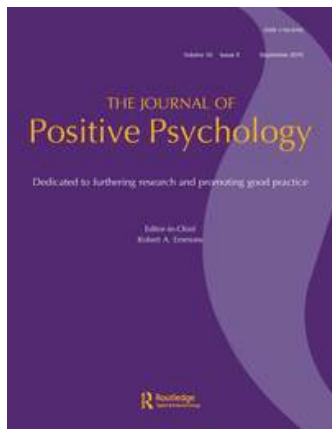


This article was downloaded by: [Robert McGrath]

On: 12 August 2015, At: 13:52

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London, SW1P 1WG



The Journal of Positive Psychology: Dedicated to furthering research and promoting good practice

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rpos20>

Integrating psychological and cultural perspectives on virtue: The hierarchical structure of character strengths

Robert E. McGrath^a

^a School of Psychology, Fairleigh Dickinson University, Teaneck, NJ 07666, USA

Published online: 23 Dec 2014.



[Click for updates](#)

To cite this article: Robert E. McGrath (2015) Integrating psychological and cultural perspectives on virtue: The hierarchical structure of character strengths, *The Journal of Positive Psychology: Dedicated to furthering research and promoting good practice*, 10:5, 407-424, DOI: [10.1080/17439760.2014.994222](https://doi.org/10.1080/17439760.2014.994222)

To link to this article: <http://dx.doi.org/10.1080/17439760.2014.994222>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

Integrating psychological and cultural perspectives on virtue: The hierarchical structure of character strengths

Robert E. McGrath*

School of Psychology, Fairleigh Dickinson University, Teaneck, NJ 07666, USA

(Received 25 October 2013; accepted 10 November 2014)

The VIA Classification characterizes six culturally defined virtues as latent variables underlying 24 character strengths. Factor analyses of measures based on the Classification usually suggest 4–5 factors that do not correspond well to traditional lists of virtues. This article describes the identification of a three-virtue model across multiple measures of strengths in four samples encompassing 1,070,549 cases. The general pattern involved a first component representing good character that split into two components reflecting Goodness and Inquisitiveness. The former divided further into components reflecting Caring and Self-Control. This pattern recurred in all data sets. The model consisting of Caring, Inquisitiveness, and Self-Control is proposed as a reliable latent structure for the VIA Classification strengths, an intuitive classification of traditional cultural virtues, and a framework for social efforts encouraging the development of virtue.

Keywords: character strengths; virtues; positive psychology; VIA Classification; factor analysis

The study of positive individual traits has been considered a fundamental goal of positive psychology since the field's inception (Seligman & Csikszentmihalyi, 2000). Within positive psychology, the understanding of positive traits has been greatly influenced by the VIA Classification of Strengths and Virtues (Peterson & Seligman, 2004). VIA originally stood for 'Values in Action' but has since become an orphaned acronym associated with the VIA Institute on Character. The VIA Classification suggests the domain of virtuous character can be understood in terms of 24 character strengths. These strengths were identified through a three-year process that involved input from more than 50 scholars and clinicians, extensive brainstorming, reviews of historical lists of virtues, and examination of popular literature and media (N. Mayerson, personal communication, 23 June 2011).

Peterson and Seligman (2004) identified several prototypical elements of a character strength. For example, they described strengths as contributing to personal fulfillment; as morally valued; as manifesting in thoughts, feelings, and actions; as embodied in paragons; and so on (see also Niemiec, 2013; Peterson, 2006). The moral character of strengths was considered particularly important, as it was this attribute that best distinguished character strengths from personal talents or abilities. This moral element is also evident in the reference to paragons and in the existence of social practices and rituals across cultures that are intended to cultivate the development of character strengths (Park & Peterson, 2008).

The 24 strengths were conceptualized as the manifest reflections of six higher order and more abstract virtues that were considered culturally universal: Wisdom and Knowledge, Courage, Humanity, Justice, Temperance, and Transcendence. These six were identified through an extensive review of classic texts on the nature of virtue representing eight cultural traditions: Confucianism and Taoism in China; Buddhism and Hinduism in South Asia; and Athenian philosophy, Judaism, Christianity, and Islam in the West (Dahlsgaard, Peterson, & Seligman, 2005). These traditions were selected for their enduring influence on modern value systems and for the availability of seminal texts addressing the nature of virtue. The resulting VIA Classification is summarized in Table 1.

Though developed intuitively, the hierarchical structuring of virtues and character strengths is reminiscent of a latent variable model. To contribute further to the study of character and virtues, the VIA Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004) was developed as a measure of the 24 character strengths for adults, which created the opportunity to evaluate empirically whether in fact the theoretical model of manifest character strengths reflecting culturally identifiable virtues was defensible.

Peterson and Seligman (2004) recognized that since the hierarchical model in Table 1 was based on cultural considerations, a different model might emerge from empirical studies of the latent structure of self-reported character strengths. Research has supported this

*Email: mcgrath@fdu.edu

Table 1. The VIA Classification.

Virtues	Character strengths
Wisdom and knowledge	Creativity [originality, ingenuity] Curiosity [interest, novelty-seeking, openness to experience] Judgment and Open-Mindedness [critical thinking] Love of Learning Perspective [wisdom]
Courage	Bravery [valor] Perseverance [persistence, industriousness] Honesty [authenticity, integrity] Zest [vitality, enthusiasm, vigor, energy]
Humanity	Capacity to Love and Be Loved Kindness [generosity, nurturance, care, compassion, altruistic love, 'niceness'] Social Intelligence [emotional intelligence, personal intelligence]
Justice	Teamwork [citizenship, social responsibility, loyalty] Fairness Leadership
Temperance	Forgiveness and mercy Modesty and humility Prudence Self-regulation [self-control]
Transcendence	Appreciation of Beauty and Excellence [awe, wonder, elevation] Gratitude Hope [optimism, future-mindedness, future orientation] Humor [playfulness] Religiousness and spirituality [faith, purpose]

Note: Terms in brackets are variants of the character strength according to Peterson and Seligman (2004).

proposition. The latent dimensional structure of the VIA-IS scales has now been investigated in at least seven studies using exploratory factor analytic techniques (Brdar & Kashdan, 2010; Littman-Ovadia & Lavy, 2012; Macdonald, Bore, & Munro, 2008; McGrath, 2014; Peterson, Park, Pole, D'Andrea, & Seligman, 2008; Ruch et al., 2010; Shryack, Steger, Krueger, & Kallie, 2010; Singh & Choubisa, 2010). These studies extracted 3–5 factors, with substantial overlap in the resulting factors.

The study by McGrath (2014) was the most extensive investigation into the factor structure of the VIA-IS to date. Latent structure was examined in 458,998 US residents who completed the VIA-IS online between 2005 and 2011, analyzed at both the item and scale level, and used several different strategies for determining the number of factors to retain. Analyses included principal components analysis (PCA) and iterated principal axis factor analysis (PAF), with oblique and orthogonal rotations, and both exploratory and confirmatory analyses. Regardless of the statistical strategy used the same five factors emerged, reflecting Interpersonal Strengths, which overlapped primarily with Peterson and Seligman's Humanity and Justice virtues; Emotional Strengths, which did not correspond well to any of the six virtues; Strengths of Restraint, which primarily encompassed strengths Peterson and Seligman associated with Courage and Temperance; Theological Strengths, corresponding to Transcendence; and Intellectual Strengths, which overlapped mainly with the Wisdom

and Knowledge virtue. These results largely replicate earlier factor analytic studies of the VIA-IS.

The existing literature on the factor structure of the VIA Classification measures raises the question of how best to characterize character strengths and virtues. Strengths and virtues are unlike other individual difference variables such as personality constructs in that as a set they represent both elements of psychological identity and cultural ideals. The virtues in the VIA Classification were selected specifically to reflect long-standing principles of optimal functioning as a member of a culture and are for that reason intuitively appealing. The latent structure of the VIA Classification measures that has emerged from research does not share the archetypal quality of the VIA Classification virtues, raising the possibility that the psychological structure of strengths is inconsistent with the common cultural understanding of the virtues. Complicating the matter is that the reliance on the VIA-IS renders unclear to what extent the non-intuitive findings are specific to that instrument.

The present set of studies was conducted to evaluate whether it was possible to identify a latent variable model for the VIA Classification character strengths that was consistent with culturally meaningful concepts of virtue. This attempt to find common ground between cultural and psychological perspectives on virtue was pursued in two ways. First, latent structural analysis was examined in the VIA-IS as well as in several less familiar measures of the VIA strengths. Second, latent

structural analyses were conducted using methods that generated multiple solutions in each data set so that several models could be compared for their intuitive appeal.

This second element of the study is inconsistent with typical practice in latent structure research. The determination of a number of factors to retain in studies of this type is usually based on one or more procedures such as the scree test (Cattell, 1966) or parallel analysis (Horn, 1965) that attempt to identify the correct number of latent dimensions underlying the manifest variables, and subsequent analyses are based exclusively on the number of factors suggested by those procedures. Goldberg (2006) has suggested that the understanding of latent structure can be enhanced using a hierarchical approach to describe the structure of latent variables. This approach involves conducting a series of PCAs, each using the same set of variables. The first analysis estimates the first unrotated principal component. Each subsequent analysis adds one component with varimax rotation of multi-component solutions, resulting in a hierarchical set of solutions for the latent structure of the variables. Component scores are generated for each solution, allowing for the computation of correlations between components at different levels of specificity, though these statistics are usually only reported between components from adjacent solutions (e.g. between components from the two-component and three-component solutions).

