

Congruence and Performance of Value Concepts in Social Research

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Two value concepts are dominant in the social sciences: (1) Schwartz's theory of basic human values, measured through the *Portrait Values Questionnaire* (ESS) and (2) Inglehart's postmaterialism and Welzel's extension to the self-expression values scale (WVS/EVS). To advance research in values, two questions need to be addressed: (1) Are the concepts and measurements of values in the different approaches interchangeable? (2) Which of the concepts performs better for explaining moral and social attitudes? This study contributes to the discussion on value concepts by comparing these value *instruments* using individual level data from an online access panel ($n = 762$) and assessing the performance of values instruments for microexplanations of moral (end-of-life attitudes and sexual morality) and social attitudes (xenophobia). Overall, the measurement model of basic human values with the PVQ provides a sound basis for comparing the Schwartz values to postmaterialism and self-expression values. In both cases, there are positive correlations with universalism and self-direction and negative correlations with tradition/conformity and security, which do not exceed 0.4. Regarding the performance, it turns out that the Schwartz values are *in toto* a more powerful tool than both Inglehart's postmaterialism and Welzel's self-expression values, in terms of explained variance as well as in terms of standardized effects.

Keywords: value concepts, postmaterialism, Portrait Values Questionnaire, self-expression values, comparative analysis

1 Introduction

When people are confronted with competing claims in public political debates, face moral conflicts and need to make a decision or just take a position on a disputed topic in everyday life, they often make up their mind about issues by resorting to guiding principles of a higher order. Values offer orientation for almost all socially relevant issues as diverse as family and sexual norms (Beckers 2008a, 2009), beginning- and end-of-life issues (Harris and Mills 1985), immigration (Davidov, Meuleman, Billiet and Schmidt 2008b; Sagiv and Schwartz 1995) and politics (Arzheimer and Rudi 2007).

Two value concepts have become dominant in the field of social research: (1) Schwartz's theory of basic human values, which, through a short form of the *Portrait Values Questionnaire* (PVQ), is included in the European Social Survey (ESS) (Schwartz 2007; Schwartz 2003). (2) Ronald Inglehart's postmaterialism (1977, 1997) and its extension to the self-expression values (Inglehart and Baker 2000; Inglehart and Welzel 2005; Welzel 2010), which are part of the World Values Survey/European Values Study (WVS/EVS).¹

Research into values with each set of value concepts has followed separate lines. Therefore, insights from one set of

concepts cannot easily be adopted for research about the other, because the relationships between the Schwartz values and postmaterialism and self-expression values are not clear.

We address two questions relevant for advancing research in social and human values: (1) Are the concepts

¹ In the social sciences, different approaches of value research have emerged. This paper focuses on the concepts of Schwartz, Inglehart and Welzel and will substantiate the understanding of these individual level concepts in the next section. We would like to stress that we were not able to compare more than three value concepts in one survey and have therefore decided to choose the concepts that have been implemented in cross-national survey series and have gained the highest attention in secondary analyses of survey data. Other concepts of values as those by Triandis and Hofstede differ from Schwartz, Inglehart and Welzel in important aspects, for example, the *individualism vs. collectivism* dimension of Triandis (1993, 1995) is only valid for the aggregate level. Triandis has additionally introduced the constructs of *idiocentrism* and *allocentrism* as the psychological manifestations at the individual level: "Cultural differences at the psychological level, then, are seen as reflecting the differential sampling of idiocentric as compared with allocentric features of self in diverse sociocultural contexts." (cf. Miller and Schaberg 2003). Hofstede (1980, 2009) also locates values at both the aggregate level (e.g., organization, countries, cultures) and at the individual level, but in fact primarily focuses on the aggregate level. Thus, for Hofstede values are "an attribute of individuals as well as of collectivities" (Hofstede 1980:18) – but his major interest is in the cultural collectivities when he claims that "values are among the building blocks of culture" (Hofstede 1980:21) and identifies value dimensions assisting in differentiating cultures.

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and measurements of values in the different approaches interchangeable? In practice, this means testing how strong the associations between Inglehart's, Welzel's and Schwartz's value dimensions are at the individual level.

(2) Which of the concepts performs better for explaining moral and social attitudes? Two cases have to be analytically disentangled: If the congruence of the concepts is high, differences in performance are most likely due to differences in measurement. If the congruence is low, the conceptual quality of the value theories can be assessed by comparing their performance when explaining attitudes and behavior.

This study thus contributes to the discussion of value concepts by comparing two widely used value *instruments* using individual level data and assessing the performance of values instruments for micro-explanation of moral and social attitudes in a specifically designed survey. The paper is composed of five sections. First, we briefly introduce the value concepts we are studying. Second, we propose hypotheses about the associations between value concepts and their relations to a set of dependent variables. Third, we describe the data that was used, the operationalization of value concepts, and the dependent and control variables. Fourth, we report results of (1) the measurement model for the PVQ, (2) the associations of the values concepts, and (3) the explanatory models. Finally, we discuss implications of our findings and suggest recommendations for their use in research practice.

2 Basic Human Values, Postmaterialism and Self-expression Values: Competing Concepts of Values in Empirical Social Research

The concept of values has a long tradition in social research. Kluckhohn (1951) and Rokeach (1973) proposed early, influential applications for survey research. Since then, many different concepts of values have developed in the field (for an overview: Hitlin and Piliavin 2004; van Deth and Scarbrough 1995). We restrict this study to two widely-used sets of value concepts and the popular instruments that operationalize them in survey research: the basic human values in the Schwartz theory and postmaterialism or self-expression values of Inglehart and Welzel.

Schwartz (1994) defines values "as desirable, trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity" (Schwartz 1994:21; cf. definition of Hofstede 1980:19). Values have important functions for individuals: They serve as motives for individual action, provide standards for the evaluation of actions and guide the formation of individuals' attitudes and choices in concrete everyday life situations. Therefore, values should predict moral and social attitudes.

