

## Internal Structure of the Characters Strengths Scale in Brazil

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### Abstract

The investigation of strengths and virtues is in the spotlight in the field of Positive Psychology because evidence suggests that strengths can help people to cope with adversities. This study aims to evaluate the internal structure of the Characters Strengths Scale (CSS), a test based on Values in Action model, through rigorous factor retention methods. Participants were 426 Brazilian undergraduate students with age between 18 and 57 years ( $M = 23.29$ ,  $SD = 6.67$ ). Factor analysis indicated one factor, which explained 32% of variance, as the most appropriate solution for the 24 strengths. Unidimensionality was suggested by different factor retention methods, what does not corroborate previous international findings and indicate the necessity of additional studies with this scale in different Brazilian populations.

*Keywords:* Positive Psychology, validity, psychological tests.

### Estrutura interna na Escala de Forças no Brasil

#### Resumo

A investigação das forças e virtudes está no centro das atenções no campo da Psicologia Positiva porque evidências sugerem que forças de caráter podem ajudar pessoas a lidar com as adversidades. Este estudo tem como objetivo avaliar a estrutura interna da Escala de Forças de Caráter (EFC), um teste com base no modelo de Valores em Ação, através de rigorosos métodos de retenção de fatores. Os participantes foram 426 estudantes universitários brasileiros com idade entre 18 e 57 anos ( $M = 23.29$ ,  $DP = 6.67$ ). A análise fatorial indicou um fator, que explicou 32% da variância, como a solução mais adequada para as 24 forças de caráter. Unidimensionalidade foi sugerida por diferentes métodos de retenção de fatores, o que não corroborou resultados internacionais anteriores. Tais achados indicam a necessidade de estudos adicionais com esta escala em diferentes populações brasileiras.

*Palavras-chave:* Psicologia Positiva, validação, testes psicológicos.

### Estructura Interna en la Escala de Fortalezas en Brasil

#### Resumen

La investigación de las fortalezas y virtudes se encuentran en el centro de las atenciones en el campo de la Psicología Positiva, porque evidencias sugieren que fortalezas de carácter pueden ayudar a las personas a hacer frente a las adversidades. Este estudio tiene como objetivo evaluar la estructura interna de la Escala de Fortalezas de Carácter (EFC), un test basado en el modelo de Valores en Acción, a través de rigurosos métodos de retención de factores. Participaron 426 estudiantes universitarios brasileños con edades entre 18 y 57 años ( $M = 23.29$ ,  $SD = 6.67$ ). El análisis factorial indicó un factor como la solución más adecuada para las 24 fortalezas de carácter, que explicó el 32% de la variancia. Unidimensionalidad fue sugerida por diferentes métodos de retención de factores, lo que no corrobora los hallazgos internacionales anteriores e indican la necesidad de estudios adicionales de esta escala en diferentes poblaciones brasileñas.

*Palabras clave:* Psicología Positiva, validez, tests psicológicos.

## Introduction

The study of characters strengths and virtues characterizes an alternative approach to the traditional psychological research focus on psychopathologies and maladaptive processes. The development of healthy and adaptive traits and processes may produce more efficient interventions and contribute to people evolve towards their highest potential (Peterson & Seligman, 2004). Park and Peterson (2009) state that, contrary to the main emphasis on psychopathology adopted by Psychology (e.g., based on the Diagnostic and Statistical Manual of Mental Disorders developed by the

American Psychiatric Association and the International Classification of Diseases used by the World Health Organization), character strengths are essential for the well-being in society because they may prevent psychological problems arising out normal or abnormal exposure to challenges and difficulties in everybody's daily life.

Research on strengths and virtues were strongly propelled by Positive Psychology (Seligman & Csikszentmihalyi, 2000), but the interest in the topic did not started recently. Some virtues have been debated since the Ancient Greece. Aristotle, for example, stated that the development of virtues is a *sine qua non* condition

to achieve and enjoy the “good life”. Moreover, he classified virtues in two domains: intellectual (e.g., intelligence) and moral (e.g., temperance and generosity) (La Taille, 2000; 2006). Lately, Piaget’s (1932/1994) studies about justice, pointed out that the moral development requires a parallel cognitive maturity. This finding stimulated the study of justice (Kohlberg, 1964) and other virtues (Gilligan, 1982; La Taille, 2000; 2006).

The approach proposed by Peterson and Seligman (2004) is a hierarchy structure of strengths and virtues that consists of 24 strengths, at the lower level, clustered on six broad virtues at the higher level (wisdom, courage, humanity, justice, temperance, and transcendence). Next, we briefly present the six virtues and their respective strengths.

