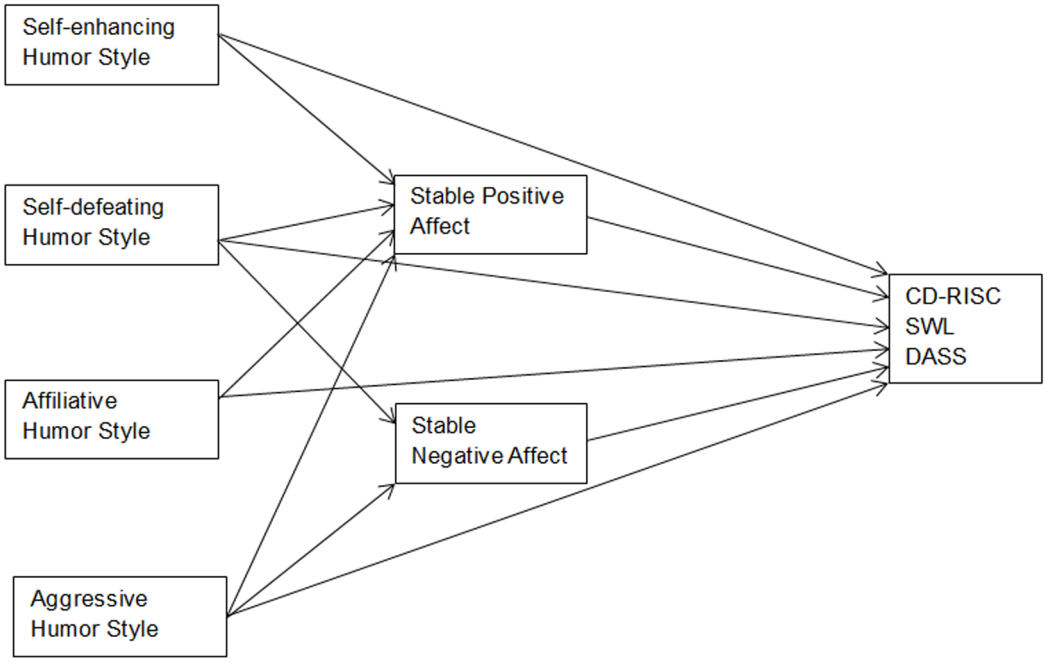

Figure 1. Direct and indirect paths tested for three outcome variables: Resilience (CD-RISC), Well-being (SWL), and Psychological Distress (DASS).

Method

Materials

Humor Styles Questionnaire (HSQ) — The HSQ was developed by Martin et al. (2003) to measure the four styles of humor that had been identified in an extensive literature review of sense of humor as a personal quality. Affiliative humor involves the positive use of humor directed at others to support or build relationships (e.g., I laugh and joke a lot with my closest friends). Aggressive humor involves attempts to demean or belittle others (e.g., If someone makes a mistake, I will often tease them about it). A self-enhancing humor style involves using humor

to counter stressors or change perspective (e.g., If I am feeling depressed, I can usually cheer myself up with humor). A self-defeating humor style reflects negative, self-directed humor designed to create humor at one's own expense in order to gain favor with others (e.g., Letting others laugh at me is my way of keeping friends and family in good spirits). Eight items assess each of the 4 humor styles, and respondents indicate the degree to which they agree with each item on a 7-point scale (1 = Totally disagree to 7 = Totally agree). The internal consistencies for the 4 humor styles in the current samples were adequate (alphas: affiliative = .70, self-enhancing = .82, aggressive = .70, self-defeating = .81).

