

Validation by Means of Method Variation: A CFA-Approach to the SSA-Value-Typology of Schwartz

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Abstract

General values belong to the traditional topics of survey research. Since the beginning of the nineties, the work of Schwartz is becoming one of the main standards in this field. In order to construct his value typology, Schwartz uses Smallest Space Analysis. However, this technique does not allow testing theories, whereas Schwartz does formulate a theory that can be tested in the framework of a CFA-model. In this study, we have used a dataset of members of the Christian Workers Movement in Flanders (N = 2,070). It is shown that these data do not fit the theoretical value typology of Schwartz. Both the different types of values and the dimensions cannot be found in the data. The article concludes with a taxonomy of values and suggestions for the operationalisation of values in surveys.⁴

1 Introduction

Since the work of Rokeach on the nature of human values (1973), values belong to the traditional topics of survey research. They have been enjoying great popularity, especially in social psychology. At the beginning of the 1980s, a second important step was taken. Hofstede published his study of values at an aggregated level. He makes a study of values over 53 nations or regions and presents a second order

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structure over different countries. Since 1990, the work on values of Shalom Schwartz has received a growing attention. Schwartz amends the work of Hofstede at two important points. He changes and empirically illustrates the dimensional structure of values and he enlarges the possible levels of observation by including the individual level and subsequently the study of values in one culture (Schwartz, 1994; Schwartz and Sagiv, 1994). The typology of Schwartz will be the substantial point for attention in this study.

Until now, almost all reports on the Schwartz value-typology use Smallest Space Analysis and a non-confirmatory approach. In their essential article on validity, Campbell and Fiske (1959: 100) argue that ‘any conceptual formulation of trait will usually include the implicit proposition that this trait is a response tendency which can be observed under more than one experimental condition and that this trait can be meaningfully differentiated from other traits’. The aim of this study is to test this proposition and to validate findings and interpretations based on the approach of Schwartz. More precisely, we want to know whether or not the findings are meaningfully influenced by the statistical method that is being used.

2 The value-typology of Schwartz

Following the tradition of Kluckhohn, Schwartz defines values as ‘desirable goals, varying in importance, that serve as guiding principles in peoples lives’ (Schwartz, 1992, 1994: 88). Values are considered as transsituational. Schwartz identifies values with an equivalent meaning into motivational types. Subsequently, these motivational types are organised in a value structure. The values are seen as “continuous “ which means that certain values of the types are overlapping or in measurement term: that they are indices for two types.

The most complete observation of values distinguishes 10 or 11 types (Schwartz, 1992): Self-direction, Stimulation, Hedonism, Achievement, Power, Security, Conformity, Tradition, Spirituality, Benevolence and Universalism.

These value-types often form pairs of adjacent types. They often go together or in correlation terms: they have high positive correlations. The value-pairs are mainly the result of empirical deduction. The pairs are benevolence – universalism, tradition – conformity, conformity – security, security power, power – achievement, achievement – hedonism, hedonism - stimulation, stimulation - self-direction, self-direction – universalism, (Schwartz, 1992: 14-15).

Subsequently, these empirical types and pairs of types are interpreted as being ordered along two bi-polar higher-order value dimensions that also point at the value-conflicts between pairs of values. The first dimension is the *openness versus conservation* dimension. On this dimension, stimulation and self-direction are opposed to the tradition – conformity pair and security. On the second dimension, the power – achievement pair, together with hedonism are opposed to benevolence

and universalism. This dimension is called the *self-enhancement versus self-transcendence* dimension (Schwartz, 1992: 43).

