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Ethnic Minority Background and Personality Characteristics: Evidence from a Representative Sample of the Adult Population*

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Abstract

I measure statistical differences in personality characteristics (personality traits, attitudes, and values) between individuals with an ethnic minority vs. ethnic majority background. This analysis might inform research on explanations of discrimination, as some researchers have proposed that discrimination might be based on statistical group differences in unobserved characteristics, such as personality characteristics (statistical discrimination). I use data of N = 6,330 individuals from a representative sample of the adult population in Germany. Analogously to field experiments showing ethnic discrimination, only individuals who have completed secondary schooling in Germany are considered in the analyses. The results suggest that, on average, ethnic minority individuals score slightly higher in openness and slightly lower in conscientiousness than ethnic majority individuals. These statistical differences are more robust—but still small—when demographic factors and measures of the qualification level are held constant. I find no significant ethnic differences in the other Big Five personality traits, feeling of connectedness to the majority population, or gender equality values. Overall, the results provide only weak support for the theory of statistical discrimination as a potential explanation of ethnic discrimination.

Keywords: attitudes, discrimination, ethnicity, personality, values

JEL classification: J15, J71, M51

Supplemental materials and analysis code:
https://osf.io/ekja9/?view_only=a8881bbe5aea4604912c1cca0202326c

1. Introduction

In this study, I analyze statistical differences in personality characteristics between individuals with an ethnic minority vs. ethnic majority background (in short: ethnic minority vs. ethnic majority individuals). I use the term "personality characteristics" as a broad term that comprises personality traits, attitudes, and values (see, e.g., Kandler, Zimmermann, and McAdams 2014).

This analysis might inform research on explanations of discrimination. There is extensive evidence from correspondence tests (a type of field experiment; e.g., Bertrand and Mullainathan 2004; Gaddis 2018) on discrimination based on ethnic background in economic markets, such as the labor market. That literature consistently shows that ethnic minority applicants are, on average, treated less favorably than ethnic majority applicants when all other applicant characteristics observed by the decision maker are identical between ethnic groups (see the reviews by Zschirnt and Ruedin 2016; Bertrand and Duflo 2017; Baert 2018; Neumark 2018; Lang and Spitzer 2020).

Regarding potential explanations, the theory of statistical discrimination (Phelps 1972; Arrow 1973), when understood as discrimination based on statistically accurate beliefs (e.g., Aigner and Cain 1977; Lang and Spitzer 2020), predicts that discrimination is based on (actual) statistical group differences in unobserved characteristics of applicants. Empirical evidence indicates that ethnic discrimination in the labor market is indeed at least partly based on employer beliefs that ethnic minority applicants have lower scores in specific unobserved personality characteristics than ethnic majority applicants (Kaas and Manger 2012; Midtbøen 2014; Kunst, Thomsen, and Dovidio 2019; Kristinsson and Sigurdardottir 2020; Weichselbaumer 2020). However, in the absence of an appropriate empirical test of personality characteristics, it has remained unclear whether and to what extent the ethnic differences assumed by some employers actually exist in

the population. If ethnic minority individuals indeed have, on average, lower scores in personality characteristics that are positively related to productivity, then this would support the theory of statistical discrimination as an explanation of discrimination, because some decision makers might discriminate based on these statistical differences in personality characteristics if these are unobserved in applications. Learning more about potential explanations of discrimination is a precondition for dealing with the problem of discrimination successfully.

The empirical analyses in the present study are based on a large representative sample of the adult population in Germany. In light of the motivation of the study, the sample is restricted such that the individuals in the final sample have similar observed characteristics to those of fictitious applicants used in correspondence studies on ethnic discrimination (e.g., Kaas and Manger 2012). Therefore, I drop individuals without German citizenship and those who have migrated to Germany after the start of elementary schooling from the sample, and all individuals in the final sample have obtained a secondary schooling qualification in Germany. I test how ethnic minority vs. majority individuals differ from each other in the Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and emotional stability; Costa and McCrae 1992), one measure of attitudes (feeling of connectedness to the people in Germany), and one measure of values (gender equality values). These personality characteristics are likely to be relevant in the present context: All of them might be positive predictors of work performance (regarding the Big Five, see also the evidence summarized by Barrick, Mount, and Judge 2001), and previous evidence suggests that employer concerns about conscientiousness, agreeableness, feeling of connectedness to the majority population, and gender equality values are relevant for ethnic discrimination in the labor market (Kaas and Manger 2012; Midtbøen 2014; Kunst, Thomsen, and Dovidio 2019; Kristinsson and Sigurdardottir 2020; Weichselbaumer 2020).

