

Personal Values Strongly Predict Study Dropout

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Participant dropout poses significant selectivity problems in longitudinal studies. Although it is often assumed that participant's value structures predict future participation and dropout, there is insufficient evidence supporting this proposition. This study aims to contribute to the literature by clarifying the relationship between participants' personal values and study dropout. Data of the 2008 baseline sample of the German Aging Survey was used to predict future survey (non-)participation in subsequent follow-ups ($N = 4442$). Personal values were measured using the Portraits Value Questionnaire. It was found that different values had differential effects on survey dropout: Whereas higher Power, Achievement, Security and Conformity values predicted increased odds of dropout, higher Benevolence, Self-Direction, Universalism, Stimulation and Hedonism values predicted decreased odds. Additionally, being older and having lower income were also associated with increased dropout. Therefore, participants' personal values seem to have major influence on participant's study participation behaviour, with values relating to pro-social behaviour having the strongest effects. Given the importance of personal values in human behaviour, longitudinal research must account for these relationships for providing accurate scientific findings.

Keywords: Values, Dropout, Attrition, Longitudinal

1 Introduction

Large parts of science rely on longitudinal studies where the same participants are observed at multiple points in time (Leeuw, 2005; Shadish, Cook, & Campbell, 2002). However, the degree to which accurate knowledge can be obtained from these studies depends on the longitudinal retention of participants (Chatfield, Brayne, & Matthews, 2005). Systematic dropout, or participation attrition, threatens the validity of longitudinal studies and may ultimately lead to biased inferences and faulty science (Bell, Kenward, Fairclough, & Horton, 2013). Consequently, there is a need to analyse possible predictors of dropout behaviour.

Personal values serve as broad guiding principles in people's life (Rokeach, 1973; Sagiv, Roccas, Cieciuch, & Schwartz, 2017; Schwartz, 1992). Personal values represent a central aspect of peoples' personality and influence one's perception, feelings, thoughts and behaviour (Schwartz, 2012). As evidenced by Schwartz (1992), personal values can be universally distinguished into ten types (Parks-Leduc, Feldman, & Bardi, 2015):

1. Self-direction (valuing independence of thought and action),

2. Stimulation (valuing stimulating experiences),
3. Hedonism (valuing sensual pleasure),
4. Achievement (valuing socially recognized successes),
5. Power (valuing being in charge of people and resources and having money),
6. Security (valuing safety and security of self, family, and nation),
7. Conformity (valuing control of impulses to fulfil others' expectations),
8. Tradition (valuing maintaining traditions),
9. Benevolence (valuing interpersonal helpfulness and close relationships), and
10. Universalism (valuing the welfare of all people and nature).

Individual differences in personal values were found to predict a wide range of outcomes in diverse areas of life (Beller, 2021; Sagiv et al., 2017), including voting behaviour (Schwartz, Caprara, & Vecchione, 2010), helping co-workers (Shao, Resick, & Hargis, 2011), and engaging in pro-environmental behaviour (Ling & Xu, 2020). Participant's values are also assumed to be central to study participation and dropout (e.g. Collaborators et al., 2018; Craig, Lahey, Dixit, & Reyn, 2018; Dotolo, Nielsen, Curtis, & Engelberg, 2017; Godsken, Hansson, Nygren, Nordin, & Kihlbom, 2015; Truong, Weeks, Cook, & Joffe, 2011; Wendler, 2008). However, insufficient evidence exists regarding this proposition. Previous studies have either been qualitative, used insufficient ad-hoc operationalisations of personal values, or

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did not systematically predict study dropout. For example, in one of the few studies on this topic, Carrera, Brown, Brody, and Morello-Frosch (2018) examined the association of participants' altruism with participation in health research. Using a qualitative research design, they argued that, indeed, altruistic tendencies of participants were one of the main reasons for their participation in research studies. In another study, Oreg and Nov (2008) analysed the contribution of four values (Achievement, Self-Direction, Benevolence, and Universalism) on the motivation to contribute to open-source initiatives. They found that all these values were related to at least some types of motivations to contribute. In another study, participants in a randomized trial retrospectively described their reasons for participating in this trial (Wendler, 2008). It was found that most participants reported egoistic as well as altruistic motivations for continuing to participate in research studies.

