FUNCTIONAL THEORY OF VALUES: RESULTS OF A CONFIRMATORY FACTOR ANALYSIS WITH PORTUGUESE YOUTHS

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ABSTRACT
This study aims to test the functional theory of life values with Portuguese youths, based on the Basic Values Survey (BVS). A content hypothesis predicting a six-dimensional values model and a structure hypothesis predicting the representation of values into two space dimensions are tested. Participants include 815 youths, 444 girls, with a mean age of 15.3 years old. The content hypothesis was verified using confirmatory factor analysis. The structure hypothesis was verified through confirmatory (proxscal) multidimensional scaling. The results indicate that the six sub functions of values (content hypothesis) can be organized in a bi-dimensional space with three types of orientation and two types of motivator (structure hypothesis). Concluding, multiple indicators provide evidence for the psychometric properties of BVS in Portugal.

Keywords
values, functional theory, confirmatory factor analysis, youths

RESUMO
Este estudo pretende testar a teoria funcionalista de valores de vida com jovens portugueses, utilizando o Questionário de Valores de Vida (QVB). Foi testada uma hipótese de conteúdo que prevê seis dimensões de valores e uma hipótese de estrutura que prevê uma representação valorativa bidimensional. Os participantes incluem 815 jovens (444 meninas), com uma média de idades de 15,3 anos. A hipótese de conteúdo foi verificada através da análise fatorial confirmatória. A hipótese de estrutura foi verificada através do escalonamento multidimensional (proxscal). Os resultados indicam que as seis subfunções de valores (hipótese conteúdo) podem ser organizadas num espaço bidimensional, com três tipos de orientação e dois tipos de motivador (hipótese estrutura). Concluindo, vários indicadores fornecem evidência das propriedades psicométricas do QVB em Portugal.

Palavras-chave
valores, teoria funcionalista, analise fatorial confirmatória, jovens

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TEORÍA FUNCIONAL DE VALORES: RESULTADOS DE UN ANÁLISIS DE FACTOR CONFIRMATORIO CON JÓVENES PORTUGUESES

Human values are a central construct in psychology, a key element of each individual's cognitive system and a determinant of human attitudes, opinions and behaviors (Rokeach, 1973). In the present article we adopt a parsimonious and theory-driven approach of basic life values, the Functional Theory of Human Values (FTHV), developed by Gouveia (1998, 2003, 2005, 2013). This theory permits the explanation of the function of values in human life by integrating previous theoretical value models proposed by Inglehart (1977), Rokeach (1973) and Schwartz (1992), and conceptualizing values as guiding forces of human actions and as expressions of their needs.

The FTHV hypotheses have been corroborated in Brazil (Ardila et al., 2012; Gouveia et al., 2010; Gouveia et al., 2009; Gouveia, et al., 2014) and confirmed in other countries such as Spain (Gouveia et al., 2010), England (Guerra, 2005) and New Zealand (Boer, 2009). This line of research is based on the use of the Basic Values Survey (BVS; Gouveia et al., 2008).

We briefly present the functional theory of human values (FTHV; Gouveia, 1998, 2003, 2013) and then a study of the plausibility of its main hypotheses in the Portuguese cultural context. The FTHV focuses on the interplay between two widely accepted value functions values guide actions (Rokeach, 1973; Schwartz, 1992) and are cognitive expressions of needs (Inglehart, 1977; Maslow, 1954) to propose a three-by-two framework distinguishing values according to their pursued goals and expressed needs.

Values function 1: "Guiding Actions"

This type of orientation has the function of guiding human behavior and can be divided into three dimensions: Social, central and personal. Gouveia (2003, 2005) considers that individuals who are guided by social values have an interpersonal focus, or prioritize life in society.

Individuals who, in turn, are guided by personal values have an egocentric or intrapersonal focus. This corresponds to a contrasting emphasis on the group or of the self as the principal unit of survival (Gouveia et al., 2003; Mueller & Wornhoff, 1990; Rokeach, 1973). An intermediate set of values along this functional dimension can be empirically identified that is neither completely nor exclusively social nor personal (Gouveia, 2003; Gouveia et al., 2003; Mueller & Wornhoff, 1990; Schwartz & Sagiv, 1995). The central values are so named because they are between social and personal values and because they are not focused exclusively on either one of the two end-members but rather are congruent with social and personal orientations.

Values function 2: "Expressing human needs"

The type of motivator can be divided into materialistic or pragmatic versus humanitarian or idealistic values. This function is associated with the expression of human needs (survival or thriving needs) (Braithwaite et al., 1996; Inglehart, 1977; Marks, 1997; Ronen, 1994).

