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# Is Optimal Functioning a Distinct State?

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Many languages and cultures have labels for individuals who have achieved a superior state of functioning, sometimes referred to as enlightenment or wisdom. This conceptualization of optimal functioning as a distinct state is implicit to several well-known psychological models, as well. This study evaluated whether self-reported strengths of character revealed evidence of such a state. A sample of 83,576 US residents completed the Values in Action Inventory of Strengths (Peterson & Seligman, 2004). On the basis of multiple statistical tests, the results consistently indicated that level of functioning is dimensional, rather than categorical. The findings do not provide support for the existence of a distinct state of superior functioning.

> This cheerful serenity . . . is neither frivolity nor complacency; it is supreme insight and love, affirmation of all reality, alertness on the brink of all depths and abysses; it is a virtue of saints and of knights. (Hesse, 1990, p. 315)

The emergence of positive psychology has reinvigorated psychologists' interest in the study of optimal functioning (Seligman & Csikszentmihalyi, 2000),

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but it is a topic that has interested humanity in general, and moral philosophers in particular, for thousands of years. One venerable issue in the understanding of optimal functioning is whether it represents a special state that one achieves, or a difference in degree from ordinary functioning. Various cultures and languages have labels that imply that a class of individuals exists characterized by a superior state of functioning. At the extreme are archetypes that are thought to apply only to a tiny sliver of the population. Included in this category would be the Christian concept of the saint or the bodhisattva of Mahayana Buddhism. However, other concepts are indicative of a broader and more prosaic class of individuals who have achieved a level of wisdom or perspective that places them apart from the general population. Ideally, the swami, the guru, the sufi, or the shaman is expected to have achieved such status, but many other cultures have a tradition of the wise one as well.

This implication of a qualitative distinction in optimal functioning is not unique to folk beliefs. More recently, Nietzsche (1891/1978) discussed the concept of the overman, the self-contained and self-created individual. Among the precursors to modern positive psychology, Rank's (1932/1989) concept of the artist and Maslow's (1968/1998) self-actualized individual are most consistent with this belief.

The pervasiveness of a belief is insufficient evidence for its accuracy, however. Campbell (1949) first popularized the hypothesis that the heroic archetype exists to serve cultural and personal purposes. At the cultural level, the concept of the superior individual exists to personify communal ideals, and as a means to communicate those ideals to others. At the personal level, it may also reflect a developmental desire to identify heroes to serve as personal role models, a desire that seems to manifest itself in the popularity of both films and literature in which a mentor leads the protagonist to a higher level of functioning. It is also relevant to this discussion that linguistic categories are sometimes created merely for purposes of simplifying communication about dimensions, as when individuals are labeled as extroverts despite any evidence of a clear demarcation between levels of social interest. Among psychologists, Allport's (1955) concept of propriate striving probably represents the best-articulated description of a gradual, incremental movement towards optimal functioning. Rogers' (1961) term, *fully functioning person*, implies a state model, but Rogers' elaboration of the term suggested a constant process of moving closer to wisdom and fulfillment.

The purpose of this study was to provide some insight into this venerable question through the use of modern statistical and psychometric methods. Specifically, the Values in Action Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004) has recently been developed as a multidimensional indicator of positive functioning and personal strengths. Similarly, a variety of statistical procedures are now available that can be used to determine

whether observed scores on a dimension are, in fact, the result of an underlying dimensional entity, or whether there is a qualitative break at the latent level. Perhaps the most commonly used of these methods in recent years has been taxometric analysis (Waller & Meehl, 1998).[1] For example, taxometric studies have demonstrated that schizotypy seems to be a categorical attribute, with a qualitative distinction in thinking between schizotypes and normals (e.g., Horan, Blanchard, Gangestad, & Kwapil, 2004; Korfine & Lenzenweger, 1995), yet security of attachment seems to be a dimensional phenomenon (Fraley & Spieker, 2003; Roisman, Fraley, & Belski, 2007). In the taxometric literature, the two intrinsic classes are referred to as the taxon and the complement.

