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The Role of Preferences, Attitudes, and Personality Traits in Labor Market Matching

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Abstract

We provide new evidence of worker-firm matching based on preferences, attitudes and personality traits using new, representative matched employer-employee data from Germany. Time-constant firm characteristics explain a significant proportion of total variance in a series of outcome variables commonly applied in behavioral economics research. Hence, behavioral characteristics play an important, yet under researched, role in the labor market matching process.

Keywords: Preferences; Attitudes; Personality; Sorting; Matching
JEL Codes: D90; D91; J01; M50

1. Introduction

The matching process between firms and employees in the labor market is a major topic in economics. A bad match between employer and employee may lead to ex-post sorting out of a firm and high costs from rehiring (Eeckhout, 2018). Previous literature has identified firm size, worker skills as well as worker and firm productivity as important drivers of this matching process (e.g., Abowd et al., 1999; Lindenlaub 2017). But the role of attitudes, preferences and personality in the matching process is much less explored, despite them gaining increasing interest in the field (Falk et al., 2018).

Previous empirical research is mainly based on lab studies showing, for instance, the effect of individual attitudes and personality traits on contract choices between subjects (Bartling et al., 2009; Dohmen and Falk, 2011). Lazear et al. (2012) find sorting explains lab participants' sharing behavior better than demographics or education. But Levitt and List (2007) argue that generalizing from lab experiments on social preferences is difficult, making cross-validation with field and survey evidence necessary. In a field experiment, Bellemare and Shearer (2010) provide evidence for risk-sorting of workers, where risk-tolerant workers sort into high-risk firms. Previous studies using representative survey data on the role of preferences and personality for matching are scarce. Focusing on one variable, Grund and Sliwka (2010) show that risk preferences cross-sectionally correlate with sorting into compensation schemes. We address this gap by using representative matched employer-employee data that includes a variety of measures of individual attitudes, preferences and personality to answer the question whether employers affect workers' behavioral characteristics. In detail, we ask: Do time-constant, firm-specific characteristics correlate with worker preferences and personality? And if yes, how strong is the explanatory power relative to other control variables, i.e. are they important drivers of an employer-employee job match?

2 Data and methodology

We use data from the Linked Personnel Panel (LPP), a unique longitudinal employer-employee data set, which is representative for German establishments in the private sector with at least 50 employees.[1] The LPP links employee-level information (e.g., about attitudes, preferences and personality) with establishment-level information on management practices and structural firm characteristics.

The LPP contains information on more than 7,000 randomly drawn employees aged between 18 and 74 working in 700 to 1,200 establishments in three survey waves 2012, 2014 and 2016. As outcome variables, we use a series of validated measures capturing fundamental determinants of human behavior (individual attitudes, preferences and personality traits), which are common in behavioral economics and applied psychology research. In detail, we include the Big Five personality traits, risk attitude, reciprocity, altruism, time preferences (discounting), trust, affective commitment to the organization, inequity aversion, and helpfulness.

[1] DOI: 10.5164/IAB.LPP1617.de.en.v1.

Our survey measures of individual attitudes and preferences have been experimentally validated, i.e. they have been shown to be very suitable predictors for actual behavior in incentivized experiments. These measures have been applied, for instance, in the Global Preference Survey or the German Socio-Economic Panel Study (Dohmen et al., 2009; Dohmen et al., 2011; Falk et al., 2016; Falk et al., 2018). For measuring commitment and the Big Five personality traits, we apply validated and commonly applied constructs.[2]

Table 1 reports summary statistics for our outcome variables. We further summarize independent variables on demographics, education, and job and establishment characteristics in table A1 of the online appendix.