The results from linear regression models suggest that, without control variables, ethnic minority individuals score, on average, slightly higher in openness and slightly lower in conscientiousness than ethnic majority individuals (both marginally significant). These differences become statistically more robust—but are still small in magnitude—when control variables for demographic factors (e.g., gender and age) and qualification level (e.g., education) are included. There are no significant ethnic differences in the other Big Five personality traits or in the considered attitudes and values (without and with controls). In relative terms, the statistical differences between ethnic majority vs. minority individuals (with control variables) are –9.5% for openness and 4.1% for conscientiousness. The results of robustness checks indicate that the ethnic difference in openness is driven by males (i.e., ethnic minority men vs. ethnic majority men), while the ethnic difference in conscientiousness is driven by females and by individuals with an ethnic minority background from countries outside the European Union (EU), especially countries with a Muslim majority.

In the last section, I discuss whether these results are helpful for explaining discrimination against ethnic minority applicants. It is possible that some decision makers discriminate against ethnic minority applicants because of their slightly lower average conscientiousness. However, the ethnic differences in conscientiousness found in the present study are much smaller than the discrimination between ethnic majority vs. minority applicants typically detected in correspondence studies. Moreover, the significance of the ethnic difference in conscientiousness does not survive a correction for multiple hypothesis testing. In addition, ethnic minority individuals score, on average, slightly higher in openness, which is positively related to work performance (Barrick, Mount, and Judge 2001), and there are no significant ethnic differences in other personality characteristics in the main analysis. As the robustness checks indicate, no

subgroup of ethnic minority individuals scores lower than ethnic majority individuals in any of the considered personality characteristics except conscientiousness. Overall, the results provide only weak support for the theory of statistical discrimination as a potential explanation of ethnic discrimination.

This study makes two contributions to the literature. First, I contribute to the literature on ethnic differences in personality characteristics. Previous empirical investigations of such ethnic differences have compared populations who live in different countries (Hofstede 2003; House et al. 2004; McCrae and Terracciano 2005; Chhokar, Brodbeck, and House 2008), have included migrants who were not socialized and educated in their country of residence (Brenzel and Laible 2016; Koopmans 2016), and/or have not controlled for individuals' other demographic factors or qualification level (Goldberg et al. 1998; Foldes, Duehr, and Ones 2008). The present study contributes to this literature by investigating differences between ethnic minority vs. majority individuals who are both living in the same country, received their education in the same country, and—in case of the models with control variables—have otherwise similar demographic factors and a similar level of qualification. This analysis improves the understanding of ethnic differences and is more informative for the type of ethnic discrimination that is shown by correspondence studies, where ethnic minority and ethnic majority applicants live in the same country and have the same observed biographies, including the same qualification level.

Second, this study contributes to the literature on explanations of discrimination. Researchers have proposed different explanations, including taste-based discrimination or prejudice (e.g., a personal preference against selecting individuals from particular groups; Becker 1957/1971) and implicit (unconscious) bias (e.g., Greenwald and Banaji 1995; Bertrand, Chugh, and Mullainathan 2005; Rooth 2010). Theories of statistical or belief-based discrimination predict

that discrimination is based on beliefs about unobserved characteristics of applicants from different groups (e.g., Phelps 1972; Arrow 1973; Bohren et al. 2019; Bohren, Imas, and Rosenberg 2019; Coffman, Exley, and Niederle 2021). The theory of statistical discrimination is often understood as implying that such beliefs about unobserved characteristics are statistically accurate (Aigner and Cain 1977; Altonji and Pierret 2001; Bertrand and Duflo 2017; Lang and Spitzer 2020). However, some researchers have considered the possibility of discrimination based on statistically inaccurate beliefs (e.g., Fershtman and Gneezy 2001; Mobius and Rosenblat 2006; Agan and Starr 2018; Arnold, Dobbie, and Yang 2018; Bohren, Imas, and Rosenberg 2019; Coffman, Exley, and Niederle 2021; Lepage 2021), which has also been called "inaccurate statistical discrimination" (Bohren et al. 2019). As noted above, while there is evidence that employer beliefs about ethnic differences in unobserved personality characteristics indeed influence recruiting decisions (in line with belief-based discrimination), it has remained unclear whether and how individuals from different ethnic groups actually differ from each other. With the present analysis, I contribute to this literature by investigating such differences between ethnic minority and ethnic majority individuals.