Daily affect ratings — The modified Differential Emotions Scale (mDES: Fredrickson, Tugade, Waugh, & Larkin, 2003) measures how strongly an emotion was felt at its peak during the day. Peak ratings are recommended, rather than average ratings, because they can be recalled more accurately (Cohn et al., 2009). The mDES includes 16 sets of emotions that are rated on 5 point scale (0 = not at all, I did not experience this emotion today, 4 = extremely, I experienced this emotion at an extremely high level at some point today). The Peak Negative Affect (PNA) means are based on seven sets of negative emotions (e.g., "angry/irritated/annoyed", "sad/downhearted/unhappy") and the Peak Positive Affect (PPA) means are based on nine sets of positive emotions (e.g., "Love/closeness/trust"; "glad/happy/joyful"). To assess stable affect, the peak ratings of positive and negative affect for each day were averaged across seven daily ratings. The internal reliabilities for these ratings were .75 or higher across the 7 daily ratings in the current sample.

Well-being — The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) gauges global well-being using five items that are answered on a 7 point scale (1 = strongly disagree, 7 = strongly agree). Higher scores indicate higher global life satisfaction and well-being. An example item is: "In most ways my life is close to my ideal". Within the current sample the internal reliability was good (alpha = 0.86).

Psychological distress — The Depression, Anxiety, and Stress Scale (DASS) measures three separate indicators of distress: depression, anxiety, and stress. The short version of the DASS was used (Henry & Crawford, 2005). Seven items assess each indicator, and items are answered using a 4 point scale (0 = did not apply to me at all, 3 = applied to me very much, or most of the time) with reference to feelings in the past week. Sample items include: "I felt that life was meaningless", "I found it difficult to relax", "I felt I was close to panic". Higher scores indicate higher levels of general psychological distress. Within the current sample the internal reliability for the full scale was very good, alpha = 0.90.

Resilience — The Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) includes 25 items that measure resilience, with responses made on a 5 point scale (0 = not at all true, 4 = true nearly all of the time). A sample item is "I can deal with whatever comes my way". Higher scores indicate higher resilience. Within the current sample the internal reliability was strong (alpha = 0.92).

Procedure

All of the data collection was done online. Students enrolled in introductory level psychology courses can fulfill a course requirement through research participation. They select from available studies posted on a web site. The current research involved three separate phases. At Phase 1, participants provided demographic information and completed the measures described above, except for the mDES. For Phase 2, participants were asked to log into the web site on seven separate days to rate their peak emotions on the mDES. Although participants were encouraged to provide ratings on 7 consecutive days, they were given 10 days to complete 7 daily ratings. To encourage

participation, participants were told that there would be a drawing from among those who completed the 7 daily ratings and five participants would receive a $10 gift card. Reminder emails were sent during the10-day time period. Phase 3 began at least 30 days after Phase 2 was completed. To encourage participation in Phase 3, participants were told that they would be entered into a drawing for a $50 gift card. Participants received an email reminding them to log in to complete the last part of the study. Those who returned completed the outcome measures again (SWL, DASS, and CD-RISC).

Participants

The final sample of participants who completed all three phases totaled 120 (89 Caucasian, 93 women, M_{age} = 21.83, SD_{age} = 6.52). The participants who completed all three phases were compared to those who did not (n = 208) on all of the measures collected at Phase 1. The only difference was on aggressive humor, $t(326) = 2.17$, p = .03, and that difference was quite small (.23 on a 7-point scale), and was probably significant due to the high power of the test. Those who completed Phase 3 had a lower reported use of aggressive humor (M = 3.39, SD = 0.97) than did those who dropped out (M = 3.62, SD = 0.93).

Results

The descriptive statistics and bivariate correlations for all the measures are presented in Table 1.