Table 1: Summary statistics of individual outcome variables

Variable	Mean	Std. dev.	Min	Max
Attitudes and preferences				
Risk attitude	5.69	1.83	0	10
Trust	3.29	0.69	1	5
Helpfulness	4.27	0.71	1	5.5
Altruism	7.66	1.52	0	10
Positive reciprocity	1.47	0.61	1	5
Negative reciprocity	4.09	0.99	1	5
Affective commitment	3.71	0.88	1	5
Inequity aversion	2.50	1.03	1	5
Time preference (discounting)	2.52	1.18	1	5
Big Five personality traits				
Extraversion	3.70	0.73	1	5
Neuroticism	2.70	0.78	1	5
Conscientiousness	4.38	0.48	1.33	5
Openness to experience	3.67	0.64	1	5
Agreeableness	4.07	0.58	1	5

To identify to what extent matching is driven by worker attitudes, preferences and personality, we run nested pooled OLS regressions where the dependent variable is an employee *i*'s attitude, preference or personality trait. In each specification, we add a new set of variables and observe the change in adjusted R-squared as well as the F-statistic of the added group. Specification (1) only controls for education (secondary and tertiary education levels), specification (2) then adds job characteristics (white collar, managerial responsibility, part time, monthly net wage, permanent contract), specification (3) further adds individual demographics (age, female, permanent relationship, household size, health status), specification (4) adds industry, region, and size fixed effects for each establishment *j* (X_j) as well as year fixed effects for each wave *t* (T_t). Finally, specification (5) adds establishment fixed effects (while excluding industry, size and region fixed effects).

Hence, our final regression specification is the following:

[2] For a detailed description of the data set and measures see Kampkötter et al. (2016) and the online appendix of this paper.

$$y_{it} = \alpha + \beta_1 educ_{it} + \beta_2 job_{it} + \beta_3 demog_{it} + \beta_4 X_j + \beta_5 T_t + \beta_6 establishment_j + \varepsilon_{it}$$

Our final specification tests whether the adjusted R-squared will significantly increase when adding establishment fixed effects. If the incremental explanatory power of time-constant establishment characteristics is higher than all other control variables that can potentially explain differences in individual outcome variables, firm characteristics would constitute an important match-specific component.[3]

3. Results

Table 2 reports incremental changes in adjusted R-squared when adding the different sets of controls for the variety of individual outcome variables. Note that the main effects do not change if the independent variables are added in a different order.[4]

Column 5 shows the incremental change in adjusted R-squared when adding establishment fixed effects. To further illustrate the influence of establishment characteristics in explaining total variation in our behavioral outcome variables, column 6 quantifies the relative importance of establishment fixed effects (by dividing incremental adj. R-squared from column 5 by total adj. R-squared). The results show that the incremental change in adjusted R-squared is highest for establishment fixed effects for all of the attitudes and preferences outcome variables (column 5), suggesting that time-constant firm characteristics explain the largest amount of variation in these outcomes. For all personality traits except openness, we observe a lower, but still reasonably high importance of establishment fixed effects in explaining total variation in behavioral outcomes. Looking at column 6, establishment fixed effects explain helping behavior (67%), trust (62%), positive reciprocity (60%), risk attitude (54%) as well as openness to experience (51%) best. This supports the notion that time constant establishment characteristics seem to play an important role in determining the worker-firm match.

[3] Studies also analyzing the effects of adding firm fixed effects into individual-level regressions include, for instance, Kampkötter (2015) and Grund and Hofmann (2019).

[4] In line with Lazear et al. (2012), this is tested using the partial adjusted R-squared of each explanatory variable set, $(R^2 - R^2_{(i)})/(1 - R^2_{(i)})$.