Materialistic values include biological survival, establishing a priority to personal existence and the conditions necessary to ensure it. Individuals who have materialist values guide their life by an orientation toward specific practical goals and normative rules (Gouveia, 2014).

On the other hand, humanitarian values are oriented towards a universal perspective, based on more abstract principles, and not focusing on specific objectives. Humanitarian values express needs that become more salient when the basic needs have been addressed (Inglehart, 1977; Maslow, 1954). These values include needs for information, self-esteem and intellectual and emotional stimulation (Baumeister, 2005). Persons who are guided by these values are typically individuals with a more mature outlook on life and are more openness to changes. Materialistic values express survival needs while humanitarian values express thriving needs (Gouveia, 2014).

FTHV Hypotheses: Structure and Content

The FTHV incorporates two main hypotheses for validation: One relates to the structure of values and the other to the content of values. Concerning the structure hypothesis, this theory assumes

two main dimensions: The type of orientation and the type of motivator, as is shown in Figure 1. The type of orientation is depicted on the horizontal axis and is formed by three dimensions: Personal, central and social. The type of motivator is on the vertical axis and it is composed of two dimensions: Material (pragmatic) and idealistic (humanitarian). These two functions acting together allows us to create a model of values with the 3 types of orientation (personal, central and social) by the 2 types of motivator (materialistic and idealistic) (see Figure 1). These two axes combine to generate six valorative sub-functions: Normative (social and materialist), interactive (social and humanitarian), existence (central and materialistic), supra-personal (central and humanitarian), promotion (personal and materialistic) and excitement (personal and materialistic). Social values are interactive and normative, the central values are super-personal and existence and the personal values are excitement and promotion.

		Values as guides of actions (circle of goals)		
		Personal goals (the individual by itself)	*Central* goals (the general purpose of life)	*Social* goals (the individual in the community)
Values as expressions of needs (level of needs	*Thriving* needs (life as source of opportunities)[1]	**Excitement Values** Emotion Pleasure Sexuality	**Suprapersonal Values** Beauty Knowledge Maturity	**Interactive Values** Affectivity Belonging Support
	Survival needs (life as source of threats) [2]	**Promotion Values** Power Prestige Success	**Existence Values** Health Stability Survival	**Normative Values** Obedience Religiosity Tradition

Figure 1. Facets, dimensions and basic values. *Note.* 1) Under permissive conditions that provide existential 2) Under pressing conditions that impose existential threats (adapted from Gouveia et al., 2014).

Method

Participants

The participants in the study are 815 youths ($M = 15.3$, $SD = 1.89$), from three public schools in the northwest of Portugal. Of these, 290 are attending 8th grade (35.6%), 267 are attending 10th grade (32.8%) and 258 are attending 11th grade (31.7%). Of the participants 444 (54.5%) were girls and 371 (45.5%) were boys. This is a convenience, non-random, sample.

Measure

The Basic Values Survey *(BVS; Gouveia et al., 2008)* is composed of 18 items. For each item, two descriptors are presented, representing the content of the inherent value (e.g., Social support: Obtain help when you need it; it feels that you are not alone in this world. Personal stability: To have the certain that tomorrow you will have all that you have today; to have an organized and unplanned life. Emotion: Enjoy challenging danger; seek adventures). Participants are expected to carefully read each listed item and evaluate its importance, as a guiding principle, using a seven-point scale, ranging from 1 "*totally unimportant*" to 7 "*of the utmost importance*". The 18 values are equally distributed among the six aforementioned sub-functions.

Table 1 shows the results of a descriptive and a reliability analysis of the values sub-functions (internal consistency and homogeneity). The Cronbach's alpha and correlations indicate the homogeneity of the values sub-function scales.

Table 1
Descriptive statistics and homogeneity of sub-functions

Sub-functions of values	α	$r_{i.i}$	M	SD	Intercorrelations				
1. Excitement	.76	0.40	5.3	1.01					
2. Promotion	.73	0.52	5.1	1.04	.50				
3. Suprapersonal	.70	0.64	5.7	0.85	.39	.47			
4. Existence	.71	0.62	6.2	0.85	.29	.37	.50		
5. Interactive	.73	0.53	5.6	0.97	.23	.24	.46	.53	
6. Normative	.76	0.41	5.0	1.09	.04	.24	.36	.42	.41

Note: * $p < .001$. α = Cronbach's alpha, $r_{i.i}$ = correlation inter-item (homogeneity), *m* = mean, and *sd* = standard deviation.

