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**Character Strengths in Employees in the People's Republic of China:
Analysing the Factor Structure of the VIA Inventory of Strengths**

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ABSTRACT: *This study explores the factor structure of the VIA Inventory of Strengths in a sample of 292 employees from the People's Republic of China. All 24 subscales had satisfactory reliabilities, as measured by coefficient alpha. Results show support for a three-dimensional model reflecting Interpersonal, Intellectual and Temperance character strengths. This finding is consistent with that of previous studies in both Western and Chinese contexts. Our results, however, suggest a uniquely Chinese interpretation of the Interpersonal strengths dimension, with a strong emphasis on the integration of benevolence and integrity, consistent with Confucian philosophy. In addition, females were found to give higher levels of endorsement to Interpersonal character strengths, while males gave higher levels of endorsement to Intellectual or creativity character strengths.*

Keywords: Cross-cultural behaviour; values; attitudes; creativity

INTRODUCTION

In recent years there has been an explosion of interest in the area of character strengths in positive psychology. Studies have consistently shown links between strengths and outcomes such as happiness (Peterson, 2006), well-being (Khumalo, Wissing & Temane, 2008; Park, Peterson, & Seligman, 2004), life satisfaction (Peterson, Ruch, Beerman, Park, & Seligman, 2007) and positive affect (Khumalo et al., 2008). Research on the nature of strengths and virtues has been aided by the seminal work of Peterson and Seligman (2004) with their development of the dominant measurement instrument of character strengths, the VIA Inventory of Strengths (VIA-IS). For over three years Peterson and Seligman elicited input from more than 50 scholars and clinicians, engaged in extensive brainstorming, reviewed historical lists of virtues from the world's most influential cultural traditions and examination of popular media and literature to identify the most prominent common virtues and character strengths. Their research culminated in an initial list of six virtues and 24 character strengths representing specific aspects of the virtues (McGrath, 2014), as displayed in Table 1.

Insert Table 1 about here

The 24 character strengths identified by Peterson and Seligman are understood to represent the underlying universe of strengths, the core virtues being derived from philosophers of major cultures such as Confucianism and Taoism in China, Buddhism and Hinduism in South Asia, Athenian philosophy, Judaism, Christianity, and Islam (Dahlsgaard, Peterson & Seligman, 2005).

The empirical measure of the 24 strengths, the Values in Action Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004) has been available freely online since 2001. To date over 400,000 participants have completed the 240-item measure of the 24 strengths (10 items per strength) as an online survey. Recently, Peterson and Seligman have developed a reduced version of the measure (the VIA-120), by statistically choosing 5 questions from the original 10 per scale that had the highest item-scale correlations. Internal consistency (α) for the VIA-120 was found to be 0.79, with Cronbach's α for all 24 strengths generally higher than .70 (Diener et al., 2010; McGrath, 2014). Multiple studies have found significant correlations between virtues of zest, curiosity, hope, love and gratitude with life satisfaction, lending external reliability to the reduced measure (Diener et al., 2010).

The VIA-IS has been applied to the hypothesised model in which character strengths are inventoried amongst six higher-level virtues, along with a multi-scale inventory that was developed on the basis of this model. Indeed, when the VIA-IS has been subjected to rigorous empirical analysis via exploratory and confirmatory factor analysis, there has only been moderate support for the conceptual structure (Peterson and Seligman, 2004; Peterson and Park, 2004; Peterson, Park, Pole, D'Andrea, and Seligman, 2008). According to Shryack, Steger, Krueger and Kallie (2010), the dimensionality of the 24 strengths is still unclear. Specifically, empirical analysis appears to support a five-dimensional (McGrath, 2014; Peterson & Park, 2004; Peterson & Seligman, 2004; Peterson et al., 2008; Ruch et al., 2010) a four-dimensional (Brdar & Kashdan, 2010) or a three dimensional (Khumalo et al., 2008; Shryack et al., 2010) model.

