



Brief Report

Personality has minor effects on panel attrition

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ABSTRACT

In light of the recent interest in using longitudinal panel data to study personality development, it is important to know if personality traits are related to panel attrition. We analyse the effects of personality on panel drop-out separately for an 'older' subsample (started in 1984), a relatively 'young' subsample (started in 2000), and a 'new' subsample (started in 2009) of the German Socio-Economic Panel (SOEP) study. We found that openness slightly decreases the probability of panel drop-out in all three samples. For the 'older' subsample only, we found a small negative effect of agreeableness on panel drop-out. We control for age, sex, education, migration background, and the number of inhabitants in the region of the respondents.

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1. Introduction

Personality dispositions like those captured by the Big Five model (John, Naumann, & Soto, 2008) are considered to be relatively stable patterns that distinguish the individual from others. Recent research on personality has used longitudinal data to investigate the development of the core personality dispositions at specific ages and to study changes in personality traits over the adult life span (e.g., Lucas & Donnellan, 2011; Specht, Egloff, & Schmukle, 2011). It is therefore important to know if, and to what extent, personality traits are related to panel attrition.

If the reasons for panel attrition are related to the investigated variables, the sample could be biased (Groves et al., 2009). A relationship between personality traits and attrition (e.g., when respondents with lower values for a certain trait have a higher probability of dropping out than respondents with higher values for the same trait) could limit the quality and accuracy of the data. Recent research using the Big Five taxonomy has provided valuable initial insights into the effects of personality traits on panel attrition.

Roberts, Walton, and Viechtbauer (2006) conducted a meta-analysis of 92 longitudinal studies to investigate the development of personality across the life course, but found no systematic relationship between attrition ($M = 44\%$, range 0–93%) and mean-level change in personality traits. Salthouse (2013), in contrast, found higher levels of agreeableness ($d = .11$) and openness ($d = .11$) among respondents ($N = 2082$) returning for the second round of an ongoing panel survey on cognitive functioning than among non-returning respondents ($N = 1698$). In addition, older respon-

dents with higher levels of extraversion had a higher probability of returning, indicating interaction effects of age and panel attrition.

Lugtig (2014) used a latent class framework to capture different patterns of panel commitment in a Dutch online panel, the Longitudinal Internet Studies for the Social Sciences (LISS; $N = 8148$). He was able to empirically separate nine different groups of respondents and to follow a different and distinct process of attrition for each one. Loyal stayers (37% of the sample), defined as respondents who participated in almost all waves of the panel, were found to be more conscientious ($d = .06$), less extraverted ($d = .15$), and less agreeable ($d = .07$) than fast attriters (19% of the sample) who dropped out immediately after the start of the panel. Also with the LISS panel, Saßenroth (2013) revealed negative effects of neuroticism ($d = .10$) and openness ($d = .09$) on the duration of panel membership.

In summary, research on the effects of personality on panel attrition is sparse, the results are inconsistent, and the effects identified are rather small. The present study attempts to fill this gap by examining the effects of personality on panel drop-out in a large sample of 11,436 German adults surveyed annually in the Socio-Economic Panel Study (SOEP).

The SOEP is a frequently used source of longitudinal data for the study of personality development (e.g., Lucas & Donnellan, 2011; Specht et al., 2011; but see Cobb-Clark & Schurer, 2012, for a study using the Australian HILDA panel). Our study provides insight into the reliability of studies on personality development using SOEP data.

We use Cox proportional hazards regressions (Cox, 1972) to estimate the effects of personality traits on panel drop-out. Based

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on past studies, we refrain from stating specific hypotheses as previous results are very mixed. We include several control variables that have been shown to influence either personality traits or panel survival in previous studies.

Studies on personality development over the adult life span have shown that personality traits change with age (e.g., Lucas & Donnellan, 2011; Specht et al., 2011). Thus, we control for age, as well as for age² and age³ to test for non-linear effects. Variables that have shown effects on panel survival in previous waves of the SOEP as well as in other longitudinal studies are sex, migration background, education, and geographical region of the respondents (e.g., Groves & Couper, 1998; Groves & Lyberg, 1988; Kroh, 2013).

2. Materials and method

2.1. Sample

To test the effect of personality on panel attrition we use data from the Socio-Economic Panel Study (SOEP). The SOEP is an ongoing longitudinal study of households in Germany. Details on sampling strategies, response rates, attrition, and representativeness of the sample can be found in Wagner, Frick, and Schupp (2007) and on the SOEP website (<http://www.diw.de/goep>). Households are selected using a multistage probability design, and all adult members of selected households (i.e., those older than age 16) are asked to participate. Since 1984, respondents have been surveyed yearly.