2. Background: Discrimination and beliefs

As this study is motivated by research on discrimination, I describe relevant background information on discrimination in this section. I define discrimination as differential treatment of individuals based on characteristics such as gender, race, or ethnic background (e.g., Bertrand and Duflo 2017; Lang and Spitzer 2020). In the following, I first summarize evidence on labor market discrimination based on ethnic background in callback decisions, then explain in more detail how statistical discrimination provides a potential explanation of such discrimination, argue that personality characteristics might be related to productivity, and finally describe

evidence on the role of information and beliefs about personality characteristics in the context of ethnic discrimination.

2.1. Evidence on labor market discrimination based on ethnic background in callback decisions

Empirical evidence on labor market discrimination is often based on correspondence tests, which are a type of field experiment (Gaddis 2018): Fictitious applications are sent to real firms, and the applications differ only in one characteristic, such as the name, which is randomly assigned; researchers then measure how that characteristic affects the callback rate (i.e., probability of invitation to a job interview; e.g., Bertrand and Mullainathan 2004). Using this method with randomly assigned names that are associated either with an ethnic majority or ethnic minority background, many studies have found evidence of labor market discrimination against ethnic minority applicants (e.g., Carlsson 2010; Oreopoulos 2011; Booth, Leigh, and Varganova 2012; Kaas and Manger 2012; Midtbøen 2016; Koopmans, Veit, and Yemane 2019; Weichselbaumer 2020; Di Stasio et al. 2021; Veit and Thijsen 2021). This evidence shows that the callback rate is typically 25–100% higher for ethnic majority applicants than for ethnic minority applicants.

Significant discrimination has been found against many ethnic minority groups, which is the case both in an international context (e.g., Oreopoulos 2011; Andriessen et al. 2012; Booth, Leigh, and Varganova 2012; Weichselbaumer 2017) and in Germany (e.g., Koopmans, Veit, and Yemane 2019). The detected discrimination is not based on differences in the (formal) qualification of applicants: Educational achievement and work experience are held exactly constant, and it is typically observed in the applications that the applicants from all ethnic groups have obtained their educational qualifications in the same country of residence, where the jobs

for which they are applying are located. The detected discrimination is apparently not based on a lack of language skills, either: Since the names are randomly assigned to the applications, there is no difference in observed language skills between applicants, and the application documents (including cover letters) are typically written in the language of the country of residence, fluently and without errors. Discrimination is also in a similar range as stated above when all applications include the information that the applicant has completed secondary schooling in the country of residence, which indicates sufficient language skills (Carlsson 2010; Kaas and Manger 2012; Koopmans, Veit, and Yemane 2019; Weichselbaumer 2020; Di Stasio et al. 2021; Veit and Thijsen 2021), and/or when all applicants explicitly state that they are fluent in or even native speakers of the language of the country of residence (Carlsson 2010; Oreopoulos 2011; Koopmans, Veit, and Yemane 2019; Di Stasio et al. 2021; Veit and Thijsen 2021).

2.2. Statistical discrimination as a potential explanation

One theory that might help to explain the empirical patterns of discrimination is the theory of statistical discrimination. This theory assumes that decision makers, when they lack perfect information about relevant characteristics of an applicant, rely on (perceived) group characteristics—such as (perceived) group means—in order to evaluate the applicant and to make their selection decisions (Phelps 1972; Arrow 1973).

The theory of statistical discrimination is often understood such that decision makers (on average) act according to accurate information about the distribution of characteristics in different groups and that they act rationally in terms of profit maximization, given the information they have observed (Aigner and Cain 1977; Altonji and Pierret 2001; Bertrand and Duflo 2017; Lang and Spitzer 2020). In line with this understanding of the theory, I use the term “statistical discrimination” for discrimination based on decision makers’ statistically accurate

beliefs about unobserved characteristics of applicants. Therefore, statistical discrimination implies that, given all observed characteristics of an applicant, the unobserved characteristics are on average correctly estimated.

