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Personality, Ideology, Intelligence, and Self-Rated Strengths

Adrian Furnham[1], Gorkan Ahmetoglu[2]

[1]Department of Psychology, University College London, London, UK
[2]Department of Psychology, Goldsmiths College, University of London, London, UK
Email: a.furnham@ucl.ac.uk

Abstract

This study looked at the individual difference correlates of self-rated character strengths and virtues. In all, 280 adults completed a short 24-item measure of strengths, a short personality measure of the Big Five traits and a fluid intelligence test. The Cronbach alphas for the six higher order virtues were satisfactory but factor analysis did not confirm the a priori classification yielding five interpretable factors. These factors correlated significantly with personality and intelligence. Intelligence and neuroticism were correlated negatively with all the virtues, while extraversion and conscientiousness were positively correlated with all virtues. Structural equation modeling showed personality and religiousness moderated the effect of intelligence on the virtues. Extraversion and openness were the largest correlates of the virtues. The use of shortened measured in research is discussed.

Keywords

1. Introduction

Part of the major research effort of the relatively new positive psychology movement has been to provide a description, and then a classification, of strengths and virtues which are the "building blocks" of the sub-discipline (Kristjansson, 2010). Peterson and Seligman (2004) provided the first taxonomy and a 240-item measure of those 24 strengths (VIA: Virtues in Action). Subsequent work has shown to what extent the strengths predict behaviours in a range of settings (education, work, home) (Peterson & Park, 2006).

These 24 strengths have a theoretically derived "higher order" structure of six virtues: wisdom and knowledge, courage, humanity, justice, temperance and transcendence. The VIA character strengths have been validated

against observer reports and there are numerous factor analytic studies looking at the structure of the strengths (Peterson, Park, & Seligman, 2006; Park & Peterson, 2006a, 2006b). The questionnaire has been translated into many different languages like Croatian (Brdar & Kashdan, 2010) and Chinese (Duan, Ho, Yu, Tang, Zhang, Li, & Yuen, 2012), but these have not confirmed the original factor structure.

Toner, Haslam, Robinson & Williams (2012) reviewed eight studies that looked at the structure of various versions of the VIA using factor or components analysis, all of which are very long, often between 140 and 240 items. Four showed a clear four factor solution, three a five factor solution and one study that there was only one general factor. There also seemed little agreement on the labels given to the different factors. In addition, in their study, they tested for a three and four factor solution and using a hierarchical, top-down interpretative method labelled their four factor solution: intellectual, social, transcendence and temperance strengths. However there remains no consensus on the number or descriptors of the virtues.

This paper examined the structure of self-rated strengths using a shortened version (24-item) of the better known 240-item measure of strengths used in various studies (Furnham, Keser, Yilmaz, & Ahmetoglu, 2014; Neto, Neto, & Furnham, 2013). It further examines the psychometric properties of that scale. It will also look at personality, demographic and ideological correlates of the higher order virtues. More importantly it is probably the first to look at intelligence self-rated strengths.

Furnham and Lester (2012) did a preliminary analysis of the measure used in this study which exploratory factor analysis showed had six higher order "virtues". They found evidence of sex differences on six of the twenty-four strength and two of the six factors. However factor analysis provided mixed evidence for the six virtues. Neto, Neto and Furnham (2013) found four factors in the analysis of this measure labelled interpersonal, leadership, temperance and intellectual strengths. They found significant sex differences on 11 of the 24 strengths and 5 of the six virtues. In a series of regressions that looked a personality, demographic and well-being correlates of the higher order virtues they found personality factors (particularly openness and agreeableness) more powerful factors than gender or subjective well-being.

The present paper examined personality, intelligence and ideological correlates of self-rated strength and virtues to replicate and extend previous studies.

1.1. Personality

Cawley, Martin, and Johnson (2000) factor analysed a 140-item virtues scale and found four factors (empathy, order, resourcefulness, serenity) which they correlated with the 60 facets from the NEO-PI-R and a measure of moral development. While the latter was completely unrelated to the four factors, the personality scores were: Agreeableness was related to Empathy; Conscientiousness with both Order and Resourcefulness; and Neuroticism (negatively) with all the factors particularly Resourcefulness and Serenity. They argued that personality is traditionally a non-normative, non-evaluative construct; whereas the opposite is true of values research and that studies, such as theirs, shows the structure of the evaluative nature of the Five Factor Model (FFM). De Raad and van Oudenhoven (2011) also related a virtues measure to personality. Their psycho-lexically Dutch language derived measure had six virtues: sociability, achievement, respectfulness, vigour, altruism and prudence and they showed that many of these were strongly correlated with personality factors (i.e. vigour with extraversion, achievement and respectfulness with conscientiousness etc.).