Table 1

Summary Statistics and Bivariate Correlations

Variable	*M*	*SD*	CD-RISC	DASS	PPA	PNA	HS-SE	HS-SD	HS-AF	HS-AG
SWL	4.98	1.34	.64**	-.57**	.43**	-.30**	.33**	.01	.15	-.10
CD-RISC	2.84	0.54		-.68**	.56**	-.35**	.47**	-.10	.23*	-.08
DASS	0.64	0.45			-.42**	.44**	-.39**	-.04	-.14	.06
PPA	2.05	0.60				-.17	.32**	-.03	.17	-.10
PNA	0.62	0.32					-.27**	.06	-.13	.15
HS-SE	4.56	1.12						.03	.45**	.16
HS-SD	2.98	1.03							.01	.30**
HS-AF	5.81	0.85								.17
HS-AG	3.39	0.96								

Note. SWL = Well-being (Satisfaction with Life); CD-RISC = Resilience; DASS = Psychological Distress (Depression, Anxiety, and Stress); PPA = mDES Peak Positive Affect; PNA = mDES Peak Negative Affect; HS-SE = Self-enhancing Humor Style; HS-SD = Self-defeating Humor Style; HS-AF = Affiliative Humor Style; HS-AG = Aggressive Humor Style. SWL and HS scores are on 1 to 7 scales. CD-RISC and mDES scores are on 0-4 scales. DASS scores can range from 0 to 3. The Humor Style scores were obtained at Phase 1, the mDES scores at Phase 2, and the SWL, CD-RISC, and DASS scores at Phase 3.

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

The bivariate correlations indicate that both stable affect measures are related to the three outcomes. Higher stable positive affect was positively related to resilience and well-being, but negatively related to psychological distress. For stable negative affect, the opposite pattern emerged. As expected based on previous findings examining positive and negative affect (Watson, Clark, & Tellegen, 1988), there was no reliable correlation between the two affect scores. Only the self-enhancing humor style was related to the affect measures, with the expected findings that a self-enhancing style predicts higher stable positive affect and lower stable negative affect. Other than a positive correlation between an affiliative humor style and resilience, only the self-enhancing humor style

was reliably related to any of the three outcome measures. Consistent with past findings, a self-enhancing humor style is positively related to resilience and well-being, but negatively related to psychological distress.

Predicting Stable Affect

Three separate path analyses were conducted to predict the outcome variables resilience (CD-RISC), well-being (SWL), and psychological distress (DASS) (see Table 2).

Table 2

Standardized Effects for all Paths and Variance Explained

		Outcomes				
		PPA	**PNA**	**CD-RISC**	**DASS**	**SWL**
Humor Style						
Self-enhancing	Total Effects	.32**	-.28**	.48**	-.43***	.34***
	Direct Effects	.32**	-.28**	.29**	-.24**	.18
	Indirect Effects			.19**	-.19***	.16***
Self-defeating	Total Effects	.01	.11	-.08	-.07	.05
	Direct Effects	.01	.11	-.06	-.11	.07
	Indirect Effects			-.02	.04	-.02
Affiliative	Total Effects	.05	-.04	.04	.03	.02
	Direct Effects	.05	-.04	.01	.06	-.01
	Indirect Effects			.03	-.03	.03
Aggressive	Total Effects	-.16	.17	-.14	.15	-.18
	Direct Effects	-.16	.17	-.04	.04	-.09
	Indirect Effects			-.10	.11	-.09
Peak Affect						
PPA	Total Effects			.43**	-.30***	.34**
	Direct Effects			.43**	-.30***	.34**
PNA	Total Effects			-.19**	.35***	-.19
	Direct Effects			-.19**	.35***	-.19
	R^2	.12**	.12**	.45***	.36***	.26***

Note. SWL = Well-being (Satisfaction with Life); CD-RISC = Resilience; DASS = Psychological Distress (Depression, Anxiety, and Stress); PPA = mDES Peak Positive Affect; PNA = mDES Peak Negative Affect; HS-SE = Self-enhancing Humor Style; HS-SD = Self-defeating Humor Style; HS-AFF = Affiliative Humor Style; HS-AGG = Aggressive Humor Style.
Bias corrected significance levels: *p < .05. **p < .02. ***p < .001.