Therefore, very few studies have explored the relationship between personal values and study dropout, and all these studies suffer from methodological shortcomings. For example, almost all previous studies employed qualitative methods and did not confirm their results using rigorous quantitative statistics. Furthermore, previous studies have mostly used untested ad-hoc operationalizations of the variables of interest. Finally, all previous studies used only specific value facets to examine study dropout and participation instead of studying the participant's full value structure. Thus, there is a need to examine the potentially powerful contribution of personal values to study (non-)participation behaviour, using both rigorous quantitative statistical methods and validated psychometric measures. The aim of this study is to help close this gap in the literature. Using a large, population-based sample of middle-aged and older adults from Germany ($N = 4442$), this study examines which of Schwartz' ten values, if any, are really predictive of future participant dropout (Klaus et al., 2017). We ask: Do participant's personal values predict future study participant and dropout?

2 Methods

2.1 Sample

We used baseline data from the public release of the 2008 wave of the German Aging Survey, a cohort-sequential longitudinal, population-based study on Germans above the age of 40 years, provided by the Research Data Center of the German Center of Gerontology (Klaus et al., 2017; Motel-Klingebiel, Tesch-Römer, & Wurm, 2016). For the German Aging Survey, participants were randomly drawn by national probability sampling. Baseline participants of 2008 who gave written consent were followed up for participation in further waves 2011, 2014, and 2017. In order to decrease the risk of panel attrition, greeting cards and information brochures were regularly sent to baseline participants and

addresses of baseline participants were regularly updated. We used data from all baseline participants in 2008 who filled out a comprehensive drop-off questionnaire, resulting in a sample size of $N = 4,442$.

2.2 Measures

Personal values were measured via the 21-item version of the Portray Values Questionnaire (PVQ-21) that is based on Schwartz' theory of 10 basic values as listed above and has been extensively tested and used, for example in the European Social Survey (Schwartz et al., 2010). In each of the 21 items the participant is tasked to judge how similar she or he is to a fictive person described in terms of their value priorities. Answers are provided on a six-point scale ranging from 'very dissimilar' to 'very similar', coded from 1 to 6. Each of the ten values is measured by two items, except universalism, which is measured by three items. Example items are "It's very important to her to help the people around her. She wants to care for their well-being" (Benevolence), "Thinking up new ideas and being creative is important to her. She likes to do things in her own original way." (Self-Direction), "It is important to her to be rich. She wants to have a lot of money and expensive things." (Power). We calculated value priorities by first subtracting the overall mean of the PVQ-21 from individual responses to items to control for response style. However, we also used the mean scores of the scales as indicators for additional robustness analyses. These additional analyses are reported in the appendix. Additional covariates included age, (household) income (in thousands of Euro) and gender. Our dependent variable, dropout, was assessed via information about future participation of baseline participants (0 = did not participate in any further wave; 1 = did participate in at least 1 further wave). Dropout may occur for several reasons including inability to contact, inability to respond, or insufficient motivation.

2.3 Data Analysis

Prior to the main analyses, a confirmatory factor analysis and a measurement invariance analysis was carried out, to validate the psychometric accuracy of the PVQ-21 (Davidov, Schmidt, & Schwartz, 2008). Both analyses used the robust DWLS estimator (Li, 2016). Among the numerous fit indices proposed (Raykov & Marcoulides, 2006), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the standardized root mean square residual (SRMR) were calculated, taking into account the recommendation of Hu and Bentler (1999). Values of $CFI > 0.90$, $TLI > 0.90$ and $SRMR < 0.08$ are taken to indicate acceptable model fit. To test whether the PVQ-21 satisfies the various measurement invariance assumptions, measurement invariance analyses involving multigroup confirmatory factor analyses were calculated. Here, subgroups were formed by sex (Men vs.