This theoretical model is operationalised with a questionnaire where respondents (in most cases students and/or teachers) are being asked to evaluate the value in terms of importance as guiding principles in their own life. After data collection the value priorities are analysed by means of Smallest Space Analysis. This multidimensional scaling technique is a geometrical representation of the value intercorrelations in a two-dimensional space. After the plotting of the values in space, the representation needs interpretation. That is, the researcher has to try to discern meaningful cluster of values. But, because of the alleged continuous character of values, Schwartz argues that a clear clustering of values is theoretically impossible. 'Rather, it is necessary to partition the space into meaningful regions based on an a priori theory of the conceptual relations among the values. What this means is that the partition lines in the SSA's represent conceptually convenient decisions about where one type of motivation ends and another begins' (Schwartz, 1992: 45). Values that are far from a partition line can be considered as typical for that dimension whereas values that are close to a partitioning line can be considered as belonging to both types. This methodological approach of Schwartz does not allow testing a theoretical model in the sense of testing the extent to which a theoretical model fits the sample (e.g., like in confirmatory factor analysis). Therefore, the validity claims of the theory of Schwartz in terms of falsification are necessarily weak⁵.

3 Research questions and design

The problem we want to deal with in this paper is twofold:

1. The main research question deals with the falsification of the value-structure that is specified in the theory of Schwartz.
2. The second question pertains to the way values can be included in survey questionnaires. We will try to propose a limited list of values for this purpose.

In order to empirically validate his theory, data are conventionally analysed in an exploratory way with Smallest Space Analysis (SSA), giving a lot of freedom to the researcher to draw the partitioning lines on the SSA's graphical representation (combined with the fact that Schwartz does not require nor expect a clear clustering of values). This exploratory character is on the one hand recognised by Schwartz himself (1992) but on the other hand it is argued that this approach allows *empirical validation* of the theory. This makes Schwartz' approach very

⁵ The use of student and teacher populations is a second and may be even more important problem with the validity of these studies.

susceptible to the statement of Underwood concerning the loose use of the validity-claim. ‘The danger ... that the investigator will fall into the trap of thinking that because he went from an artistic or literary conception ... to the construction of items for a scale to measure it, he has validated his artistic conception’ (1957, as cited in Campbell and Fiske, 1959: 101).

The theory of Schwartz is placed in a framework of statistical testing of a theory. Because of the way the theory is specified as a structure of dimensions and second order relations between dimensions, we can test his theory in the framework of the confirmation of an expected measurement model. When the results converge with Schwartz findings and interpretation, this should add more statistical authority to the conclusion and enlarge the validity of his typology and structure.

But this is not the total picture. First of all, this only holds if a value “loads” on an adjacent type. But, this argument does not cover the possibility that a value is also an indicator for non-adjacent types. Likewise, values can also be close to a partitioning line because they are considered the same by the whole sample but in the sense that they are substantially related with the values of another type (adjacent or not).

If values are meaningless or have substantially different meanings for different groups in a population, these values have to be considered as *arbitrary measures*. Because, if values have substantially different meanings for different groups in a population, the content and meaning of what is being evaluated is unknown for the researcher. For instance, what does it mean to say that value x is the third most important value for the respondents of a sample if this value has substantially different meanings in that sample? The SSA-analysis as operated by Schwartz is insufficient when it comes to the analysis of multiple meanings in one sample. The lines are drawn on *theoretical* and *not on empirical* grounds. From this procedure, it is impossible to conclude that a value has different *empirical* meanings because the values are close to a partitioning line. This way of partitioning does not allow anyone to conclude anything for empirical relations about values that are close to lines that are drawn on theoretical grounds.

Confirmatory Factor Analysis (CFA) could give part of an answer. In the framework of CFA it is possible to pre-specify cross-loadings. But CFA is also based on the item intercorrelations. So the detection of differences in meaning is limited to the framework of the value list, the closed survey-way of observation and last but not least to correlations that are condensed figures for *the total sample*. Hence, correlations share the same weakness with all over-all statistical measures: they do not take into account within-sample differences between groups (Catell, 1979; Rudas, 1998; Waege, 1994). Only if a theory that defines differences between groups formed on the basis of e.g. education or gender, would be available, it would become feasible to test aspects of difference in meaning between groups in a heterogeneous population. Therefore, our approach is also limited, especially when the question is the detection of multiple meaning in a population.