For example, applying the method to 48 items reflecting dietary practices, Goldberg (2006) found the first unrotated principal component, unsurprisingly, reflected a general tendency toward a healthy diet. When a second component was retained, the two main components of healthy diet proved to involve avoiding fats and eating fiber. That second component remained unchanged through solutions retaining 3 and 4 factors, but fat avoidance was further divisible into avoidance of meat-related fats, avoidance of other fats, and substituting low-fat foods. The hierarchical approach therefore provided insight into both broad and more specific healthy diet practices.

Goldberg (2006) proposed continuing the process until a component emerges that is not associated with the highest loading for any item, but most studies employing his hierarchical approach have used a more conservative stopping rule (e.g. Rentfrow, Goldberg, & Levitin, 2011; Wright et al., 2012) to keep the analysis manageable and presumably to avoid retaining factors of questionable reliability. The procedure can also be modified by using factor analytic methods rather than PCA or using an oblique rotation method.

The hierarchical approach can be compared with biological taxonomy, which allows for focusing on different taxonomic ranks (class, family, genus, etc.) as a particular problem warrants. Within psychology, hierarchical

modeling of latent structure has been particularly influential in work on the nature of intelligence (Carroll, 1993). In self-report measures, the hierarchical approach allows observation of how respondents' dimensions for evaluating themselves evolve as they make finer discriminations.

The present manuscript summarizes the results from three studies applying the hierarchical approach to factor definition of VIA character strength data. The first study builds on the work by McGrath (2014) with the VIA-IS. The hierarchical approach is applied to a sample that overlaps substantially with the sample used in that study, though with replication in a second sample. The second study uses a sample of adults who completed a very different measure of the VIA Classification. All data from these two studies involve unselected Internet samples. The third study evaluates the hierarchical structure of the strengths in a preselected sample of adults who completed a paper-and-pencil variant of the VIA-IS. Despite their methodological differences, the studies consistently provided support for a three-dimensional model that is stable across measurement instruments, sample methods, and factor analytic methods and that offers a rapprochement between the cultural and psychological perspectives on the latent structure of the VIA Classification character strengths.

Study 1

Method

Participants

All participants completed the VIA-IS online between 2005 and 2008 at the Authentic Happiness website or between 2008 and 2012 at the VIA Institute on Character website. In those rare instances where individuals completed the instrument more than once, only the final administration was used. Ethnicity data were not collected because the websites were accessed from countries where American conceptions of ethnicity are not relevant.

The primary sample consisted of 634,933 adult residents of the United States. This sample overlapped substantially with the US sample used by McGrath (2014) in his factor analysis of the VIA-IS, so this sample allowed evaluation of hierarchical structure in a context where the optimal latent structural model as suggested by exploratory factor analytic methods is already well-established. The mean age was 35.29 years ($SD = 14.12$). It was a highly educated group, with 88.89% reporting some college coursework; 67.54% were female.

A second sample was also used in this study consisting of 434,518 non-US residents to evaluate the reliability of the results. This sample included representatives of

190 countries, though the most common nations of origin were English speaking: Australia ($N = 113,753$, 26.18%), Canada ($N = 74,256$, 17.09%), and the United Kingdom ($N = 70,020$, 16.11%). Currently, the VIA-IS is available in 22 languages. Data were aggregated regardless of which translation the respondent selected. Again, the sample was highly educated – 84.83% reported some college coursework – and primarily female (64.14%). The mean age was 36.20 ($SD = 12.00$)

Measure

The VIA-IS consists of 24 10-item scales, each representing one of the VIA Classification character strengths. Items are completed on a five-point scale from *very much like me* to *very much unlike me*. All items are keyed in the positive direction, so that *very much like me* always indicates greater identification with the character strength. Studies of the VIA-IS scales have been conducted demonstrating adequate internal reliability, test–retest reliability, and validity as gauged by ratings from significant others and indicators of well-being (Park, Peterson, & Seligman, 2004; Peterson & Seligman, 2004; Ruch et al., 2010).

Coefficient alpha values for the 24 scales varied between 0.75 and 0.90 in the US sample. Mean scores on the 24 strengths were compared across the two samples. Not surprisingly given the sample sizes, all tests were significant. However, except for the mean differences on Spirituality ($d = 0.36$) and Gratitude ($d = 0.26$), both higher in the US sample, standardized effect size statistics did not meet traditional criteria for even a small effect (Cohen, 1988).

Procedure

Neither the Authentic Happiness nor VIA Institute websites actively recruit visitors. However, the sites are commonly mentioned in discussions of positive psychology written for the general public, and the former is the official website of Martin Seligman. Visitors to the two sites have numbered in the millions. Only Authentic Happiness data were collected with Institutional Review Board approval, but a privacy policy is provided to all visitors at both sites during the registration process that indicates potential use of the data in an anonymous form for research purposes. Those who complete the inventory receive feedback about their strengths and virtues.

McGrath (2014) settled on a five-factor solution for the VIA-IS, and the current US sample overlaps substantially with the sample used in that study. However, since the samples are not equivalent, it was deemed appropriate to evaluate the maximum number of factors to retain in the present sample as well. This was accomplished using two procedures that were chosen because a number

of studies have found them to be particularly accurate indicators of dimensionality (e.g. Hayton, Allen, & Scarpello, 2004; Velicer, Eaton, & Fava, 2000; Wood, Tataryn, & Gorsuch, 1996) and because they offer an objective standard for determining the number of dimensions. Parallel analysis involved creating 100 random data matrices with the same number of variables and cases as the raw data matrix. The true data matrix and each of the random data matrices were then submitted to PCA without rotation. For a component to be retained, the eigenvalue for the data matrix had to exceed 95% of the random matrix eigenvalues for the same component (Glorfeld, 1995).

The minimum average partial procedure involved sequentially partialing each PCA component from the data correlation matrix and computing the mean value for the resulting squared partial correlation matrix. Partialing a true component reduces common variance, so the mean should decline; when the component instead removes unique variance, the mean of the partial correlations should increase. Extraction stops when the mean squared partial correlation reaches a local minimum. Velicer et al. (2000) concluded the procedure's accuracy could be improved by raising the average partial correlation to the fourth rather than the second power.

Both analyses were conducted using SAS macros developed by O'Connor (2000). O'Connor's minimum average partial macro provides estimates of the number of factors after raising the average partial correlation to both the second and fourth powers, so there were three separate tests of the number of components available across the two procedures. All three tests supported retaining five factors in the US sample, which was also the most common finding across prior factor analytic investigations of the VIA-IS (e.g. Brdar & Kashdan, 2010; Ruch et al., 2010). Since no study has yet suggested retaining six factors, PCAs were conducted with 1–5 components despite the original six-virtue VIA Classification. Solutions involving more than one component were varimax rotated.

Three additional sets of analyses were conducted to evaluate the generality of the findings. To determine whether the findings were specific to the statistical methods used, analyses were replicated in the US sample using PCA with promax rotation (power = 4) and PAF with varimax rotation. To determine whether the findings were specific to the US sample, PCA with varimax rotation was also conducted in the non-US sample. As a result, the vector of loadings from the one-component PCA in the US sample could be compared to the vector of loadings from a one-factor PAF solution for the US sample and a one-component PCA solution for the non-US sample. Each of the 14 vectors of loadings from the varimax-rotated multi-component PCA solutions in the US sample was compared to a vector of varimax-rotated

loadings from a PAF solution for the US sample, a vector of varimax-rotated loadings from a PCA solution in the non-US sample, and a vector of promax-rotated PCA loadings drawn from the structure matrix in the US sample. This allowed for 44 comparisons across the five solutions. Intraclass correlations (3, 1) were then computed for each comparison.

In some cases, the order of the latent dimensions changed across analyses so that, for example, component 4 of the varimax-rotated PCA converged with factor 5 of the varimax-rotated PAF in the five-factor solution. However, it was always possible to find a vector in all comparison matrices that the correlation indicated could reasonably be interpreted as convergent with the varimax-rotated PCA vector in the US sample. The mean intraclass correlation across the 44 comparisons was 0.89, with 34 (77.3%) exceeding 0.80. The minimum value was 0.67. These findings suggest substantial reliability in outcomes across statistical methods and samples. Consistency across the samples is particularly compelling, since the non-US sample differed both in nation of residence and potentially in the language in which the instrument was completed, though limitations of this sample will be noted in the Discussion. To simplify matters, henceforth, only the varimax-rotated PCA results for the US sample will be discussed. The focus on PCA results is also intended to avoid any implication that the findings reflect some structure that exists independent of the VIA-IS.

Results

Loadings from the varimax-rotated PCA solutions in the US sample can be found in Table 2, and a graphic representation of the relationships between component scores at consecutive levels of discrimination in the characterization of character strengths may be found in Figure 1 (Levitin, Schaaf, & Goldberg, 2005). As Goldberg (2006) noted, the use of orthogonal rotation means the correlations in Figure 1 can be interpreted as path coefficients. The figure provides recommended labels for the components, with new labels introduced at each division of a component. The remainder of this section interprets the information provided in the table and figure in some depth, because the findings from this study will provide the context for interpreting the subsequent studies.

The one-component solution

The first unrotated principal component was positively associated with all 24 scales, and loadings exceeded 0.40 for every scale except Modesty. These results are consistent with a general factor of Good Character. The largest loadings were associated with a diverse set of scales, including Leadership, Zest, Hope, and Gratitude, suggesting a broad tendency to work effectively with

others and to feel positively about the world and the future. This Good Character dimension bears resemblance to the General Factor of Personality that has been identified in research on personality, which is characterized at the high end by extraversion, emotional stability, conscientiousness, agreeableness, and openness (e.g. Musek, 2007; Rushton & Irwing, 2011). Good Character similarly identifies a tendency for a broad array of positive traits to co-occur in some people.