Wisdom and knowledge characterizes cognitive skills necessary for the acquisition of knowledge and is composed by creativity, curiosity, open-mindedness, love of learning, and perspective. Courage is defined by emotional abilities involved in the process of reaching goals and encompasses bravery, persistence, integrity, and vitality. Humanity is related to taking care and helping others. This virtue is comprised of love, kindness, and social intelligence. Justice refers to the life in community associated with civic feelings and consists of citizenship, fairness, and leadership. Temperance protects against excesses and is constituted for forgiveness, modesty/humility, prudence, and self-regulation. Transcendence characterizes idealization of connections with the universe and encompasses appreciation of beauty, gratitude, hope, humor, and spirituality.

This structure was achieved through research on religious, cultural, philosophical and legal texts from all around the world and only omnipresent virtues were included in the model (Dahlsgaard, Peterson, & Seligman, 2005). For this reason, the authors claim that the six-dimensional structure should be stable over time, and across cultures (Seligman, Park, & Peterson, 2004). However, we did not found studies that replicated this structure, what may require further revision to the model (e.g., Brdar & Kasdan, 2010; Littman-Ovadia & Lavy, 2012; McGrath, 2012). The lack of empirical evidence supporting this model should not preclude researchers to investigate virtues, though.

Peterson e Seligman (2004) emphasized that the virtues and strengths of character should be investigated because they help to prevent physical and mental illness, serves as bedrock of the human condition and are consistent with an important route to the psychological good life. Character strengths can be defined

as positive traits that influence thinking, feelings and behaviors (Park, Peterson, & Seligman, 2004).

La Taille (2010) indicates three reasons to the study of virtues: (a) they are universal (b) desirable and admirable qualities (c) that constitute people’s ethic character. These motives might explain why virtues are so studied all over the world. In Brazil, investigations about generosity (Vale & Alencar, 2008; 2009), and gratitude (Freitas, Silveira, & Pieta, 2009; Rava & Freitas, 2013) using the clinic interview proposed by Piaget corroborated hypothesis that virtues are developed from childhood to adolescence. We also found out a survey with adults that suggest forgiveness might be used with equity across different set of people (Rique, Camino, Enright, & Queiroz, 2007). More specifically, this investigation verified that an offended person is more motivated to restore positive perceptions with an offending family member and friend than with a coworker. Due to the growing interest of Brazilian psychologists in the study of virtues, we believe that the development of standardized tests to evaluate them constitute an important step to integrate and advance knowledge from different areas.

We believe the investigation of virtues through different methodologies (e.g., interviews and surveys) and theoretical approaches (e.g., Moral, Social and Positive Psychology) may provide different and complementary evidence that benefit the advance of the field. However, to our knowledge, there are no standardized tests with validity evidence to investigate virtues on large scale in Brazil.

The VIA-IS, also known as Values in Action-Classification of Strengths, is a worldwide known test used to evaluate virtues through self-report answering. According to the developers, VIA-IS makes possible the development of a science based on the understanding of strengths and virtues. This happens because the test allows the measurement and classification of the constructs among large groups of people. This test might be considered the first step to the empirical investigation of characters strengths and virtues. As conjectured by its authors the VIA-IS is a self-report test comprised of 240 items answered on a 5-point *Likert* scale (1 = “not at all like me” to 5 = “very much like me”). Ten items evaluate each one of the 24 strengths. This test has been adapted to South Africa (Khumalo, Wissing, & Temane, 2008), India (Singh & Choubisa, 2010), Croatia (Brdar & Kashdan, 2010), Germany (Ruch et al., 2010), and Israel (Littman-Ovadia & Lavy, 2012). Different number of dimensions for the VIA-IS has

been found: three (Khumalo et al., 2008), four (Brdar & Kashdan, 2010), and five (Littman-Ovadia & Lavy, 2012; Park et al., 2006; Peterson & Park, 2006; Singh & Choubisa, 2010). These findings indicate that the cultural context in which people live may play a role on the expression of strengths and virtues.

To address this issue, we conducted a large project to develop a test. After broad literature review, 72 items were created (three per strength). Items were analyzed by five independent judges who suggested some changes in item content. Items that did not reach 80% of agreement among judges were reformulated. Approximately 15% of the items were adjusted to better express the specific strength and a pilot study with 26 university students was conducted to evaluate the adequacy of the items. After the pilot, suggestions were incorporated and one item suppressed. The final version of the test presented 71 appropriate items to the target population (Noronha & Barbosa, 2013). To gather validity evidences, we conducted rigorous statistical tests to determine the internal structure of the Characters Strengths Scale (CSS), a Brazilian test developed to the evaluation of strengths and virtues. This test is based on the Peterson and Park's (2004) model, but do not constitute an adaptation of the Values in Action Inventory of Strengths (VIA-IS: Peterson & Seligman, 2004). In order to verify the more appropriate structure of the CSS, we evaluated its internal structure through different methods of factor extraction and retention.