Women) and age (40–65 years vs. 66+ years). The following measurement invariance models were tested: a) configural invariance (equivalence of factorial structure between groups), b) metric invariance (equivalence of factor loadings between groups), and c) scalar invariance (equivalence of constants between groups). To utilize the PVQ-21 regarding our research question, at least metric invariance should be given (van de Shoot, Lugtig, & Hox, 2012). The Bayesian Information Criterion (BIC) is calculated to judge which measurement invariance model best fits the empirical data, with smaller BIC values denoting better model fit.

Regarding the main analysis, correlations and logistic regression analyses were used to examine the degree to which different values predict future participant dropout. To reduce the potential for bias, we imputed missing values in the 2008 wave via missForest, as participants who are more likely to drop out might also be more likely to answer questions incompletely (Yan & Curtin, 2010). MissForest uses nonparametric random forests to impute missing values for mixed-type data. Unlike other imputation techniques (e.g., multiple imputation), missForest does not require any distributional assumptions and thus regularly outperforms other imputation techniques (Stekhoven & Buhlmann, 2012). Proportions of missing values were minimal for all variables, ranging from 0% (dropout) to 8% (income).

3 Results

3.1 Descriptive Statistics

Descriptive statistics and inter-correlations of our variables are reported in Table 1. As can be seen, participants (49% female) were on average 61.80 years old ($SD = 11.88$) and had an average household income of 25.92k € ($SD = 20.03$). About 40% of participants dropped out and did not participate in successive survey waves.

3.2 Confirmatory Factor Analyses

The CFA resulted in a good model fit regarding all calculated indices ($CFI = 0.96$, $TLI = 0.94$, $SRMR = 0.04$). All factor loadings (standardized path coefficients) are above the value of $\lambda = 0.30$ suggested as a cut-off in the literature (Brown, 2015) and are statistically significant ($p < 0.05$). Accordingly, it can be assumed that the items represent meaningful measures of their latent construct and that the overall measurement structure of the PVQ-21 is valid. For the measurement invariance analyses regarding gender, the best-fitting model was found to be for metric invariance ($BIC_{\text{CONFIGURAL}} = 260152$, $BIC_{\text{METRIC}} = 260073$, $BIC_{\text{SCALAR}} = 260140$). Regarding the measurement invariance analyses of age groups, the best-fitting model was also found to be metric invariance ($BIC_{\text{CONFIGURAL}} = 259757$, $BIC_{\text{METRIC}} = 259685$, $BIC_{\text{SCALAR}} = 259862$). Therefore, results of the confirmatory factor analyses indicate that the

PVQ-21 is a psychometrically sound measurement instrument that can be used well to survey personal values in the current sample (for slightly different findings see Davidov et al., 2008).

3.3 Main Analyses

Regarding the research question, as visible in Table 1, all values correlated significantly with future dropout. Higher Security, Conformity, Tradition, Achievement and Power values were associated with increased dropout, whereas higher Benevolence, Universalism, Self-Direction, Stimulation and Hedonism values were associated with decreased dropout.

Logistic regression results partly confirmed these bivariate findings, as seen in Table 2. Higher Security, Conformity, Achievement and Power still predicted increased odds of dropout; and higher Benevolence, Universalism, Self-Direction, Stimulation, and Hedonism still predicted decreased odds. However, when one analyses raw personal values scores simultaneously, as visible in Table A1, only Security, Benevolence, Self-direction, Stimulation, Achievement and Power significantly predicted dropout. Additionally, being older, being male and having less income all predicted increased odds of dropping out. Of the values, Power and Benevolence had the largest standardized effect sizes on dropout. These results were generally robust for different design and analytical choices, including a stepwise analysis (Table A1), analysing women and men separately (Table A2), analysing an ordinal number of times of participation outcome than a binary dropout variable (Table A3), and when analysing a non-imputed list-wise deleted dataset (Table A4). It was observed, however, that better Security and Stimulation seemingly predicted increased dropout better in women than in men, and that Power significantly predicted dropout only in men. Additionally, more values were significant in the analyses using value priorities, but the significant values using the raw value scores were also the most significant variables in the main value priority analyses.