Procedure

After obtaining the informed consent by the parents, students were invited to participate in the study. A demographic questionnaire and the BVS were administered to the students by a trained research assistant, during regular classes. Although the survey was answered in a collective context, in class, the responses were given individually. The instructions needed to complete the instrument were indicated, and well as, the detailed ethical procedures associated with the study. On average, approximately 15 minutes was required to complete the survey.

Data analysis

Preliminary analyzes. There were no missing data across the items of the measure. The assumptions of multivariate normality of sampling distribution and absence of outliers were previously checked. While the item skewness values ranged from -.05 to -2.80, the kurtosis values ranged from -.099 to 8.92 (see Table 2). A univariate non-normality was suggested for a number of items, due to their skewness and/or kurtosis values off the interval [-1, 1] (Martins, 2001). The Mardia's coefficient of multivariate kurtosis was 136.133, thus suggesting a violation of the assumption of multivariate normality of sampling distribution (Garson, 2012). The Mahalanobis Distance statistics suggested the existence of 47 influential cases ($p < .001$), that did not change the sampling distribution. The remaining analyses were performed with and without outliers (e.g., Pinto et al., 2013). When the results were worsen with outliers, the results without outliers were reported.

Due to the non-normality of sampling distribution, the Maximum Likelihood (ML) estimation method with bootstrapping was used. The results were reported with the bootstrap x2 statistics (Bollen & Stine, 1992) with 500 bootstrap samples. A good fit was suggested with a *p* value higher than .05 for the Bollen-Stine bootstrap.

Table 2
Observed variables' distribution

Item	Minimum	Maximum	Skewness	Kurtosis	Median
1	1	7	-.046	-.80	6
2	1	7	-5.95	-.05	6
3	1	7	-1.01	1.25	5
4	1	7	-.55	-.099	5
5	1	7	-1.35	1.85	5
6	1	7	-.39	-.39	4
7	1	7	-2.80	8.92	6
8	1	7	-1.47	1.72	5
9	1	7	-1.08	1.22	7
10	1	7	-.71	.32	6
11	1	7	-.59	.13	5
12	1	7	-2.10	5.70	6
13	1	7	-1.25	1.76	6
14	1	7	-.42	-.24	6
15	1	7	-.38	-.58	5
16	1	7	-1.02	1.02	5
17	1	7	-.91	.53	7
18	1	7	-1.12	.86	7

A content hypothesis. A Confirmatory Factor Analysis (CFA) was conducted in order to test the content hypothesis (a six dimensional values sub-functions), and compare it with five alternative models (a penta, three, bi and unidimensional models). The use of the CFA in this study relied on its utility to examine the adequacy of an existing measure and related measurement model to a new population (Harrington, 2009).We used the Analysis of Moment Structures (AMOS), Version 20 for Windows.

The indicators of fit considered were: chi-square square goodness-of-fit test (χ^2), the goodness-of-fit-index (GFI) and its weighted version (AGFI), the comparative fit index (CFI,) the root-mean-square error of approximation (RMSEA), the consistent Akaike information criterion (CAIC) and the expected cross validation index (ECVI).

Structure hypothesis. In order to test the structure hypothesis, we used Statistical Package for the Social Sciences, (SPSS, 18th Ed.) to calculate descriptive statistics (frequency, mean and standard deviation), the internal consistency (homogeneity and Cronbach's alpha) of valorative sub-functions and a confirmatory multidimensional scaling (MDS algorithm Proxscal). The Tucker Phi coefficient (φ) was used as a measure of model fit, accepting values of 0.90 or greater (van de Vijver & Leung, 1997). We chose a theory-based MDS approach for our analyses. Multidimensional scaling using a theory-based starting configuration is appropriate for our purposes because Gouveia (1998) offers an explicit, theoretically grounded hypothesis about the structure of the values.

A Target Model and alternative Models were specified. The Target Model was defined to test the fit of the original six-factor structure to the sample of eighth to eleventh graders. The Target Model relied on the Portuguese BVS version (Gouveia et al., 2008*)* and was assumed as the hypothesised solution for this study. Six latent variables and 18 observed variables were specified. The latent variable interactive, assumed the items affection, support and belonging. The latent variable normative assumed the items religiosity, tradition and obedience. The latent variable supra-personnal assumed the items maturity, knowledge, beauty. The latent variable existence assumed the items stability, health and survival. The latent variable excitement assumed the items sexuality, pleasure and emotion. The latent variable promotion assumed the items success, prestige and power (see Figure 1).

The errors of measurement were freely estimated and assumed to be independent across the test of the five models. The factor loading of one observed variable was also fixed to 1.