Macdonald, Bore, and Munro (2008) related the 24 strengths to the Big Five personality traits and social desirability. They set out to test a model relating the six "higher order" virtues to the Big Five traits: temperance would correlate with conscientiousness; wisdom and knowledge with openness; humanity and justice with agreeableness; courage with emotional stability; but they predicted no correlate of the virtue transcendence. They factor analysed the 24 scales and found four factors which they labelled—positivity, intellect, conscientiousness and niceness and which did not confirm the Peterson and Seligman (2004) hypothetical structure. Extraversion correlated the most and neuroticism the least with the individual strengths but there was no clear interpretable relationship between the Big Five Traits and the higher order virtues. Furnham and Lester (2012) also found extraversion related significantly to most variables and neuroticism least but a strong relationship between agreeableness and humanity. Neto et al. (2013) found openness, agreeableness and conscientiousness positively related to each of their higher order factors.

1.2. Ideological Beliefs

This study looked at individual ideological correlates of the strengths which has been used in many previous

studies and shown to be a strong correlate of social beliefs particularly with respect to money, health and self-perceptions (Furnham, 2008a). Ideology was operationalized in terms of a person's political and religious beliefs. Religion and political orientation are closely related to values around such issues as justice, temperance and spirituality. Further, previous research has shown how powerful these two variables are in predicting many behaviours relating to such issues as health and work (Furnham, 2008a). Thus one may expect the less religious and left wing people to rate their spirituality and transcendence strengths lower and justice and wisdom strengths higher than more religious, right winged people.

1.3. Intelligence

There are a number of papers in sociology and psychology to suggest that intelligence is linked to educational and social values (Lynn & Kanazawa, 2008). Kanazawa (2010) demonstrated that intelligence is related to political liberalism and atheism. Thus, it may be predicted that intelligence is related to self-rated strengths particularly wisdom and justice.

2. Method

2.1. Participants

In all, 280 people (239 males) took part where mean age was 33.34 years (SD = 3.65) (range: 25 to 53). In all 86.3% were European Caucasians and the remainder European born Africans or Asians. In all 82% had English as a mother tongue, and 86.9% were married. Of the total 44.2% had a first degree and 32.7% also a post graduate degree. Most had been in the organisation (the military) between 12 and 22 years. They were all of the rank of major (or above) and in all three armed services (air force, army, navy) and with a variety of specialist skills from doctors to marines. On a five-point (not at all: 1 to very: 5) scale of religiousness the mean score was 2.37 (SD = 1.17). Participants have no trouble rating the extent to which they self-define themselves as religious and this single measure has been used in many studies. Similarly, on a 7-point scale of political beliefs: Right Wing 1 to Left Wing 7 the mean was 3.18 (SD = 1.07). These scales have been used in many other studies and reliable measures of personal ideology (Vincent & Furnham, 1997). These have been shown to correlate with a wide range of social behaviours.

2.2. Questionnaires

1) *Self-rated character strengths* (Furnham & Lester, 2012). This involved participants rating character strengths on an IQ based, normal, bell-curve distribution, with a mean of 100 and a standard deviation of 15 points. There were 24 of these, each with a brief description/explanation (see **Table 1**). They were shown a picture of a normal distribution and then the following instructions: "Look at the following scale and simply put a number between 55 and 145 based on what you think reflects each particular strength compared to the general population. For example if you put 120 you think that you are fairly high but a score of 105 means you are only just above average. You can put any number between 55 and 145. Please try to be accurate and honest in your answers". Pilot work showed that participants had no difficulty with rating each strength on that scale.

2) *Abbreviated Big Five* (McManus, Smithers, Partridge, Keeling, & Fleming, 2003). This is a 15-item questionnaire that measures five traits: Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. At least eight published studies have used this measure (Furnham & McManus, 2004; McManus & Furnham, 2006).

3) *Numerical reasoning* test 20-item (NRT-20, Chamorro-Premuzic, 2008). This test measures mathematical and logical reasoning via 20-item that do not require any previous training in Mathematics. There are 20-item and participants have 15 minutes to complete the test. Items include series completion (numbers and matrices), basic arithmetic problems (computational speed), and other deductive reasoning tasks. Recent data for 6023 UK adults and 325 students indicated uncorrected correlations of .52 and .68 with the Baddeley Reasoning Test (Baddeley, 1968) and Wonderlic Personnel Test (Wonderlic, 1992).