4 Discussion

Although it has been widely assumed that personal values predict study (non-) participation only insufficient evidence existed regarding this claim. Adding to the literature, we investigated how personal values predicted future study dropout using a large population-based sample of German middle-aged and older adults. We found that several personal values predicted panel attrition: Higher Security, Conformity, Achievement and Power predicted increased odds of dropout, whereas higher Benevolence, Universalism, Self-Direction, Stimulation, and Hedonism predicted decreased odds of dropout. Of the values, Benevolence, Self-Direction, Power and Achievement generally had the largest effect sizes. Therefore, participants who value being in charge,

Table 1
Descriptive Statistics and Intercorrelations of Dropout, Value Priorities and Demographic Variables (N = 4442)

	M/%	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. Dropout (dropped out)	40%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Participation	1.37	1.29	-0.87***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Security	0.43	0.86	0.12***	-0.11***	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Conformity	-0.17	0.96	0.12***	-0.12***	0.30***	-	-	-	-	-	-	-	-	-	-	-	-
5. Tradition	0.27	0.89	0.04*	-0.03	0.16***	0.29***	-	-	-	-	-	-	-	-	-	-	-
6. Benevolence	0.93	0.64	-0.12***	0.12***	-0.11***	-0.18***	0.13***	-	-	-	-	-	-	-	-	-	-
7. Universalism	0.73	0.65	-0.09***	0.09***	-0.04***	-0.17***	0.13***	0.38***	-	-	-	-	-	-	-	-	-
8. Self-direction	0.53	0.78	-0.16***	0.15	-0.38***	-0.45***	-0.31***	0.10	0.03	-	-	-	-	-	-	-	-
9. Stimulation	-1.04	0.90	-0.09***	0.08	-0.44***	-0.43***	-0.39***	-0.20***	0.19***	-	-	-	-	-	-	-	-
10. Hedonism	-0.24	0.93	-0.04	0.02	-0.26***	-0.33***	-0.31***	-0.19	0.08	0.32***	-	-	-	-	-	-	-
11. Achievement	-0.68	0.89	0.08***	-0.08***	-0.16***	-0.17***	-0.44***	-0.33***	0	0.10	0.10	-	-	-	-	-	-
12. Power	-1.12	0.81	0.08***	-0.07***	-0.12***	-0.02	-0.32***	-0.36***	-0.09***	0.02	0.02	0.05***	-	-	-	-	-
13. Income	25.92	20.03	-0.13***	0.15***	-0.19***	-0.14***	-0.12***	0.04*	-0.04**	0.17***	0.11***	0.01	0.40***	-	-	-	-
14. Working Status	37%	-	-0.10***	0.13***	-0.16***	-0.23***	-0.21***	0.02	-0.01	0.15***	0.14***	0.07***	0.17***	0.13***	-	-	-
15. Age	61.80	11.88	0.11***	-0.13***	0.17***	0.30***	0.25***	-0.05**	-0.02	-0.16	-0.18***	-0.09***	-0.16***	-0.18***	0.26***	-	-
16. Gender (female)	49%	-	-0.01	0.03	0.06	-0.04*	0.06	0.18	0.18	-0.01	-0.02	-0.09***	-0.15***	-0.14***	-0.18***	-0.71***	-

M = Mean, SD = Standard deviation
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2
 Logistic Regression Results Predicting Study Dropout via Value Priorities (N = 4442)