The possible influence of socially desirable responding on the General Factor has been noted (Irwing, 2013), and the same concern is relevant to the Good Character dimension. In light of this issue, it is noteworthy that Modesty, the tendency to downplay one's achievements, was the strength least related to the first component. Given that respondents actively sought to complete the VIA-IS, the length of the instrument, and the absence of material consequences associated with the outcome, widespread purposeful exaggeration of strengths is unlikely. The possibility of self-delusional misrepresentation remains, but prior research that removes variance associated with the first factor tends to reduce rather than increase the validity of self-report personality scales (Borkenau & Amelang, 1985; McCrae & Costa, 1983). If replicated in the context of character strengths, such findings would suggest that in balance, the first factor from self-report data usually reflects more substantive variance than response bias. Finally, the issue of social desirability is of less concern in a study on the covariation of character strength scales than it would be in a study on the validity of placement on those scales. An interesting topic for future research would be whether individuals who generate high scores across the board on the strength scales tend to represent the paragons discussed by Peterson and Seligman (2004) or whether other sources of data such as ratings by knowledgeable informants would suggest they tend to show self-deceptive biases instead (Johnson, 1990).

The two-component solution

For the second solution, the Good Character component decomposed into two dimensions that were equally related to the first component, suggesting they comprise the overall concept of good character on the VIA-IS in equal measure. The first component was associated with every scale having to do with one's style of behaving in the world, whether strictly interpersonal (e.g. Fairness, Love) or not (e.g. Prudence, Self-Regulation). The highest loadings were those for Fairness, Modesty, Prudence, and Honesty. This was perhaps the most comprehensive measure of what could be called 'Goodness' across the solutions. Alternative terms that could have applied, such as integrity, were avoided since they have already been used in other models of the strengths (Table 1).

Table 2. Loadings for principal components analyses of the US sample in study 1.

Strength	1-1 GC	2-1 Good	2-2 Inq	3-1 Car	3-2 Inq	3-3 SC	4-1 Con	4-2 Civ	4-3 SC	4-4 Inq	5-1 Soc	5-2 Civ	5-3 SC	5-4 Inq	5-5 Insp
Beauty	.52	.19	.55	.41	.44	-.01	.24	.36	-.13	.67	.12	.30	-.13	.67	.30
Bravery	.66	.24	.69	.28	.65	.23	.56	-.07	.43	.33	.60	-.02	.39	.29	.16
Creativity	.51	-.03	.76	.10	.77	.04	.35	-.16	.23	.64	.50	-.10	.17	.61	-.02
Curiosity	.68	.17	.80	.35	.73	.10	.45	.10	.18	.68	.34	.06	.18	.66	.38
Fairness	.71	.72	.28	.63	.11	.45	.28	.72	.21	.25	.29	.75	.16	.25	.10
Forgiveness	.58	.58	.24	.60	.07	.28	.28	.63	.06	.21	.13	.59	.05	.22	.33
Gratitude	.76	.56	.51	.72	.31	.20	.58	.49	.11	.27	.27	.41	.12	.26	.65
Honesty	.71	.69	.32	.40	.24	.63	.33	.40	.59	.09	.36	.45	.55	.08	.09
Hope	.76	.47	.60	.50	.49	.31	.66	.13	.44	.16	.41	.08	.46	.14	.59
Humor	.59	.28	.55	.61	.37	-.06	.73	.11	.04	.12	.74	.17	-.03	.07	.23
Judgment	.61	.40	.46	.05	.51	.62	.03	.22	.62	.50	.22	.28	.57	.50	-.17
Kindness	.72	.64	.38	.78	.16	.21	.58	.56	.08	.12	.51	.59	.03	.10	.29
Leadership	.77	.66	.43	.66	.25	.36	.52	.50	.27	.17	.54	.56	.21	.15	.16
Learning	.43	.01	.61	.03	.64	.12	.01	.11	.11	.84	.00	.06	.12	.84	.11
Love	.66	.46	.48	.72	.27	.05	.70	.32	.05	.10	.50	.30	.03	.07	.51
Modesty	.37	.73	-.21	.36	-.30	.60	-.09	.73	.28	-.11	-.16	.72	.28	-.07	.06
Perseverance	.63	.54	.35	.19	.35	.64	.34	.11	.76	.01	.25	.10	.76	.00	.28
Perspective	.75	.42	.65	.32	.61	.43	.45	.14	.53	.40	.52	.19	.49	.37	.10
Prudence	.52	.71	.02	.17	.02	.81	-.10	.55	.63	.09	-.12	.55	.62	.12	.02
Self-regulation	.58	.55	.27	.16	.27	.66	.21	.20	.71	.05	.09	.17	.73	.06	.28
Social Intelligence	.70	.37	.63	.49	.51	.18	.66	.10	.31	.22	.73	.17	.25	.18	.15
Spirituality	.57	.45	.35	.53	.21	.19	.45	.35	.14	.13	.06	.23	.20	.14	.71
Teamwork	.68	.75	.20	.72	-.01	.38	.51	.60	.23	-.10	.41	.62	.19	-.11	.29
Zest	.76	.37	.71	.51	.59	.19	.71	.08	.34	.28	.48	.03	.35	.25	.59
<i>p(V)</i>	.41	.25	.25	.23	.18	.16	.21	.15	.15	.13	.16	.15	.14	.12	.11

Notes: The x - y notation indicates the number of components retained and the location of the component within that solution. GC = Good Character; Good = Goodness; Inq = Inquisitiveness; Car = Caring; SC = Self-Control; Con = Connection; Civ = Civility; Soc = Sociability; Insp = Inspiration; $p(V)$ = proportion of variance accounted for. Loadings of .40 or higher are bolded.

The second component was most highly related to those scales reflecting intellectual endeavors. The largest loadings were associated with Creativity, Curiosity, Zest, and Bravery, suggesting this global dimension is better associated with Inquisitiveness than with specific academic pursuits.

The emergence of this component so early in the sequential analysis of the strength scales would seem to contradict the earlier claim of a close association between character strengths and morality, since learning and creative pursuits can be used for asocial, and even for antisocial, purposes. Inquisitive tendencies represent character strengths to the extent that on average they tend to contribute to rather than detract from society. The fact that Peterson and Seligman (2004) included them in a list of strengths that are valued across many cultures suggests this perception is widespread. The common theme unifying the cross-culturally relevant character strengths may not be their immediate relationship to moral action so much as (1) their likelihood of use for moral purposes and (2) their contribution to the social good.

This distinction in character strengths between Goodness and Inquisitiveness can be compared to various two-dimensional models that contrast external and internal orientations from fields as diverse as positive

psychology, personality psychology, and attachment theory. Park and Peterson (2006) (Peterson & Park, 2009), for example, referred to *heart strengths* such as Zest, Gratitude, Hope, and Love; and *head strengths*, such as Creativity and Love of Learning. The authors noted that the former tend to be more closely associated with happiness and life satisfaction than the latter. Though the two components that emerged in the present analysis could be characterized as reflecting heart and head, respectively, their associations with individual VIA-IS scales is not always consistent with Park and Peterson's grouping. In particular, the Inquisitiveness component was more strongly related to the strengths Zest and Hope than Goodness was. McGrath (2014) found the items from Zest and Hope tended to collapse into a single factor that was labeled positivity. What this suggests is that, in the context of the VIA-IS, a positive and enthusiastic attitude toward the world tends to be more closely associated with curiosity about the world than with an overall style of behaving in the world, at least when those are the only two options.

Park and Peterson (2010) associated their heart-head strengths distinction with Triandis' (2001) generalization of the cultural concepts of collectivism and individualism to the study of individual personality, where collectivism tends to encourage the good of the group as a whole

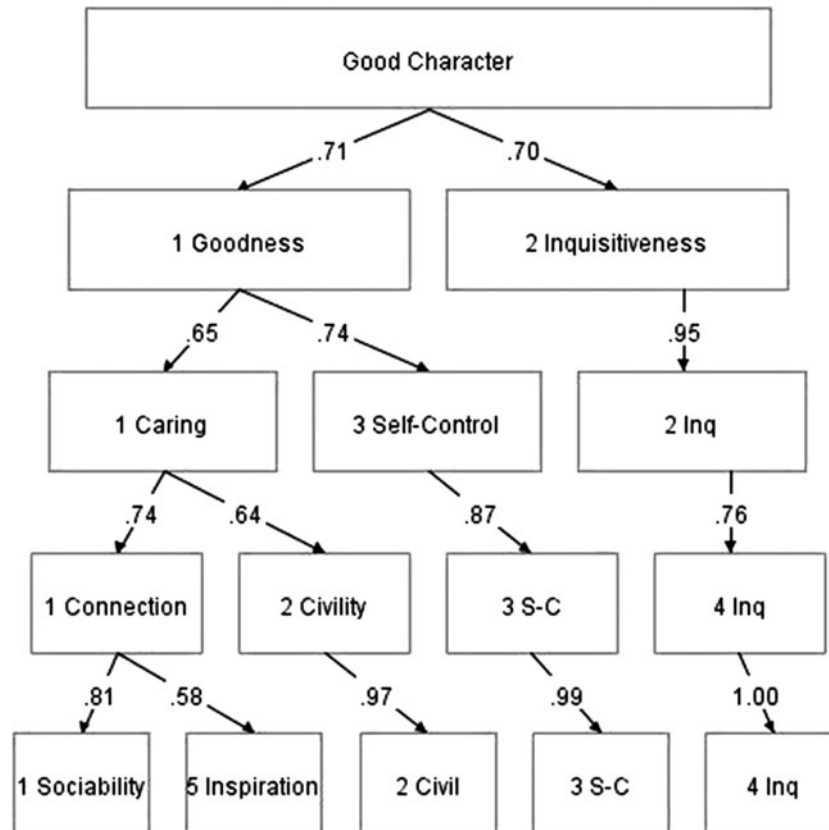


Figure 1. Hierarchical structure across principal components analyses with increasing numbers of components for the VIA Inventory of Strengths (Study 1).

