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Brief Report

Character strengths and well-being in Croatia: An empirical investigation of structure and correlates

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ABSTRACT

We investigated relations among strengths of character in 881 students from Croatian universities. We also examined links between strengths and various well-being indices. Our conceptualization was based on the Values in Action classification system with 24 strengths organized within six superordinate virtues (Peterson & Seligman, 2004). A factor analysis led to a four-factor solution; factors were defined as *Interpersonal Strengths*, *Fortitude*, *Vitality*, and *Cautiousness*. Of these factors, *Vitality* (with zest, hope, curiosity, and humor as indicators) emerged as the most relevant to well-being. When examining individual strengths, zest, curiosity, gratitude, and optimism/hope emerged with the strongest associations with elevated life satisfaction, subjective vitality, satisfaction of autonomy, relatedness, and competence needs, and a pleasurable, engaging, and meaningful existence. Results have implications for understanding the structure and variability of benefits linked with particular strengths.

1. Introduction

Strengths have been defined as pre-existing qualities that arise naturally, feel authentic, are intrinsically motivating to use, and energizing, thereby increasing the probability of healthy outcomes (Linley, 2008; Peterson & Seligman, 2004). With the ambitious goal of cataloguing strengths of character that are relatively ubiquitous across history and culture, Peterson and Seligman used an iterative process of theory and data to reduce a list of candidates. This framework led to a classification scheme of 24 lower-level strengths arranged among six broad dimensions of virtues. As any scientific endeavor, the emergence of new theory and research on strengths should suggest refinements as needed.

From this strength classification system, a self-report questionnaire was created – the Values in Action Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004). With the advent of web-based survey technology and the popularity of this scale in basic research and applied clinical and coaching work, more than a million people completed the VIA-IS in only 6 years (Linley et al., 2007; Park, Peterson, & Seligman, 2004; Peterson, Ruch, Beermann, Park, & Seligman, 2007). To date, scientists have elucidated strengths that are most relevant to elevated well-being (Park et al., 2004; Peterson et al., 2007), effective recovery from illness (Peterson, Park, & Seligman, 2006), and perceived psychological growth following adversity (Peterson, Park, Pole, D'Andrea, & Seligman, 2008). Taken together, strengths of character appear to aid understanding of what contributes to fulfilling outcomes at personal, relational, and organizational levels. Given these promising findings, it is important to take a step back and examine the viability of this popular theory and measurement strategy.

We sought to extend this literature on the VIA-IS in several ways. First, we sought to study a large sample of people in Croatia and compare results to studies from the United States (Park et al., 2004), United Kingdom (Linley et al., 2007), Switzerland (Peterson et al., 2007), and Japan (Shimai, Otake, Park, Peterson, & Seligman, 2006). Generalizability is of particular relevance because the authors aimed to develop a strength classification system invariant across cultures (Peterson & Seligman, 2004).

Second, to date, to only two published studies report on the factor structure of the VIA-IS (Macdonald, Bore, & Munro, 2008; Peterson et al., 2008). What this means is that most researchers and practitioners have accepted the distinctiveness of the 24 strengths at face-value without empirical evaluation. Macdonald and colleagues (2008) failed to find a clean pattern of findings, with a large number of cross-factor loadings within a four-factor solution. In the only other published study, Peterson and colleagues (2008) found support for a five-factor solution. They explained that their five-factor solution was based on eigenvalues greater than 1.0, with no information provided on actual eigenvalues, factor loadings, or correlations among factors. Taken together, it remains unclear of how to best categorize strengths as the evidence appears to deviate from the authors' conceptual framework.

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Third, we sought to move beyond factor analyses to examine the construct validity of the broad dimensions uncovered. To meet this aim, we studied a broad range of perspectives on well-being including: (1) life satisfaction, (2) subjective vitality, (3) satisfaction of basic psychological needs for autonomy, belongingness, and competence, and (4) motivation to pursue a life characterized by pleasure, engagement, and/or meaning. Of the four, life satisfaction is most commonly used as a measure of subjective well-being (Ryan & Deci, 2001). Our second perspective, on subjective vitality, reflects the energy available to the self to create a rich, meaningful life while working with the inevitable pain of being human (Ryan & Deci, 2008). Our third perspective, on psychological needs, can be construed as a different approach to operationalizing "a good life" (Kashdan, Biswas-Diener, & King, 2008; Ryan & Deci, 2001). As for our fourth perspective, there is evidence that people differ in what they desire from the moments in their life.

The use of various indices from diverse traditions allows us to test which strengths of character possess the broadest benefits. Prior research shows that not all strengths are equal and curiosity, gratitude, hope, and the capacity to love have particularly strong links to well-being (Park et al., 2004; Shimai et al., 2006).