Schwartz's theory distinguishes ten potentially universal values. Table 1 summarizes the ten values and the core goals of each one. Schwartz organizes the ten motivational values according to their compatibility. Four higher-order values emerge which structure the ten first order values: (1) self-transcendence and its opposite (2) self-enhancement;

(3) openness to change and its opposite (4) conservation (Schwartz 1994:24; Schwartz 2003:270).

Inglehart and Welzel define values similarly to Schwartz: "Value orientations set standards for desirable and undesirable goals" (Inglehart and Welzel 2005:23). Inglehart deduces the specific content of the goals from the individual level scarcity hypothesis and from Maslow's hierarchy of needs. The scarcity hypothesis states that individuals value those goals that help satisfy those needs that have not yet been satisfied. The need hierarchy implies that once basic material needs are fulfilled, human beings develop higher needs for esteem and self-actualization (Inglehart 1977:33). Thus, values depend on the level of existential security individuals experience during their early socialization. Individuals who experienced states of material scarcity and physical insecurity during their childhood and youth will value material and physical security (i.e., materialistic goals). Individuals growing up in very secure environments, where all needs for food, housing, and security are fulfilled, will strive for more ambitious goals of "belonging, esteem, aesthetic and intellectual satisfaction" (Inglehart 2008), i.e., postmaterialistic goals (Inglehart 1977, 1997).

In subsequent studies, Inglehart extended his analytical framework to a two-dimensional model of value change (Inglehart and Baker 2000). The first stage is linked to processes of industrialization, which induces a shift from traditional values to secular-rational values. The second stage is bound to the development of post-industrialization, inducing a shift from survival to self-expression values. Postmaterialism is part of this second dimension of value change (Inglehart and Baker 2000). Studies using values as independent variables to explain social and moral attitudes at the individual level mostly use the original postmaterialism index. Numerous studies have shown that postmaterialism is an important predictor of individual's attitudes, especially political and moral attitudes (e.g., Inglehart 1990:195; Arzheimer and Rudi 2007; Layman and Carmines 1997; Kidd and Lee 1997; Beckers 2008a:322).

Departing from Inglehart's two-dimensional theory of value change, Welzel suggests focusing on self-expression values as the most relevant element in value change. Self-expression values "represent an emancipative set of orientations that emphasize freedom of expression and equality of opportunities" (Welzel 2010:153). This conception of self-expression values emphasizes both the autonomy and the embeddedness of individuals in modern societies. The measurement Welzel suggests (see below) includes items from Inglehart's traditional vs. secular-rational and survival vs. self-expression dimensions, indicating that Welzel has a uni-dimensional understanding of value change.

Although Inglehart's postmaterialism and Welzel's self-expression values cover very similar conceptual phenomena, we include both in this analysis because Welzel's operationalization of self-expression values might overcome major shortcomings of the postmaterialism index.²

² It is known that the share of postmaterialists is highly dependent on the economic conditions, such as growth, inflation, and un-

Table 1: Definitions of the motivational types of values in terms of their core goal by higher order values

| Value Type | Core Goal |
|---------------------------|---|
| <i>Self-enhancement</i> | |
| 1. Power | Social status and prestige, control or dominance over people and resources |
| 2. Achievement | Personal success through demonstrating competence according to social standards |
| <i>Openness to change</i> | |
| 3. Hedonism | Pleasure and sensuous gratification for oneself |
| 4. Stimulation | Excitement, novelty, and challenge in life |
| 5. Self-Direction | Independent thought and action choosing, creating, exploring |
| <i>Self-Transcendence</i> | |
| 6. Universalism | Understanding, appreciation, tolerance and protection for the welfare of all people and for nature |
| 7. Benevolence | Preservation and enhancement of the welfare of people with whom one is in frequent personal contact |
| <i>Conservation</i> | |
| 8. Tradition | Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self |
| 9. Conformity | Restraint of actions, inclinations and impulses likely to upset or harm others and violate social expectations or norms |
| 10. Security | Safety, harmony, and stability of society, of relationships and of self |

Note. Adapted from Davidov et al. (2008a).

3 Research Hypotheses

A few studies have examined associations between Schwartz's and Inglehart's value dimensions. These comparisons were mostly done at the country level because the scales were not administered in the same surveys (Inglehart 2006; Schwartz 2006; Welzel 2010). The absence of isomorphism in the structure of values at the individual and the country level,³ however, means that country level studies cannot inform us about relations at the micro-level (Fischer, Vauclair, Fontaine and Schwartz 2010).

One notable exception is a study by Wilson (2005) who compared the Schwartz Value Survey (SVS) – a 56-item instrument to measure the 10 basic human values – to Inglehart's postmaterialism. He reported that the latter is positively correlated with universalism, self-direction, and benevolence (i.e., values of self-transcendence), but negatively correlated with conformity, security, and power (the remaining correlations being weak).

Welzel studied the individual level associations between his self-expression scale and a reduced, two-dimensional version of the Schwartz values. He found that self-expression values are positively related to altruism (universalism and benevolence) and individualism (self-direction and stimulation), but only in countries with a high average level of self-expression values (Welzel 2010:166).⁴

This study goes beyond previous studies by (1) using the full version of the PVQ to assess the association between postmaterialism and Schwartz's values, (2) also studying associations with self-expression values, and (3) assessing which of the three value concepts best explains social and moral attitudes.

Conceptually, postmaterialism and self-expression values should be negatively correlated with tradition, conformity, and security, which represent central aspects of materialism and survival values (e.g. group coherence, respect

for authorities, traditional morality). We expect positive correlations with self-direction because postmaterialism and self-expression values express human aspirations for autonomy. In addition, an emphasis on postmaterialism and self-expression values should be positively related to universalism, since these values share priority on tolerance, equality, and concern for the welfare of others at the group level (i.e. at the level of national societies or even humanity as a whole) (Schwartz 1994:37). We anticipate a difference between postmaterialism and self-expression values in their correlations with stimulation and hedonism. Since self-expression values emphasize expressive individualism, they should be more strongly correlated with stimulation and hedonism than postmaterialism. We do not presume substantial correlations between postmaterialism and self-expression values on the one hand and achievement, power and benevolence on the other hand.