The multi-cohort nature of the SOEP – new respondents are recruited into the SOEP on a regular basis – enabled us to utilise three subsamples of the SOEP, each selected to be representative of the population of Germany, using a multistage probability design for our analyses: a ‘new’ sample surveyed first in 2009 with personality measured on the same occasion (SOEP Sample I, $N = 2400$), a ‘younger’ sample with short duration of panel membership surveyed first in 2000 with personality measured in the year 2005 after five years of panel membership (SOEP Sample F, $N = 5826$), and an ‘older’ sample with a long duration of panel membership, consisting of those surveyed first in 1984 with personality measured in the year 2005 after 21 years of panel membership (SOEP Samples A & B, $N = 3210$).

Analysing three different subsamples separately allows us to test whether personality traits influence panel attrition differently in newly started surveys than in longer running panel surveys. We refrain from the alternative approach of analysing all samples together while using duration of panel membership as a control variable, as a) time in study does not overlap for the three subsamples and therefore time and cohort effects (i.e., initial differences in the composition of the subsamples) cannot be disentangled and b) time in study might have non-linear relationship with panel attrition.

We excluded all respondents that died or moved abroad between 2005 and 2012. Furthermore, we excluded all respondents that lived in their respective households in 1984 (‘older’ sample) or 2000 (‘younger’ sample) as children, even if they provided measures of their personality in 2005, because these respondents (‘older’ sample: $N = 1027$; ‘younger’ sample: $N = 537$) were not able to decide whether or not to join the panel until their first individual interview at the age of 17. Finally, respondents with missing data in the control variables described below were excluded as well ($N = 9$).

2.2. Materials

In 2005 and 2009, the Big Five personality traits (BFI; John, Donahue, & Kentle, 1991) were measured in the SOEP using a short form with 15 items (Lang, John, Lüdtke, Schupp, & Wagner, 2011).

Three items were used to measure each dimension. Participants responded to these items on a 7-point scale that ranged from ‘1’ (does not apply) to ‘7’ (does apply). The inter-item correlations are reported by Lucas and Donnellan (2011).

Control variables were measured with the yearly SOEP questionnaires. Age (‘new’ sample: $M = 49.81$ years, $SD = 17.51$ years, $range = 17–94$ years; ‘younger’ sample: $M = 52.10$ years, $SD = 15.88$ years, $range = 21–96$ years; ‘older’ sample: $M = 57.84$ years, $SD = 12.51$ years, $range = 37–94$ years) was generated as the differences between the reported birth year and the year of our study. Sex indicates if the respondent was male (‘new’ sample: 47.62% male; ‘younger’ sample: 46.93%; ‘older’ sample: 48.07%). For education, a binary variable was used to indicate if the respondent held a high school diploma or not (‘new’ sample: 15.50% high school diploma; ‘younger’ sample: 17.73%; ‘older’ sample: 11.68%). Migration background was measured with a binary variable indicating if the respondent was born in a country other than Germany or had parents born in another country (‘new’ sample: 18.42% migration background; ‘younger’ sample: 9.96%; ‘older’ sample: 21.68%). The regional level indicates if the respondents were from a big city or from a less populated region (‘new’ sample: 31.04% region with more than 500,000 inhabitants; ‘younger’ sample: 29.54%; ‘older’ sample: 34.92%). All non-binary variables were z-standardised before the analyses.

2.3. Analyses

We used Cox proportional hazards regressions (Cox, 1972) to analyse the effects of the Big Five personality traits and the control variables by determining hazard ratios for overall survival. Hazard was modelled as $H(t) = H_0(t) \times \exp(\beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)$, where $x_1 \dots x_k$ were the predictor variables and $H_0(t)$ was the baseline hazard at time t , representing the hazard – the instantaneous risk of dropping out at any time – for a person with the value 0 for all the predictor variables. The coefficients $\beta_1 \dots \beta_k$ were estimated by Cox regressions. The quantity $\exp(\beta_k)$ can be interpreted as the relative risk of panel drop-out for an individual with an increase of one standard deviation in the value of the personality trait compared with another individual, given that both individuals are the same on all other covariates. For the dichotomous control variables, the quantity $\exp(\beta_k)$ can be interpreted as the relative risk of panel drop-out for an individual with the risk factor present compared with an individual with the risk factor absent, given that both individuals are the same on all other covariates. A hazard ratio > 1 indicates a higher risk of panel drop-out, whereas a hazard ratio < 1 indicates a lower risk.

Drop-out was defined as a refusal to participate without any successful attempt to contact the former respondent again later, so temporary drop-outs were not taken into account.¹ The SOEP can obtain information about temporary drop-outs in subsequent waves and with additional questionnaires, hence the more serious problem are final drop-outs. Thus, the analyses could be estimated through 2011 only because we do not yet know if 2012 drop-outs are temporary or final.

Possible predictors of panel drop-out were entered in three steps. In model 1, the influence of the five z-standardised personality traits was estimated. In model 2, variables associated with personality development – respondents’ age, age², age³ – and sex were entered into the model 1 equation. Age was centred before age² and age³ were calculated. In model 3, variables that have shown effects on panel drop-out – education, migration background, and regional level – were included. All analyses were computed with Stata 13.

¹ We also estimated models considering temporary drop-outs and the results did not change significantly.

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