To provide some intuitive sense of how taxometric analyses function, Waller and Meehl (1998) imagined a researcher from another planet, ignorant of our concept of gender. This researcher has collected a data set consisting of certain strongly correlated dimensional variables such as chest size, hip-to-waist ratio, and voice pitch. Taxometric and cluster analysis and related procedures should identify the variables in that data set as overt manifestations of the latent qualitative distinction between males and females. When it comes to the structure of superior functioning, we are in the same position as that alien researcher, and this study was conducted to provide insight into the inherent character of this latent variable. The issue addressed in this study was whether optimal psychological functioning is a state or an ideal we approximate to varying degrees. To put the question in terms drawn from moral philosophy: Is the goal of moral striving enlightenment, or the movement towards enlightenment?



## METHOD

### Participants

Between September 2002 and December 2003, 110,105 adults completed the VIA-IS through the Authentic Happiness Web site (www.authentichappiness.com). This Web site was created as a resource for individuals interested in learning more about positive psychology. In addition to information about the topic, visitors were encouraged to complete a series of questionnaires relevant to the evaluation of personal resources, life satisfaction, and related

[1]The findings of this study were replicated with cluster analysis using recommendations drawn from Milligan and Cooper (1985) and Overall, Gibson, and Novy (1993). The results of those analyses have been omitted for the sake of brevity, but are available upon request from the first author.

constructs. Upon completion, the respondent received immediate feedback about his or her results, a feature that was intended to motivate participants to self-report accurately. The VIA-IS was only available in English, so participation required the respondent be capable of reading English.

The respondents who completed this measure included 83,576 individuals who were US residents (76.1% of respondents). These individuals served as the participants for this study. The Web site allowed the respondent to complete the VIA-IS multiple times, and approximately 1% availed themselves of this option. For the study, only the results from the first administration were considered.

Table 1 provides the demographic data for the sample. Because the Web site was intended for international use, respondents were not asked about ethnicity. The sample is fairly consistent with 2000 US Census data in terms of the distribution of age, but includes a substantially larger proportion of women and college graduates. The latter finding suggests that this sample may, on average, demonstrate higher socioeconomic status than the general American population, which is a predictor of better emotional and behavioral functioning (Dohrenwend et al., 1992; Gallo, Bogart, Vranceanu, & Matthews, 2005). Furthermore, although the folk traditions described previously do not associate the attainment of optimal functioning with higher levels of education, they do suggest a relationship with love of



TABLE 1
Demographic Statistics

| *Variable* | *N* | % |
|---|---|---|
| Gender | | |
| Female | 59829 | 71.59 |
| Male | 23747 | 28.41 |
| Age | | |
| 18–20 | 4574 | 5.47 |
| 21–24 | 6730 | 8.05 |
| 25–34 | 18037 | 21.58 |
| 35–44 | 21094 | 25.24 |
| 45–54 | 21396 | 25.60 |
| 55–64 | 9563 | 11.44 |
| 65+ | 2182 | 2.61 |
| Education | | |
| <High school | 697 | 0.83 |
| High school | 4265 | 5.10 |
| Some college | 18618 | 22.28 |
| Associates | 5708 | 6.83 |
| Baccalaureate | 25251 | 30.21 |
| Postbaccalaureate | 29037 | 34.74 |

learning and curiosity (Peterson & Seligman, 2004). For these reasons, it is reasonable to hypothesize that the sample demonstrates a higher level of functioning, on average, than the general American population, although there is no way to test this hypothesis with the available sample.