To identify bias corrected confidence intervals, 2000 bootstrap samples were drawn. In each analysis, the direct paths from the four humor styles to the two peak affect measures were the same, so they are shown first. Humor styles did explain a moderate amount of variance in both peak positive and peak negative affect, however; only the self-enhancing humor style was reliably related to the stable affect ratings. Consistent with the bivariate correlations, participants with stronger self-enhancing humor styles reported higher levels of stable positive affect and lower levels of stable negative affect. Thus, while it seemed possible that humor other than self-enhancing uses could have contributed to differences in stable affect by helping to facilitate the presence of positive experiences, only the tendency to use humor to deflect or minimize potential stressors explained significant variance in stable affect levels averaged over seven days.

Resilience

In the path analysis for resilience, the model explained a substantial amount of the variance (45%). PPA and PNA both demonstrated reliable direct effects on resilience, with PPA having a positive relationship and PNA a negative relationship. Of the humor styles, only a self-enhancing humor style evidenced statistically reliable effects, and evidence was found for both direct and indirect positive relationships. To further assess the indirect paths, the multiple mediation macro developed by Preacher and Hayes (2008) was used and 2000 bootstrap samples were drawn to identify bias-corrected confidence intervals. Both PPA (p = .002) and PNA (p = .038) were found to be significant mediators, and they were not reliably different from each other as mediators (p = .10).

Psychological Distress

In the path analyses for the DASS score, once again a substantial amount of variance was explained (36%), and both stable affect scores had significant direct effects. As would be expected, PPA was negatively related to DASS and PNA was positively related. A self-enhancing humor style again showed reliable direct and indirect effects on DASS, with the relationships now negative. The multiple mediator paths were tested using the Preacher and Hayes (2008) macro and again there was evidence for mediation through both PPA (p = .008) and PNA (p = .014), with no reliable difference between the two mediators (p = .340).

Well-Being

The path analysis predicting SWL scores explained substantial variance (26%), but only PPA had a reliable direct effect (PNA, p = .06). Higher levels of stable positive affect were associated with greater life satisfaction. Once again, only the self-enhancing humor style was related to the outcome, and in this case although the total effect was significant, only the indirect relationship was statistically reliable. In this case, the multiple mediation results indicated that only PPA was a significant mediator (p = .006)

Discussion

Our primary purpose was to determine if a good sense of humor could contribute to maintaining stable positive affect and minimizing stable negative affect. Based on the Broaden and Build theory (Fredrickson, 2013), a more positive stable affect was assumed to then facilitate psychological health in the form of higher resilience and well-being, and lower distress. Using the Humor Styles Questionnaire to distinguish among the different ways in which humor can be expressed as our sense of humor measure (Martin et al., 2003), we were able to assess whether any and all humor styles might help support positive affect, or if only some styles were relevant. Although most research that has examined the separate humor styles has found that only the adaptive styles, affiliative and self-enhancing, were related to psychological health outcomes, it remained possible that any humor uses might contribute to more stable positive affect by allowing for greater amusement (Fredrickson, 2013) or mirth (Martin, 2007) to be present in one's life. By employing a longitudinal design, and path analyses, we were able to examine all direct and indirect relationships among the humor styles, stable affect, and psychological health outcomes.

Considering first the direct relationships between the humor styles and stable affect, the evidence supports only a self-enhancing humor style as relevant to stable affect. In both the simple bivariate relationships, and within the path model when all humor styles were included, there were no statistically reliable results for any of the other three humor styles. Greater use of self-enhancing humor was both positively related to stable positive affect and negatively related to stable negative affect. In one sense, this is expected, since a major component of a self-enhancing humor style involves using humor to deflect or minimize threats to the self that might otherwise lead to