2.3. Procedure

Departmental ethical permission was sought and received. Participants were tested in small groups under exam conditions. They were all attending a year long leadership course. Each received feedback on their performance.

Table 1. Means, standard deviations and factor loadings of each of the 24 strengths.

Personal strengths	Mean	SD	1	2	3	4	5
1. *Curiosity*: interest in, intrigued by many things	115.43	11.96					.79
2. *Love of learning*: knowing more, reading understanding	112.96	13.02					.73
3. *Good judgment*: critical thinking, rationality, openmindedness	116.52	10.67					.56
4. *Ingenuity*: originality, practical intelligence, street smart	112.65	12.21		.64			
5. *Social intelligence*: emotional intelligence, good with feelings	109.35	16.40			.65		
6. *Wisdom*: seeing the big picture, having perspective	113.71	12.26					.47
7. *Bravery*: courage, valour, fearlessness	111.79	13.20		.75			
8. *Persistence*: perseverance, diligence, industriousness	115.16	13.45				.46	
9. *Integrity*: honesty, genuineness, truthful	119.89	12.64				.61	
10. *Kindness*: generosity, empathic, helpful	113.39	12.74				.78	
11. *Loving*: able to love & be loved; deep sustained feelings	110.17	14.65				.61	
12. *Citizenship*: team worker, loyalty, duty to others	117.01	11.41				.51	
13. *Fairness*: moral valuing, equality and equity	116.71	11.22			.64		
14. *Leadership*: able to motivate groups, inclusive, focused	118.09	10.87		.63			
15. *Self-control*: able to regulate emotions, non-impulsive	109.17	13.73			.58		
16. *Prudence*: cautious, far-sighted, deliberative, discreet	109.11	12.43			.70		
17. *Humility*: modesty, unpretentious, humble	109.85	12.80			.67		
18. *Appreciative of beauty*: seeking excellence, awe/wonder	111.07	13.84	.55				
19. *Gratitude*: thankful, grateful	112.72	11.80	.67				
20. *Optimism*: hopefulness, future-mindedness, positive	110.50	14.59	.74				
21. *Spirituality*: faith, philosophy, sense of purpose/calling	100.40	17.71	.62				
22. *Forgiveness*: mercy, benevolent, kind	107.49	13.20				.49	
23. *Playfulness*: humour, funny, childlike	110.30	16.48		.47			
24. *Enthusiasm*: passion, zest, infectious, engaged	113.40	12.56	.58				
	Eigenvalue		7.46	2.03	1.58	1.40	1.20
	Variance		31.1%	8.45%	6.59%	5.83%	5.01%

3. Results

3.1. Factor Analysis

Taxonomists argue the 24 strengths cluster or factor into six higher order strengths. We first examined the reliability of the hypothesized scales. The internal consistency, Cronbach's alpha, for the six scales were wisdom = .72, courage = .64, love = .71, justice = .73, temperance = .66, transcendence = .79. Thus, four out of the six scales were above the usually acceptable cut-off point of .70.

Next, various factor analyses (CFA) were conducted to examine whether the self-ratings would fall into the clusters representing the six virtues. Both orthogonal and oblique rotations were attempted to see which best confirmed the a priori classification. Results from all four analyses were very similar. **Table 1** shows the orthogonal-rotated, confirmatory factor analysis.

As can be seen from **Table 1**, only five factors had eigenvalues above 1. The first factor contained five Transcendence strengths, and the alpha was .77. The second factor comprised bravery, ingenuity, leadership, and playfulness. This factor, named fortitude (in line with Peterson et al., 2008), had an alpha value of .69. The third factor contained all three Temperance items as well as two additional factors, namely, fairness and persistence. The alpha was .74. The fourth factor contained two of the Love items, as well as social intelligence, integrity, citizenship, and forgiveness. In line with Peterson et al. (2008), this factor was named interpersonal and had an alpha value of .79. The fifth and final factor, named cognitive (again in line with Peterson et al., 2008) contained four of the 6 wisdom items. The alpha was .73. This suggested that this shortened measure did not factor into the 6 virtues as specified by the "theory". The alpha for the total scale combined was .90 which could be considered to be an index of a person's belief in their "overall virtue".