	OR	95%-C.I.		β_{OR}	z	p
		Lower	Upper			
Security	1.23	1.15	1.33	1.20	5.56	< 0.01
Age	1.01	1.00	1.02	1.01	2.48	0.01
Income	0.84	0.81	0.89	0.84	-6.80	< 0.01
Working Status (working)	0.94	0.78	1.14	0.94	-0.60	0.55
Gender (female)	0.91	0.81	1.04	0.91	-1.37	0.17
Conformity	1.20	1.12	1.28	1.19	5.24	< 0.01
Age	1.01	1.00	1.01	1.01	1.91	0.06
Income	0.84	0.80	0.88	0.84	-7.35	< 0.01
Working Status (working)	0.95	0.79	1.14	0.95	-0.58	0.56
Gender (female)	0.94	0.83	1.06	0.94	-0.96	0.34
Tradition	1.00	0.93	1.07	1.00	-0.01	0.99
Age	1.01	1.00	1.02	1.01	2.93	0.00
Income	0.83	0.79	0.87	0.83	-7.76	< 0.01
Working Status (working)	0.94	0.78	1.14	0.94	-0.62	0.54
Gender (female)	0.93	0.83	1.06	0.93	-1.04	0.30
Benevolence	0.68	0.62	0.75	0.79	-7.57	< 0.01
Age	1.01	1.00	1.02	1.01	2.87	0.00
Income	0.84	0.79	0.87	0.84	-7.46	< 0.01
Working Status (working)	0.93	0.78	1.13	0.93	-0.69	0.49
Gender (female)	1.02	0.90	1.16	1.02	0.35	0.72
Universalism	0.77	0.70	0.85	0.84	-5.31	< 0.01
Age	1.01	1.00	1.02	1.01	2.92	0.00
Income	0.82	0.78	0.86	0.82	-7.94	< 0.01
Working Status (working)	0.94	0.78	1.13	0.94	-0.65	0.52
Gender (female)	0.99	0.88	1.13	0.99	-0.10	0.92
Selfdirection	0.71	0.66	0.77	0.77	-8.11	< 0.01
Age	1.01	1.00	1.02	1.01	2.31	0.02
Income	0.85	0.81	0.89	0.85	-6.65	< 0.01
Working Status (working)	0.95	0.79	1.14	0.95	-0.57	0.57
Gender (female)	0.93	0.82	1.05	0.93	-1.12	0.26
Stimulation	0.86	0.80	0.92	0.88	-4.20	< 0.01
Age	1.01	1.00	1.02	1.01	2.43	0.01
Income	0.84	0.79	0.87	0.84	-7.47	< 0.01
Working Status (working)	0.94	0.78	1.13	0.94	-0.67	0.50
Gender (female)	0.92	0.82	1.05	0.92	-1.20	0.23
Hedonism	0.93	0.87	1.00	0.93	-2.10	0.04
Age	1.01	1.00	1.02	1.01	2.80	0.01
Income	0.83	0.79	0.87	0.83	-7.80	< 0.01
Working Status (working)	0.94	0.78	1.13	0.94	-0.63	0.53
Gender (female)	0.92	0.82	1.04	0.92	-1.27	0.20

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	OR	95%-C.I.		β_{OR}	z	p
		Lower	Upper			
Achievement	1.31	1.22	1.41	1.27	7.40	< 0.01
Age	1.01	1.01	1.02	1.01	3.59	< 0.01
Income	0.82	0.78	0.86	0.82	-8.13	< 0.01
Working Status (working)	0.91	0.76	1.10	0.91	-0.96	0.34
Gender (female)	1.01	0.89	1.14	1.01	0.13	0.90
Power	1.35	1.25	1.46	1.27	7.49	< 0.01
Age	1.01	1.01	1.02	1.01	3.44	< 0.01
Income	0.81	0.77	0.85	0.81	-8.44	< 0.01
Working Status (working)	0.93	0.77	1.12	0.93	-0.73	0.47
Gender (female)	1.00	0.88	1.13	1.00	0.00	1.00

Each value priority was analyzed in a separate regression.

OR = Unstandardized Odds Ratio, 95%-CI = 95% Confidence Interval, β_{OR} = Standardized (z-scaled) OR, z = z-Value, p = p-value

having money, being safe, and getting socially recognized and those who disregard interpersonal helpfulness, independence and stimulating experiences are most likely to drop out in future survey waves.

These results support the general notion that altruistic values predict study participation (Carrera et al., 2018; R. M. Groves, Cialdini, & Couper, 1992). At the same time the current study goes beyond previous findings by showing that there are multiple other values that are associated with study participation, including Achievement, Security, Power, Self-Direction and Stimulation. How can the effects be explained? Survey (non-)participation, like any behaviour, is a complex phenomenon that is determined by a myriad of factors (R. M. Groves et al., 1992). It has been observed that study participation partly represents an example of pro-social behaviour that benefits other people and society as a whole (Carrera et al., 2018). Supporting this line of argument, the values that have been found to positively predict study participation in this study have also been found to predict pro-social behaviour in the literature (e.g., Benevolence and Self-Direction); conversely, those values that have been found to inhibit general pro-social behaviour (e.g., Security, Achievement and Power), have been found to inhibit study participation (Schwartz, 2010). Thus, it appears that study participation behaviour can be seen as one aspect of general pro-social behaviour. Participants continue to participate in longitudinal studies mainly because they value pro-social behaviour in general.