Note: Numbers before component labels indicate placement within that solution. Labels are abbreviated after their first occurrence. Values associated with arrows are Pearson correlations between component scores. Only the largest path to each new component is included.

while individualism gives primacy to both the success and the responsibility of the individual person. Digman (1997) similarly characterized the first two dimensions of personality as alpha/socialization (with substantial loadings for Conscientiousness, agreeableness, and neuroticism) and beta/personal growth (associated with openness to experience and extraversion). Finally, a model has emerged in the attachment literature that understands interpersonal pathology as a function of two dimensions referred to as model of other/avoidance and model of self/anxiety (Bartholomew & Horowitz, 1991; Fraley & Shaver, 2008). These dimensions similarly reflect a connection to the outside world and connection to self that is inherent to the concepts of Goodness and Inquisitiveness, respectively.

The three-component solution

As indicated by Figure 1, the Inquisitiveness component remains largely intact through subsequent levels in the hierarchy, while the concept of Goodness subdivides into more specific elements of interaction with the outside

world. The three-component solution emerges from a division of Goodness into two components. The first, labeled Caring, is most strongly associated with strengths reflecting emotional and interpersonal issues such as Gratitude, Kindness, Love, and Teamwork. The second dimension to emerge out of Goodness is characterized by strengths that have to do with one's ability to function effectively in the world such as Prudence, Perseverance, and Self-Regulation and is labeled Self-Control.

Because this three-component solution is proposed as a particularly important perspective on the structure of the strengths, Figure 2 provides a more graphic representation of the model. The two-component solution reflected the importance of a distinction between personal inquiry and engagement with the world. The three-component solution focuses on a particularly important and intuitive distinction within the domain of 'engagement with the world,' namely, between other humans and the rest of the environment. By dividing strengths into those having to do with others, with self, and with the environment, the three-dimensional model provides a useful approach to understanding strengths in terms of

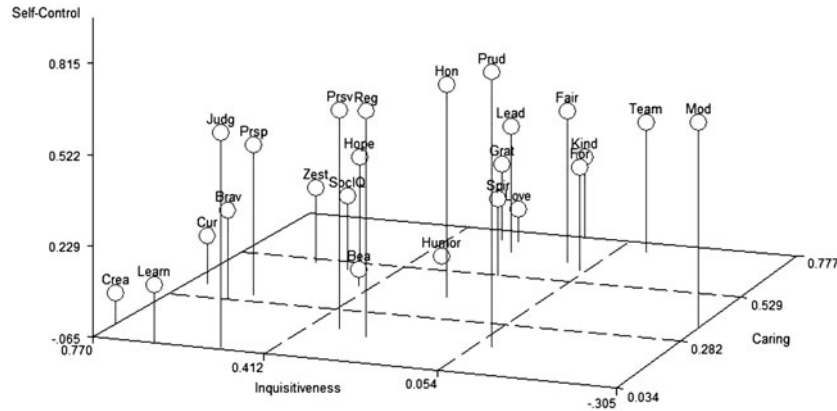


Figure 2. Representation of the loadings for the Study 1 three-component solution of Caring (Factor 1), Inquisitiveness (Factor 2), and Self-Control (Factor 3).

Note: Bea = Beauty; Brav = Bravery; Crea = Creativity; Cur = Curiosity; Fair = Fairness; For = Forgiveness; Grat = Gratitude; Hon = Honesty; Mod = Modesty; Kind = Kindness; Lead = Leadership; Lrng = Learning; Judg = Judgment; Prsp = Perspective; Prsv = Perseverance; Prud = Prudence; Reg = Self-Regulation; SocIQ = Social Intelligence; Spir = Spirituality; Team = Teamwork. Strengths closer to the back of the graph are more closely related to Caring, those to the left are more closely related to Inquisitiveness, and those with taller pins are more closely related to Self-Control.

their targets. In addition to head and heart strengths, it suggests a category of ‘gut’ strengths that provides a more complete picture of what is needed to contribute maximally to society.

The four-component solution

In the four-component solution, the Caring dimension further subdivides. The first component is characterized by strengths such as Humor, Love, and Zest and seems to reflect interpersonal and emotional connectedness. In contrast, the second component loads highest on those interpersonal strengths that have to do with dealing with people with respect, such as Fairness, Modesty, and Forgiveness. This component has been labeled Civility. It is at this level that issues of justice separate out from a more emotion-based affiliation toward others. It is interesting to note that beginning with the three-component solution, the markers of positivity (Hope and Zest) started to shift. Once components emerged that were exclusively about relationships, more of the variance of Hope and Zest seemed to have to do with those virtues than with Inquisitiveness.

The five-component solution

In the fifth solution, Connectedness divides into an emotional connection with others (Sociability) and an emotional connection with the world (Inspiration) that loads highest on strengths such as Spirituality, Gratitude, and Hope. It expands upon the three-dimensional model’s focus on relationship with self, other, and the world, adding the relationship to that which is immaterial and

spiritual. It also represents another instance in which strengths need not directly relate to moral action toward others, but do in balance contribute to the social good. Again, words such as transcendence and spirituality might have better captured this last dimension but were eschewed to avoid confusion with existing models of the character strengths.

As could be expected given the overlap in the samples, the five-factor model described here is essentially the same as that previously reported by McGrath (2014). In that article, labels for the five latent variables were selected for consistency with prior factor analytic studies of the VIA-IS. In the present study, labels were instead chosen to be reflective of how they emerged in the sequential model and of the strengths on which the component loaded highest at the time of its emergence. So, what earlier works referred to as Interpersonal Strengths are referred to here as Civility, which is more consistent with the concept of respect for others common to the strengths most closely associated with the component. Emotional Strengths has been relabeled as Sociability, Restraint as Self-Control, Theological Strengths as Inspiration, and Intellectual Strengths as Inquisitiveness.

Study 2

Method

Participants

The sample consisted of 385 adults (ages 18–70) who accessed the VIA Institute website to complete the VIA-IS in March 2011. The sample was on average somewhat older than that used in Study 1. The mean age

was 43.18 years ($SD = 12.15$). The level of education was even higher than in the first study, with 93.77% reporting some college experience, as was the percent of females in the sample (68.57%). Location of participation was not restricted though the additional measures were only available in English. Members of the sample resided in 24 different countries, but the most common locations were again the United States ($N = 209$, 54.96%), Australia ($N = 76$, 19.95%), Canada ($N = 30$, 7.87%), and the United Kingdom ($N = 28$, 7.35%). Mean VIA-IS scores were consistently higher in this sample than in the US sample from Study 1, but the effect sizes comparing the two samples were consistently small.

Measures

In addition to the VIA-IS, participants completed several other measures. The Signature Strengths Inventory (SSI) offered an alternative approach to measurement of the 24 strengths. It provided respondents with a brief description of each strength. These descriptions were originally developed by Peterson and Seligman for use in interviews about the strengths, though they have been modified over time by VIA Institute staff (N. Mayerson, personal communication, 5 May 2013). For example, the description for Prudence read ‘You are wisely cautious; you are planful and conscientious; you are careful to not take undue risks or do things you might later regret.’ Participants then rated themselves on three items for each strength, indicating (1) how essential that strength is to who they are, (2) how natural and effortless it is to express that strength, and (3) how uplifting and energizing it is to express that strength. The resulting 72 SSI items were completed on a seven-point scale. Though there were only three items per scale, coefficient alpha values were quite high, ranging between 0.80 and 0.94. The mean correlation between the SSI scales and corresponding VIA-IS scales was 0.69 (range 0.52–0.84), suggesting substantial though less than perfect overlap between the measures.

In addition to the VIA-IS and SSI, participants completed Diener et al.’s (2010) Flourishing Scale. The scale consists of eight items completed on a seven-point scale. It expands on previous well-being measures by including items reflecting success in social–psychological functioning. Items address topics such as a sense of purpose and meaning in life, optimism, and engagement. Coefficient alpha for the Flourishing scale proved to be 0.88 in this sample.

Procedure

After completing the VIA-IS, visitors to the website were offered the option of completing additional questionnaires. Those who agreed pilot-tested one of two new

measures of the VIA character strengths, one of which was the SSI. Participants also completed several other investigational measures that will not be included in this analysis.

Parallel analysis and the minimum average partial procedure consistently suggested retaining three factors. Since there was no basis for suggesting the SSI could generate more than three reliable factors, the hierarchical analysis was terminated after the three-component solution. The 11 intraclass correlations comparing loadings from varimax-rotated PCA to varimax-rotated PAF and promax-rotated PCA ranged from 0.81 to 0.99, with a mean of 0.93. Intraclass correlations were also computed comparing varimax-rotated PCA loadings for the SSI to those from the first three solutions for the US sample in Study 1. This required one reversal of positions. The first two factors in the two-component solution did not demonstrate adequate reliability (0.53), but all others ranged between 0.62 and 0.91, with a mean of 0.77.¹

Results

Loadings for the varimax-rotated PCAs of the SSI scales can be found in the left half of Table 3, and the graphic representation of relationships between components in Figure 3. The results were very similar to those reported for Study 1, though there were some shifts in the location of strengths on the components. These shifts will be addressed in the Discussion. The first component loaded above 0.40 on all strengths, including Modesty. The two-factor solution distinguished between Inquisitiveness and those strengths focusing on acting in the world. This Goodness component then decomposed into Caring and Self-Control components. A comparison of Figures 1 and 3 indicates the only notable difference is that Self-Control was substantially less related to Goodness than was true in Study 1. Results for Flourishing were consistent with expectations based on prior evidence suggesting heart strengths are more related to life satisfaction than head strengths (Table 4). That is, the more the component was associated with strengths reflecting positive engagement with others, the more the component was indicative of positive social and psychological functioning.