Further, of the seven studies that have now been conducted exploring the latent structure of the VIA-IS using exploratory techniques, there appears considerable variability in the contents of, and labels applied to, the factors. McGrath (2014) suggests this may in part reflect cultural issues, given that the seven studies were completed in six different countries. Another factor possibly contributing to instability in the factor solutions is multidimensionality in the actual scales. Examination of the

character strengths in Peterson and Seligman's original model (see Table 1) demonstrates this idea. Items loading on the scale "Teamwork" include citizenship, social responsibility and loyalty, arguably disparate concepts, which results in multidimensional scales with varying loadings in the latent variables underlying the instrument. While the VIA-IS scales have established adequate internal reliability, this is not a sufficient indicator of unidimensionality (McGrath, 2014, Schmitt, 1996).

Similarities amongst the various models proposed by the empirical literature on the VIA-IS are far greater than differences, with a general factor reflecting interpersonal strengths, regard for humanity or positive affect towards others, a factor reflecting vitality and intellectual strengths such as curiosity, creativity and zest, and a third factor reflecting intrapersonal strengths associated with temperance such as self-regulation, perseverance and prudence. These findings lend support for the notion that this virtue structure may be universal across cultures and should be further explored.

There is only one reported attempt to study the VIA-IS in a Chinese population. Duan et al. (2012) examined the factorial structure of the instrument in a sample of 839 undergraduate students and found support for a 3-factor model. The first factor, labelled *Interpersonal*, comprised virtues kindness, teamwork, fairness, love, authenticity, leadership, forgiveness and gratitude. The second, *Vitality*, comprised virtues humour, curiosity, zest, creativity, perspective, hope, social intelligence, appreciation of beauty, bravery and open-mindedness. The third, *Cautiousness*, comprised the virtues judgment, prudence, self-regulation, perseverance, love of learning and modesty. The study found adequate goodness-of-fit indices for the 3-factor model through Confirmatory Factor Analysis, reporting a goodness-of-fit index (GFI) of 0.852. A reduced version of the original VIA-IS was offered for Mainland China, labelled the CVQ or Chinese Virtues Questionnaire, comprising 96 items (4-items per strength). Results reported by Duan et al. (2012) were consistent with those of previous studies (eg Khumalo et al., 2008; Shryack et al., 2010), lending further support for a 3-factor model.

With respect to the Chinese population, Duan et al's (2012) study is the only reported study investigating the factor structure of the VIA-IS to date. The sample used were university students from a single university in the southwest of China. Further, data was collected via the internet and may not be as comparable as those collected by face to face administration of questionnaires (Gosling, Vazire, Srivastava, & John, 2004). As such, the current study will be the first reported to investigate the VIA-

IS in a sample of Chinese employees from a wide range of organisations across two provinces in Mainland China, using face-to-face administration of questionnaires. We hypothesised that the retained factors from our analysis will include at least one factor reflecting humanity and interpersonal strengths, one reflecting intellectual and vitality strengths and a temperance factor reflecting perseverance, self-regulation and prudence, as reported in previous studies (Duan et al., 2012; Khumalo et al., 2008; Shryack et al., 2010; Park & Peterson, 2005, 2006).

Second, this study examines gender differences. In a study of over 17,000 UK employees, Linley et al. (2007) found that women typically scored higher on character strengths than men, with the exception of creativity where men scored higher than women. Ruch et al. (2010) also found that women scored higher than men in relation to the humanity strengths and that men scored higher on creativity. However, they also found men to score higher on open-mindedness, perspective and leadership. Thus, we hypothesised that women would score higher than men on a factor reflecting kindness and humanity and lower on a factor reflecting creativity.

METHOD

Participants

The sample consisted of 292 employees from organisations in the People's Republic of China. 87 were male (29.8%) and 205 were female (70.2%). 249 employees were aged 18-35 (85%), 32 were aged 36-45 (11%), 7 were aged 46-55 (2.4%) and 4 were aged 56-65 (1.4%). The sample was drawn from a range of industry types, including 82 employees from services (28.1%), 43 from technology (14.7%), 51 from education (17.5%), 34 from sales/marketing (11.6%), 23 from government agencies (7.9%), 16 from manufacturing (5.5%), 11 from communications (3.8%), and 31 from "other" industries (10.6%).