Table 2: Incremental changes in adjusted R-squared when adding further controls

	Sets of independent variables:					**Total adj. R^2**	**Δ adj. R^2 establish-ment FE / total adj. R^2 (5) / (6)**	**Number of obs.**
Dep. var.:	Educa-tion	*(1)*+ Job	*(2)* + Demo-graphics	*(3)* + Industry, region, size, and year FE	*(4)* + Estab-lishment FE		(in %)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Attitudes and preferences								
Risk attitude	0.006**	0.013**	0.007**	0.005**	0.037**	0.068	54.4	13,599
Trust	0.003**	0.001	0.006**	0.019**	0.049**	0.079	62.0	13,577
Helping	0.002**	0.003**	0.013**	0.003**	0.040**	0.060	66.7	13,552
Altruism	0.002*	0.001*	0.021**	0.001	0.024**	0.049	49.0	6,508
Pos.reci-procity	0.003**	0.000	0.003**	0.000	0.009**	0.015	60.0	6,516
Neg. reci-procity	0.002	0.006**	0.014**	0.004**	0.023**	0.049	46.9	6,498
Commit-ment	0.012**	0.045**	0.039**	0.008**	0.086**	0.191	45.0	13,461
Inequity aversion	0.005**	0.011**	0.010**	0.007**	0.017**	0.051	33.3	10,482
Time pref.	0.016**	0.005**	0.003**	0.003**	0.018**	0.045	40.0	6,501
Big Five personality traits								
Extra-version	0.001*	0.011**	0.026**	0.004**	0.014**	0.056	25.0	10,502
Neuroti-cism	0.007**	0.017**	0.065**	0.003**	0.015**	0.107	14.0	10,520
Consci-entiousn.	0.022**	0.006**	0.025**	0.002**	0.014**	0.069	20.3	10,520
Openness	0.005**	0.005**	0.006**	0.002**	0.019**	0.037	51.4	10,397
Agreea-bleness	0.005**	0.008**	0.014**	0.002**	0.016**	0.046	34.8	10,510

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

3. Discussion and conclusion

We provide first evidence of worker-firm matching based on preferences, attitudes and personality traits using representative matched employer-employee data. Time-constant establishment characteristics, holding individual and other firm characteristics constant, explain a significant proportion of total variance in a series of behavioral outcome variables.

A possible mechanism behind these findings is labor market sorting, which contributes to our understanding why employees are heterogeneous across firms regarding social preferences. If firms screen on employee preferences such as cooperation, they set contracts that will only attract the desired type of worker (Kosfeld and von Siemens, 2011).

Further, individuals in the workplace can become more similar over time. This is particularly important in the case where preferences are to a certain degree endogenous. Further explanations might include the similar-to-me effect (Rand and Wexley, 1975), a selection of employees similar to the employers themselves. Similarly, peer effects could influence personal preferences and attitudes over time through learning and changes in behavior (Sacerdote, 2001). Further research is needed to explore the detailed channels, i.e. to what extent matches are driven by sorting, learning, similarity, peer effects, or other potential channels, which our data thus far do not allow to causally identify.

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Online appendix. Supplementary data

Supplementary material related to this article can be found in the attached online appendix.

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Online Appendix

Appendix A: Description of behavioral outcome variables

Risk attitude is measured with the single item adapted from the individual questionnaire of the SOEP (Richter et al., 2013). The wording is: “Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?” on a 11-point Likert scale ranging from 0 (risk averse) to 10 (fully prepared to take risks).

Altruism is measured with a single-item construct using the following wording: “How do you assess your willingness to share with others without expecting anything in return? Please assess your willingness on a scale with 0 meaning: "not at all willing to share without expecting something in return" and 10 meaning: "very willing to share without expecting something in return". The values in between allow you to grade your assessment.”) (Falk et al, 2016, 2018).

The respective answering scale ranges from 0 to 10.

Time preferences (discounting) are measured using the following two items on a five-point Likert scale ranging from 1 (does not apply to me at all) to 5 (applies to me perfectly) (modified from (Falk et al, 2016, 2018):

A: I abstain from certain things today so I can afford more tomorrow.

B: I tend to procrastinate things even though it would be better to do them now.