Study 3

Method

Participants

In 1993, 1135 men and women from one metropolitan area in Oregon were recruited for the Eugene-Springfield Community Sample. Participation was limited to adult community residents who would agree to complete questionnaires intermittently for remuneration over a period

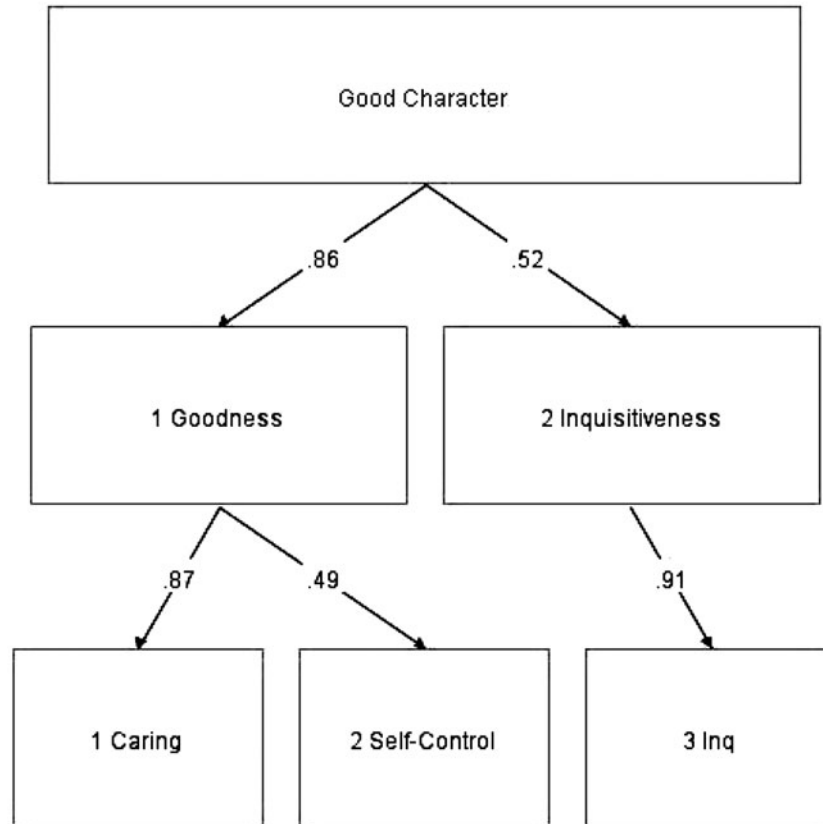


Figure 3. Hierarchical structure across principal components analyses with increasing numbers of components for the SSI (Study 2). Note: Numbers before component labels indicate placement within that solution. Labels are abbreviated after their first occurrence. Values associated with arrows are Pearson correlations between component scores. Only the largest path to each new component is included.

of at least 5–10 years. To increase the likelihood of stable residence in the community, the sample was restricted to homeowners. Since then, members of the sample have completed a variety of behavioral and personality measures. In 2004, 713 members of the sample completed a questionnaire called the Perceptions of Personal Qualities (PPQ), which will be described below. This subsample was 57.14% female; 15.65% did not attend college, 49.03% had college experience, and 35.33% were educated at the graduate level. Given the demographics of the Eugene-Springfield area when they were recruited, the subsample was 98.34% White. In 1993, their average age was 50.03 years ($SD = 12.05$), with a range of 18–83, suggesting that at the time they completed the PPQ, they were substantially older on average than the samples used in Studies 1–2.

Measures

The PPQ was administered as part of the development of the International Personality Item Pool (IPIP; Goldberg et al., 2006), a large set of items in the public domain

intended to offer broad coverage of personality variables. The PPQ included the 240 items from the VIA-IS. Items were rewritten to be consistent in format with the rest of the IPIP, and on each scale, 3–4 items were rewritten to be negatively keyed. The PPQ included an additional 102 items intended to measure the 24 strengths and other positive attributes. After data were collected, 39 items from the VIA-IS were deleted from the scoring and 12 of the new items were added based on corrected item-total correlations. This reduced the mean number of items per scale from 10 to 9.04, with a range of 7–10 items per scale. The final coefficient alpha values varied between 0.70 and 0.91. This revised inventory has been referred to as the IPIP-VIA.

As noted previously, the Eugene-Springfield participants completed a number of other inventories over the years. The current analyses will focus on a small set of inventories that provides a broad perspective on personality. The NEO Personality Inventory–Revised (NEO-PI-R; Costa & McCrae, 1992) was administered during the summer of 1994 and was completed by 607 individuals who also completed the PPQ. This 240-item

inventory is the most widely used measure of the five-factor model of personality, and scales measuring Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness were used in this study. Items are completed on a five-point response scale.

The HEXACO Personality Inventory (HEXACO; Lee & Ashton, 2004) includes 192 items with five-point response options ($N = 665$). In addition to the five-factor model dimensions, it also includes a scale of Honesty-Humility. The HEXACO was administered during the spring of 2003.

Cattell's Sixteen Personality Factor Questionnaire-5th edition (16PF; Conn & Rieke, 1994) consists of 185 items completed on a three-point scale ($N = 555$). The inventory generated 16 scales, one of which is a short intelligence test, reflecting Cattell's 16-factor model of personality. The 16PF was administered in the fall of 1996.

Finally, in the fall of 1997, members of the sample reported the frequency with which they had participated in 400 behavioral acts (e.g. Shot a gun, Smoked marijuana) on a five-point scale from *never* to *more than 15 times in the past year*. Through a series of analyses, Grucza and Goldberg (2007) identified six reliable conceptually related clusters of acts addressing issues of Drug Use, Undependability, Friendliness, Erudition, Communication, and Creativity. The number of PPQ completers without missing data on the items comprising the six clusters varied between 634 and 636.

The 10-year time frame over which these measures were administered raises questions about comparability. Unfortunately, few studies are available on the long-term test-retest reliability of these instruments, with some exceptions. Cattell, Eber, and Tatsuoka (1970) found reliability coefficients over a four-year period that raise concerns about the stability of 16PF scores, while Terracciano, Costa, and McCrae (2006) found 10-year stability in scores for the NEO scales used in this study was quite good. It should be noted that time effects should have reduced the size of correlations between scales, and so results provided for this study may underestimate the strength of cross-sectional relationships.

Procedure

Data collection from this sample received Institutional Review Board approval, and participants were free to decline completion of any questionnaires sent to them. Members of the sample received all questionnaires in the mail and were reimbursed for completing each instrument. Given the long-term commitment to the project, one would expect the respondents took the task seriously. All three tests of the number of factors (O'Connor, 2000) again indicated retaining three factors. This variant

from Study 1 is particularly interesting given the IPIP-VIA represents a revision of the VIA-IS. Comparisons between varimax-rotated PCA and other analytic models consistently indicated a high degree of convergence across the first three solutions, with intraclass correlations ranging between 0.84 and 0.99 ($M = 0.95$).

Results

Loadings for the varimax-rotated PCAs of the IPIP-VIA may be found in the right half of Table 3 and the graphic representation of relationships between components in Figure 4. In this case, the first component loaded >0.40 on all scales except Modesty, Spirituality, and Prudence. Inquisitiveness emerged as the first component in the two- and three-component solutions. Hope and Zest were associated with Inquisitiveness in both the two- and three-component solutions. Overall, the results essentially replicate prior findings.

Table 4 provides comparisons between component scores and personality and behavioral variables. Given the large sample sizes, it is not surprising that over 85% of correlations were significant. The relative sizes of correlations in general follow expectations. For example, it was expected that personality variables indicating openness to new experiences and behavioral indicators of erudition and communication would correlate most highly with Inquisitiveness. The small positive correlation between Inquisitiveness and drug use was also anticipated. The very strong relationships with measures of extraversion, friendliness, and social boldness, however, were less predictable. Goodness and Caring were most closely related to variables reflecting agreeableness and honesty, and Caring was particularly closely related to warmth. Not predicted but also not unreasonable was the relationship between Goodness and rule conscientiousness and lower levels of drug use. Finally, as could be expected, Self-Control was particularly closely related to conscientiousness, perfectionism, and dependability.

In Study 1, it was hypothesized that the first component parallels the General Factor of Personality, while the two-component solution mirrors Digman's (1997) alpha-beta model. Access to the NEO-PI-R scores allowed for a direct test of these hypotheses. Score on the first component derived from the NEO-PI-R served as a General Factor. This factor loaded >0.40 on all five scales except Openness. Varimax-rotated scores from the two-component solution served as estimates of alpha and beta, with the components loading on the five scales as expected.

Table 4 indicates the two first components correlated 0.64, Goodness and Alpha 0.50, and Inquisitiveness and Beta 0.62. These relationships are substantial, especially considering an interval of 10 years between the two administrations. Though the relationship is far from

Table 3. Loadings for principal components analyses in studies 2 and 3.