113 employees worked for State Owned Enterprises (38.7%), 85 worked for private companies (29.1%), 33 worked for joint venture companies (11.3%), while 38 worked for foreign owned companies (13%). There was a wide range of occupational types: professional staff (30.5%), managerial staff (20.2%), administrative staff (29.5%), clerical staff (8.6%), blue-collar staff (1.4%) and "other" (8.9%).

In terms of highest level of education achieved, 28 employees had graduated from high school (9.6%), 121 had attained Diploma level (41.4%), 96 had attained undergraduate degrees (32.9%) and 47 had attained postgraduate degrees (16.1%).

Measures

The questionnaire used in this study was a Chinese translation of the VIA-120. The VIA-120 is a 120-item reduced version of the original 240-item VIA-IS, formed by choosing the five questions from the original ten questions per scale that had the highest item-scale correlations. The VIA-120 is now offered as the standard VIA, replacing the long form VIA-IS. Staff from the Positive Psychology Laboratory at the University of Hong Kong translated the VIA-120 from English into Chinese using the forward and backward translation procedure. Respondents used a 5 point Likert-type scale ranging from 1= *very much unlike me* to 5= *very much like me* to rate the extent each item described them (Peterson & Seligman, 2004). Scores of 24 character strengths (5 items per strength) were obtained in the same manner as from the original English language version, by summing the corresponding items of each of scales.

The reliabilities of the character strength scales derived from the shorter VIA-120 have been shown to be comparable to those from the original VIA-IS (240-item). Cronbach's alpha for all scales measuring the 24 character strengths on the 120-item version have been found to be above .70 (VIA Character Institute, 2014).

Procedure

Approval to conduct the project using the VIA-120 in simplified Chinese in Mainland China was first obtained from the original authors of the VIA-IS. The simplified Chinese translation of the VIA-120 was distributed in paper version to employees in organisations throughout provinces in North-west (Shanxi) and Southern (Shanghai) China. The online version was not used as many participants in North-west China did not have access to the internet. Further, it was considered that the administration of face-to-face questionnaires would increase the reliability of the data as a personal relationship with the researcher is established, thereby building trust, a critical element in Chinese relationships. Research assistants were recruited via long standing connections at two universities in Shanghai and Taiyuan, Shanxi province.

Participants were provided with information regarding the purpose of the study, its anonymity, and the voluntary nature of the questionnaire. The questionnaire also contained a short scale relating to employee engagement with their career, a job satisfaction item and demographics. The current study reports only data relating to demographics and the VIA-120.

Data Analysis

Initially, 24 character strengths scores were formed from individual items according to the classifications established by Peterson and Seligman (2004), with 5 items added together to form each character strength. A Principal Components Analysis was conducted on each of the strength scales and the scree plot was inspected to ensure unidimensionality of the constructs. In addition, to test for distinctness of each of the strengths, the correlation matrix was examined to determine whether the individual correlation between each pair of strengths was higher than the Cronbach's alpha for the individual strengths.

Previous studies of the VIA-IS factor structure have tended to use Principal Components Analysis (McGrath, 2014). The decision on the number of factors to be extracted was based on inspection of the plot of eigenvalues and using root-one and scree-test criteria, as well as the interpretability of the factors. In terms of factor rotation, orthogonal rotations are common in personality research and have recently been applied in the context of virtues research (Cawley, Martin, & Johnson, 2000; Peterson et al., 2008). As such, for the purposes of consistency, we adopted orthogonal (Varimax) rotation for the present study.

The resulting factor scores were saved as variables and a series of t-tests were conducted to test for gender differences on the factor-based scales.