## Method

### Participants

Participants were 426 Brazilian undergraduate students (32.1 % male) with age between 18 and 57 years ( $M = 23.29$ ,  $SD = 6.67$ ) from two universities (one private and other public). Students are from two Brazilian states – São Paulo and Minas Gerais. This is not a random sample.

### Instrument

The Characters Strengths Scale (Noronha & Barbosa, 2013) was developed for the Brazilian context and is based on Peterson and Seligman's (2004) model. Initially, items were 72 statements developed to measure the 24 strengths and their respective six virtues. Five judges were selected from a group of research on positive psychology to evaluate the items. The judges were doctorate and master students who agreed with the pertinence of the items in most cases. However,

approximately 15% of the items received lower agreement rate and were reformulated. The final version of the scale was composed by 71 items answered on a 5-point *Likert* scale (0 = "not at all like me" to 4 = "very much like me"). The score of each strength is given by the sum of the respective items. There are 23 strengths composed by 3 items and only one strength composed by 2 items.

### Procedures

The ethical aspects of the study were guaranteed. Participants collectively completed the questionnaires whilst in the classrooms. The participants were asked to carefully read the questions and respond to the items according to their personal feelings. The total time taken to complete the test was approximately 15 minutes.

## Results

Table 1 presents descriptive statistics for the indicators. Means range from 6.23 (e.g., beauty) to 9.87 (e.g., gratitude), and standard deviations range from 1.55 (e.g., beauty) to 3.04 (e.g., forgiveness). All indicators present negative skewness and eight show kurtosis higher than 1. These results point out that our indicators violate normality assumptions. Next, we describe the procedures used to evaluate the internal structure of the VIA.

We conducted a factor analysis using the 24 strengths as indicators to investigate the dimensionality of the CSS. Items corresponding to each strength were parceled to create the new indicators (e.g., all items that measure curiosity were added up to create the indicator called curiosity). To define the number of factors to extract, we used traditional parallel analysis (PA: Horn, 1965), the Very Simple Structure (VSS: Revelle & Rocklin, 1979), and a new and efficient procedure: the hull method (Lorenzo-Seva, Timmerman, & Kiers, 2011). VSS is based on Very Simple Structure index of goodness of fit for factor solutions of increasing rank, and the hull method intends to discover a model with an optimal balance between model fit and number of parameters. Analyses were conducted on Factor 9.2 (Lorenzo-Seva & Ferrando, 2006) and on R (Psych Package: Revelle, 2013).

Parallel analysis using principal component analysis (PCA) suggests three components, while PA with maximum likelihood extraction indicates one factor. This discrepancy may occur because PCA estimates total variance of the manifest variables and, for this

Table 1  
*Descriptive Statistics and Factor Loadings of the 24 Strengths in the Unidimensional Solution of the SVS*

Variables	M	SD	Skewness	Kurtosis	Number of items parceled	Factor loadings
Creativity	7.28	2.16	-.21	-.01	3	.50
Curiosity	9.43	2.25	-1.15	1.76	3	.57
Openness	9.11	1.94	-.93	1.63	3	.50
Learning	9.06	2.25	-.79	.75	3	.60
Judgment	7.40	2.26	-.33	-.12	3	.58
Originality	8.82	2.19	-.64	.45	3	.50
Bravery	7.48	2.79	-.55	.21	3	.50
Perspective	9.17	2.24	-.90	1.10	3	.69
Vitality	8.38	2.50	-.88	.77	3	.65
Kindness	9.25	2.12	-1.03	1.77	3	.61
Love	8.83	2.34	-.75	.48	3	.58
Intelligence	7.93	2.31	-.53	.30	3	.58
Fairness	9.21	2.04	-.91	1.41	3	.59
Leadership	7.51	2.35	-.45	.16	3	.63
Teamwork	8.19	2.11	-.42	.17	3	.73
Forgiveness	6.68	3.04	-.22	-.54	3	.47
Modesty	8.87	2.12	-.66	.57	3	.47
Prudence	8.91	2.08	-.86	1.22	3	.51
Self-regulation	7.23	2.59	-.21	-.37	3	.42
Beauty	6.23	1.55	-.99	.97	2	.55
Gratitude	9.87	2.35	-1.42	2.16	3	.64
Hope	9.38	2.48	-1.16	1.34	3	.67
Humor	8.42	2.36	-.59	.10	3	.52
Spirituality	8.91	3.02	-1.13	.70	3	.55
Eigenvalue						7.99
Variance explained						33%