Results

Content hypothesis

The first hypothesis predicts that the 18 line items (valorative markers), the six-factor model, fits the data. With the aim of determining the relative adjustment of the theorized model (original model with six sub-functions), four alternative models were compared according to the number of factors.

The first model assumed a single factor (unifactor) concerning a social desirability values, it was assumed that all items could saturate a single general factor. The second model (bifactor) assumed that values were distributed according the type of motivator: materialistic and idealist. The third model (trifactorial) assumed that values were organized according the type of orientation: Personal, social and central. It was felt that social values and personal power could represent the main difference between the values. The fourth model (pentafactorial) (encompasses existence and suprapersonal sub-functions): Considering the possibility that the central values together form the basis of the structure of human values (Gouveia et al., 2011). It would then be possible that the existence and suprapersonal sub-functions were united, resulting in a total of five valorative sub-functions. The original model was contrasted with three other alternative models. The results are shows in Table 3.

Table 3
Testing content hypotheses

Number of factos	χ^2	*Df*	GFI	CFI	RMSEA	ECVI
Six with outliers	797.53	120	.89	.79	.08	1.105
Six without outliers	771.45	120	.89	.78	.08	1.137
Five with outliers	827.48	125	.89	.78	.08	1.130
Five without outliers	794.10	125	.89	.78	.08	1.154
Three with outliers	878.80	132	.88	.77	.08	1.175
Three without outliers	873.12	132	.75	.75	.09	1.238
Two with outliers	1103.38	134	.85	.70	.09	1.446
Two without outliers	1095.60	134	.84	.84	.10	1.238
One with outliers	1104.02	135	.85	.70	.09	1.445
One without outliers	1098.64	135	.84	.68	.10	1.524

Note: Factorial models: Six-factors (original model), five-factors (suprapersonal and existence sub-functions composing a one-dimension: Central values), three-factors (personal, central, and social values), two-factors (idealist and materialist values), and one-factor (all values loading on one-dimension); *p <.001.

As can be observed in Table 3, the models with five and six factors register the best results. These results suggest that existence and suprapersonal sub-functions could be combined together to form the central values' dimension. However, the difference between the values of existence and

suprapersonal terms present theoretical and empirical support. In this case, as there is only a slight difference between the CFIs of both models, one relies on the significant difference in their chi-square statistics, the model using six factors corresponding to the lowest χ^2 value. The other model shows an adjustment indicator model clearly inferior as shown in Figure 2.
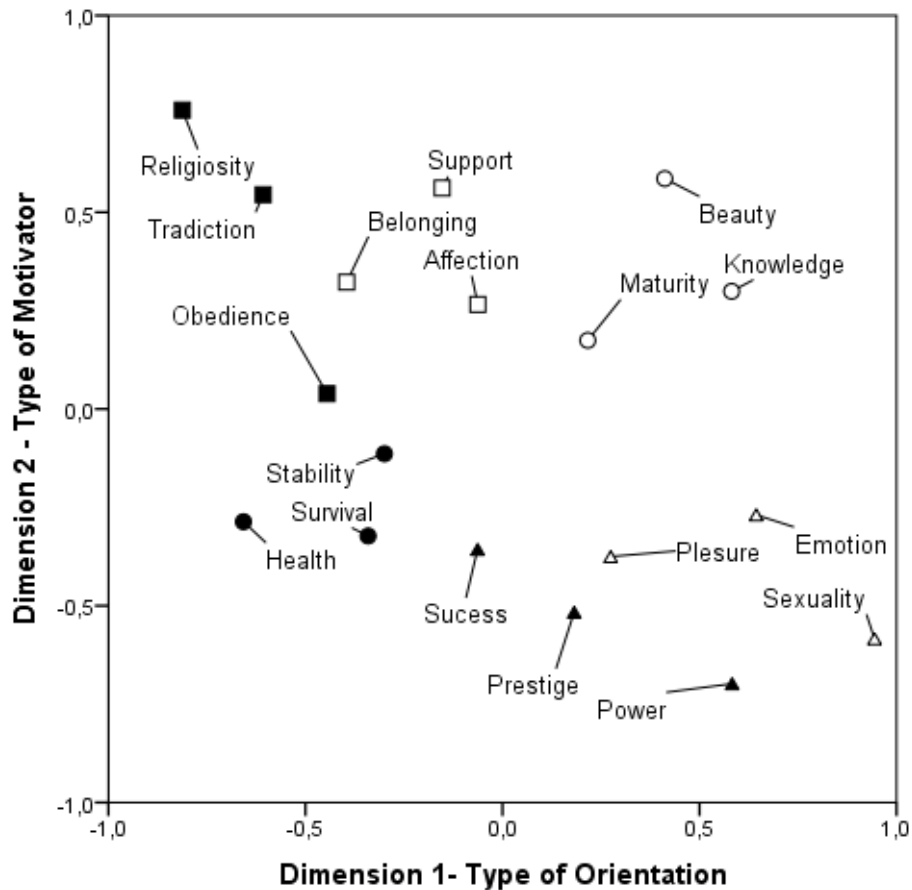