distress, an increase in negative emotions, and a potential reduction of positive affect. Successful self-enhancing humor should limit negative affect while also supporting or increasing positive affect. On the other hand, within the Broaden and Build model the positive emotion of amusement is seen as one source of positive experiences that can build positive affect, and amusement would seem to include at least affiliative humor as a relevant humor style. Amusement is described as sharing laughs and using humor to help strengthen social bonds (Fredrickson, 2013). Furthermore, within the character strengths model of virtues, the types of humor described as contributing to the transcendence virtue; liking to laugh and joke, bringing smiles to others, appear to include at least affiliative uses, and possibly other humor styles (Peterson & Seligman, 2004). Although prior research had found that a self-defeating humor style was negatively related to positive personal qualities like optimism, hope, and happiness in both cross-sectional (Cann & Etzel, 2008) and longitudinal studies (Cann, Stilwell, & Taku, 2010), we found no relationship of a self-defeating humor style with stable affect as a personal quality. One possibility is that the relationships found in the past reflect underlying differences in personality, but that a self-defeating humor style does not impact an individual's variable affective experiences. A self-defeating style is not used to respond to specific events in a person's life, rather it represents a more global negative perspective. This would be consistent with the other relationships found with a self-defeating humor style; higher depression, lower self-esteem, greater hostility (Martin et al., 2003).

A second issue addressed in the current research involved identifying how a good sense of humor might have positive effects on psychological health directly, or indirectly, mediated though differences in stable affect. As a first step in assuming possible mediation effects, it was necessary to demonstrate that differences in stable affect were related to the psychological health outcomes; otherwise indirect effects would be unexpected. Across the three separate outcome measures, the path analyses revealed highly consistent results. First, as predicted, stable positive affect was related to all three outcomes. A higher stable positive affect predicted greater resilience and well-being and a lower level of psychological distress. Stable negative affect, while uncorrelated with positive affect, also explained variance in two of the three outcomes. Higher stable negative affect predicted greater psychological distress and lower levels of resilience. The relationship of stable negative affect with well-being failed to reach significance, although the coefficients were comparable to those for resilience. In general, being able to maintain higher positive affect and lower negative affect would seem to have significant psychological health benefits. According to the Broaden and Build model, these benefits accrue because positive affect supports more creative and flexible thinking, which makes the individual more resilient and able to maintain a positive frame of mind even when challenges arise (Fredrickson, 2013). To validate this process, future research should specifically examine the roles of creativity and flexibility. Positive affect might be important simply because it creates a more positive frame of mind, regardless of any differences in thinking styles. On the other hand, if stable positive affect does enhance creativity and flexibility in thinking, it also might facilitate expressions of humor, since creating humor often depends on these same qualities (Brodzinsky & Rubien, 1976). Perhaps a cyclical pattern exists in which effective humor allows for establishing stable positive affect, which facilitates more effective humor, all as a result of creative and flexible thinking.

The findings for the humor styles also were quite consistent across the three health outcomes. Only a self-enhancing humor style was related to any of the outcomes. Indirect effects, mediated through both positive and negative affect, were evident for both resilience and psychological distress, but the direct effects also were reliable for those outcomes. Having a self-enhancing humor style has potential health benefits both by increasing resilience and decreasing psychological distress, but it also supports a more positive stable affect, which in turn has potential health benefits. For well-being the effects were generally weaker, only the indirect effect for self-enhancing humor was

reliable, and it was mediated through positive affect. Apparently, the presence of self-enhancing humor tendencies, regardless of the levels of the other humor styles, is a useful quality for enhancing psychological health and building resources to deal with threats. Some other recent findings lend support to this possibility. Leist and Müller (2013) used cluster analyses to identify 'humor types' based on combinations of humor styles. They found three 'types': 'humor deniers' were low on all humor styles, 'humor endorsers' were high on all humor styles, and 'self-enhancers' were high on adaptive humor styles, but low on maladaptive styles. When they compared these types, they found that on a measure of self-esteem the self-enhancers scored higher than the other two types. So, the presence of higher maladaptive humors, even when adaptive humor styles were present was associated with lower self-esteem. However, on a measure of life satisfaction, there were no differences between the humor endorses and self-enhancers. So the presence of maladaptive humor styles, along with the adaptive styles, was not associated with lower life satisfaction.