Strength	Study 2						Study 3					
	1-1	2-1	2-2	3-1	3-2	3-3	1-1	2-1	2-2	3-1	3-2	3-3
	GC	Good	Inq	Car	SC	Inq	GC	Inq	Good	Inq	Car	SC
Beauty	.55	.33	.51	.46	.02	.59	.48	.48	.13	.54	.32	-.18
Bravery	.65	.51	.42	.33	.54	.26	.57	.70	-.03	.67	-.01	.23
Creativity	.42	.08	.67	.16	.07	.72	.51	.75	-.20	.76	-.13	.11
Curiosity	.46	.06	.80	.10	.15	.82	.71	.77	.13	.73	.19	.22
Fairness	.68	.69	.18	.51	.52	.03	.53	.18	.69	.08	.69	.21
Forgiveness	.60	.72	-.03	.67	.27	-.09	.43	.08	.65	.02	.68	.09
Gratitude	.70	.74	.13	.75	.21	.13	.66	.36	.65	.31	.73	.09
Honesty	.59	.47	.37	.21	.63	.15	.63	.32	.66	.12	.49	.61
Hope	.72	.71	.22	.63	.37	.14	.76	.63	.43	.53	.43	.35
Humor	.51	.44	.27	.53	.04	.32	.53	.51	.20	.52	.33	-.04
Judgment	.48	.14	.70	-.15	.67	.46	.58	.56	.20	.40	.03	.62
Kindness	.66	.70	.13	.74	.15	.15	.67	.38	.64	.32	.72	.10
Leadership	.61	.53	.30	.31	.57	.11	.68	.65	.26	.58	.27	.29
Learning	.42	.04	.76	.07	.14	.77	.52	.64	-.02	.64	.07	.07
Love	.61	.68	.06	.78	.04	.13	.69	.55	.41	.50	.48	.17
Modesty	.56	.61	.08	.44	.46	-.07	.05	-.33	.58	-.45	.45	.25
Perseverance	.73	.66	.31	.39	.68	.09	.58	.49	.31	.28	.07	.76
Perspective	.69	.38	.70	.21	.55	.55	.72	.75	.18	.64	.12	.46
Prudence	.55	.40	.41	.07	.73	.14	.36	-.01	.66	-.22	.43	.61
Self-Regulation	.62	.54	.30	.22	.74	.03	.45	.35	.28	.16	.04	.70
Social Intelligence	.66	.62	.26	.63	.21	.26	.66	.67	.20	.64	.27	.15
Spirituality	.46	.45	.15	.42	.21	.11	.34	.09	.48	.07	.57	-.06
Teamwork	.64	.71	.06	.53	.49	-.09	.57	.28	.61	.19	.61	.23
Zest	.71	.65	.29	.62	.31	.24	.75	.71	.29	.62	.29	.35
$p(V)$.36	.29	.17	.22	.19	.13	.34	.27	.19	.22	.18	.13

Notes: The x - y notation indicates the number of components retained and the location of the component within that solution. GC = Good Character; Good = Goodness; Inq = Inquisitiveness; Car = Caring; SC = Self-Control; $p(V)$ = proportion of variance accounted for. Loadings of .40 or higher are bolded.

perfect, there is clearly substantial overlap in the domains of personality and character.

Discussion

Consistent findings

These studies have attempted to evaluate whether a model of character strengths could be derived from psychological self-report data that corresponds with long-standing cultural beliefs about virtue. Consistent results across the studies suggest several new insights into ways to think about the perception of virtue. At the broadest level, there seems to be a general perception of 'good character.' This is a necessarily wide-ranging concept, encompassing all the elements of positive functioning in society. In general, though, with some exceptions (particularly Modesty and Spirituality), this component was meaningfully related to all strengths, suggesting the existence of an overall tendency toward a virtuous self-perception, and one would hope toward virtuous behavior. In adults, this global perception decomposes into two primary components that involve operating in the world in a manner that demonstrates moral goodness and an intellectual interest in the world. The former in turn

divides into two portions having to do with interpersonal issues and with effective acting upon the world. This model emerged across all three studies and captures the three targets of virtuous action (others, the self, and the physical world), and so is proposed as an intuitive framework for understanding the conceptualization of character strengths. Figure 2 provides a graphic representation of the location of the various strengths within this framework, at least on the VIA-IS.

Further evidence for the reliability of this model comes from two other research teams that have identified the same three-factor model. Shryack et al. (2010) tested several different models and concluded that the three-factor model was most reliable in a sample of twins from Minnesota administered the VIA-IS. In two studies administering the Chinese Virtues Questionnaire, a variant of the VIA-IS developed specifically for use in mainland China, a three-factor structure emerged labeled interpersonal, which is consistent with Caring; vitality, which closely parallels the Inquisitiveness component; and cautiousness, which is consistent with Self-Control (Duan, Ho, Bai, & Tang, 2013; Duan et al., 2012). In every study included in this article as well as in the work by Shryack et al. and Duan et al., the Caring component

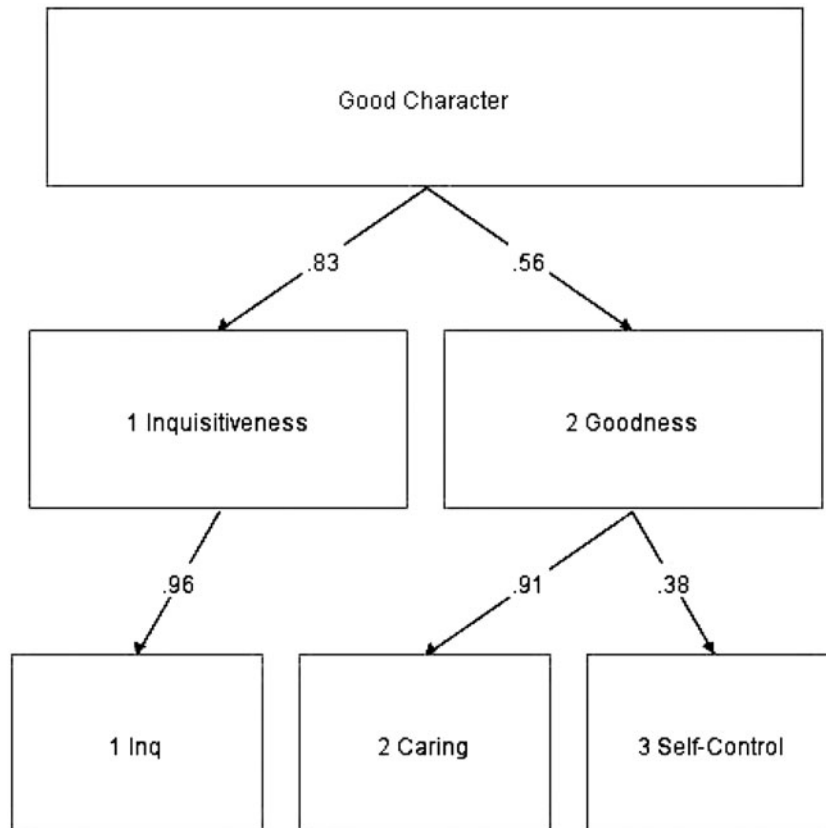


Figure 4. Hierarchical structure across principal components analyses with increasing numbers of components for the PPQ strengths measure (Study 3).

Note: Numbers before component labels indicate placement within that solution. Labels are abbreviated after their first occurrence. Values associated with arrows are Pearson correlations between component scores. Only the largest path to each new component is included.

was associated with Fairness, Forgiveness, Kindness, Gratitude, Love, and Spirituality; Inquisitiveness with Appreciation of Beauty, Curiosity, Creativity, Love of Learning, and Perspective; and Self-Control with Honesty, Judgment, Perseverance, Prudence, and Self-Regulation.

Variations in the findings

Number of components

The five-dimensional model that emerged for the VIA-IS was not supported in the other studies. In Study 1, Caring divided further into civic responsibilities versus a sense of emotional connectedness, which in turn divided into social and spiritual forms of connection. These results would suggest that when virtue is analyzed further from the perspective of the VIA-IS, moral goodness is more of an amalgam of elements than is intellectual curiosity or self-control, and that spiritual inspiration and civility are phylogenetically more akin to emotional and interpersonal strengths than to intellectual

strengths. This conclusion argues for using an emotion-laden label for the former, such as Inspiration, rather than the more abstract concept of theological strengths that has been popular in earlier factor analytic studies (e.g. Ruch et al., 2010; Singh & Choubisa, 2010). The association between Civility and Caring is similarly interesting because, of all the dimensions that emerged, Civility comes closest to the conception of morality as an abstract principle. The fact that at the level of personal experiences of strengths it is more closely related to feelings for others than to intellectual interests, seems consistent with Gilligan's (1982) feminist perspective linking the morality of fairness and the morality of care.

However, these speculations must be considered tentative given that several different strategies for determining the number of factors to retain recommended a maximum of three. It is debatable whether these additional components are idiosyncratic to the VIA-IS or whether they would emerge out of any measure of the VIA Classification given enough data points.

Table 4. Correlations of factor scores with other questionnaires.

	1-1 GC	2-1 Good	2-2 Inq	3-1 Car	3-2 SC	3-3 Inq
Study 2						
Flourishing	0.67	0.59	0.31	0.51	0.38	0.23
Study 3						
NEO-PI-R						
Neuroticism	-0.40	-0.32	-0.25	-0.19	-0.11	-0.46
Extraversion	0.49	0.53	0.09	0.54	0.19	0.02
Openness	0.33	0.51	-0.17	0.58	-0.01	-0.16
Agreeableness	0.27	-0.10	0.64	-0.17	0.65	0.06
Conscientiousness	0.41	0.29	0.31	0.09	0.07	0.68
GFP	0.64					
Alpha		0.26	0.50			
Beta		0.62	-0.08			
HEXACO						
Honesty	0.18	-0.11	0.50	-0.19	0.45	0.14
Emotionality	-0.02	-0.15	0.19	-0.11	0.29	-0.23
Extraversion	0.52	0.63	0.00	0.64	0.10	0.04
Agreeableness	0.25	-0.03	0.50	-0.07	0.54	0.00
Conscientiousness	0.41	0.32	0.27	0.13	0.04	0.66
Openness	0.38	0.60	-0.22	0.65	-0.10	-0.05
16PF						
Warmth	0.35	0.21	0.32	0.23	0.44	-0.11
Reasoning ^a	0.11	0.22	-0.14	0.21	-0.17	0.13
Emotional stability	0.40	0.30	0.27	0.21	0.19	0.36
Dominance	0.24	0.44	-0.23	0.43	-0.25	0.18
Liveliness	0.22	0.27	-0.02	0.32	0.11	-0.16
Rule consciousness	0.11	-0.15	0.44	-0.25	0.33	0.24
Social boldness	0.39	0.45	0.02	0.45	0.09	0.05
Sensitivity	0.22	0.13	0.20	0.17	0.32	-0.17
Vigilance	-0.24	-0.13	-0.24	-0.10	-0.25	-0.08
Abstractedness	-0.08	0.16	-0.41	0.30	-0.23	-0.38
Privateness	-0.24	-0.24	-0.08	-0.29	-0.21	0.16
Apprehension	-0.24	-0.27	-0.02	-0.21	0.06	-0.27
Openness to change	0.32	0.51	-0.19	0.55	-0.09	-0.04
Self-reliance	-0.18	-0.06	-0.23	-0.06	-0.29	0.06
Perfectionism	0.16	0.05	0.23	-0.08	0.06	0.42
Tension	-0.27	-0.11	-0.33	-0.09	-0.36	-0.04
Behavioral clusters						
Drug use	-0.06	0.15	-0.35	0.19	-0.33	-0.04
Undependability	-0.01	0.12	-0.20	0.21	-0.07	-0.26
Friendliness	0.35	0.35	0.11	0.38	0.22	-0.08
Erudition	0.16	0.28	-0.13	0.32	-0.03	-0.11
Communication	0.34	0.33	0.10	0.36	0.21	-0.06
Creativity	0.28	0.43	-0.14	0.45	-0.07	0.02