Studying values, however, is not *de l'art pour l'art*. If values play an important role in social research it is because they explain – among other things – political, social, and moral attitudes. As stated above, our aim is to assess which values are best suited to explain attitudes. For this reason we selected a set of social and moral attitudes as dependent variables in structural equation models (SEM) with values as explanatory variables.

First, xenophobia was selected as a social attitude and end-of-life issues were selected as moral attitudes, because

employment rates (see Clarke and Dutt 1991), and the policy goals to be ranked by respondents do not cover major contemporary issues, e.g., issues concerning equality of opportunities.

³ Schwartz, for instance, identifies seven values on the country/cultural level (Schwartz 2006).

⁴ Welzel uses data from WVS 2005/2006. The questionnaire only includes one item per Schwartz value. Because Tradition and Hedonism do not clearly fit the two-dimensional structure, they were removed from the analyses.

we expect postmaterialism, self-expression values, and the Schwartz values to have the same explanatory potential for these variables. Thus, postmaterialism, self-expression values, and self-direction should inhibit xenophobia but foster a liberal attitude towards end-of-life issues. Universalism is presumed to reduce critical attitudes towards foreigners but is not expected to have an effect on end-of-life issues, because universalism is more concerned with the welfare of others than with the self. In contrast, tradition, conformity, and security should increase xenophobia and foster a more restrictive attitude to end-of-life issues.

Second, a set of moral attitudes concerning sexual morality was selected in order to test whether the multidimensionality of the Schwartz values inventory has explanatory potential that goes beyond the postmaterialism and self-expression values. Overall, postmaterialism, self-expression values, and self-direction are presumed to increase sexual liberalism. Due to the emphasis on self-actualization of self-expression values, the latter are expected to have a stronger effect than postmaterialism. Tradition, conformity, and security should induce a more restrictive sexual morality. The values associated with Schwartz's higher-order openness to change (self-direction, stimulation, hedonism) are expected to foster a more liberal sexual morality because they imply an open-mindedness that is not covered either by postmaterialism or by self-expression values. We expect the values of the higher-order self-transcendence (benevolence, universalism) to relate positively to sexual liberalism because they should foster tolerance towards 'deviating behaviour'. We anticipate no link from values of the higher-order value self-enhancement (power, achievement) with the attitudes we are studying.

4 Data and Operationalization

762 respondents completed an online questionnaire between June 17 and July 16, 2010.⁵ Respondents were recruited from a German self-selected online access panel of a market research company (73.2% of viewers of the first page).⁶ Therefore, the dataset is not representative for the German population, but the distribution of the socio-demographic variables of the sample shows more heterogeneity than student samples used for previous studies (Schmidt, Bamberg, Davidov, Herrmann and Schwartz 2007; Wilson 2005): 58% of the participants are women; the average age is 37 with more middle aged people (SD = 13, Min. 16, Max. 80); 54% reported holding the highest German school degree; 47% are full time employed (21% students, 9% part time employed, 7% retirees and 7% unemployed or disabled). The sample is thus somewhat biased toward groups inclined more to value openness/individualism and postmaterialism (younger respondents, women, and students).

Operationalization of the values followed the original instruments. For postmaterialism, the complete 12 items Inglehart index was used. This instrument consists of three forced choice items with four response categories each. Each item offers particular goals for the respective country and respon-

dents are asked to rate the most and second most important goal. Two of the goals in each forced choice are postmaterialist goals and two are materialist goals. *In toto*, there are 6 different rankings.⁷ The index is computed following the instruction of Abramson and Inglehart (1995:24)⁸: For each postmaterialist goal ranked most important, the score 2 is assigned, for each one ranked second most important the score 1. As Inglehart suggests, the item "improve beauty of cities and landscapes" was excluded because this item does not univocally measure postmaterialism. The scores for the three forced-choice batteries are added to yield a postmaterialism scale (PMat) from 0 to 8.⁹

Self-expression values are operationalized as suggested by Welzel (2010:7) by adding up three subscales of self-expression values. The first subscale "traditional morality" embraces three questions asking whether homosexuality, abortion and divorce can be justified (1 = *never justifiable*; 10 = *always justifiable*). The second is the emphasis on personal autonomy as a value in children's education. Respondents are asked to choose up to five educational goals from a list. "Independence" and "imagination" represent self-expression values, "faith" and "obedience" represent the opposite. Deviating slightly from Welzel's coding, we code 1 if self-expression values are chosen and -1 if the opposite values are chosen. Summing across items gives a scale from -2 to 2. The third is a gender equality scale. In this case, the items Welzel uses are unlikely to produce much variation in developed countries (e.g., "On the whole, men make better political leaders than women do"). We used three other items for our purposes ("being a housewife is fulfilling", "work makes one independent", and "men and women both contribute to

⁵ The item wordings of the PVQ are reported in the appendix of the paper of Beierlein et al. in this volume. A list of the other questions used in the models is available in *web appendix A* on the website of the first author: <http://tinyurl.com/7l8q5nz>. The full questionnaire (in German) and the dataset may be obtained from the authors upon request.

⁶ A response rate based on the number of invitations to the survey by the market research company cannot be calculated due to a lack of data. 83 percent of those respondents who started the survey completed the questionnaire. Three weeks before the data collection, a pretest was conducted among 30 respondents (mix of general population, students and social scientists). The panel 'sozioland' was formerly set up by the company Globalpark GmbH (Germany) as one of the first online access panels in Germany relying on self-selected respondents without CATI or other offline recruitment procedures. The panel, later adopted by respondi AG (Germany), was mainly used for market research surveys but was also offered to universities to include scientific research surveys.