In the current study, we examined character strengths in a Croatian sample, including the structure of VIA-IS strengths and correlates with well-being outcomes. Compared with prior VIA-IS studies (Macdonald et al., 2008; Peterson et al., 2008) that relied on principal components analysis (useful for data reduction and prediction instead of uncovering underlying theoretical concepts), we used factor analyses and more precise methodologies to detect factors. Our three aims might advance research on the measurement of character strengths.

2. Methods

2.1. Research participants

Students (881) participated in the study (532 women, 335 men; 14 failed to report their gender). Ages ranged from 18 to 28 years (X = 20.87; SD = 1.78). Our sample was selected from seven faculties spanning spanned all sciences from social sciences, natural sciences, to technology from two Croatian universities. Participants were recruited in two ways. Professors were contacted directly to recruit from courses and advertisements were promoted in departments. Less than 2% of contacted students were uninterested in participating.

2.2. Measures

The Values in Action Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004) is a 240-item self-report questionnaire where people endorse statements about their strengths. Ratings are made on a 5-point scale (1 = "not at all like me" to 5 = "very much like me"). There are 10 items for each of the 24 strengths in the VIA classification. For instance, curiosity is measured by items such as "I am always curious about the world" and gratitude is measured by items such as "I feel thankful for what I have received in life."

Three researchers with advanced knowledge of English language translated the items independently, compared translations and resolved differences. Language experts in both English and Croatian languages reviewed and refined the final translation. Only two scales had less than acceptable reliability (self-regulation = .67 and prudence = .69).

The Satisfaction With Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item scale where people judge whether their life is satisfying on a 7-point rating scale (e.g. "I am satisfied with my life") (α = .74; M = 4.83, SD = 0.97).

The Subjective Vitality Scale (Ryan & Frederick, 1997) is a 7-item scale for people to assess perceptions of having energy and feeling alive on a 7-point scale (e.g.," I feel energized") (α = .82; M = 4.89, SD = 1.01).

The Basic Psychological Needs Scale (Gagné, 2003) addresses the degree to which a person's psychological needs are being satisfied. There are three subscales, concerning needs for autonomy (7 items), relatedness (8 items), and competence (6 items). Ratings are made on a 7-point scale. Examples of items include "I feel like I can decide for myself how to live my life" (autonomy; α = .68), for, "I really like the people I interact with" (relatedness; α = .75), and "People I know tell me I am good at what I do" (competence; α = .60). Mean values for autonomy was 5.00 (SD = .82), relatedness was 5.56 (SD = .81), and 4.77 for competence (SD = .79).

The Orientation to Happiness Questionnaire (Peterson, Park, & Seligman, 2005) is an 18-item questionnaire assessing strategies for pursuing well-being. There are three 6-item subscales with ratings made on a 7-point scale: pleasure (e.g., "I love to do things that excite my senses") (α = .76), engagement (e.g., "I seek out situations that challenge my skills and abilities") (α = .69), and meaning (e.g., "My life serves a higher purpose") (α = .78). Mean values for pleasure was 5.22 (SD = .94), engagement was 4.67 (SD = .82), and 4.75 for meaning (SD = 1.00).

3. Results

The inspection of normality for all measures showed that the shapes of distributions were within acceptable limits.[1] Most variables were slightly negatively skewed and their means are above the scale mean. Some degree of negative skew for character strengths had been previously reported (Linley et al., 2007; Peterson et al., 2006). Means, standard deviations, and internal reliabilities for 24 strengths are provided in Supplementary material.

3.1. Correlations among character strengths

We examined relations between character strengths (supplementary material). Most character strengths were positively correlated, with zero-order correlations ranging from .10 to .73. The strongest correlations were found between perspective and both judgment and social intelligence (.73), curiosity and zest (.72), and fairness and leadership (.72). The lowest correlation was .10 between modesty and love of earning, and .14 between humor and prudence. Three strengths, love of learning, modesty and prudence, possessed low correlations (below .30) with a variety of other strengths.

3.2. The structure of character strengths

Next, we focused on the factor structure of character strengths. To provide a preliminary guide in specifying the number of factors, a second-order principal component analysis of the 24 strengths was performed, according to the procedure recommended by Velicer, Eaton, and Fava (2000). The initial extraction produced four components with eigenvalues exceeding 1 (the first six eigenvalues were 11.71, 1.76, 1.48, 1.04, .98, and .84). Two criteria were used to determine how many components to extract: Horn's Parallel analysis (1965), and Velicer's Minimum Average Partial (MAP; Velicer et al., 2000). Parallel analysis and MAP test were run using the SPSS syntax developed by O'Connor (2000). Parallel analysis indicated a three component solution (averaged eigenvalues of

[1] Normality was examined in two ways, inspecting the histograms and calculating skew and kurtosis values. The highest value for skew was −.62 (hope), and for kurtosis .86 (fairness).

random data were 1.31, 1.26, 1.22, 1.19, 1.16, and 1.14), based on the rule that factors from observed data should explain more variance than corresponding factors from random data. MAP suggested, however, that four components should be retained. Velicer et al. (2000) recommend these methods as guidelines with the caveat that the interpretability of the final solution is critical.