4 Validation by variation of statistical techniques⁶

The relation between a theoretically specified model and the data will be studied by means of Confirmatory Factor Analysis (CFA). The main reason why Schwartz rejects the use of (exploratory) factor analysis is the continuous character of values and the fact that values have to be considered in relation to one another in an overall-model (Schwartz, Sagiv, 1994: 114). But, with Confirmatory Factor Analysis we can untangle both problems. The first problem, the continuous character of values, can be solved by specifying cross-loadings in a CFA model; the second problem can be solved by specifying an oblique model.

4.1 Data

The data for this study were collected from a population of members of different social organisations of catholic signature (Van Gyes, De Witte, 1996). These organisations are mainly concerned with the representation of workers (union activities), social-cultural activities and health care⁷. The total sample of 2932 potential respondents is the result of nine sub-samples from nine different organisations that are part of the catholic social movement. Finally 2070 questionnaires were filled out by the respondents and collected by collaborators. In the sample, the higher educated and the mid-life age group (35-65 years of age) are slightly over-represented compared with the distribution in Flanders. Also, the number of people living in “traditional” families is over-represented compared to the Flemish average. Because of the inclusion of social and cultural organisations and of members of a generalised health care system, higher-class people (income) are also represented in the sample (Van Gyes, De Witte, 1996: 37-64). Although, the sample cannot be considered as representative for Flanders, it is in many respects a heterogeneous sample with a substantial variation of the classical background variables that are characteristic for survey models, particularly when this group is compared with the homogeneous population of teachers and students that are in many cases the populations for the samples of the research on the Schwartz-typology.

Van Gyes and De Witte (1996: 99) already analysed these data with SSA and came to a representation of the data that is very close to the one that is expected based on Schwartz.

⁶ The data for the quantitative part of the study were collected by Guy Van Gyes and Hans De Witte. The data were collected in the framework of a study that was commissioned by the ACW. ACW is an organisation that represents several social organisations of the Christian pillar in Belgium. We thank both the researcher and the ACW for the willingness to share these data with us.

⁷ The union has about 900 000 members, the KWB (one mainly male-oriented social-cultural organisation) has about 150 000 members. Flanders has a population of about 6 000 000. This means that these are large organisations that do not represent a small minority.

4.2 A validation of Schwartz' typology

The first step of the validation with CFA is specification of a CFA-model that is based on the theory of Schwartz. Because there are some differences between the western and eastern part of the world, we will take the value representation of a study concerning western oriented countries (Schwartz, 1992: 6-7, 24; also Schwartz, Sagiv, 1994: 96). The first step in the analysis is the construction of ten value-dimensions. Each of these dimensions has several values as indicators. Some of the values are indicators for two dimensions. These dimensions are adjacent types in the graphical representation.

Self-direction: freedom, creativity, independence, choosing own goals, curious, originality

Stimulation: excitement, a varied life, daring

Hedonism: pleasure, enjoying life

Achievement: ambition, influential, successful, intelligent, capable

Power: social power, wealth, and authority preserving my public image, social recognition

Security: national security, security, sense of belonging, social order, reciprocation of favours, health

Conformity / Tradition: obedient, politeness, self-discipline, honour parents, respect for tradition, devout, humble, moderate, accepting my portion in life

Spirituality: spiritual life, detachment, meaning in life, inner harmony

Benevolence: honest, forgiving, true friendship, helpful, responsible, loyal, mature love.

Universalism: world at peace, wisdom, protecting environment, equality, inner harmony, broadminded, social justice, unity with nature

Cross-loadings of factors on values were specified based on the expectation of Schwartz (1992: 6-7). We will use an oblique rotation and by consequence allow for all factors to correlate between each other. The Pearson's correlation matrix is used (Coenders, 1996), based on the listwise deletion of missing values. The effective sample size for the analysis is 1657. The analysis is carried out with LISREL 8.20[®].

The model that is specified on the theoretical expectations has a RMSEA of 0.065 ($\chi^2 = 9694$ df=1477). Five of the expected cross-loadings were non-significant, 1 loading (meaning of life as indicator for spirituality) was non-significant, 13 of the expected loadings are lower than .45, and of course we get a large number of important modification indices.