RESULTS

Insert Table 2 about here

Table 2 presents the mean scores, standard deviations and internal consistency reliability estimates (Cronbach alpha's) for each of the 24 strengths as assessed by the VIA-120. Higher scores represent higher levels of expression of the corresponding character strength. On a potential scale from

1 to 5, mean scores ranged from 3.2 to 4.2, with some degree of negative skew consistent with results from previous studies (Linley et al., 2007; Littman-Ovadia & Lavy, 2012; Peterson, Park, & Seligman, 2006). Standard deviations ranged from .55 (Integrity) to .75 (Spirituality). Overall, the three strengths with the highest levels of expression in the Chinese sample were Integrity (M=4.22, SD=.55); Kindness (M=4.00, SD=.61); and Love (M=4.06, SD=.60). The three strengths with the lowest levels of expression were Self regulation (M=3.25, SD=.68); Love of Learning (M=3.23, SD=.75) and Perspective (M=3.34, SD=.65). Of the 24 scales, 23 had satisfactory internal consistency measured by Cronbach's alpha coefficients of above .70. The scale for Self-Regulation yielded an alpha coefficient of .60. According to Duan et al. (2012), items in this scale such as "I have no trouble eating healthy foods" do not synchronize well with Chinese culture, as most food choices are already healthy in China, which may explain the difficulty with this particular scale. However, for purposes of consistency, it was left in for the subsequent factor analysis.

To study the factor structure of the character strengths, we performed Principal Component Analyses with Varimax rotation and Kaiser normalisation for the 24 scales on the VIA-120 (See Table 3). Initially, four factors were extracted, and these factors explained 67% of the total variance. However, examination of the scree plot and item loadings suggested a three factor solution thus the three factor solution was adopted.

Despite the dominance of orthogonal rotations in recent virtues research (e.g. Peterson et al., 2008; Shryack et al., 2010), it is often the case that oblique rotations are preferred over orthogonal rotations. Thus, to test whether the rotational strategy had any effect on the pattern loadings, we conducted the analysis using an oblique (Oblimin) rotation. Results showed that pattern loadings were almost identical regardless of the rotation strategy adopted.

Insert Table 3 about here

The first factor comprised items depicting interpersonal strengths such as kindness, love, fairness and gratitude. This factor described 23.52% of the variance. All items loading on this factor also loaded on the "Interpersonal" factor described by Duan et al (2012), with the exceptions of items

“Appreciation of Beauty” and “Hopefulness”. Loadings also overlapped substantially with the “interpersonal strengths” dimension described by Shryack et al. (2010).

The second factor explained 26.09% of the variance. With the exception of the item “Love of Learning”, all items overlapped with Duan et al.’s “Vitality” factor, although the item loadings varied significantly. This dimension appears to reflect intellectual strengths and the energy or vitality one commits in the pursuit of knowledge and wisdom. Highest loading items included creativity, perspective, bravery, curiosity, vitality (or ‘zest’), open-mindedness and humour. Again, items significantly overlapped with the intellectual strengths dimension described by Shryack et al. (2010).

Items loading highest on the third factor included prudence, self-regulation, humility and perseverance, all of which were also the highest loading on Shryack et al.’s (2010) temperance strengths dimension. This factor explained 13.11% of the total variance. Reflecting intra-personal strengths associated with temperance; there was substantial overlap with Duan et al.’s (2012) ‘Cautiousness’ dimension, although their dimension also included items judgment (integrity) and love of learning. In Shryack et al.’s (2010) study, judgment (integrity) was found to load highly on the intellectual strengths factor, along with creativity and perspective. Interestingly, however, in the current study, judgment (integrity) actually loaded highly (.69) on the interpersonal factor, along with items such as kindness, love, fairness and gratitude. This could be reflective of a uniquely Chinese interpretation of the interpersonal strengths dimension. One of the five fundamental Chinese virtues, that of benevolence or *ren*, describes the cultivation of harmony with others through kindness, love and gratitude but also through ethical practice and the Confucian version of the ‘Golden Rule’, that is, what one does not wish for oneself one should not do unto others (Bond & Hwang, 1986).