3.2. Correlation Analysis

The 5 virtues were then extracted and analyzed in terms of their correlations with the predictor variables. **Table 2** shows the correlations between virtues, intelligence, and personality factors. As can be seen, all virtues ratings were moderately correlated. Overall, extraversion is most consistently and significantly correlated with the virtues except temperance, while Intelligence is moderately related to Transcendence and Interpersonal virtues. Religiousness was correlated with transcendance ($r = .26$, $p < .001$) and interpersonal ($r = .15$, $p < .05$) while political orientation was only correlated with interpersonal ($r = .12$, $p < .05$).

3.3. Structural Equation Modelling

We next conducted structural equation modelling (SEM) with the data using AMOS 5.0 (Arbuckle & Wothke, 1999). The choice of ordering is rarely straightforward in SEM studies (Pearl, 2000), and a model was tested primarily to provide a general picture of the relationship among the target variables. The 15 variables included in the model were divided into three subgroups, whereby age, gender and IQ were exogenous or covariates, personality traits, religious and political orientation were mediators, and the 5 virtues, on which the mediators loaded, were endogenous.

The model's goodness of fit was assessed via the χ^2 statistic (Bollen, 1989; tests the hypothesis that an unconstrained model fits the covariance or correlation matrix as well as the given model; ideally, values should not be significant); the goodness of fit index (GFI; Tanaka & Huba, 1985; a measure of fitness where values close to 1 are acceptable) and its adjusted version (AGFI; adjust for the number of degrees of freedom); comparative fit

Table 2. Correlations between the 5 virtues, intelligence, and the Big Five personality factors.

	Tc	F	T	I	Cn	IQ	N	E	O	A	C
Transcendence (Tc)											
Fortitude (F)	.47**										
Temperance (T)	.52**	.45**									
Interpersonal (I)	.59**	.50**	.46**								
Cognitive (Cn)	.41**	.51**	.53**	.38**							
Intelligence (IQ)	−.28**	−.09	−.08	−.26**	.06						
Neuroticism (N)	−.13*	−.13*	−.18**	−.02	−.14*	−.14*					
Extraversion (E)	.33**	.33**	.05	.17**	.20**	.00	. −.19**				
Openness (O)	.21**	.11	.04	.03	.34**	.07	−.04	.09			
Agreeableness (A)	.08	.07	.08	.19**	.06	.17**	−.19**	.13*	−.07		
Conscientiousness (C)	.19**	.08	.31**	.11	.12*	.02	−.33**	.22**	−.06	.12	

N = 280. *$p < .05$, **$p < .01$.

index (CFI) can be interpreted as the improvement in fit of the hypothesized model over a baseline model, relative to the fit of the baseline model); the root mean square residual (RMSEA; Browne & Cudeck, 1993; values of .08 or below indicate reasonable fit for the model); the parsimony goodness-of-fit index (PGFI; Mulaik et al., 1989; a measure of power that is optimal around .50); and the Akaike's Information Criterion (AIC; Akaike, 1973; gives the extension to which the parameter estimates from the original sample will cross-validate in future samples).

In the hypothesised model, saturated paths from the covariates to the mediators, and from the mediators to the 5 DV's (i.e. virtues) were added. Thus, no direct paths from the covariates to the 5 virtues were added. In addition, the five virtues were allowed to correlate. The model, with 21 parameters between the covariates and the mediators, and 35 parameters between the mediators and 5 virtues, did not fit the data well: χ^2 = (49 df, $p < .01$) 600.75, GFI = .73, AGFI = .33, PGFI = .30, CFI = .29, RMSEA = .20, AIC = 742.75. The model was modified accordingly. On the basis of the AMOS modification indices, expected parameter change statistics, and standardized residuals, 2 direct paths, from IQ to Transcendence and IQ to Interpersonal virtues, were added to the model. In addition, several of the Big Five personality traits were also allowed to correlate (see Chamorro-Premuzic, 2008 for a review of similar findings). Additions were made one at a time, and were based on multiple criteria that take into account theoretical, as well as statistical considerations. All other path coefficients and fit statistics were examined after each addition to determine its effect on these values. Several paths were found to have non-significant findings and were subsequently removed from the model one parameter at a time, starting with the lowest t-value.

The modified model, shown in **Figure 1**, fitted the data well: χ^2 = (69 df, $p < .01$) 91.93, GFI = .96, AGFI = .93, PGFI = .55, CFI = .97, RMSEA = .04, AIC = 193.93.