In order to come to a model that more or less fits the data, we will have to follow an exploratory strategy. In a first step, we will remove the insignificant λ 's. Then, step by step, we will introduce the most significant λ until a RMSEA of <0.05 is attained. After each step, all λ 's that are insignificant will be removed before a further step is taken.

The first addition is a λ from achievement on wisdom (decrease in χ^2 of 310). After this first addition, three theoretically expected loadings and one theoretically expected cross-loading⁸ became insignificant.

In the process of adding the parameters with high modification indices, some theoretically expected loadings had to be set to 0⁹. After the specification of 23 additional cross-loadings, we obtained a model with a RMSEA of 0.048 ($\chi^2 = 6460$, DF=1464). The pattern of factor-loadings is given in Table 1.

Table 1: Factor loadings (λ 's) of the modified model.¹⁰

	Self-direct	Stimul	Hedon	Achiev	Power	Secur	Con-trad	Benev	Spirit	Univers
Equality										0.35
Inner harmony						0.39	--0.24			0.25
Social power					0.60					
Pleasure			0.78							
Freedom	0.44	-0.46	0.65							
Spiritual life									0.60	
Belonging						0.12				0.41
Social order						0.64				
Exciting life		0.34	0.45							
Meaning in life										0.50
Politeness							0.70			
Wealth					0.48					
National security						0.57				
Reciproc. favors						0.23				
Creativity	0.55									
World at peace		-0.20								0.50
Respect tradition							0.50			
Mature love		0.26								0.23
Self-discipline							0.22	0.36		
Detachment									0.43	
Family security						0.18				0.34

⁸ Spirituality on inner harmony, power on social recognition, achievement on influential and self-direction on intelligent.

⁹ The cross-loadings of conformity/tradition on reciprocation of favours, of universalism on intelligence and the loading of originality on self-direction (not a Schwartz-value) beauty is not an indicator for universalism but for self-direction.

¹⁰ In all the models, a correlation between the error-term of the two values that point to environment had to be specified suggesting that both indicators are influenced by a common factor "environmental concern".

	Self-direct	Stimul	Hedon	Achiev	Power	Secur	Con-trad	Benev	Spirit	Univers
Social recognit.		0.25		0.06						0.27
Unity nature										0.48
Varied life		0.71								
Wisdom				0.60						0.14
Authority					0.68					
True friendship			0.22					0.46		
World beauty	0.46									
Social justice			-0.30							0.56
Independent	0.70								-0.40	
Moderate							0.30			
Loyal								0.57		
Ambitious		0.31		0.16			0.36			
Broad-minded	0.34					-0.34				0.36
Humble						-0.50	0.69		0.38	
Daring		0.66								
Potect environm.										0.49
Influential					0.78					
Honour parents							0.65			
Own goals	0.68							-0.34		
Healthy			0.06			0.41				
Capable				0.73						
Accepting life							0.38		0.09	
Honest								0.53		
Public image					0.43	0.29				
Obedient							0.71			
Intelligent				0.74						
Helpful								0.69		
Enjoying life			0.45							
Devout	-0.48						0.49		0.78	
Responsible								0.49		
Curious	0.59									
Forgiving								0.54		
Successful				0.24	0.56					
Decency							0.72			
Being original		0.59								
Feeling secure						0.49				

The first level of the Schwartz value typology consists of 10 value-dimensions. During the exploratory process of reaching a more or less acceptable fit, some loadings and cross-loadings were already changed. So, the structure of the relations between types and indicators is substantially altered. When we inspect the pattern of loadings, we have to conclude that there are many trivial indicators. Some trivial indicators have low loadings, other values have cross-loadings that cannot be accepted on theoretical grounds (ambiguous indicators). A negative cross-loading on an adjacent type that belongs to the same second-order dimension cannot be accepted. Also, we cannot accept two relatively high positive loadings of one indicator on two theoretically opposite dimensions.

Therefore, it seems necessary to include an additional step in the procedure. In that step, the trivial indicators will be removed in order to obtain a better model from the measurement point of view.

Before doing this, we inspect the correlation matrix of the latent variables (Table 2). The main question that has to be answered here deals with the expected second order value structure of Schwartz' typology as manifested in the data.