## Measure

The VIA-IS is a broadband self-report measure of character strengths and virtues. Peterson and Seligman (2004) identified six core virtues common to the world's most influential cultural traditions, including Confucianism and Taoism from China; Buddhism and Hinduism from the Indian subcontinent; and Judeo-Christianity, Athenian Greece, and Islam from the West. These virtues included courage, justice, humanity, temperance, transcendence, and wisdom. Literature from psychology and philosophy on the nature of positive functioning was then used to generate a list of 24 character strengths that represent manifestations of the six core virtues.

Each character strength scale consists of 10 items, resulting in a 240-item measure. Respondents endorse agreement with statements using a 5-point Likert scale from 1 (*very much unlike me*) to 5 (*very much like me*). Items were rejected or refined through an iterative process until coefficient alpha for all scales exceeded .70 in a preliminary sample.

Peterson and Seligman (2004) provided details concerning the reliability and validity of the VIA-IS. Briefly, coefficient alpha for all scales exceeded .70. Test–retest correlations for all scales over a 4-month period were substantial and in almost all cases approached their internal consistencies. Moderate correlations ($r \geq .30$) were reported with ratings by significant others. Subsequent research has found large correlations ($r \geq .50$) with related self-report measures of positive functioning, including life satisfaction (Park, Peterson, & Seligman, 2004), academic achievement (Park & Peterson, 2006), and work performance (Peterson & Park, 2006).

## Statistical Analyses

Taxometric analysis refers to a set of graphically based statistical procedures developed by Meehl and his associates (Meehl & Yonce, 1994, 1996; Waller & Meehl, 1998) specifically for the purpose of distinguishing structurally dimensional attributes from structurally dichotomous attributes.

Three taxometric statistical methods were employed in this study: mean above minus below a cut (MAMBAC), maximum covariance (MAXCOV), and latent mode (L-Mode). A brief description of each follows. Readers interested in more technical discussions of the methods are referred to the original sources.

MAMBAC requires two indicators of the attribute. Details of the procedure are provided by Meehl and Yonce (1994). MAMBAC with seven indicators allows for 42 separate curves, each of which represents a test of categorical versus dimensional structure. For constructs that are structurally dichotomous, these curves should be hill-shaped. When the latent construct is dimensional, the same graph should tend towards a *U* shape.

MAXCOV requires one input variable, used to define the *X* axis, and two output variables used to define the *Y* axis. Details are provided by Meehl and Yonce (1996; see also Waller & Meehl, 1998). MAXCOV with seven indicators allows for 105 curves testing the taxonic hypothesis. Taxonic constructs will again produce hill-shaped curves; MAXCOV curves for dimensional constructs should be relatively flat or saw-toothed.

The final taxometric method, L-Mode (Waller & Meehl, 1998), differs from the preceding methods in that all available indicators are treated as a single set, so a single curve is generated regardless of the number of indicators. The indicators are factor analyzed, and the density plot of the first factor scores is generated. For taxonic constructs, the reduction in measurement error resulting from the factor analysis should produce a clearly bimodal distribution. A dimensional variable in contrast should produce a unimodal distribution.

Taxometric analyses were carried out using a software package developed by John Ruscio (Ruscio, Haslam, & Ruscio, 2006). This package is based on the R statistical programming language, and was used in this study in association with R version 2.9.0 (R Development Core Team, 2009). Each method generated a series of smoothed curves that reflects statistical characteristics of the indicators. In addition, these curves were compared to simulated data generated under an assumption of taxonic versus dimensional structure. This comparison allows generation of a statistic called the comparison curve fit index (CCFI; Ruscio, Ruscio, & Meron, 2007). CCFI values can range from 0 to 1, with lower values suggesting better fit for dimensional structure and higher values suggesting better fit for taxonic structure.