⁷ It is beyond the scope of this paper to discuss advantages and shortcomings of ranking instruments (Inglehart 1994; Hellevik 1994; Bürklin, Klein and Ru 1994; Inglehart and Klingemann 1996).

⁸ See the Appendix for an example of the computation.

⁹ The same operationalization was applied to the six materialist goals resulting in a scale from 0 to 10 (because no item was excluded). Both scales are correlated with more than $r = -.955$. Therefore, adding a materialism scale to the subsequent analyses would not yield additional information.

income”). Answers are given on a 6-point scale and recoded so that higher values indicate a positive evaluation of gender equality. The three subscales are standardized to values from 1 to 10, keeping the distances of the categories proportional to the original coding of the subscales and divided by three, resulting in the overall self-expression-values scale (SEV).

Basic human values are measured with the Portrait Values Questionnaire (PVQ) (Schwartz et al. 2001:524). We use the German translation of the PVQ provided by Schmidt and colleagues (Schmidt et al. 2007). As common in research on basic human values, we assess the PVQ scales with confirmatory factor analysis (CFA) (Davidov et al. 2008b; Davidov 2008; Davidov 2010; Schmidt et al. 2007).

Operationalization of the dependent variables is based on existing scales from other studies. All dependent variables are modeled as latent variables measured with at least three indicator variables. Xenophobia is operationalized with items from the survey “Group focused enmity 2003”. Deviating slightly from Heitmeyer’s (2003) proposal, four items are used for the construction of the scale, in order to achieve a more comprehensive understanding of xenophobia. Answers are given on a scale from 1 (*agree strongly*) to 6 (*disagree strongly*).

We selected four general questions from the more extensive module on end-of-life issues from the *British Social Attitudes Survey 2005* (NatCen 2007) in order to measure people’s attitudes on end-of-life issues. Pro-choice opinions, which are referred to in the hypothesis, comprise the practices of euthanasia, physician assisted suicide, family assisted suicide and the use of living wills, defining a patient’s wishes in situations where he or she is not able to say which medical treatment he or she wants (scale from 1 = *definitely should be allowed* to 4 = *definitely should not be allowed*).

Questions on sexual morality were adopted from the *European Values Study* (EVS 2010), the *Scottish Social Attitudes Survey* (SSA) 2002 (NatCen 2004) and the *British National Survey on Sexual Attitudes and Lifestyles* (NATSAL) 2000 (ESDS 2005). Several questions from the surveys were combined into three latent variables covering different domains of sexual morality: (a) types of sexual behavior that implicitly negates a (long-term) relationship as a necessary basis of sexuality (sexual permissiveness), (b) types of sexual behavior that disregard the boundaries of the relationship (cheating), and (c) types of sexual behavior that hurt traditionally accepted norms (non-traditional sexuality).

For sexual permissiveness on one-night stands, we adopted from NATSAL (scale from 1 = *always wrong* to 5 = *not wrong at all*) and two items on “having casual sex” and “prostitution” from the EVS (scale from 1 = *never justifiable* to 10 = *always justifiable*).

The second scale on unfaithfulness (cheating) includes items from NATSAL on different forms of cheating within a relationship: cheating (1) when one is married, (2) on his/her partner without being married, (3) on his/her partner if not living together. The items cover differences in sexual morality depending on the relationship status of the partners (scale from 1 = *always wrong* to 5 = *not wrong at all*).

For non-traditional forms of sexuality, we used two SSA

questions on attitudes towards premarital sex and sexual relations between men (same answer scale as cheating). Another question on sexual relations between two adult women was included in the questionnaire (cf. proposal 4 in Beckers 2008b:9). It correlated highly with the aforementioned item ($r = -.92$) and was therefore omitted from our analyses. One question on “homosexuality” was adopted from the EVS item battery on moral judgments (same answer scale as casual sex item).

In addition to values, several standard control variables were included in the explanatory models: gender, age in years, educational achievement measured as highest level of secondary full-time education (range from 0 to 4), religiosity (as a latent variable measured by church attendance and religious self-assessment), political self-assessment on the left-right scale (1 = *left*, 11 = *right*). In the case of xenophobia and end-of-life issues, a latent exogenous variable was included to measure subjective deprivation by respondents’ subjective (1) evaluations of their social class, (2) judgments of whether they receive a just part of nation’s wealth, and (3) satisfaction with their financial situation. Higher values indicate low subjective deprivation. For the dependent variable xenophobia, contact with foreigners in the neighborhood, within the family, at the workplace or among friends, the number of areas of contact that respondents reported was counted.

5 Results

5.1 Measurement model for the PVQ

Several subsequent CFA models were run to assess the measurement parameters for the PVQ. Model diagnosis shows that to achieve an acceptable model fit, the same modifications have to be applied as reported by Schmidt et al. (2007) in their study of a German student sample.

(1) The high correlation of the values tradition and conformity shows that these values are indistinct in our sample. Both were collapsed into one factor (trad/conf). (2) The Item Power 1¹⁰ strongly loads on achievement, but not on power. This item was used as an indicator for achievement. (3) The residual correlations of Universalism 3 and Universalism 6 were freed (0.539). Both items refer to the protection of the environment; a topic that might form a sub-dimension of universalism. (4) The residual correlations of Self-Direction 2 and Self-Direction 4 were freed. Both these items refer to independence in a narrow sense, whereas the two other self-direction items also embrace intellectual independence and creativity.

The fit measures of the present model are equivalent to the model reported by Schmidt et al. (2007). Close inspection of the data shows that for our sample some more modifications are meaningful in order to improve the structure and conceptual validity of the measurement mode.¹¹ First, three

¹⁰ For a list of items, see the Appendix in the paper of Cieciuch and Davidov in this volume.