Table 2: Correlation matrix of independent variables.

	Self-direct	Stimul	Hedon	Achiev	Power	Secur	Con-trad	Benev	Spirit	Univers
Self-direct	<u>1</u>									
Stimul	<u>0.69</u>	1								
Hedon	<u>0.24</u>	0.56	1							
Achiev	<u>0.74</u>	0.43	<u>0.20</u>	1						
Power	<u>0.41</u>	0.62	0.43	0.50	1					
Secur	<u>0.46</u>	<u>0.11</u>	<u>0.29</u>	<u>0.48</u>	<u>0.39</u>	1				
Con-trad	<u>0.39</u>	0.08	0.04 (n.s.)	0.35	0.30	<u>0.86</u>	1			
Benev	<u>0.66</u>	0.28	-0.08	0.37	0.05 (n.s.)	<u>0.49</u>	0.66	1		
Spirit	<u>0.66</u>	0.27	0.25	0.31	0.06 (n.s.)	<u>0.62</u>	0.51	0.81	1	
Univers	<u>0.55</u>	0.26	-0.25	0.21	0.06 (n.s.)	<u>0.10</u>	0.09	0.55	0.45	1

The second-order structure of Schwartz had two parts. The first is the existence of more or less clear pairs of values, the second aspect of the typology are the two bi-polar dimensions.

1. The first pair of values is the conformity – tradition pair. Because we modelled these two types as one dimension, this first pair is forced on the data¹¹. The second expected pair is self-direction and stimulation. These dimensions have a correlation coefficient of .69. The third pair is benevolence-universalism (.50). These are three pairs that were expected on the basis of the early theory of Schwartz. The high correlations can be considered as a confirmation of the theory. Now, we will look at all correlations that are .45 or higher and ask the question if they are expected based on the findings of Schwartz and his transformation of the theory (Schwartz, 1992: 14-15). Security – Power (.39) and Achievement – Hedonism (.20) are two of the nine expected pairs and have relatively low correlations. So the number of unexpected elevated correlations is large. Six of the ten largest correlations were not among the expected pairs! Of the 18 correlations above .45, only 7 were expected. Also taking into account the two correlations that were expected to be high but that are relatively low, we have to conclude that the theory of Schwartz is not present in the results of our empirical exploration. The high correlation (.86) between benevolence and spiritualism is expected based on the argumentation of Schwartz. This points towards the reasonable argument of Schwartz that (as has been done with conformity and tradition) benevolence and spiritualism can often be collapsed in one dimension.
2. The main characteristic of the theory of Schwartz is the bi-dimensional second-order structure of values. As has been exposed earlier, Schwartz arranges the ten value-types along two bi-polar dimensions. The first dimension opposes Self-direction and Stimulation to Security and Conformity-Tradition. Table 3 shows that there are no negative correlations between these types. On the contrary: Self-direction correlates highly with both security and conformity-Tradition (res. .46 and .39). The low correlations between stimulation and Conformity-Tradition – Security does not point at bi-polarity of these types but at an orthogonal character. More or less the same conclusion has to be written for the other bi-polar dimension. There, achievement and power are opposed to benevolence (and spiritualism) and universalism. But, our findings show that achievement has a positive correlation with both benevolence (+spiritualism) and universalism (res. .37 and .21). There is only one clearly negative correlation between universalism and hedonism. Also unexpected is the fact that the lowest correlation of self-direction is within the individualistic half: the correlation with self-direction and hedonism. This individualistic character is supposed to lead to higher correlations for the two value-types.

¹¹ This collapse is motivated by the fact that both types often are situated in the same edge of the SSA-representation and by the fact that for many indicators, cross-loadings are being expected on both types.

We can conclude that the two-bipolar dimensions are not reproduced in the correlations between the value-types. The data-analysis by means of CFA does not lead to the confirmation of the way Schwartz defines the second-order structure of values.

Table 3: Expected and unexpected correlations.