Additionally, the two values of Stimulation and Hedonism were significant in predicting decreased dropout in the main analysis of the current study, although they have not been directly linked to pro-social behaviour. As one potential explanation, continuing to participate in a longitudinal survey can be experienced as exciting (Stimulation) and pleasuring

(Hedonism), depending on the personal interest in the topic of the questionnaire (Schwartz, 2010). Indeed, several previous studies have found that personal interest of participants in the topic is one of the major predictor of participation behaviour (Edwards, 2002; R. Groves, Presser, & Dipko, 2004; Keusch, 2013). Therefore, although future studies must validate this hypothesis, people who value Stimulation and Hedonism might tend to continue to participate in longitudinal research because they find more joy and excitement in it.

These results bear important implications regarding the use of longitudinal studies. In contrast to other stable psychological characteristics, personal values have been found to exhibit relatively large effects on study participation and dropout (Richter, Körtner, & Saßenroth, 2014). For example, one increase in a standard deviation of Power was associated with 27% increased odds of future dropout, and one increase in a standard deviation of Benevolence was associated with 21% reduced odds of future dropout. Therefore, participants selectively participate in research depending on their personal values. Given the central role of personal values in human psychology, findings from longitudinal studies are likely biased to the degree that participant's personal values, and their behavioural sequelae, are related to the phenomena of interest. Authors of longitudinal studies, especially those concerned with psychosocial phenomena and intentional behaviour should be mindful of this potential bias (Sagiv et al., 2017).

Research employing longitudinal methods needs to account for this potential bias. One often-suggested strategy is to impute missing data (Asendorpf, Schoot, Denissen, & Hutteman, 2014). Importantly, for this strategy to be feasible, indicators of personal values should be included to account for dropout. Another strategy to account for this bias is to use other data sources that do not suffer from selective

dropout. For example, in the realm of health research, the use of automatically collected claims data might prove beneficial to cross-validate findings (Beller et al., 2020; Schröder, Beller, Golpon, & Geyer, 2020). Lastly, these results might also inform survey methodology. Like in the framing debate on climate change, one could try to re-frame survey participation such that it more likely appeals to those participants who value Achievement, Security, and Power who are more likely to dropout (Corner, Markowitz, & Pidgeon, 2014). One could for example provide certificates to research participants (satisfying participants' achievement motivations) or provide more monetary rewards (satisfying power motivations) to increase the participation rates.

Several limitations to the current study need to be considered. First, while the results seem to be very robust to different design and analytical choices (see the tables reported in the Appendix), the current study did not differentiate between different types of dropout like loss of contact or refusal to participate, which might be needed to validate the supposed mechanisms. Additionally, while the PVQ-21 seemed to be a psychometrically sound instrument to measure personal values in our sample, some previous studies have reported concerns regarding the use of the shortened PVQ-21 (Davidov et al., 2008). Thus, future analyses should replicate our results using the longer version of the PVQ and potentially also other value scales. Secondly, although the study used a large population-based sample of middle-aged and older adults, the sample did not include young adults. The effects of values on attrition might differ in younger adults from middle-aged and older adults and should thus be analysed by future studies. Third, the current study is based on a large survey about life-circumstances of middle-aged and older adults. Different modes of survey administration, different study topics and different study designs such as the use of RCTs might all moderate the effect between values and dropout and should thus be investigated by future studies (R. M. Groves et al., 1992). Finally, although the current results might be explained by the "survey participation as pro-social behaviour"-hypothesis, other explanations might also hold true. For example, respondents with high agentic values (e.g., Achievement and Power) could simply spend more time on work and achievement-related activities, have thus less time to participate in surveys, and might be more likely to drop out (Trapnell & Paulhus, 2012). Therefore, future studies are needed that further explore potential predictors of dropout like loneliness and differential aspects of health (Beller & Wagner, 2018a, 2018b, 2020; Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Huber et al., 2011). Notwithstanding these opportunities for future research, the current study provided new and robust evidence for the complex and differential effects of participants' values on survey dropout. This risk must be accounted for in longitudinal studies to further reduce risk of bias.

