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 (WVS/EVS).

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...
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 unidimensional 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-
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, 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.

Note. Adapted from Davidov et al. (2008a).
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. Respondents were recruited from a German self-selected online access panel of a market research company (73.2% of viewers of the first page). Therefore, the dataset is not representative for the German population, but the distribution of the sociodemographic variables of the sample shows more heterogeneity than student samples used for previous studies (Schmidt, Bamberg, Davídov, 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 respondents 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. The index is computed following the instruction of Abramson and Inglehart (1995:24): 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...
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 \( r = -0.92 \) 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 \((1 = \text{left}, 11 = \text{right})\). 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 \((\text{trad/conf})\). (2) The Item Power 1 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. 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
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-loadings leads 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. Postmaterialism 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-
CONGRUENCE AND PERFORMANCE OF VALUE CONCEPTS IN SOCIAL RESEARCH

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

<table>
<thead>
<tr>
<th>Model</th>
<th>A: Xenophobia</th>
<th>B: End-of-life attitudes</th>
<th>C: Sexual permissiveness</th>
<th>D: Unfaithfulness</th>
<th>E: Non-traditional sexuality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>0.313</td>
<td>0.221</td>
<td>0.197</td>
<td>0.083</td>
<td>0.197</td>
</tr>
<tr>
<td>Model 2</td>
<td>0.352</td>
<td>0.222</td>
<td>0.202</td>
<td>0.089</td>
<td>0.205</td>
</tr>
<tr>
<td>Model 3</td>
<td>0.351</td>
<td>0.291</td>
<td>0.350</td>
<td>0.101</td>
<td>–</td>
</tr>
<tr>
<td>Model 4</td>
<td>0.385</td>
<td>0.291</td>
<td>0.351</td>
<td>0.104</td>
<td>–</td>
</tr>
<tr>
<td>Model 5</td>
<td>0.584</td>
<td>0.250</td>
<td>0.347</td>
<td>0.159</td>
<td>0.314</td>
</tr>
<tr>
<td>Model 6</td>
<td>0.588</td>
<td>0.250</td>
<td>0.348</td>
<td>0.160</td>
<td>0.318</td>
</tr>
<tr>
<td>Model 7</td>
<td>0.589</td>
<td>0.304</td>
<td>0.421</td>
<td>0.164</td>
<td>–</td>
</tr>
<tr>
<td>Model 8</td>
<td>0.596</td>
<td>0.304</td>
<td>0.422</td>
<td>0.166</td>
<td>–</td>
</tr>
</tbody>
</table>

Controls: All models = age, gender, education, left-right scale, religiosity; additional for end-of-life attitudes = subjective deprivation; additional for xenophobia = 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.