reason, tends to inflate factor loadings and eigenvalues, what may have overestimated the retention of components. At this point, we can notice that no indication of six factors was found in our dataset, and because common factor analysis is more appropriate than PCA to estimate latent variables (Costello & Osborne, 2005), we opted to run other methods of retention using factor analysis. Both VSS and the hull method indicate one factor as the best solution<sup>1</sup>.

<sup>1</sup> We evaluated additional solutions of six, five, four, three, and two factors. The solutions of six and five factors presented the last factors with only two indicators per factor and were not considered appropriate for this reason (Velicer & Fava, 1998). The solutions of

Because the indicators (e.g., the strengths) violate normality assumptions, principal axis factoring seems a suitable method of extraction (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Tests of adequacy matrix were satisfactory; Bartlett's statistic was significant and Kaiser-Meyer-Olkin was considered very good (.93). The first six eigenvalues are respectively 7.99, 1.19, 1.05, .70, .36 and .33. The first factor explained 33% of variance and presented loadings higher than .40 for

four, three and two factors presented indicators that did not load in any factor (e.g., beauty and integrity) and cross-loaded in two or more factors. Moreover, none of these models provided theoretically interpretable solutions.

all indicators in the unidimensional solution (Table 1). Alpha coefficient (.93) indicates high reliability.

### Discussion

This study aimed to verify the internal structure of the Characters Strengths Scale. The development of the CSS was based on the Peterson and Park's (2004) model, and, for this reason, similar internal structure found elsewhere might be verified in Brazil corroborating previous findings. Because evidence suggest that individuals with more virtues are less prone to develop psychological problems from their day-to-day adversities in life (Park & Peterson, 2009), physical diseases and mental disorders (Peterson & Seligman, 2004), we emphasize the relevance of having a scale with validity evidences that allow the research of these constructs in large scale.

Although the VIA-IS is used in many countries (Brdar & Kashdan, 2010; Littman-Ovadia & Lavy, 2012; Park, Peterson, & Seligman, 2004; Park, Peterson, & Seligman, 2006; Peterson & Park, 2006; Ruch et al., 2010; Singh & Choubisa, 2010;) no Brazilian version of the test is available for researchers in the country. No other tests based on Peterson and Park's (2004) model has been developed in Brazil too, and the CSS represents a prolific possibility to evaluate strengths and advance the knowledge in the field, especially because it allows the development of positive interventions in different contexts.

Contrary to our expectances, factor analysis and rigorous methods of factor retention indicated the unidimensionality of the scale. This result does not corroborate the findings of other countries and suggest that the six virtues do not constitute distinct constructs (e. g., Brdar & Kashdan, 2010; Khumalo et al., 2008; Littman-Ovadia & Lavy, 2012; McGrath, 2012; Park et al., 2006; Peterson & Park, 2006). Sample homogeneity constitutes a possible shortcoming of this study. Thus, the authors suggest additional studies with this scale using different populations to better evaluate the internal structure of the CSS. Because cultural differences may play a role on the way virtues are expressed, studies with this test in other regions of the country might provide relevant information about its internal structure too (e.g., corroborating or not the unidimensionality of the scale). Future studies should provide further validity evidences to the scale through the evaluation of the relationships among virtues with personality and other constructs studied by positive psychology, as subjective

well-being, optimism, hope, and resilience. Such investigations might bring new clues about the way virtues are manifested in Brazil.

### References

- Brdar, I., & Kashdan, T. B. (2010). Character strengths and well-being in Croatia: An investigation of structure and correlates. *Journal of Research in Personality, 44*, 151-154. doi:10.1016/j.jrp.2009.12.001
- Costello, A. B., & Osborne, J. W. (2005). Exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation, 10*(7), 1-9.
- 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.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272-299.
- Freitas, L. B. L., Silveira, P. G., & Pieta, M. A. M. (2009). Sentimento de gratidão em crianças de 5 a 12 anos. *Psicologia em Estudo, 14*(2), 243-250.
- Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Cambridge, MA: Harvard University Press.
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*(2), 179-185.
- Khumalo, I. P., Wissing, M. P., & Temane, M. Q. (2008). Exploring the validity of the values-in-action inventory of strengths (VIA-IS) in an African Context. *Journal of Psychology in Africa, 18*(1), 133-142. doi: 10.1080/14330237.2008.10820180
- Kohlberg, L. (1964). Development of moral character and moral ideology. In M. L. Hoffman & L.W. Hoffman (Eds.), *Review of child development research* (vol. I; pp. 383-431). New York: Russel Sage Foundation.
- La Taille, Y. de (2009). Formação ética: Do tédio ao respeito de si. Porto Alegre: Artmed.
- La Taille, Y. de (2006). A importância da generosidade no início da gênese da moralidade na criança. *Psicologia: Reflexão e Crítica, 19*(1), 9-17.