^aA brief intelligence test.

Notes: The $x-y$ notation indicates the number of components retained and the location of the component within that solution. GC = Good Character; Good = Goodness; Inq = Inquisitiveness; Car = Caring; SC = Self-Control; NEO-PI = NEO Personality Inventory-Revised; GFP = General Factor of Personality; HEXACO = HEXACO Personality Inventory; 16PF = 16 Personality Factors. Correlations with absolute values of at least 0.30 are bolded. Correlations with absolute values >0.08 are significant ($p > 0.05$). Sample sizes vary between 555 and 665.

Locations of strengths

Though substantial consistency was found across studies in the location of most strengths, others were more variable. For example, Leadership was associated with Caring in Study 1, Self-Control in Study 2, and Inquisitiveness in Study 3. Such findings demonstrate that while there was substantial overlap in the measures, there were also important differences. The IPIP-VIA Leadership

scale omitted three items that were particularly reflective of fairness and equality as concerns for the leader (e.g. 'Treat everyone the same'), thereby eliminating a social justice component to the scale that was more consistent with Caring. The remaining items as a group had more to do with problem-solving tasks, issues that are more likely to reflect Inquisitiveness. In contrast, the description of Leadership in the SSI read 'You positively influence those

you lead; you prefer to lead than to follow; you are very good at organizing and taking charge for the collective benefit of the group.' It does not seem surprising that this construct would fit more comfortably with strengths such as Perseverance and Self-Regulation.

A second example is provided by Bravery. This strength was most closely related to Inquisitiveness in Studies 1 and 3, where a number of items had to do with holding strong opinions. In Study 2, where the description of the strength focused primarily on facing fears and overcoming challenges, it was Self-Control that was dominant.

Limitations of the research

Generality of the VIA classification

Though these are interesting insights, it is important to keep several limitations of this research in mind. First, all three studies assumed the validity of the VIA Classification of character strengths. Other approaches to the development of a model of virtues would probably lead to different results. For example, Cawley, Martin, and Johnson (2000) factor analyzed a measure of 140 'virtue terms' and settled on four factors. Their empathy factor is consistent with Caring, and their order and resourcefulness factors overlap with Self-Control, but their remaining factor (serenity) does not map well to any of the components that emerged in the current studies. Schwartz (1992) has suggested a two-dimensional model of 10 universal values that contrasts self-transcendence with self-enhancement, and openness to change with conservation.

These two comparators are particularly useful for characterizing how differences in starting point can lead to different destinations. Cawley et al. (2000) approached the problem from a lexical and moral perspective, looking for words in the English language that identify attributes one ought to demonstrate. In contrast, though values and virtues overlap, some of Schwartz's (1992) values, such as power and achievement, are clearly more about personal advantage than cultural advancement. The VIA Classification followed a middle way. As noted earlier, the character strengths and virtues are not necessarily or even primarily moral in nature, but a quality of cultural advantage was important to their inclusion. As Peterson and Seligman (2004) also noted, the VIA Classification was based on a much broader review than the lexical approach followed by Cawley et al. (2000).

Sample limitations

Another issue is that two of the studies relied on unfiltered Internet samples, though web-based collection may be less of a biasing factor than is sometimes thought

(Gosling, Vazire, Srivastava, & John, 2004; Silver, 2012; Weigold, Weigold, & Russell, 2013). A more serious concern is socioeconomic homogeneity in the samples given required access to the Internet in Studies 1 and 2 and home ownership in Study 3. Though a non-US sample was used for comparison in Study 1, a substantial majority of the non-US sample resided in Europeanized societies, and even the non-US sample would likely be considered WEIRD (Henrich, Heine, & Norenzayan, 2010): Western (or at least Westernized), Educated, Industrialized, Rich, and Democratic. It is uncertain from these results to what extent the findings would generalize, especially to nonliterate cultures that were not surveyed when identifying the virtues underlying the classification of strengths, or even to Americans of lesser means.

A recent study by Gurven, von Rueden, Massenkoff, Kaplan, and Lero Vie (2013) is relevant to this discussion. They were interested in the generalizability of the traditional five factor model of personality to the Tsimane, a largely nonliterate and sparsely educated population found in the Bolivian Amazon region that survives primarily through a combination of hunting, fishing, and cultivation of a few crops. Instead of the five factors, they identified a two-factor model reflecting a prosocial disposition and industriousness, a solution that bears reasonable resemblance to the Caring and Self-Control components in the present research. The failure of Inquisitiveness to emerge as a distinct element of person evaluation among the Tsimane may well reflect the relative importance of industriousness/self-control versus intellectual curiosity in a relatively static society living in challenging circumstances.

These findings suggest it would be a mistake to assume the three-component model is universally valid just because it neatly divides strengths relevant to self, others, and the environment. However, several hypotheses about the expected role of the three categories of strengths seem reasonable. First, given the importance of collective action to survival of the human species, it is unlikely that a culture could be imagined in which the prosocial strengths would not emerge as a key dimension of virtuous functioning. Second, the importance of inquisitiveness may well vary depending on the degree to which the society values and creates opportunities for formal education, while the importance of self-control is likely to vary depending on the degree to which factors such as industriousness and perseverance are necessary for survival. Consistent with this last hypothesis, within these WEIRD samples, many of the strengths indicative of Self-Control (Self-Regulation, Prudence, and Modesty) were associated with the lowest mean scores. Finally, it may be hypothesized that, other factors being equal, the most successful cultures will value all three.

General concerns

Explanatory value

The results also raise two general concerns about the study of virtues and the use of the three-factor model to understand the nature of virtue. First, it should be noted that much of the variability in the strength measures is not accounted for by the components. The Good Character component never accounted for more than 42% of variability. The three components of Caring, Inquisitiveness, and Self-Control accounted for only 57% of variance in Study 1, 54% in Study 2, and 53% in Study 3. Clearly, there is a good deal of variability in the strengths that is not explained in terms of these three latent dimensions. Of course, that is to be expected when the goal was not to maximize fit but to find a model that is both empirically justified based on psychological measurement and intuitively meaningful from a cultural perspective. That said, it is important to recognize that the three-factor model is a simplification of the strengths as measured in these studies, though this statement applies to all latent structural research to some degree and has been particularly raised as an issue in discussions of the General Factor of Personality (e.g. Holden & Marjanovic, 2012; Revelle & Wilt, 2013). This issue should be kept in mind should researchers consider attempting to cross-validate the proposed three-factor model using confirmatory factor analysis. Such efforts are likely to be plagued by this lack of fit.

Character vs. personality

Another issue that emerges out of these analyses is whether the VIA-IS model of strengths can be considered simply a reformulation of the five factor model or its extension by the inclusion of Honesty-Humility. As Peterson and Seligman (2004) noted, it is not surprising to find substantial overlap, since both have to do with personal dispositions in values and self-perceptions. However, to say that Caring combines honesty and agreeableness from personality theory is not equivalent to saying it is 'the same thing as' honesty and agreeableness. The differences are particularly evident in those instances where analyses for the strengths were carried out past three components. The findings indicate the structure of the strengths goes in a very different direction at that point than the structure of personality. Conceptually, the observation of personality has somewhat different goals than the observation of character strengths, even if both have to do with personal disposition. The study of personality encompasses the entire spectrum of personal attributes, regardless of their contribution to cultural stability and advancements. The study of character is narrower and more prescriptive. The extent to which they should be treated as practically

distinct, however, will depend on research demonstrating the incremental validity of strengths variables over key personality dimensions for the prediction of culturally important criteria.

Conclusions

With the appropriate caveats in mind, the results of these studies suggest a potentially reliable model of virtue that is psychologically meaningful, in that it emerges empirically out of self-perceived character strengths. It is also culturally meaningful, in that the triumvirate of heart, head, and guts offers a particularly intuitive framework for conceptualizing the goals of character development and for identifying key goals in personal growth. In preparing this manuscript, I found no finer testament to this claim than the dedication offered by the late Christopher Peterson (2006) for his book *A Primer in Positive Psychology*: 'I dedicate this book with love and gratitude to my parents, who taught me to love learning, to work hard, and to get along with others.' The love of learning, the willingness to work hard, and the ability to care for others: surely there is no simpler yet more complete statement of what good character means.