¹¹ All the details of the measurement model including the model parameters and an overview of model modifications are included in

Table 2: Correlations between the Schwartz values (38-item version of PVQ)

| | UNI | BEN | TRA/CON | SEC | POW | ACH | HED | STI | SDR |
|---------|---------|---------|----------|---------|-------|-------|-------|-------|-----|
| UNI | 1 | | | | | | | | |
| BEN | 0.664 | 1 | | | | | | | |
| TRA/CON | 0.127 | 0.261 | 1 | | | | | | |
| SEC | 0.135 | 0.249 | 0.808 | 1 | | | | | |
| POW | (0.002) | (0.028) | (-0.028) | 0.131 | 1 | | | | |
| ACH | -0.046 | 0.115 | 0.228 | 0.374 | 0.642 | 1 | | | |
| HED | 0.149 | 0.321 | (-0.044) | (0.023) | 0.236 | 0.339 | 1 | | |
| STI | 0.113 | 0.098 | -0.224 | -0.332 | 0.378 | 0.387 | 0.493 | 1 | |
| SDR | 0.647 | 0.469 | (-0.101) | (0.040) | 0.362 | 0.360 | 0.421 | 0.487 | 1 |

Non-significant correlations with $p > .05$ in parentheses (two tailed t-test).

UNI = Universalism, BEN = Benevolence, TRA/CON = Tradition/Conformity, SEC = Security, POW = Power, ACH = Achievement, HED = Hedonism, STI = Stimulation, SDR = Self-Direction;

residual correlations are specified that indicate subdimensions within single values. Second, the items Tradition 1 and Tradition 2 were removed from the model because their interpretation is somewhat ambiguous in the German context, leading to low factor loadings. Third, four cross-loadings were specified from values to indicators not intended to measure them. The reason for cross-loadings to emerge is that the indicator overlaps with two values. Specifying the cross-loading affects the correlation of values. In our case, it underscores the theoretically postulated structure of the values that would be blurred if the cross-loadings were not specified (for a discussion, see Davidov 2010:185).

Taking these modifications into account, the overall model fit is satisfactory and the model structure is close to the expected theoretical pattern. The Root Mean Square Error of Approximation (RMSEA) is 0.052 and the Standardized Root Mean Square Residual (SRMR) is 0.054. Considering RMSEA and SRMR simultaneously, given the model complexity and the sample size ($N = 762$), the combinational rules suggested by Hu and Bentler (1999:54) indicate that the fit is acceptable. The values for the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) do not reach the suggested threshold of 0.95 (CFI 0.887; TLI 0.872). Following the arguments by Rigdon (1996) we preferred RMSEA over CFI since a confirmatory strategy is applied here.

The correlations between the values (reported in Table 2) show the expected circular structure of the model (cf. Schwartz 2003:270). Adjacent values are strongly correlated, whereas values that are at opposite poles of the value circle are negatively correlated or not correlated. The comparatively strong correlation of power with self-direction and stimulation would not be expected, but is conceptually not very challenging because both share a strong emphasis on autonomous individuals.

5.2 Congruence of value concepts: Correlations between PVQ, PostMat, and SEV

The pattern of the correlations between the Schwartz values, postmaterialism, and self-expression values is clear (see Figure 1). In both cases, there are positive correlations with universalism and self-direction and negative correlations with tradition/conformity and security. Postma-

terialism has a negative correlation with self-enhancement values (particularly achievement), whereas self-expression values have stronger correlations with openness to change values (hedonism, stimulation, self-direction). Benevolence is neither correlated with postmaterialism, nor with self-expression values.

Referring to our first research question, we may sum up that there is substantial overlap of the Schwartz values, Inglehart's postmaterialism, and Welzel's self-expression values and the correlations show the expected pattern (see section 3). Nevertheless, no correlations are higher than 0.4. This suggests that postmaterialism and self-expression values do not merely cover one of Schwartz's values.

5.3 SEM models

To assess the relative performance of the different value concepts in explanatory models for moral and social attitudes, we first compare the changes in r-squares when values are included in regression models. In a second step, the relative explanatory power will be assessed by comparing the standardized regression coefficients.

Due to high correlations between some of the Schwartz values, the 9 values cannot be included in a regression model simultaneously. Instead of including the higher-order values, a set of single values could have been included as well. For three reasons the higher-order values are used in this study: First, to guarantee the comparability between the models with different dependent variables; second, to compare the three value concepts in their full operationalization; and third, to account for the multi-dimensionality of the Schwartz value measurement.¹² The higher-order value *self-enhancement* is removed from the model because of high correlations with the other higher-order values that still cause problems of multicollinearity. Removing self-enhancement is not problematic because there are no hypotheses relating this higher-order value to moral and social attitudes.

The integrated structural equation model for the three value concepts, all control variables and the dependent con-

web appendix B of this paper (<http://tinyurl.com/718q5nz>).

¹² We had to specify a cross-loading of self-direction on self-transcendence and a residual correlation between hedonism and benevolence.

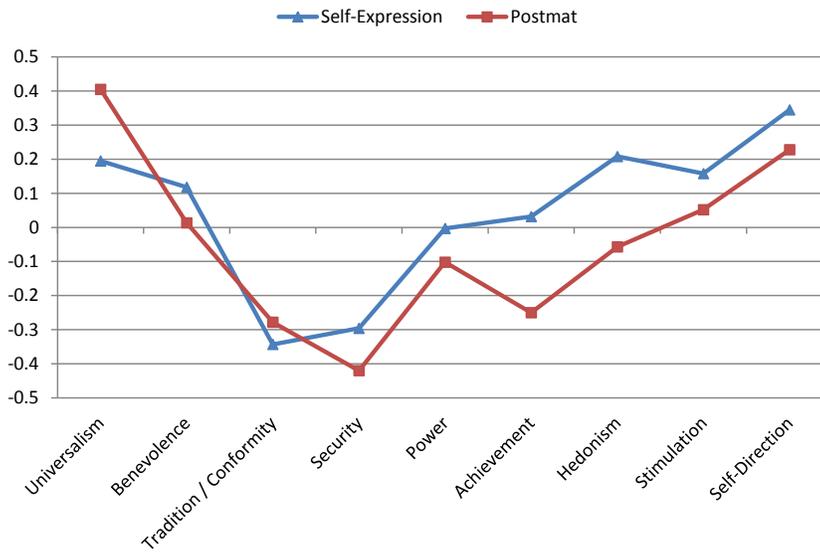


Figure 1. Correlations between the Schwartz values, postmaterialism, and self-expression values