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-
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.\textsuperscript{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 substantial 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 conservatism 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.\textsuperscript{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 \textit{in toto} a more powerful...
<table>
<thead>
<tr>
<th></th>
<th>Model 8A: Xenophobia</th>
<th>Model 8B: End of Life Issues</th>
<th>Model 8C: Sexual Permissiveness</th>
<th>Model 8D: Unfaithfulness</th>
<th>Model 8E: Non-traditional sexuality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Schwartz values</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservation</td>
<td>1.174</td>
<td>6.952</td>
<td>0.609 (0.087)</td>
<td>-0.219</td>
<td>-2.598 (-0.087)</td>
</tr>
<tr>
<td>Openness</td>
<td>0.546</td>
<td>4.541</td>
<td>0.278 (0.087)</td>
<td>0.221</td>
<td>3.105 (0.087)</td>
</tr>
<tr>
<td>Self-Transcend.</td>
<td>-1.233</td>
<td>-6.538</td>
<td>-0.523 (0.011)</td>
<td>-0.006</td>
<td>-0.060 (-0.004)</td>
</tr>
<tr>
<td><strong>Inglehart/Welzel measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Postmaterialism</td>
<td>0.070</td>
<td>2.130</td>
<td>0.128 (0.003)</td>
<td>-0.010</td>
<td>-0.517 (-0.080)</td>
</tr>
<tr>
<td>Self-Expression</td>
<td>(-0.016)</td>
<td>-0.399</td>
<td>(-0.019)</td>
<td>0.127</td>
<td>5.620 (0.029)</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religiosity</td>
<td>-0.097</td>
<td>-2.540</td>
<td>-0.120 (0.044)</td>
<td>-0.032</td>
<td>-3.165 (-0.072)</td>
</tr>
<tr>
<td>Deprivation</td>
<td>0.406</td>
<td>3.915</td>
<td>0.180 (0.001)</td>
<td>-0.030</td>
<td>-2.617 (-0.070)</td>
</tr>
<tr>
<td>Pol. Orientation</td>
<td>0.133</td>
<td>5.457</td>
<td>0.222 (0.029)</td>
<td>0.027</td>
<td>0.085 (0.009)</td>
</tr>
<tr>
<td>Contact with foreigners</td>
<td>0.024</td>
<td>0.657</td>
<td>(0.023)</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Education</td>
<td>-0.120</td>
<td>-2.978</td>
<td>-0.108 (0.043)</td>
<td>-1.863</td>
<td>-0.026 (-0.042)</td>
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<tr>
<td>Female</td>
<td>(0.150)</td>
<td>1.850</td>
<td>(0.065)</td>
<td>0.021</td>
<td>-0.303 (-0.001)</td>
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<tr>
<td>Age</td>
<td>0.010</td>
<td>2.541</td>
<td>0.106 (0.008)</td>
<td>3.912</td>
<td>-0.004 (-0.070)</td>
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<tr>
<td>Schwartz values</td>
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<td>Conservation</td>
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<td>0.609 (0.087)</td>
<td>1.237</td>
<td>-2.598</td>
<td>-0.219</td>
<td>(0.087)</td>
<td>-2.000</td>
<td>-0.144</td>
<td>-1.654</td>
<td>(0.087)</td>
<td>-1.136</td>
<td>-4.328</td>
<td>(-0.087)</td>
<td>-0.344</td>
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<tr>
<td>Openness</td>
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<td>0.278 (0.087)</td>
<td>1.484</td>
<td>-0.221</td>
<td>3.105</td>
<td>(0.087)</td>
<td>0.198</td>
<td>0.249</td>
<td>3.352</td>
<td>(0.087)</td>
<td>0.199</td>
<td>-0.418</td>
<td>-1.721</td>
<td>(0.087)</td>
</tr>
<tr>
<td>Self-Transcend.</td>
<td>-1.233</td>
<td>-6.538</td>
<td>-0.523 (0.011)</td>
<td>0.128</td>
<td>-0.006</td>
<td>-0.060</td>
<td>(0.009)</td>
<td>-0.004</td>
<td>-0.187</td>
<td>-1.798</td>
<td>(0.012)</td>
<td>-0.124</td>
<td>1.571</td>
<td>5.205</td>
<td>0.405</td>
</tr>
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| Inglehart/Welzel measures |         |         |       |         |         |       |         |         |       |         |         |       |         |         |       |
| Postmaterialism        | 0.070   | -2.130  | 0.128 (0.003) | 0.208 | -0.010 | -0.517 | (0.012) | 0.025  | -0.080 | 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) | –       | –       | –       |

| Controls              |         |         |       |         |         |       |         |         |       |         |         |       |         |         |       |
| Religiosity           | -0.097  | -2.540  | -0.120 (0.044) | -0.144 | -6.653 | -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 (0.001) | 0.140 | 2.424  | 0.123  | –       | –       | –       | –       | –       | –       | –       | –       | –       |
| Pol. Orientation      | 0.133   | 5.457   | 0.222 (0.029) | 0.055 | 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 | -0.026 | 1.027  | (0.077) | 0.042  | 0.067  | 0.137  | (0.005) | 0.158  | 2.150  | 0.087  |
| Female                | (0.150) | 1.850   | (0.065)  | 0.021  | -0.303 | -5.021 | (0.001) | -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 | -0.004 | -1.535 | 0.168 (0.004) | -0.070 | 0.156  | 6.383  | 0.271  | -0.023 | -3.413 | -0.154 |

| R²                   | 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 socio-tropic 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 trans-situational 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. 

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. 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.

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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 (msshash@mscc.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.
the online questionnaire and Dr. Otto Hellwig for providing access to the respondi online panel "sozioland".

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