As shown in the model, while age and gender had a direct impact on Agreeableness, there was no relationship between these demographic variables and the 5 strengths. Participants who scored higher on IQ tests, reported to be less Religious, more Stable (less Neurotic) and more Agreeable; they also reported being weaker in Transcendent, as well as Interpersonal Virtues. Of the Big Five personality factors Extraversion was found to be the strongest and most consistent predictor of self-rated strengths in virtues. This personality factor predicted four of
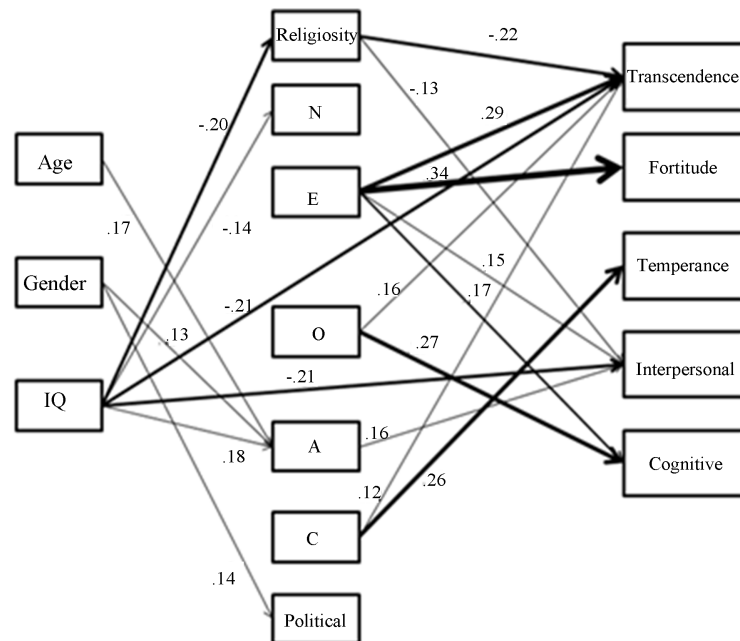

Figure 1. Modified model predicting virtues. Note: All paths are standardised parameter estimates significant at $p < .05$. Sex coded 1 = male, 2 = female. A = agreeableness, O = openness, C = conscientiousness, E = extraversion, Political = political orientation. Thickness of arrows is directly proportionate to the size of beta values. For clarity, correlations between same block variables have been omitted from the figure.

the five criterion variables. Thus, extraverted individuals rated themselves as stronger on transcendent, fortitude, interpersonal and cognitive virtues. As expected, openness showed the strongest relationship with the cognitive virtues. Conscientiousness strongly predicted temperance virtues and was related to transcendent virtues (albeit less strongly). Agreeableness moderately predicted interpersonal virtues, while neuroticism did not show any significant relationship with the 5 criterion variables. Finally, more religious individuals rated themselves as higher in transcendent and interpersonal virtues. AMOS-squared multiple correlations indicated that, in combination, the relevant predictors accounted for 11% of the variance in cognitive, 12% in interpersonal, 11% in fortitude, 25% in transcendence, and 7% in temperance virtues.

An alternative general strength factor was also tested, where all previously significant paths from exogenous variables on the various DVs, were loaded on a single latent strength factor. The fit statistics of this model were considerably worse: $\chi^2 =$ (81 df, $p < .01$) 270.31, GFI = .89, AGFI = .84, PGFI = .60, CFI = .75, RMSEA = .09, AIC = 348.25. Thus, a 5 factor model fits best.

4. Discussion

This study used a 24-item measure of the strengths/virtues and a 15-item measure of the Big Five personality to examine the relationship between the two, comparing results with for instance a 240-item (Linley et al., 2007) or a 140-item (Cawley et al., 2000) of strengths with a 100-item (Macdonald et al., 2008) or 240-item (Cawley et al., 2000) measure of the Big Five. Thus this study used 39 questionnaire items whereas others used 480-item to measure the two sets of constructs. The results showed the internal reliability of both short measures to be satisfactory.