Reciprocity (positive and negative) is measured using the following two items on a five-point Likert scale ranging from 1 (does not apply to me at all) to 5 (applies to me perfectly) (Falk et al, 2016, 2018):

A: If someone tries to harm me on purpose, I will try to pay them back in kind even if this is associated with costs for me.

B: If someone does me a favor, I am prepared to return it.

Trust is measured with two of three trust items included in the German SOEP Study (Naef and Schupp, 2009). Both items are measured on a five-point Likert scale from "totally agree" to "totally disagree".

Affective commitment to the organization is measured using the six-item short scale by Meyer et al. (1993) on a five-point Likert scale.

Inequity aversion is based on two items of the USS-8 justice sensitivity inventory (Schmitt et al., 2010). We apply one item from the victim and one item from the beneficiary scale that reflect disadvantageous and advantageous inequity.

Helpfulness (helping) asks whether employees help colleagues, and are helped by colleagues based on the following two items (5-point Likert scale ranging from 1 "Always" to 5 "(Almost) never"):

A: How often do you receive help and support from colleagues if required so?

B: How often do you offer help to your colleagues?

We measure Big Five personality traits with the 16-item version of the Big Five Inventory short scale developed for the Socio-Economic Panel (SOEP) (Gerlitz and Schupp, 2005; Lang et al., 2011) on a five-point Likert scale ranging from 1 (does not apply to me at all) to 5 (applies to me perfectly).

More details on the items, constructs and their internal validity are provided in Kampkötter et al. (2016).

Appendix B: Summary statistics of individual-level explanatory variables

Table A1

Variable	Mean	SD	Min	Max
Education				
No qualification	0.005	0.07	0	1
Lower secondary school certificate	0.24	0.43	0	1
Intermediate secondary school certificate	0.44	0.50	0	1
University of applied sciences entrance qualification	0.10	0.30	0	1
University entrance diploma (A-level)	0.21	0.40	0	1
Another level of education	0.007	0.08	0	1
No training qualification	0.02	0.15	0	1
Apprenticeship	0.49	0.50	0	1
Vocational training within the education	0.10	0.30	0	1
Master craftsmen or technical college	0.20	0.40	0	1
University of applied sciences degree	0.09	0.28	0	1
University degree	0.10	0.29	0	1
Other training qualification	0.004	0.06	0	1
Job				
White collar employee	0.60	0.49	0	1
Leadership position	0.30	0.46	0	1
Part time contract	0.13	0.34	0	1
Monthly net income	2,239.86	1,330.47	25	60,000
Fixed-term contract	0.05	0.22	0	1
Individual demographics				
Age	46.25	10.46	18	69
Female	0.28	0.45	0	1
Health status	2.36	0.94	1	5
..Permanent relationship	0.84	0.37	0	1
..Household size	2.78	1.22	1	13
Industry			0	1
Manufacturing industry	0.32	0.46	0	1
Metal and electrical industry, automotive sector	0.37	0.48	0	1
Commerce, traffic, communication	0.11	0.31	0	1
Company-related services, financial services	0.13	0.33	0	1
IT, communication and other services	0.07	0.26	0	1
Region				
North	0.17	0.37	0	1
East	0.27	0.44	0	1
South	0.26	0.44	0	1
West	0.30	0.46	0	1
Establishment size				
20 to 49	0.006	0.08	0	1
50 to 99	0.13	0.34	0	1
100 to 249	0.25	0.43	0	1
250 to 499	0.24	0.43	0	1
500 and more	0.37	0.48	0	1
Year				
2012	0.39	0.49	0	1

2014	0.34	0.47	0	1
2016	0.27	0.44	0	1

N=13,599 (largest sample available for one of the dependent variables)

Data Access

The data set used in this article, the Linked Personnel Panel, is open to any researcher and is available via the Research Data Centre (FDZ) of the German Federal Employment Agency at the Institute for Employment Research (IAB).

See the following URL for more details:

https://fdz.iab.de/en/Integrated_Establishment_and_Individual_Data/lpp.aspx

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