Table 4 shows the results of a series of t-tests conducted to examine gender differences between factor based scales for the three factors, labelled ‘Interpersonal’, ‘Intellectual’ and ‘Temperance’.

Insert Table 4 about here

For the 'Interpersonal' dimension, the mean for females ($M=0.15, SD=0.96$) was higher than for males ($M=-0.03, SD=1.00$) and this difference was significant at $p<.001$; $t(234)=-3.46$. This result is consistent with Linley et al.'s (2007) finding that women gave higher strength ratings than men on interpersonal, humanity related items. Similarly, Ruch et al. (2010) found that German speaking women scored modestly higher than men with respect to humanity strengths. For the 'Intellectual' strengths dimension, the mean for men ($M=0.22, SD=0.90$) was significantly higher ($p<.01$) than for women ($M=-0.10, SD=1.00$); $t(234)= 2.25$. This was consistent with the results of Ruch et al. (2010) who found that men scored higher on creativity, open-mindedness and perspective. Linley et al. (2007) also found men to score higher on creativity. It might also be the case that in Chinese society, virtues such as bravery and vitality are associated with the traditional male role rather than the female. There were no significant differences found between males and females on the factor based scores for the 'Temperance' dimension.

DISCUSSION

The current study presents the results of a factor analysis on the VIA Inventory of Strengths from a sample of employees from organisations in the People's Republic of China. Integrity, kindness and love were the character strengths most endorsed by the Chinese sample (as measured by mean scores), perhaps reflecting the strong Confucian tradition of social harmony being achieved through acts of benevolence and ethical behaviour toward others (Bond & Hwang, 1986). A strong emphasis on integrity does not appear to be emphasised in published studies on Western samples (e.g. Linley et al., 2007).

Similar to other studies conducted using exploratory factor analysis on the VIA-IS, our study failed to support the 6-factor model proposed by Peterson and Seligman (2004). Factor analyses revealed the distinct presence of three factors in accordance with our hypothesis: the first reflecting "Interpersonal" strengths of humanity and kindness, the second reflecting "Intellectual" strengths of creativity, curiosity, vitality and perspective, with a third reflecting intra-personal "Temperance" strengths such as self-regulation, prudence and humility. These results showed strong overlaps with

those of previous studies (eg. Shrayck et al., 2010), including the only published study in China, albeit using a student population (Duan et al., 2012).

Females were found to endorse higher levels of “Interpersonal” strengths, with males endorsing higher levels of “Intellectual” strengths. This supports the nurturing hypothesis (Eagly & Wood, 2013) whereby women endorse strengths associated with their evolutionary role in nurturing the young, while men endorse strengths that may be related to their role as leaders or hunter-gatherers. However there are also cultural and organisational factors at play, and the role of gender is complex. As such no interpretation should be overstated.

The study lends support for a virtue structure that may well be universal across cultures. An interesting and important deviation from previous studies was found in the current study, however, and should be highlighted. The strength of “integrity” was the highest endorsed item in terms of mean score and also loaded highly on the “Interpersonal” or kindness/humanity dimension. This is distinct from previous studies where this strength has loaded on the “Intellectual” dimension (Shrack et al., 2010) or the “Temperance” (restraint) dimension (McGrath, 2014). Through his Analects, Confucius taught that proper action is based on five “cardinal” virtues, and that together these provide the moral foundation of social order (Cleary, 1993: 3). The first, or primary, virtue of Confucianism is that of benevolence (仁 *ren*), which is discussed widely in writings of Confucianism and has been variously translated as “benevolence”, “love”, “goodness”, “human-heartedness”, and “humanity” (Bond and Hwang, 1986). It is best expressed in terms of the Confucian golden rule, “do not do to others what you do not want done to yourself”, or “love your fellow men”. This supreme virtue is considered so fundamental in Chinese everyday life that it is still a predominant cultural value even among the most modernised groups in society, such as contemporary young intellectuals (Yang, 1986). As such, in the minds of the Chinese, moral integrity is inseparable from acts of benevolence toward others.