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Appendix

(Appendix tables follow on next page)

Table A1

Logistic Regression Results Predicting Study Dropout via Raw Personal Values Scores in a Stepwise Analysis (N = 4442)

	Model 1				Model 2				Model 3			
	OR	Lower	Upper	<i>p</i>	OR	Lower	Upper	<i>p</i>	OR	Lower	Upper	<i>p</i>
Security	1.17	1.09	1.27	< 0.01	1.16	1.08	1.26	< 0.01	1.12	1.04	1.21	< 0.01
Conformity	1.08	1.01	1.16	0.03	1.05	0.97	1.12	0.21	1.04	0.97	1.12	0.30
Tradition	1.08	1.01	1.17	0.04	1.06	0.98	1.14	0.16	1.05	0.97	1.14	0.20
Benevolence	0.78	0.70	0.87	< 0.01	0.79	0.71	0.87	< 0.01	0.80	0.72	0.90	< 0.01
Universalism	1.01	0.91	1.12	0.82	1.01	0.91	1.13	0.79	1.00	0.90	1.11	0.99
Selfdirection	0.79	0.73	0.86	< 0.01	0.79	0.73	0.86	< 0.01	0.82	0.75	0.89	< 0.01
Stimulation	0.90	0.83	0.97	< 0.01	0.90	0.83	0.97	0.01	0.90	0.84	0.97	0.01
Hedonism	1.02	0.96	1.10	0.49	1.02	0.96	1.10	0.47	1.01	0.94	1.08	0.85
Achievement	1.20	1.11	1.29	< 0.01	1.22	1.13	1.32	< 0.01	1.22	1.13	1.32	< 0.01
Power	1.12	1.03	1.21	0.01	1.14	1.05	1.23	< 0.01	1.17	1.08	1.28	< 0.01
Age	-	-	-	-	1.01	1.01	1.02	< 0.01	1.01	1.00	1.02	0.04
Gender (female)	-	-	-	-	1.11	0.97	1.26	0.13	1.05	0.93	1.20	0.41
Income	-	-	-	-	-	-	-	-	0.84	0.81	0.89	< 0.01
Working Status	-	-	-	-	-	-	-	-	0.91	0.75	1.10	0.33

OR = Unstandardized Odds Ratio, 95%-CI = 95% Confidence Interval, *p* = *p*-value

Table A2
Logistic Regression Results Predicting Study Dropout via Raw Personal Values Scores in a Single Analysis in Men and Women (N = 4442)

	Men					
	OR	95%-C.I.		β_{OR}	z	p
		Lower	Upper			
Security	1.05	0.94	1.17	1.05	0.87	0.39
Conformity	1.01	0.91	1.12	1.01	0.18	0.85
Tradition	1.06	0.95	1.18	1.05	0.99	0.32
Benevolence	0.85	0.73	0.99	0.89	-2.12	0.03
Universalism	0.99	0.86	1.14	0.99	-0.12	0.91
Selfdirection	0.79	0.70	0.89	0.81	-3.90	< 0.01
Stimulation	0.91	0.83	1.02	0.91	-1.63	0.10
Hedonism	0.94	0.86	1.04	0.94	-1.16	0.25
Achievement	1.26	1.13	1.40	1.31	4.16	< 0.01
Power	1.26	1.12	1.41	1.27	3.85	< 0.01
Age	1.01	1.00	1.02	1.11	1.36	0.17
Income	0.81	0.76	0.87	0.62	-5.99	< 0.01
Working Status (working)	1.11	0.82	1.48	1.11	0.64	0.52
	Women					
	OR	95%-C.I.		β_{OR}	z	p
		Lower	Upper			
Security	1.20	1.07	1.34	1.22	3.19	< 0.01
Conformity	1.06	0.96	1.18	1.08	1.20	0.23
Tradition	1.05	0.93	1.17	1.05	0.77	0.44
Benevolence	0.76	0.65	0.89	0.82	-3.40	< 0.01
Universalism	1.02	0.88	1.19	1.02	0.27	0.79
Selfdirection	0.84	0.74	0.94	0.84	-2.96	< 0.01
Stimulation	0.87	0.78	0.98	0.86	-2.37	0.02
Hedonism	1.08	0.98	1.19	1.09	1.48	0.14
Achievement	1.21	1.08	1.35	1.25	3.39	< 0.01
Power	1.08	0.96	1.23	1.08	1.32	0.19
Age	1.01	1.00	1.02	1.14	2.01	0.04
Income	0.89	0.82	0.95	0.83	-3.22	< 0.01
Working Status (working)	0.77	0.60	1.00	0.77	-1.98	0.05