Table 3: R-squares of regression models before and after successively one by one and combined inclusion of postmaterialism, self-expression values, and Schwartz’s higher-order values

| | | Model 1 controls only | Model 2 PMat+ controls | Model 3 SEV+ controls | Model 4 PMat+ SEV+ controls | Model 5 PVQ+ controls | Model 6 PVQ+ PMat+ controls | Model 7 PVQ+ SEV+ controls | Model 8 PVQ+ PMat+ SEV+ controls |
|---|------------------------------|-----------------------------|------------------------------|-----------------------------|--------------------------------------|-----------------------------|-----------------------------------|----------------------------------|---|
| A | Xenophobia | 0.313 | 0.352 | 0.351 | 0.385 | 0.584 | 0.588 | 0.589 | 0.596 |
| B | End-of-life attitudes | 0.221 | 0.222 | 0.291 | 0.291 | 0.250 | 0.250 | 0.304 | 0.304 |
| C | Sexual permissiveness | 0.197 | 0.202 | 0.350 | 0.351 | 0.347 | 0.348 | 0.421 | 0.422 |
| D | Unfaithfulness | 0.083 | 0.089 | 0.101 | 0.104 | 0.159 | 0.160 | 0.164 | 0.166 |
| E | Non-traditional sexuality | 0.197 | 0.205 | – | – | 0.314 | 0.318 | – | – |

Controls: All models = age, gender, education, left-right scale, religiosity; additional for end-of-life attitudes = subjective deprivation, contacts with immigrants. PMat = Postmaterialism, SEV = Self-Expression Values, PVQ = Portrait Values Questionnaire, Missing values (N = 36) imputed for PMat scale; PVQ without the higher-order value self-enhancement.

cepts xenophobia, end-of-life, sexual permissiveness and unfaithfulness (Model 8 in Table 3) has an acceptable model fit (SRMR = 0.052; RMSEA = 0.043 with $p = 1.0$; CFI = 0.876; TLI = 0.862). The models for non-traditional sexuality as a dependent variable have been estimated separately, since one of the items used for its measurement is also part of Welzel’s self-expression value scales (justifiability of homosexuality). To avoid a tautology, the self-expression values are not used to explain nontraditional sexuality. The fit measures for this model (Model 6E in Table 3; RMSEA = 0.052; SRMR = 0.058; CFI = 0.852; TLI = 0.834) also indicate an acceptable fit to the data.

Table 3 summarizes the r-squared for different sets of models: (1) the benchmark models (Model 1 A-E) that include only control variables, (2) models that include each single value concept (Models 2, 3, and 5), (3) models including different pairs of value concepts (Models 4, 6, and 7), and (4) a full model including all three value concepts simultaneously (Model 8).

It is obvious from Table 3 that including postmaterialism as a predictor increases the r-square only slightly. Its contribution to the explanation of the dependent variables decreases if Schwartz higher-order values are added to postmaterialism. The explanatory power of postmaterialism is entirely absorbed by the Schwartz higher-order values.

In contrast, the inclusion of the *self-expression values* induces the highest increase in r-square for end-of-life issues and sexual permissiveness but contributes also to the explanation of xenophobia and unfaithfulness.

The explanatory power of the *Schwartz higher-order values* is strongest for xenophobia, unfaithfulness and non-traditional sexuality. For xenophobia and unfaithfulness, the PVQ absorbs most of the explanatory power of the self-expression values and postmaterialism (comparing Model 8a+d to Model 5a+d). For non-traditional sexuality, only the Schwartz values have substantial explanatory power, which is in line with our hypothesis (bearing in mind that the self-

Table 4: Predicted and observed effect-directions of the value concepts

| Values | Xenophobia | | End of Life Issues | | Sexual Permissiveness | | Unfaithfulness | | Non-Traditional Sexuality | |
|--------------|------------|----------|--------------------|----------|-----------------------|----------|----------------|----------|---------------------------|----------|
| | Pre-dicted | Observed | Pre-dicted | Observed | Pre-dicted | Observed | Pre-dicted | Observed | Pre-dicted | Observed |
| Pmat | - | + | + | n.s. | + | n.s. | + | n.s. | + | - |
| SEV | - | n.s. | + | ++ | + | ++ | + | n.s. | n.i. | n.i. |
| PVQ | | | | | | | | | | |
| Conservation | + | ++ | - | n.s. | - | -- | - | n.s. | - | -- |
| Openness | - | + | + | n.s. | + | + | + | ++ | + | n.s. |
| Self-Trans. | - | -- | n.s. | n.s. | + | n.s. | + | n.s. | + | ++ |

n.s. = non-significant effects, n.i. = not included in the model, + = positive significant, ++ = strongest positive, - = negative significant, -- = strongest negative, Pmat = Postmaterialism, SEV = Self-Expression Values, PVQ = Portraits of Values Questionnaire, Openness = Openness to change, Self-Trans. = Self-Transcendence.

expression values are not considered in the model).

In a second step, the comparison of the value concepts is extended to the direction and relative strength of the standardized regression coefficients. Table 4 summarizes the findings for the value concepts by juxtaposing the predicted and the observed effects. The full model, reporting the coefficients and including the control variables, is reported in Table 5.