Statistical discrimination might be an adequate explanation of ethnic discrimination if individuals from different ethnic groups (and otherwise identical characteristics observed in the applications) differ from each other, on average, in unobserved characteristics that are relevant for productivity. These unobserved characteristics might be personality characteristics: If these are not observed in the applications, then decision makers might make use of statistical ethnic differences in personality characteristics in order to make their selection decisions.

2.3. Personality characteristics and productivity

Discrimination based on group differences in personality characteristics can only be (individually) rational if personality characteristics are related to the desired outcome, e.g., productivity. I first consider personality traits, which are relatively stable patterns of feeling, thinking, and acting (Roberts 2009). The Five Factor Model of personality is a comprehensive measure of individuals' personality traits (Costa and McCrae 1992). This model distinguishes the following five (so-called Big Five) personality traits: openness (i.e., how original and open to experiences someone is), conscientiousness (i.e., how thoroughly and diligently someone is working), extraversion (i.e., how outgoing and communicative someone is), agreeableness (i.e., how trusting and sensitive someone is toward others), and emotional stability (i.e., how relaxed someone is and how well someone can deal with stress; the inverse of neuroticism). From a theoretical perspective, it is plausible that all of these traits might enhance productivity—especially conscientiousness (which should be important for diligent work), agreeableness (which should be important for team work), and emotional stability (which should be important

for dealing with work-related stress). Empirical literature indicates that all of the Big Five personality traits are indeed positively related to at least some dimensions of work performance, with conscientiousness and emotional stability having the most consistent positive effects (Barrick, Mount, and Judge 2001).

Next to personality traits, I consider attitudes (in particular, feeling of connectedness to the majority population) and values (in particular, gender equality values, which reflect preferences for gender equality in different life domains). Connectedness to the majority population might be important for productivity in many jobs because this attitude should facilitate successful interactions with ethnic majority individuals (as superiors, colleagues, customers, etc.). Gender equality values might enhance productivity in many jobs because these values should facilitate respectful and successful interactions with women (e.g., with female superiors, colleagues, and customers).

2.4. Evidence on the role of information and beliefs about personality characteristics

In line with the theory of statistical discrimination, several studies suggest that ethnic discrimination in the labor market is indeed at least partly based on employer beliefs about unobserved characteristics of applicants—in particular, beliefs about unobserved personality characteristics. In a correspondence study in Germany, the difference in callback rates between ethnic majority vs. minority applicants is 29% when no information on applicants' personality is included; but when a reference letter with statements about the applicant's high conscientiousness and agreeableness is included in all applications, then the callback rate of the ethnic minority applicant increases and ethnic discrimination becomes insignificant (Kaas and Manger 2012). This suggests that, when individual-level information on personality is

unobserved, employers tend to believe that ethnic minority applicants usually have lower scores in conscientiousness and/or agreeableness than ethnic majority applicants who have otherwise identical observed characteristics. If employers did not, on average, believe in such ethnic differences, they would not react to the individual-level information that both applicants have the same score in conscientiousness and agreeableness.

Precisely, the callback rate of the ethnic minority applicant increases and discrimination diminishes when high levels of conscientiousness, affability, commitment, and capacity for teamwork are observed and held constant between applicants (Kaas and Manger 2012: 5). This list suggests that, in addition to conscientiousness and agreeableness, employers might also be concerned about a supposed weaker feeling of connectedness to the majority population and lower gender equality values among ethnic minority applicants. The importance of beliefs about these characteristics is further suggested by the finding that revealed loyalty to the majority population increases the perceived suitability of ethnic minority applicants (Kunst, Thomsen, and Dovidio 2019) and by qualitative evidence that employers tend to be concerned about possibly insufficient gender equality values of applicants with an ethnic minority, especially Islamic, background (Kristinsson and Sigurdardottir 2020). The importance of employer concerns about supposed lower levels of conscientiousness among ethnic minority vs. majority applicants is additionally suggested by another correspondence study with reference letters (Weichselbaumer 2020) and by interviews with employers (Midtbøen 2014).