Figure 2. Spatial representation of values

Structure hypothesis

Figure 2 presents the results of confirmatory multidimensional scaling (MDS) analysis (proxscal algorithm), using SPSS (SPSS, 20th Ed.). The correlation between observed values fit the proposed structure. As it is possible to observe in the figure, the six theorized valorative sub-functions can be represented in a two-dimensional space, showing a satisfactory adjustment as noted by .96 Tucker Phi. The materialistic values (figures met) are in a region of space different from the idealistic values (figures unfilled). On the other hand, social values (squares) and personal values (triangles) are situated between the central values (circles). Thus, the results of confirmatory multidimensional scaling (MDS) corroborate the hypotheses presented, i.e., the central values are between social values and personal values (hypothesis 2) and materialistic values and humanitarian values lie in two different regions of two-dimensional space (hypothesis 2b).

Discussion

The main goal of this study was to assess the adequacy of the Functionalist Theory of Human Values developed by Gouveia (Gouveia et al., 2008, 2009, 2010, Gouveia et al., 2012) with a sample of Portuguese youths. The results have gathered evidence to support the hypotheses regarding the content and structure of human values in Portugal. Thus, as indicated previously in the model (Gouveia, 2003; Gouveia et al., 2008), values are organized along two functional dimensions, which

when crossed yield six sub-functions by type of orientation (social, central and personal) and type of motivator (materialistic and humanitarian). Additionally 18 valorative markers were found in the corresponding theoretical sub-functions, with reliability coefficients that meet the recommendations from the literature (Clark & Watson, 1995). These are represented by three specific values each: excitement (idealistic motivator and personal orientation; values emotion, pleasure and sexuality), promotion (materialistic motivator and personal orientation; values success, power and prestige), existence (materialistic motivator and central orientation; values stability, health, survival), suprapersonal (idealistic motivator and central orientation; values beauty, knowledge and maturity), interactive (idealistic motivator and social orientation; values affection, belonging and support), and normative (materialistic motivator and social orientation; values obedience, tradition and religiosity).

The content hypothesis suggested that the specific values would cluster in six sub-functions, what should be the most appropriate factor structure, and the structure hypothesis indicated that the central values would be located between the personal and social, which would meet on opposite sides of the two-dimensional space, while idealistic and materialistic values would occupy distinct space positions. The structure hypothesis suggested that central values are located between social and personal, and materialistic and humanitarian values would be organized in two regions of two-dimensional space. This structure has also been found to be robust in student and general samples from Brazil, Germany, New Zealand, Philippines, Spain, and the United Kingdom (Boer & Fischer, 2012; Gouveia et al., 2010).

This study has some limitations which should be considered for future research. The main limitation derives from the fact that it is a community sample. The adolescents are from the same region, and this sample was not a random, specific or probabilistic sample of students, and thus is not necessarily representative of the Portuguese population. Nevertheless, since the purpose of this study was not to generalize the results, but to test Gouveia's model, they do provide validity and accuracy in the context in which they were applied.

Another limitation concerns the use of a single type of self-report instrument. This method of data collection has some disadvantages, since the participant can distort the reported content, giving answers which differ from what would be real values (Cozby, 2003; Kohlsdorf & Junior Costa, 2009). Of particular concern is the bias or style of social desirability of the resulting response, a feature that may even be inherent to human values (Schwartz et al., 1997) and impact mainly on self-report measures. In future research another possibility to handle this limitation is to obtain an independent measure of social desirability, and use that either to omit responses that are 'high' in social desirability or partial out variance that is correlated with social desirability.

However more research is needed to test the validity of this model in other countries, with distinct cultures and with different samples such as in Asiatic countries for example. The Basic Value Survey might be particularly useful in less-developed contexts where such needs are more salient. The selection of marker values should take into account the socio-cultural context of the samples to be studied. The theoretical identification of the two main functions and the specific sub-functions allows a clear and parsimonious description of value effects that should enhance future research. In this way, the present study contributes to the theoretical development of the study of the Human Life Values, and to better support for the process of career construction with adolescents in today's society, which is full of rapid changes and challenges.

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