The effects of *postmaterialism* are either not significant or do not have the expected direction. The standardized coefficients of postmaterialism are systematically smaller than those of self-expression values and of the Schwartz higher-order values. This confirms the minor explanatory power of postmaterialism revealed in the analysis of variance explained.

Although *self-expression* values do not significantly influence xenophobia and unfaithfulness, they do fit the expectations for end-of-life issues and sexual permissiveness. Their effects are stronger than those of postmaterialism and of the Schwartz higher-order values.

The *Schwartz higher-order values* have a particularly strong impact on xenophobia, unfaithfulness and non-traditional sexuality, in most cases in the hypothesized direction. With regard to end-of-life issues, none of the Schwartz higher-order values shows significant effects. These attitudes are best explained by self-expression values. Because the result in favor of self-expression values might be biased due to the inclusion of the abortion item in its measurement, we would like to stress that in the model with controls and the Schwartz higher-order values (Model 5), openness to change (0.105; $p = .070$) and self-transcendence (0.109; $p = .094$) have a (weak) positive influence, confirming our prediction.¹³ Given the high correlation of conservation and religiosity, the expected effect of conservation might be canceled out when religion is controlled. As expected, conservation strongly decreases and openness to change strongly increases the acceptance of sexual permissive behavior. The two Schwartz higher-order values are almost as important predictors as Welzel's self-expression values, although the items in the PVQ have greater conceptual independence from sexual permissiveness.

Concerning unfaithfulness, the Schwartz higher-order value openness to change is the only value that has a sub-

stantial influence on a more liberal attitude. Openness to change therefore covers aspects of values that are not embraced by postmaterialism or self-expression values (see section 3). However, the effect of conservation is not significant. One might note that using the single values instead of the higher order values could have resulted in stronger effects.

6 Discussion and Conclusion

At the beginning of this paper, we identified two questions as relevant for advancing research in social and human values: (1) Are the value concepts and measurements in each popular approach interchangeable? And: (2) Which of the concepts better explains moral and social attitudes? The value concepts of Schwartz, Inglehart and Welzel have all been used to explain individual's attitudes and behavior. Although there is considerable overlap among the three concepts, the modest strength of the correlations shows that they do not refer to the same underlying phenomenon. Each concept has its own theoretical and empirical content. Moreover, the higher-order self-enhancement value is not at all represented by postmaterialism or self-expression values, and the higher-order openness to change value is only minimally captured by the self-expression scale. Thus, the answer to the first question is that it is not possible to substitute the different concepts and measurements of values for one another without the loss of unique information.¹⁴

Turning to the second question, all dependent latent variables illustrate the usefulness and explanatory power of values. With our data, we may tentatively conclude that the Schwartz higher-order values are *in toto* a more power-

¹³ When the abortion item is excluded from the self-expression values in order to control for an eventual tautological effect of a beginning-of-life issue (abortion) on an end-of-life issue (euthanasia), only minor changes can be detected which are negligible and do not affect the results.

¹⁴ It should be noted that the reported correlations do not take into account possible cross-loadings that might occur between Schwartz values and indicators for postmaterialism and self-expression values or vice versa. Because we followed the original operationalizations, postmaterialism and self-expression values are not estimated as latent constructs. Therefore, testing the cross-loadings was not possible. Modeling significant crossloadings might affect the reported coefficients if we had opted for latent constructs.

Table 5: Estimates for the regression models of social and moral attitudes on Postmaterialism, Self-Expression values, and Basic Human Values

| | Model 8A: Xenophobia | | | Model 8B: End of Life Issues | | | Model 8C: Sexual Permissiveness | | | Model 8D: Unfaithfulness | | | Model 8E: Non-traditional sexuality | | |
|----------------------------------|-------------------------|--------|----------|---------------------------------|--------|---------|------------------------------------|--------|----------|-----------------------------|--------|----------|--|--------|----------|
| | b | t | β | b | t | β | b | t | β | b | t | β | b | t | β |
| <i>Schwartz values</i> | | | | | | | | | | | | | | | |
| Conservation | 1.174 | 6.952 | 0.609 | (0.087) | 1.237 | (0.089) | -0.219 | -2.598 | -0.200 | (-0.144) | -1.654 | (-0.117) | -1.136 | -4.328 | -0.344 |
| Openness | 0.546 | 4.541 | 0.278 | (0.087) | 1.484 | (0.087) | 0.221 | 3.105 | 0.198 | 0.249 | 3.352 | 0.199 | (-0.418) | -1.721 | (-0.118) |
| Self-Transcend. | -1.233 | -6.538 | -0.523 | (0.011) | 0.128 | (0.009) | (-0.006) | -0.060 | (-0.004) | (-0.187) | -1.798 | (-0.124) | 1.571 | 5.205 | 0.405 |
| <i>Inglehart/Welzel measures</i> | | | | | | | | | | | | | | | |
| Postmaterialism | 0.070 | 2.130 | 0.128 | (0.003) | 0.208 | (0.012) | (-0.010) | -0.517 | (-0.080) | (0.025) | 1.258 | (0.071) | -0.118 | -2.094 | -0.132 |
| Self-Expression | (-0.016) | -0.399 | (-0.019) | 0.127 | 5.620 | 0.293 | 0.169 | 6.166 | 0.345 | (0.049) | 1.833 | (0.090) | — | — | — |
| <i>Controls</i> | | | | | | | | | | | | | | | |
| Religiosity | -0.097 | -2.540 | -0.120 | -0.144 | -6.563 | -0.352 | -0.082 | -3.165 | -0.178 | (-0.024) | -0.955 | (-0.046) | -0.394 | -5.729 | -0.313 |
| Deprivation | 0.406 | 3.915 | 0.180 | 0.140 | 2.424 | 0.123 | — | — | — | — | — | — | — | — | — |
| Pol. Orientation | 0.133 | 5.457 | 0.222 | 0.035 | 2.617 | 0.117 | (0.027) | 0.085 | (0.080) | (0.009) | 0.526 | (0.023) | (-0.034) | -0.753 | (-0.035) |
| Contact with foreigners | (0.024) | 0.657 | (0.023) | — | — | — | — | — | — | — | — | — | — | — | — |
| Education | -0.120 | -2.978 | -0.108 | (0.043) | -1.863 | (0.077) | (0.026) | 1.027 | (0.042) | (0.067) | 0.137 | (0.005) | 0.158 | 2.150 | 0.087 |
| Female | (0.156) | 1.850 | (0.065) | (0.001) | 0.021 | (0.001) | -0.303 | -5.021 | -0.220 | -0.116 | -2.426 | -0.093 | 0.457 | 2.833 | 0.115 |
| Age | 0.010 | 2.541 | 0.106 | 0.008 | 3.912 | 0.168 | (-0.004) | -1.535 | (-0.070) | 0.156 | 6.383 | 0.271 | -0.023 | -3.413 | -0.154 |
| R ² | 0.596 | | | 0.304 | | | 0.422 | | | 0.166 | | | 0.348 | | |