The 24 scales of the VIA-IS each represented a potential indicator of optimal functioning. Meehl (1999) noted one issue in taxometric analysis is that taxonic constructs can appear dimensional if the indicators used to detect the taxon do not demonstrate substantial separation between the two classes. He urged restricting taxometric analysis to indicators likely to detect a taxon if it exists. Because the presence and size of a categorical difference is unknown *a priori*, the following strategy was used to implement Meehl's recommendation. Principal components analysis was used to generate the first unrotated component score from the 24 VIA-IS scale scores. This component score accounted for 40.12% of total variance across the scales

TABLE 2
Descriptive Statistics for Selected Indicators

| | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
|---|---|---|---|---|---|---|---|
| Correlations | | | | | | | |
| 1. Fairness | | | | | | | |
| 2. Integrity | .52 | | | | | | |
| 3. Hope | .36 | .42 | | | | | |
| 4. Kindness | .57 | .51 | .41 | | | | |
| 5. Leadership | .70 | .47 | .46 | .60 | | | |
| 6. Perspective | .40 | .52 | .60 | .41 | .50 | | |
| 7. Vitality | .35 | .41 | .74 | .45 | .48 | .53 | |
| *M* | 4.00 | 3.97 | 3.60 | 3.96 | 3.74 | 3.77 | 3.56 |
| *SD* | 0.49 | 0.48 | 0.68 | 0.53 | 0.55 | 0.54 | 0.68 |
| Skew | –0.45 | –0.36 | –0.47 | –0.43 | –0.18 | –0.30 | –0.27 |

*Note*. Given the sample size ($N = 83{,}576$), all correlations are significant.



and served as a rough estimate of level of functioning. The sample was then divided into two groups. The respondents with the highest 10% of scores on the component score were considered the preliminary *optimal functioning* (taxon) group, and the remaining 90% were considered the *ordinary functioning* (complement) group. *d* was then computed, comparing the two groups on each of the 24 VIA-IS scores. Because the selection of a 10% base rate was arbitrary, this division was repeated three more times, using the top 5%, 1%, and .1% of scores as the optimal functioning group.

As the base rate was reduced, *d* values consistently increased. Seven VIA-IS scales were associated with *d* values $\geq 1.50$ at all four base rates. These were Fairness, Integrity, Hope, Kindness, Leadership, Perspective, and Vitality. In other words, if the categorical model of optimal functioning is assumed to be correct, and the base rate of optimal functioning is between .1 and 10%, these seven scales emerged as the ones most likely to discriminate between the taxon and complement classes. The inclusion of perspective (wisdom) and kindness among the seven dimensions retained was considered particularly desirable, as those would seem to be core facets of optimal functioning. Table 2 provides descriptive statistics for the seven scales. The lack of skew is noteworthy, as it is easier to detect taxonic structure in the absence of skew (Ruscio & Marcus, 2007).

## RESULTS

Figure 1 summarizes all graphical results from the study. In every case, the results are consistent with a dimensional interpretation. MAMBAC and