While the current study represents the first known to examine the factor structure of the VIA-IS in a sample of employees from Mainland China, there are some limitations. Confirmatory factor analysis would be necessary to evaluate the overall fit for the model derived from the exploratory technique and to test for independence amongst the three dimensions. We also highlight the interpretative issues associated with self-report measures and the need to consider other sources for

assessing character strengths (such as bosses or peers) and for evaluating the consequences for the organisation of possessing various character strengths (such as work performance, job satisfaction or citizenship behaviour).

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Table 1: The VIA Inventory of Strengths model

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
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) Humour (playfulness) Religiousness and Spirituality (faith, purpose)

Note. Terms in parentheses are variants of the character strengths according to Peterson and Seligman (2004)

Table 2: Means, Standard deviations and internal consistency reliabilities (Cronbach α 's) on the VIA-IS.

Strength	Mean	SD	α
Curiosity	3.54	(0.68)	.74
Love of Learning	3.33	(0.75)	.75
Open Mindedness	3.63	(0.63)	.68
Creativity	3.54	(0.73)	.80
Social Intelligence	3.76	(0.59)	.66
Perspective	3.34	(0.65)	.74
Bravery	3.37	(0.64)	.68
Perseverance	3.70	(0.64)	.75
Integrity	4.23	(0.55)	.71
Kindness	4.00	(0.61)	.75
Love	4.06	(0.60)	.72
Citizenship	3.88	(0.57)	.71
Fairness	3.92	(0.63)	.75
Leadership	3.70	(0.66)	.73
Self Regulation	3.25	(0.68)	.60
Prudence	3.67	(0.62)	.70
Appreciation of Beauty	3.77	(0.61)	.65
Gratitude	3.77	(0.56)	.67
Hopefulness	3.72	(0.61)	.66
Spirituality	3.42	(0.76)	.76
Humility	3.66	(0.61)	.68
Humour	3.68	(0.67)	.77
Vitality	3.69	(0.64)	.69
Forgiveness	3.81	(0.62)	.65

Table 3: Factor Solution for the VIA-IS (Principal-Components Analysis)

Strengths	Interpersonal	Intellectual	Temperance	h^2
Kindness	.81	.21	.15	.72
Love	.76	.27	-0.02	.65
Fairness	.75	.16	.39	.74
Gratitude	.71	.38	.20	.69
Integrity	.69	.17	.28	.58
Forgiveness	.68	.06	.34	.58
Citizenship	.66	.37	.36	.70
Appr of Beauty	.61	.39	.19	.56
Leadership	.56	.45	.40	.67
Hopefulness	.54	.53	.19	.60
Creativity	.23	.80	.07	.71
Perspective	.02	.75	.38	.70
Bravery	.27	.72	.22	.63
Curiosity	.46	.68	-.03	.68
Vitality	.48	.66	.05	.67
Open Mindedness	.09	.65	.51	.69
Humour	.52	.60	-.09	.64
Love of Learning	.09	.57	.30	.42
Social Intelligence	.45	.55	.26	.58
Spirituality	.37	.50	.34	.50
Prudence	.22	.36	.72	.69
Self Regulation	.13	.15	.69	.51
Humility	.44	-.02	.65	.62
Perseverance	.42	.36	.48	.54
% variance	23.52	26.09	13.11	62.72

Note. **Bold** indicates highest factor loadings of the scales. h^2 - communalities.

Table 4: Gender Differences on VIA Factor Scores

	Gender		t	df
	Mean (SD) Females (N=163)	Mean (SD) Males (N=73)		
Interpersonal	0.15(0.96)	-0.03(1.00)	-3.46***	234
Intellectual	-0.10(1.00)	0.22(0.90)	2.25**	234
Temperance	-0.41(1.02)	0.91(1.03)	0.93	234

** $p < .01$, *** $p < .001$