Non-significant effects with $p > .05$ in parentheses; unstandardized (b) and standardized (β) regression coefficients; $n = 753$.

ful tool than Inglehart's postmaterialism and Welzel's self-expression values. This is true both in terms of explained variance as well as in terms of standardized effects. Only the explanation of end-of-life issues shows evidence in favor of the self-expression values scales. The relatively weak performance of the postmaterialism index in explaining social and moral attitudes tested here is most noteworthy and confirms findings from studies on political attitudes and behavior (Rossteutscher 2004:787).

Postmaterialism is the most prominent value concept in social research. Nevertheless, we suggest that the operationalization of postmaterialism has to be carefully revised. Issues of equality of chances in education and economy may have become more relevant in today's societies than concerns about inflation rates.

In most cases, the operationalization of self-expression values proposed by Welzel should be preferred to the postmaterialism index. Theoretically, both indexes cover very similar phenomena. But the self-expression values scale is an easy way to obtain better measurement. The associations with the Schwartz values show that the self-expression values scale appropriately covers the emphasis on individuals' autonomy (self-direction), the importance of sociotropic evaluations (universalism), the significance of self-actualization (stimulation, hedonism) and the rejection of more traditional values (tradition/conformity, security). Therefore, we recommend scholars using data from the *World Values Survey/European Values Study* to apply the operationalization of self-expression values by Welzel.

The Schwartz PVQ, which has been fully implemented in our survey, is very useful for causal analysis and provides different options for different research approaches. We have opted for the higher-order values and could find evidence for the explanatory power of three out of four values, although a number of relevant control variables were included in the models. The results of this study support the usefulness of the Schwartz values for survey research.

Although a web SAQ was used without an interviewer supervising the process, only 4.6 percent of respondents were dropouts during the answering of the 40 items of the Schwartz PVQ. Thus, the applicability of the Schwartz values was successfully tested for a mode becoming more relevant in future survey research.

It should also be noted that the Schwartz values are a well-tested instrument. Compared to postmaterialism and self-expression values, its strongest advantage is the transsituational formulation of the items that avoids overlaps with other theoretical constructs.

Despite the supremacy of the Schwartz values, some desiderata remain, as the extended version is expensive when used in general social surveys. In the context of survey research, it demands a long time period of intense cognitive attention from respondents compared with other measurement instruments (e.g. social and political trust). Several respondents (pretest and panel participants) reported difficulties in answering the items (particularly Conformity 3) because they include two stimuli that can lead to contradictory responses.¹⁵

Moreover, the measurement model for the PVQ shows that composite scores cannot easily be computed for the Schwartz values because (1) tradition and conformity are not distinct even using the 40-item version of the PVQ and (2) some cross-loadings show that respondents interpret some items not only in relation to the values they are intended to measure but also refer to other values. Leaving cross-loadings out (e.g., by computing simple composite scores) will modify the empirical content of the values and thus potentially bias the results from causal models. It should be noted that the structure of the measurement model we used for our analysis might be dependent on the particular self-selected sample of the study. Although the structure is very similar to the measurement model reported in the literature, there is the possibility that another sample would lead to slightly different conclusions.

Nevertheless our application shows that the technical effort in using the PVQ is high and thus might put researchers off from making use of its explanatory potential. Another disadvantage is that due to the high correlation among adjacent values it is impossible to test all ten values simultaneously in structural equation models.¹⁶ Some standardized rules for the computation of Schwartz's value scales and the higher-order values are needed to facilitate the use of the items in more substantive applications, especially when a reduced 21 items version of the ESS is used.

Our study presents some limitations. The sample is not representative for the German population. It is slightly biased in favor of non-traditional values and the respondents are used to participate in surveys. It is difficult to assess the bias that this could have on the results. However, the results fit findings from other studies and the basic associations as well as the basic structure of the human values are replicated.

Further research has to provide, first, a revision of the postmaterialism index in order to adapt it to the issues at stake in contemporary societies and, second, standardized procedures for the use of Schwartz's values in SEM and OLS regression models to facilitate the use of the PVQ for researchers not specialized in structural equation modeling.

Acknowledgements

We are grateful to the reviewers and the issue and journal editors for many helpful comments and suggestions which have improved this paper. We would also like to thank Svenja Döbler and Richard Norrie for proof-reading, the pretest participants as well as our colleagues at the Universities of Cologne, Düsseldorf and Osnabrück for critical reviews of

¹⁵ A revised version of the PVQ, the PVQ-R, is now available which measures 19 distinct values by using only one stimulus per item and overcomes problems of earlier versions of the PVQ like the discriminant validity of the single values. The PVQ-R and a paper describing it can be obtained from Shalom Schwartz (msshach@mssc.huji.ac.il).

¹⁶ Alternatively, we could have included only those values in the models for which the strongest effects on the dependent variable were expected.

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