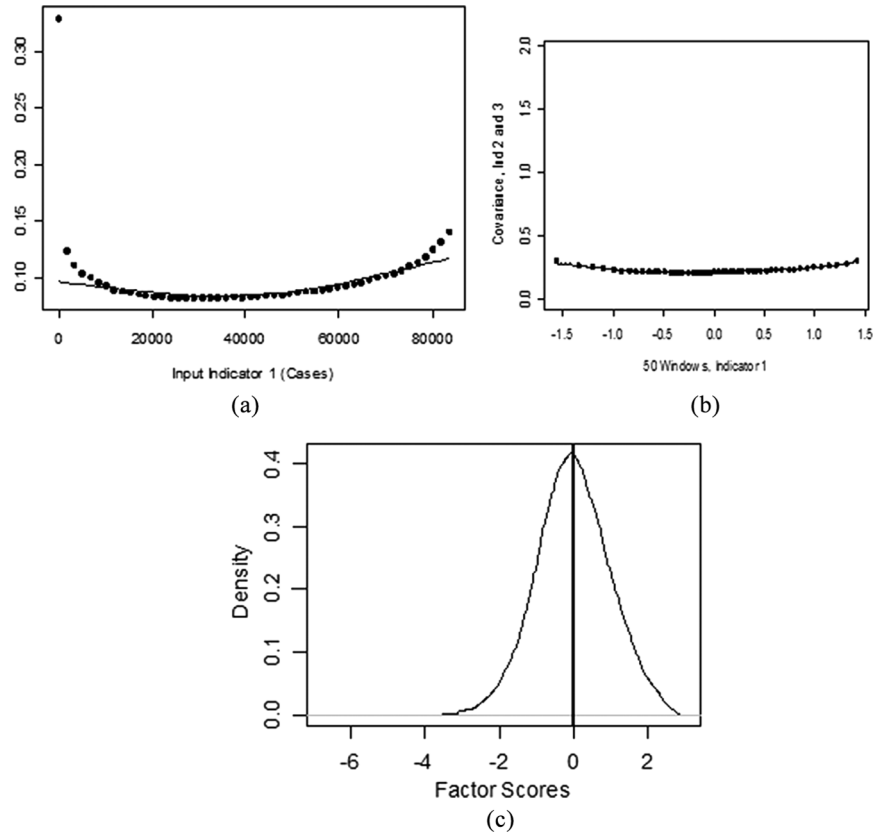


FIGURE 1 (a) All 42 MAMBAC curves demonstrated this U-shaped pattern. (b) All 105 MAXCOV curves demonstrated this flattened pattern. (c) The single L-mode curve was unimodal. Every one of these patterns is indicative of dimensional structure.

MAXCOV curves are consistently flat or U-shaped, and the L-Mode curve demonstrates a single mode.[2] Values for the CCFI statistic varied between .247 and .382 across the three sets of analyses, all of which are consistent with a dimensional model of the underlying construct. In summary, all

[2]There is a variant of the MAXCOV procedure available that is particularly useful in cases where the base rate for the taxon is very small (Ruscio et al., 2006; Waller & Meehl, 1998). MAXCOV analyses were replicated with the number of windows set as high as 8000. The resulting curves also demonstrated the flattened pattern seen in Figure 1, arguing against the presence of even a very small taxon.

148 curves and all three statistics generated to test the structure for optimal functioning supported a dimensional rather than categorical model.

## DISCUSSION

Despite a very large sample, consideration of a broad range of possible base rates for optimal functioning, measurement of a large set of constructs relevant to the domain, use of variables demonstrating minimal skew, controlling for the potential impact of masking variables, and use of multiple tests of the taxon hypothesis, the results were unanimous in failing to provide evidence of a categorical structure. There remains the possibility that the true base rate of the state of optimal functioning falls out of the interval .1–10%. This concern can be addressed both statistically and conceptually. Given that the seven scales used for the analyses emerged as acceptable at every base rate evaluated, that those seven scales were associated with larger *d* values as the hypothesized base rate was reduced, and that methods specifically intended to identify low base rate events (see Footnote 2) also found no evidence of a qualitative break, it is unlikely that these data would provide evidence for a taxon of optimal at any base rate.

The results support the conclusion that individual differences in such variables are of degree, not of kind. It is important to recognize that this finding is not specific to any particular archetype of optimal functioning (e.g., the saint or self-actualizing individual) but is based on elements that tend to recur across all such archetypes, particularly perspective and kindness.

These results are consistent with the conclusion that in the real world one is not wise, but wiser: The path to superior functioning is gradual, a matter of approximation rather than attainment. They indirectly also provide support for the conjecture that virtues or character strengths can be of varying relevance across contexts (see also Schwartz & Sharpe, 2006; Wolf, 1982).

Perhaps one of the most intriguing implications of this article is the potential for using modern empirical methods to reinvigorate discussion of a longstanding philosophical question. As Peterson and Seligman (2004) explicitly acknowledged, the study of positive psychology has the potential to contribute directly to the understanding of virtue, a topic that has fascinated the public in both ancient and contemporary times.

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