	Expected	Unexpected
Conformity – Security (.86) :	X	
Benevolence and Spiritualism (.81) :	X	
Achievement and Self-direction (.74) :		X
Benevolence and Self-direction! (.66) :		X
Spiritualism and Self-direction (.66) :		X
Benevolence and Conformity-Tradition (.66) :		X
Power and Stimulation (.62) :		X
Spiritualism and Security (.62) :		X
Hedonism – Stimulation (.56) :	X	
Universalism and Self-direction (.55) :	X	
Self-direction – Universalism (.55) :	X	
Spiritualism and Conformity-Tradition (.51) :		X
Power – Achievement: (.50) :	X	
Benevolence and Security (.49) :		X
Security and Achievement (.48) :		X

4.3 The model after deletion of trivial indicators

We now proceed to the query for obtaining a more parsimonious model where all indicators attain the minimum requirements to be considered as sound indicators for a value-type. There are different possible strategies for developing a model where the indicators have the essential qualities. Because of the large number of parameters, we choose for a solution based on the results of the CFA where all indicators that do not have the necessary requirements to be considered as sound indicators are omitted from the analysis. We only keep those indicators with loadings that are high enough (at least .45) and that are unique indicators or indicators that only have theoretically acceptable cross-loadings. By following this

strategy, we maximise the chance of finding the 10 basic dimensions of Schwartz' typology.

As a result of this strategy we start with dropping 12 indicators¹². After adding one extra cross loading of power on social recognition, the model reaches a RMSEA of 0.049 ($\chi^2 = 3433$, $df = 723$). In these measurement models also, the loadings of detachment, social recognition, moderate and healthy clearly turned out to be too low according to our standards. They are omitted from the model. After this step, the original loading of sense of belonging on security was omitted and sense of belonging becomes an indicator for universalism. Since true friendship is an indicator for hedonism and benevolence, it is eliminated from the model because these dimensions are theoretically opposed to each other. Of course, this step is taken from a measurement point of view, and not from the point of view of substantial theory. Because, from this second point of view, we have to argue that true friendship seems to be an aspect of both hedonism and benevolence. From a measurement point of view we conclude that true friendship cannot be considered as a clear indicator for one of the value-dimensions.

The factor loadings of the model without trivial indicators are presented in Table 4. Each dimension (value-type) has at least two unique indicators necessary for the identification of the model.

Of the 57 values at the beginning of the study, 41 are left over. Some dimensions have a correlation coefficient .80 or more, for instance between security and conformism/tradition (see Table 5). Therefore, one could also consider leaving out one or more entire dimensions. Although, the correlations do not equal 1, these high correlations do question the relevance of empirically distinguishing between all these types. When deleting types based on the analysis as reported at present, or based on other analyses that are the result of a similar procedure as the one that was followed by us, we should always keep in mind that this is an exploratory procedure maximising the chance of detecting the 10 original types.

Table 4: Factor loadings (λ 's).

Indicators	Self-direct	Stimul	Hedon	Achiev	Power	Secur	Contrad	Benev	Spirit	Univers
Social power					0.60					
Pleasure			0.76							
Spiritual life									0.60	
Belonging										0.47
Social order						0.65				
Exciting life		0.31	0.48							
Meaning in life										0.48

¹² Equality, inner harmony, freedom, reciprocation of favours, mature love, self-discipline, family security, social recognition, ambitious, broad-minded, humble, and accepting life as it.

	Self-direct	Stimul	Hedon	Achiev6ft	Power	Secur	Contrad	Benev	Spirit	Univers
Politeness							0.70			
Wealth					0.48					
National security						0.58				
Creativity	0.55									
World at peace		-0.26								0.58
Respect tradition							0.50			
Unity nature										0.47
Varied life		0.72								
Wisdom				0.59						0.14
Authority					0.68					
World beauty	0.46									
Social justice			-0.32							0.51
Independent	0.70								-0.40	
Loyal								0.55		
Daring		0.67								
Potect environm.										0.50
Influential					0.78					
Honour parents							0.65			
Own goals	0.68		-0.35							
Capable				0.73						
Honest										0.54
Public image					0.44	0.28				
Obedient							0.70			
Intelligent				0.76						
Helpful								0.62		
Enjoying life			0.48							
Devout	-0.59						0.58		0.81	
Responsible								0.51		
Curious	0.59									
Forgiving								0.54		
Successful				0.23	0.57					
Decency							0.72			
Being original		0.60								
Feeling secure						0.45				

Other approaches such as exploratory factor analysis might lead to different conclusions and the distinction of other types. Also, it not necessarily so that the correlations between the types are similar.