There has been something of a debate about the use of short forms of questionnaires (Herzberg & Brahler, 2006; Muck, Hell, & Gosling, 2007). Furnham (2008b) compared a 5-, 10- and 60-item measure of the Big Five and concluded that often researchers have to trade off scale internal reliability for length. Some reduce a scale of 10- to 20-item to between 3- and 5-item either based on a statistical procedure like item to total correlations or simplicity, clarity and face validity of the items. Because of the minimum number, alpha reliabilities often drop below the .70 level often rarely exceeding .50. Despite this, those measures are often used and prove to be valid. Clearly, the more reliable to instrument the better. Further if the Big Five are to be described at the facet as well as the domain (super vs primary) factor level this inevitably requires additional items. This study suggests that this 24-item measure can stand for a reasonably proxy for much longer measures, particularly when research conditions demands apply.

All the factor analyses of the various long and short strengths/virtues questionnaires have failed to confirm the six-factor theoretical structure (Furnham et al., 2011; Neto et al., 2013; Shryack et al., 2010) and this study was no different. As in other studies, the factors are readily interpretable but tend to be given different names in different studies. The factor analysis in this study yielded five, clearly interpretable inter-correlated factors. These factors were correlated with intelligence and the Big Five personality traits in logical ways; four of the thirty being r > .30. These results are comparable to that of De Raad and Van Oudenhoven (2011) who used different measures of both personality and virtues and whose correlations were overall higher. Thus where they found conscientiousness positively correlated with achievement and respectfulness, this study showed conscientiousness positively correlated with Temperance.

The study showed that participants tended to believe that they were above average in all the strengths (i.e. the score were all over 100, yet the data was normally distributed) which is a common finding in the self-assessed literature (Furnham, 2001). The strengths of this sample of middle aged, British, participants rated most highly were integrity, leadership and citizenship while those rated as lowest included spirituality, forgiveness and prudence. This pattern was quite different from that shown by the international students in Furnham and Lester's (2012) study or in the Neto et al. (2013) study of Portuguese adolescents though both rated integrity high and spirituality low. Obviously, self assessed strengths are related to such things as a person's age; but also their values and beliefs which can be measured in such things as their religious and political beliefs. The fact that the participants were military officers may account for these findings.

The five virtues were correlated with the Big Five measures, yet only three of the 30 correlations was r > .20. Most significant correlations were with extraversion and were positive, while fewest significant correlations were with neuroticism and these tended to be negative. However the results are unlike those of Neto et al. (2013) who used the same measures as they found the most consistent, significant and positive correlates of the virtues

were openness and agreeableness.

In this study two of the five correlations between virtues and intelligence were significant. Brighter people rated themselves lower on transcendance and interpersonal but surprisingly not higher on cognitive. Correlations with religiousness and political beliefs were modest.

Perhaps the most important feature of the study is the structural equation modeling shown in **Figure 1**. This was the first study to examine the relationship between intelligence and personal ideology (political and religious beliefs) and the virtues. **Figure 1** shows that personality and ideology are mediator variables between a person's demography (age and gender) and their intelligence and the higher order virtues. The analysis showed that sex and age were related to trait agreeableness which in turn was related to the interpersonal virtue. No other relationships were found for sex and age; however this maybe due to the relatively small age range in the participant sample as well as the male:female ratio in this study. Furnham and Lester (2012) also only found modest evidence of sex differences in the self rated strengths (less than 20%).

This study did however show the role of fluid intelligence in predicting the virtues. Intelligence was directly related to two virtues (both negatively): transcendence and interpersonal. However religiosity proved also to moderate the effects of intelligence onto transcendence and interpersonal virtues.

The CFA showed that neither neuroticism nor political orientation was related to the five virtues. It also showed that consciousness was clearly related to temperance, openness to cognitive and extraversion to fortitude and transcendance. These findings are clearly interpretable in terms of the definition of both traits and virtues. Thus, conscientious people (who are dutiful, ordered, self-discipline and achievement striving) see themselves as having strengths with respect to self-control, prudence and humility. Equally, those who score high on openness believe their strengths lie in their curiosity, love of learning and good judgment.

This paper found, as did Cawley et al. (2000), that virtue is a function of personality, but also of intelligence. The question for the researcher is given the conceptual and empirical overlap between these two concepts when and why one achieves incremental validity using strengths measures over the more established trait measures. There also remains the issue of impression management/social desirability and delusional self-reporting. Longer strengths measures like longer trait measures ask people to report of their behaviours, usually the frequency with which they do things whereas in shorter measures they ask people to rate total traits, or strengths. In this sense the former may be less fakeable than the latter.

Two obvious future directions are apparent for this area. The first is to compare self and other reports of strengths to obtain a more "objective" measure of strengths and examine the correlates of observed strengths. The second is to examine the stability of strengths over time.

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