Since principal axis factoring is more suitable for testing latent constructs. Maximum likelihood analysis was conducted using promax rotation ($\kappa = 3$). The choice of non-orthogonal rotation was based on the assumption that character strengths are correlated. The first five eigenvalues were 11.32, 1.27, 1.12, .74, and .64. Results indicate the existence of one large general factor explaining 47.22% of the variance. Three and four-factor solutions were compared. A four-factor solution was chosen, because it was more interpretable and accounted for greater total variance. In addition, in the three-factor solution, two variables had almost identical loadings on two factors, and another two variables had communalities below .35.

Based on the highest loading items, our four factors were named: Interpersonal Strengths, Fortitude, Vitality, and Cautiousness (Table 1). These four factors accounted for 60% of the total variance. Among these four broad latent factors, four strengths showed cross-loadings above .35: modesty, curiosity, humor, and perseverance. Two strengths, learning and spirituality had low communalities (.34 and .39) with a small gap between primary and cross loadings. We decided to exclude these two strengths from further analyses because they did not make a significant contribution to their primary factors (Fortitude and Cautiousness). The correlations between factors ranged from .61 (Vitality and Cautiousness) to .73 (Vitality and Fortitude). These high correlations also indicate the existence of one large general factor.

3.3. Correlation of VIA factors with other measures

To examine the meaningfulness of our second-order VIA-IS factors, we report correlations with life satisfaction, vitality, psychological needs, and orientations to happiness. As shown in Table 2, the four factors were correlated with these outcomes, ranging from .17 to .64. The majority of correlations are moderate in size and quite similar.

The first factor, *Interpersonal Strengths*, was moderately correlated with outcomes. This factor had the largest correlation with relatedness (.47) and meaningful living (.43). The second factor, *Fortitude*, was also moderately associated with all outcomes; the highest correlations were with a meaningful life (.48) and engaged living (.47). The next factor, *vitality*, was the latent factor with the most robust links with our outcomes-correlations ranged from .39 (with pleasant life) to .64 (with vitality). The last factor, *Cautiousness*, was moderately correlated with engaged living (.42), followed by meaningful living (.39), and least related with relatedness (.26) and pleasant living (.17). Taken together, these correlations support the robustness of Fortitude and Vitality factors and the validity of the Interpersonal Strengths, Vitality, and Cautiousness factors. The highest correlations were found between factors and well-being variables that conceptually overlap, such as our *Vitality factor* and subjective Vitality (.47), and our *Interpersonal Strengths* factor and relatedness (.64).

Table 1
Oblimin (promax) rotated five-factor solution of VIA strengths.

	Factor 1	Factor 2	Factor 3	Factor 4	Communality
Fairness	**.79**	.07	−.11	.11	.70
Teamwork	**.69**	−.07	.15	.14	.66
Kindness	**.69**	.18	.07	−.03	.69
Forgiveness	**.64**	−.08	.10	.10	.54
Love	**.62**	.05	.19	−.10	.50
Modesty	**.55**	−.19	−.11	**.40**	.46
Leadership	**.54**	.31	.03	.11	.70
Gratitude	**.47**	.04	.33	.12	.62
Beauty	.34	.28	.11	.06	.43
Perspective	.03	**.79**	.00	.12	.75
Judgment	−.02	**.74**	−.12	.34	.75
Originality	−.09	**.65**	.30	−.06	.61
Intelligence	.20	**.61**	.14	−.03	.66
Valor	.04	**.53**	.26	.02	.54
Learning	−.08	**.35**	.34	.05	.34
Zest	.07	.01	**.82**	.13	.83
Hope	.09	.07	**.56**	.26	.61
Curiosity	.11	**.36**	**.55**	−.12	.70
Humor	**.36**	.20	**.44**	−.26	.58
Prudence	.13	.09	−.11	**.72**	.65
Self-regulation	−.02	.07	.29	**.55**	.51
Perseverance	−.09	.19	**.43**	**.48**	.64
Spirituality	.12	−.03	.34	**.37**	.39
Honesty	.25	.29	.11	**.35**	.61
% variance	47.17	5.29	4.65	3.10	

Note: Bold – loadings ⩾ .35. In order from factor 1 to 4, labels included Interpersonal Strengths, Openness to Experience, Conscientiousness, and Vitality.

Table 2
Zero-order correlations of VIA second-order factors with life satisfaction, psychological needs, and orientations to happiness.