Our results are clearly supportive of Kuiper's (2012) recent proposal that a good sense of humor helps to build and support resilience as a factor that can provide health benefits. Kuiper also suggested that any efforts to understand the role of sense of humor in building resilience must consider important differences based on humor styles, and our results show that to be the case. A self-enhancing humor style was the only style found to contribute to resilience. Kuiper also argued for sense of humor as part of an emotion regulation strategy that would allow for more positive reappraisals of threats. Although our data do not consider individual instances of appraising potential threats, they do indicate that a self-enhancing humor style supports a more stable positive affective state that, based on the Broaden and Build model, should assist in creatively reappraising potential threats. Overall, the direct effects between the self-enhancing humor style and resilience, and the indirect effects through stable affect, support humor use as a factor in building resilience.

The current findings would seem to imply a very limited role for sense of humor in impacting psychological health; only a self-enhancing humor style was found to be beneficial. However, the focus on direct effects of sense of humor, or indirect effects mediated by stable affect, may not allow for the full impact of a good sense of humor to be appreciated. An affiliative humor style, the other adaptive humor style, has been found to be related to indicators of psychological health in some studies (Martin et al., 2003), and a role for an affiliative style is implicated by both the Broaden and Build model and the Character Strengths model. In both of these models, shared humor is assumed to help build or strengthen social bonds. These enhanced or extended social bonds would likely provide the individual with greater social support, and social support has been implicated in enhanced psychological and physical health (e.g., Cohen, 2004; Holt-Lunstad, Smith, & Layton, 2010). Perhaps a good sense of humor, based on higher use of affiliative humor, indirectly impacts health by helping to establish the social connections that insure social support when needed. Measures of resilience tend to focus on individual strengths and beliefs, with little attention to resilience that might grow out of interpersonal resources. For example, the CD-RISC has only one item, out of 25, that mentions relationships. Logically, there should be a role for resilience based on strong interpersonal relationships, and affiliative humor could help build that resource.

Some recent research provides support for this possibility. Cann, Zapata, and Davis (2011) found that in romantic relationships, perceptions that your partner has an affiliative humor style were predictive of higher relationship satisfaction. Even more impressive was the finding by Ibarra-Rovillard and Kuiper (2011) that use of affiliative humor by a person portrayed as depressed, but no other humor style, led observers to feel more positive about themselves, potentially improving social bonds even for the depressed. Finally, Dyck and Holtzman (2013) reported that the relationship between an affiliative humor style and depressive symptoms was fully mediated through

perceived social support, but the relationship for a self-enhancing style with depressive symptoms remained even when social support was controlled. Thus, it seems a worthwhile direction for future research to consider how a good sense of humor, based on high affiliative humor uses, might influence psychological health by providing the resources often available through greater social support.

Our results offer initial support for the importance of a good sense of humor, reflected in higher uses of self-enhancing humor, in supporting stable positive affect, building resilience, and limiting psychological distress. The longitudinal research strategy increases the possibility that a causal link might be assumed between adaptive humor styles and positive health outcomes. Obviously, it will now be important to examine these relationships in a more diverse sample and over a longer period of time. In addition, it will be important to consider other indicators of stable positive affect. We employed a measure based on peak affective experiences daily, but daily affect can show considerable variability across a day (Kuppens, Van Mechelen, Nezlek, Dossche, & Timmermans, 2007). Thus, it might be useful to consider variability of affect as well as peak or average experiences as indicators of stable affect. A high peak with high variance might yield very different effects compared to the same peak affect with low variance. Our results also support the calls in the literature for viewing humor and sense of humor as complex constructs. Attempts to assess sense of humor as a global construct are likely to confound adaptive and maladaptive humor styles and lead to inconsistent findings. Humor uses, when adaptive, can be beneficial, but not all uses of humor will be adaptive. Furthermore, the different forms of adaptive humor may operate differently in affecting psychological health.

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Competing Interests

The authors have declared that no competing interests exist.

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