- La Taille, Y. de. (2000). Para um estudo psicológico das virtudes morais. *Educação e Pesquisa*, 26(2), 109-121.
- Littman-Ovadia, H., & Lavy, S. (2012). Character strengths in Israel: Hebrew adaptation of the VIA inventory of strengths. *European Journal of Psychological Assessment*, 28(1):41-50. doi: 10.1027/1015-5759/a000089
- Lorenzo-Seva, U., Timmerman, M. E., & Kiers, H. A. L. (2011). The Hull method for selecting the number of common factors. *Multivariate Behavioral Research*, 46, 340-364. doi:10.1080/00273171.2011.564527
- Lorenzo-Seva, U., & Ferrando, P. J. (2006). Factor: A computer program to fit the exploratory factor analysis model. *Behavior Research Methods Instruments & Computers*, 38(1), 88-91.
- McGrath, R. E. (2012). Scale-and item-level factor analyses of the VIA Inventory of Strengths. *Assessment*, 21(1), 4-14. doi: 10.1177/1073191112450612
- Noronha, A. P. P., & Barbosa, A. J. G. (2013). *Escala de forças de caráter*. Relatório técnico não publicado.
- Park, N., & Peterson, C. (2009). Character strengths: Research and practice. *Journal of College & Character*, 10(4), 1-10.
- Park, N., Peterson, C., & Seligman, M. E. P. (2004). Strengths of character and well-being. *Journal of Social and Clinical Psychology*, 23(5), 603-619.
- Park, N., Peterson, C., & Seligman, M. E. P. (2006). Character strengths in 54 nations and the 50 US states. *Journal of Positive Psychology*, 1, 118-129.
- Peterson, C., & Park, N. (2006). Character strengths in organizations. *Journal of Organizational Behavior*, 27, 1149-1154.
- Peterson, C., & Park, N. (2004). Classification and measurement of character strengths: Implications for practice. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice* (pp. 433-446). New York: John Wiley & Sons.
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Washington, DC: American Psychological Association.
- Piaget, J. (1994). *O juízo moral na criança* (E. Lenardon, Trans.). São Paulo: Summus. (Original publicado em 1932).
- Rava, P. G. S., & Freitas, L. B. L. (2013). Gratidão e sentimento de obrigatoriedade na infância. *Psico-USF*, 18, 383-394.
- Revelle, W. (2013). *Psych: Procedures for psychological, psychometric, and personality research* (R package, version 1.3.2). Northwestern University, Evanston, IL.
- Revelle, W., & Rocklin, T. (1979). Very simple structure: An alternative procedure for estimating the optimal number of interpretable factors. *Multivariate Behavioral Research*, 14, 403-414.
- Rique, J., Camino, C., Enright, R. D., & Queiroz, P. (2007). Perdão interpessoal e contextos de injustiça no Brasil e Estados Unidos. *Psico-PUCRS*, 38, 185-192.
- 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(3), 138-149. doi: 10.1027/1614-0001/a000022
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55, 5-14.
- Seligman, M. E. P., Park, N., & Peterson, C. (2004). The Values in Action (VIA) classification of character strengths. *Ricerche di Psicologia. Special Positive Psychology*, 27(1), 63-78.
- Singh, K., & Choubisa, R. (2010). Empirical validation of values in action-inventory of strengths (VIA-IS) in Indian context. *Psychological Studies*, 55(2), 151-158.
- Vale, L. G., & Alencar, H. M. (2009). Generosidade para com amigo, desconhecido e inimigo: Juízos morais de crianças e adolescentes. *Interação em Psicologia*, 13(2), 299-310.
- Vale, L. G., & Alencar, H. M. (2008). Generosidade versus interesse próprio: Juízos morais de crianças e adolescentes. *Psicologia: Teoria e Pesquisa*, 24(4), 423-431.
- Velicer, W. F., & Fava, J. L. (1998). Effects of variable and subject sampling on factor pattern recovery. *Psychological Methods*, 3, 231-251.

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