OR = Unstandardized Odds Ratio, 95%-CI = 95% Confidence Interval, β_{OR} = Standardized (z-scaled) OR, z = z-Value, p = p-value

Table A3
Ordinal Regression Results predicting Participation via Raw Personal Values Scores (N = 4442)

	OR	95%-C.I.		β_{OR}	z	p
		Lower	Upper			
Security	0.91	0.86	0.98	0.91	-2.70	0.01
Conformity	0.97	0.91	1.03	0.96	-1.03	0.30
Tradition	0.99	0.92	1.05	0.98	-0.43	0.66
Benevolence	1.16	1.06	1.28	1.12	3.14	< 0.01
Universalism	0.99	0.90	1.08	0.99	-0.28	0.78
Selfdirection	1.19	1.10	1.28	1.17	4.56	< 0.01
Stimulation	1.08	1.01	1.15	1.08	2.22	0.03
Hedonism	0.97	0.91	1.03	0.97	-0.99	0.32
Achievement	0.83	0.77	0.89	0.80	-5.53	< 0.01
Power	0.89	0.83	0.96	0.89	-3.08	< 0.01
Age	0.99	0.99	1.00	0.91	-2.38	0.02
Income	1.13	1.09	1.18	1.29	6.69	< 0.01
Working Status (working)	1.19	1.01	1.40	1.19	2.08	0.04
Gender (female)	1.00	0.90	1.12	1.00	0.06	0.95

OR = Unstandardized Odds Ratio, 95%-CI = 95% Confidence Interval, β_{OR} = Standardized (z-scaled) OR, z = z-Value, p = p-value

Table A4
Logistic Regression Results Predicting Study Dropout via Raw Personal Values Scores in a Listwise Deleted Dataset (N = 3869)

	OR	95%-C.I.		β_{OR}	z	p
		Lower	Upper			
Security	1.08	1.00	1.18	1.09	2.05	0.04
Conformity	1.05	0.98	1.14	1.06	1.33	0.18
Tradition	1.07	0.99	1.17	1.07	1.65	0.10
Benevolence	0.79	0.71	0.89	0.84	-3.93	< 0.01
Universalism	1.02	0.91	1.14	1.02	0.36	0.72
Selfdirection	0.82	0.75	0.90	0.84	-4.29	< 0.01
Stimulation	0.90	0.83	0.97	0.89	-2.58	0.01
Hedonism	0.98	0.91	1.05	0.98	-0.56	0.58
Achievement	1.23	1.14	1.34	1.28	5.03	< 0.01
Power	1.21	1.10	1.32	1.22	4.16	< 0.01
Age	1.01	1.00	1.02	1.11	2.01	0.04
Income	0.84	0.81	0.89	0.71	-6.26	< 0.01
Working Status	0.90	0.74	1.12	0.90	-0.92	0.36
Gender (female)	1.11	0.96	1.27	1.11	1.35	0.18

OR = Unstandardized Odds Ratio, 95%-CI = 95% Confidence Interval, β_{OR} = Standardized (z-scaled) OR, z = z-Value, p = p-value