Acknowledgements

I would like to acknowledge the VIA Institute for providing access to the data sets used in Studies 1-2, Maureen Barckley for her help with the data set used in Study 3, Lewis Goldberg for his sage input on an earlier draft, and Daniel Levitin for access to the software that generated most of the figures. All opinions expressed are solely the responsibility of the author.

Note

1. The structure of the SSI allowed for an alternate approach to evaluating the reliability of the findings. Specifically, it was possible to use the essential, natural, and uplifting items as if they comprised three separate inventories comprised of 24 single-item scales. In each case, parallel analysis and the minimum average partial procedure suggested three factors, and each set of hierarchical PCAs replicated the pattern described in the Results. That is, the findings reported for the SSI were consistent across the three types of questions.

References

- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61, 226–244.
- Borkenau, P., & Amelang, M. (1985). The control of social desirability in personality inventories: A study using the principal-factor deletion technique. *Journal of Research in Personality*, 19, 44–53.
- Brdar, I., & Kashdan, T. B. (2010). Character strengths and well-being in Croatia: An empirical investigation of structure and correlates. *Journal of Research in Personality*, 44, 151–154.

- Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. New York, NY: Cambridge University Press.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*, 245–276.
- Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). *Handbook for the sixteen personality factor questionnaire*. Champaign, IL: Institute for Personality and Ability Testing.
- Cawley, M. J., III, Martin, J. E., & Johnson, J. A. (2000). A virtues approach to personality. *Personality and Individual Differences, 28*, 997–1013.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Conn, S. R., & Rieke, M. L. (1994). *The 16PF fifth edition technical manual*. Champaign, IL: Institute for Personality and Ability Testing.
- Costa, P. T., Jr, & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Dahlsgaard, K., Peterson, C., & Seligman, M. E. P. (2005). Shared virtue: The convergence of valued human strengths across culture and history. *Review of General Psychology, 9*, 203–213.
- Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D.-W., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research, 97*, 143–156.
- Digman, J. M. (1997). Higher-order factors of the Big Five. *Journal of Personality and Social Psychology, 73*, 1246–1256.
- Duan, W., Ho, S. Y., Bai, Y., & Tang, X. (2013). Psychometric evaluation of the Chinese virtues questionnaire. *Research on Social Work Practice, 23*, 336–345. doi:10.1177/1049731513477214
- Duan, W., Ho, S. Y., Yu, B., Tang, X., Zhang, Y., Li, T., & Yuen, T. (2012). Factor structure of the Chinese virtues questionnaire. *Research on Social Work Practice, 22*, 680–688. doi:10.1177/1049731512450074
- Fraley, R., & Shaver, P. R. (2008). Attachment theory and its place in contemporary personality theory and research. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed.). (pp. 518–541). New York, NY: Guilford.
- Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Cambridge, MA: Harvard University Press.
- Glorfeld, L. W. (1995). An improvement on horn's parallel analysis methodology for selecting the correct number of factors to retain. *Educational and Psychological Measurement, 55*, 377–393.
- Goldberg, L. R. (2006). Doing it all Bass-Ackwards: The development of hierarchical factor structures from the top down. *Journal of Research in Personality, 40*, 347–358.
- Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. C. (2006). The international personality item pool and the future of public-domain personality measures. *Journal of Research in Personality, 40*, 84–96.
- Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about internet questionnaires. *American Psychologist, 59*, 93–104.
- Gruza, R. A., & Goldberg, L. R. (2007). The comparative validity of 11 modern personality inventories: Predictions of behavioral acts, informant reports, and clinical indicators. *Journal of Personality Assessment, 89*, 167–187.
- Curven, M., von Rueden, C., Massenkoff, M., Kaplan, H., & Lero Vie, M. (2013). How universal is the Big Five? Testing the five-factor model of personality variation among forager–farmers in the Bolivian Amazon. *Journal of Personality and Social Psychology, 104*, 354–370.
- Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods, 7*, 191–205.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences, 33*, 61–83.
- Holden, R. R., & Marjanovic, Z. (2012). A putatively general factor of personality (GFP) is not so general: A demonstration with the NEO PI-R. *Personality and Individual Differences, 52*, 37–40.
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179–185.
- Irwing, P. (2013). The general factor of personality: Substance or artifact? *Personality and Individual Differences, 55*, 234–242. doi:10.1016/j.paid.2013.03.002
- Johnson, J. A. (1990, June). *Unlikely virtues provide multivariate substantive information about personality*. Poster presented at the 2nd Annual Meeting of the American Psychological Society, Dallas, TX. Retrieved from <http://www.personal.psu.edu/faculty/j/5/j5j/papers/ConferencePapers/1990APS.pdf>
- Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research, 39*, 329–358.
- Levitin, D. J., Schaaf, A., & Goldberg, L. R. (2005). *Factor diagrammer (Version 1.1b)* [computer software]. Montreal: McGill University. Retrieved from http://daniellevitin.com/levitinlab/LabWebsite/software/factor_diagrammer
- Littman-Ovadia, H., & Lavy, S. (2012). Character strengths in Israel: Hebrew adaptation of the VIA inventory of strengths. *European Journal of Psychological Assessment, 28*, 41–50.
- Macdonald, C., Bore, M., & Munro, D. (2008). Values in action scale and the Big 5: An empirical indication of structure. *Journal of Research in Personality, 42*, 787–799.
- McCrae, R. R., & Costa, P. T. (1983). Social desirability scales: More substance than style. *Journal of Consulting and Clinical Psychology, 51*, 882–888.
- McGrath, R. E. (2014). Scale- and item-level factor analysis of the VIA inventory of strengths. *Assessment, 21*, 4–14.
- Musek, J. (2007). A general factor of personality: Evidence for the Big One in the five-factor model. *Journal of Research in Personality, 41*, 1213–1233.
- Niemiec, R. M. (2013). VIA character strengths research and practice (The first 10 years). In H. H. Knoop & A. Della Fave (Eds.), *Well-being and cultures perspectives on positive psychology* (pp. 11–30). New York, NY: Springer.
- O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers, 32*, 396–402.
- Park, N., & Peterson, C. (2006). Character strengths and happiness among young children: Content analysis of parental descriptions. *Journal of Happiness Studies, 7*, 323–341.
- Park, N., & Peterson, C. (2008). The cultivation of character strengths. In M. Ferrari & G. Poworowski (Eds.), *Teaching for wisdom: Cross-cultural perspectives on fostering wisdom* (pp. 59–78). New York, NY: Springer.

- Park, N., & Peterson, C. (2010). Does it matter where we live? The urban psychology of character strengths. *American Psychologist, 65*, 535–547.
- Park, N., Peterson, C., & Seligman, M. E. P. (2010). Strengths of character and well-being. *Journal of Social and Clinical Psychology, 23*, 603–619.
- Peterson, C. (2006). *A primer in positive psychology*. Oxford: Oxford University Press.
- Peterson, C., & Park, N. (2009). Classifying and measuring strengths of character. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (2nd ed., pp. 25–33). New York, NY: Oxford University Press.
- Peterson, C., Park, N., Pole, N., D'Andrea, W., & Seligman, M. E. P. (2008). Strengths of character and posttraumatic growth. *Journal of Traumatic Stress, 21*, 214–217.
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A classification and handbook*. Washington, DC: American Psychological Association.
- Rentfrow, P. J., Goldberg, L. R., & Levitin, D. J. (2011). The structure of musical preferences: A five-factor model. *Journal of Personality and Social Psychology, 100*, 1139–1157.
- Revelle, W., & Wilt, J. (2013). The general factor of personality: A general critique. *Journal of Research in Personality, 47*, 493–504.
- Ruch, W., Proyer, R. T., Harzer, C., Park, N., Peterson, C., & Seligman, M. E. P. (2010). Values in action inventory of strengths (VIA-IS): Adaptation and validation of the German version and the development of a peer-rating form. *Journal of Individual Differences, 31*, 138–149.
- Rushton, J. P., & Irwing, P. (2011). The general factor of personality. In T. Chamorro-Premuzic, S. von Stumm, & A. Furnham (Eds.), *The Wiley Blackwell handbook of individual differences* (pp. 132–161). London: Wiley-Blackwell.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theory and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). New York, NY: Academic Press.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5–14.
- Shryack, J., Steger, M. F., Krueger, R. F., & Kallie, C. S. (2010). The structure of virtue: An empirical investigation of the dimensionality of the virtues in action inventory of strengths. *Personality and Individual Differences, 48*, 714–719.
- Silver, N. (2012, November 11). Google or Gallup? Changes in voters' habits reshape polling world. *New York Times*, p. A20.
- Singh, K., & Choubisa, R. (2010). Empirical validation of values in action-inventory of strengths (VIA-IS) in Indian context. *National Academy of Psychology India Psychological Studies, 55*, 151–158.
- Terracciano, A., Costa, P. T., Jr, & McCrae, R. R. (2006). Personality plasticity after age 30. *Personality and Social Psychology Bulletin, 32*, 999–1009. doi:10.1177/0146167206288599
- Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality, 69*, 907–924.
- Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. E. Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy* (pp. 41–71). Boston, MA: Kluwer Academic.
- Weigold, A., Weigold, I. K., & Russell, E. J. (2013). Examination of the equivalence of self-report survey-based paper-and-pencil and internet data collection methods. *Psychological Methods, 18*, 53–70.
- Wood, J. M., Tataryn, D. J., & Gorsuch, R. L. (1996). Effects of under- and over extraction on principal axis factor analysis with varimax rotation. *Psychological Methods, 1*, 354–365.
- Wright, A. C., Thomas, K. M., Hopwood, C. J., Markon, K. E., Pincus, A. L., & Krueger, R. F. (2012). The hierarchical structure of DSM-5 pathological personality traits. *Journal of Abnormal Psychology, 121*, 951–957.