	Interpersonal Strengths	Fortitude[a]	Vitality	Cautiousness[b]
Life satisfaction	.34*	.37*	.49*	.34*
Vitality	.35*	.45*	.64*	.37*
Autonomy	.34*	.37*	.46*	.28*
Relatedness	.47*	.33*	.46*	.26*
Competence	.31*	.42*	.48*	.37*
Pleasant life	.27*	.32*	.39*	.17*
Meaningful life	.43*	.48*	.46*	.39*
Engaged life	.37*	.47*	.48*	.42*

* $p < .05$.
[a] Without love, of learning.
[b] Without spirituality.

4. Discussion

The primary aim of the current study was to examine the structure of character strengths with the VIA-IS, one of the most widely used measures in basic and applied psychology. The factor structure in this study failed to confirm to the six superordinate virtue framework reported by Peterson and Seligman (2004). There was evidence for a theoretically meaningful four faction solution. However, one large factor explained nearly half of the variance. Based on item loadings, we named our factors: Interpersonal Strengths, Fortitude, Vitality, and Cautiousness.

We are not the first researchers to find evidence for a four-factor solution (Macdonald et al., 2008). The broader virtues uncovered by Macdonald and colleagues are similar to our results including a factor reflecting positive behavior toward other people (Interpersonal Strengths vs. their Niceness), a factor reflecting openness and bravery (Fortitude vs. their Intellect), a global factor of positive qualities encompassing zest, humor, and hope among others (Vitality vs. their Positivity), and a factor reflecting self-control (Cautiousness vs. their Conscientiousness). Peterson et al. (2008) also detected similar factors reflecting Interpersonal Strengths, Fortitude, Vitality (what they term transcendence), and Cautiousness (what they term temperance); their final factor termed Cognitive (based on appreciation of beauty, creativity, curiosity, and love of learning) is harder to reconcile. Despite commonalities across studies, the factor structure detected by Macdonald and colleagues suffered from a comparatively larger number of

cross-factor loadings; factor loadings are not reported by Peterson et al. (2008).

Peterson and Seligman (2004) stated that their classification will "change in the years to come, as theory and research concerning character strengths proceed" (p. 31). Of the three studies examining the factor structure of the 24 strengths, one used a sample of college students in Australia (Macdonald et al., 2008), the other used an unsolicited sample of people responding to a survey on a website dedicated to positive psychology (Peterson et al., 2008), and we studied 881 college students from Croatia. Findings that differ among these studies might be due to sampling differences and the assumption by prior researchers that factors should be orthogonal and thus be examined with a varimax rotation (compared with our assumption of non-independence and use of promax rotation). The moderate to large sized correlations between individual strengths supports the notion of non-independence. More studies are needed to address the replicability, stability, and meaningfulness of four factor (current study and Macdonald et al., 2008) and five factor (Peterson et al., 2008) models using samples from varied cultures across time.

4.1. VIA broad dimensions and well-being

The factors representing broader strength dimensions correlated positively with well-being indices. However, it should be noted that some degree of item overlap existed between our well-being measures and strength factors. This was most obvious for our vitality factor and the subjective vitality scale. As might be expected, Interpersonal Strengths showed the strongest links to satisfying belonging needs and pursuing a meaningful life. Fortitude and vitality showed the strongest links to the presence of subjective vitality and pursuing a life infused with engagement and meaning. Of the four higher-order factors, Cautiousness had the weakest associations with well-being outcomes.

Future work can focus on particular configurations of strengths to determine whether people with certain profiles are at a greater advantage in terms of psychological, physical, and social well-being. For instance, a profile reflecting elevations in Interpersonal Strengths ("strengths of the heart", Park & Peterson, 2006a) and Fortitude ("strengths of the mind") might be a particular potent combination. Much of what we know about strengths has been limited by the tendency of researchers to focus their efforts on single traits instead of theoretically meaningful combinations. The comprehensiveness of the strength taxonomy used in the present study (Peterson & Seligman, 2004) is a welcome departure from the narrow, singular trait based approach that dominates the field.

4.2. Caveats

Despite the use of a large sample from a neglected country of origin and a variety of well-being outcomes in the same study, there are some limitations. First, the questionnaires were administered to college students. As Park and Peterson (2006b) point out, based on previous thinkers from Aristotle to Erik Erikson, if we are focused on the structure of strengths or their relation to each other, it might be more appropriate to address strengths in real-world contexts such as work and parenting beyond college life. Second, the measures used in this study suffer from the interpretative issues of self-report approaches. Third, only two published studies are available on the factor structure of strengths. Thus, our findings should be interpreted cautiously. Due to the wide use of this particular measure in basic and applied settings (Duckworth, Steen, & Seligman, 2005; Rashid & Ostermann, 2009), we believe it is paramount for other researchers to examine the psychometric properties of the VIA-IS. This includes how "positive psychology" research on character strengths provides information beyond existing personality science on adaptive traits.

Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.jrp.2009.12.001.

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