The 41 remaining values allow revealing the 10 types that constitute the foundation of the typology. In Table 5, the correlations of the latent variables of the model without trivial indicators are compared with the correlations of the modified model with all values included. Based on visual inspection of the differences we can conclude that the correlations do not differ “significantly” between the two models. This means that both correlation matrices would lead to approximately the same conclusions concerning the structure of the value-types. This is an argument of construct validity in favour of a more parsimonious data collection excluding all trivial indicators. Of course, this only holds if we want to limit our typology to the one that is being proposed by Schwartz. Based on the considerable similarity between the two correlation matrices, we can infer that the model without trivial indicators also does not lead to a representation of the data that allows the conclusion that the second-order typology of Schwartz is an adequate representation of the “reality” as observed in the survey and analysed with CFA.

Table 5: Comparison of the correlation matrices of latent variables. The first table on top is the correlation of the model without trivial indicators.

	Self-direct	Stimul	Hedon	Achiev	Power	Secur	Con-trad	Benev	Spirit	Univers
Self-direct	1									
Stimul	0.70	1								
	0.69									
Hedon	0.25	0.55	1							
	0.24	0.56								
Achiev	0.76	0.43	0.21	1						
	0.74	0.43	0.20							
Power	0.41	0.59	0.46	0.49	1					
	0.41	0.62	0.43	0.50						
Secur	0.42	0.09	0.26	0.42	0.36	1				
	0.46	0.11	0.29	0.48	0.39					
Con-trad	0.40	0.09	0.10	0.36	0.31	0.89	1			
	0.39	0.08	0.04 ns	0.35	0.30	0.86				
Benev	0.67	0.27	-0.07	0.38	0.07	0.50	0.67	1		
	0.66	0.28	-0.08	0.37	0.05 ns	0.49	0.66			
Spirit	0.71	0.38	0.28	0.36	0.14	0.73	0.56	0.80	1	
	0.66	0.27	0.25	0.31	0.06 ns	0.62	0.51	0.81		
Univers	0.61	0.33	-0.22	0.30	0.06 ns	0.02 ns	0.03 ns	0.57	0.50	1
	0.55	0.26	-0.25	0.21	0.06 ns	0.10	0.09	0.55	0.45	

In our exploratory approach, the chance of detecting the 10 types as expected based on the theory of Schwartz is maximised. Therefore, following a different exploratory strategy (e.g., a preceding exploratory factor analysis) might lead to different results and subsequent conclusions. The model that we have presented is only one of the possible models. In many cases like this, several nearly equivalent

models that cannot be distinguished on empirical grounds can be represented based on the same data (cf. Jöreskog, 1993).

5 Discussion

The study of values and differences in values is a highly standardised procedure, not at least because of the interest in international comparison between countries. Tourangeau argues that “it is not a foregone conclusion that the costs of standardisation outweigh the gains or that the gains can be preserved while the costs are reduced” (Schober, Conrad, 1997: 595).

The purpose of this contribution is twofold. First, we test the theory of Schwartz with a different technique than the one that is generally being used. The second objective is the question of whether it is possible to propose a shorter value list because the list that is usually proposed is rather long. Like Schober and Conrad, our study shows that there are strong indications that in the context of research on general values the costs of standardisation of analysis techniques and questionnaire wording does outweigh the gains. The variation in the way data are analysed, is only a minor variation of the methodology. However, in the case of the Schwartz-typology, this method variation leads to substantially different conclusions. The second purpose of this article is also achieved. Without affecting the correlations between the dimensions, we are able to drop 16 (28%) of the 57 indicators.

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