While this evidence suggests that ethnic discrimination in the labor market is at least partly based on employer beliefs about group differences in unobserved characteristics of applicants (belief-based discrimination; Bohren et al. 2019; Bohren, Imas, and Rosenberg 2019; Coffman, Exley, and Niederle 2021), it has remained unclear whether these beliefs are statistically accurate

(statistical discrimination) or statistically inaccurate ("inaccurate statistical discrimination"; Bohren et al. 2019). There are different potential sources of statistically inaccurate beliefs about groups. For example, average beliefs about groups (i.e., stereotypes) might be inaccurate due to a confirmation bias or in-group bias (e.g., Judd and Park 1993) or as a result of endogenous and incomplete learning (Lepage 2021). Based on the representativeness heuristic (Kahneman and Tversky 1972), the theory of stereotypes by Bordalo et al. (2016) states that stereotypes tend to exaggerate group differences because stereotypical thinkers focus on relative differences between groups and largely neglect their similarities, which distracts their estimation of group means. To the extent that ethnic minority individuals actually have, on average, lower scores in advantageous personality characteristics than ethnic majority applicants (whose other observed characteristics are similar), the results would support the theory of—accurate rather than inaccurate—statistical discrimination, as decision makers might be aware of and make use of such actual statistical differences in their selection decisions.

3. Theoretical considerations and previous evidence on the relationships between ethnic background and personality characteristics

Personality characteristics generally reflect individual differences, i.e., differences between individuals (e.g., Roberts 2009; Kandler, Zimmermann, and McAdams 2014). Therefore, it is unlikely that there are substantial group differences in these characteristics; group differences might be much less pronounced than differences between individuals. Furthermore, ethnic minority individuals are often—at least to some extent—integrated into the majority culture in which they are living (e.g., (Lönnqvist, Jasinskaja-Lahti, and Verkasalo 2011; Schiefer 2013; Rudnev 2014; Blau et al. 2020), which suggests that ethnic differences in personality characteristics might be smaller within the same country than between different countries.

Nevertheless, it is well-known that some demographic factors, such as gender, are statistically related to personality (e.g., Roberts and DelVecchio 2000; Costa, Jr., Terracciano, and McCrae 2001). There might also be some statistical relationships between ethnic background and personality within countries. For example, ethnic minority individuals are more likely to experience cultural diversity, as their cultural background at least partly differs from the majority culture in which they are living. These experiences of diversity might, on average, make them more open to experiences, i.e., lead to higher openness. On the other hand, their oftentimes lower socioeconomic background (especially in Germany, immigration has often been associated with low socioeconomic status) and different cultural background might on average lead to lower conscientiousness compared to the ethnic majority population. With respect to cultural background and conscientiousness, it is noteworthy that, according to the GLOBE study of culture across nations, Germans have a higher mean score in performance orientation than most other nations (Chhokar, Brodbeck, and House 2008).

In addition to personality traits, some ethnic differences in attitudes and values might exist. Because the social integration process might sometimes be insufficient, ethnic minority background is possibly associated with a lower feeling of connectedness to the majority population. There are also many discussions about presumably lower gender equality values among ethnic minority individuals, especially those with an Islamic background (e.g., Koopmans 2016).

There is some empirical evidence of mean differences in personality characteristics between ethnic minority vs. majority individuals. A study with US data finds that some ethnic minority groups indeed have lower average scores in conscientiousness than the ethnic majority population (Goldberg et al. 1998). Another US study finds small ethnic differences in openness,

which are positive or negative depending on the ethnic minority group (Foldes, Duehr, and Ones 2008). Using data from Germany, one study finds lower average scores in extraversion and emotional stability among migrant workers from Asia and Europe compared to native workers, mostly with small effect sizes (Brenzel and Laible 2016). Furthermore, descriptive evidence from different West European countries suggests that ethnic minority individuals with an Islamic background have lower mean scores in a sociocultural assimilation index and in liberal gender values than ethnic majority individuals (Koopmans 2016).

4. Method

4.1. Sample

This paper uses data from the National Educational Panel Study (NEPS; see Blossfeld and Roßbach 2019). The NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi, Germany) in cooperation with a nationwide network. NEPS is a group of longitudinal datasets covering a broad range of topics, including education, competencies, personality, and work.

Within the NEPS, I use the dataset “Adult Education and Lifelong Learning”, which focuses on the adult population in Germany (NEPS Network 2021). This dataset is based on a survey of a random sample of adult residents, starting in 2007/08. Over time, additional random samples have been added to account for sample attrition.

The analyses in the present study are based on wave 8 (2015/16) of the NEPS adult sample, because most of the variables that I need to investigate the research question are available in that wave. Sampling weights for participation in wave 8 of the NEPS adult sample are provided by the NEPS dataset and are included in the regression analyses to account for any remaining sample selection bias.

The NEPS adult sample is a highly suitable data source for the present study. It is large enough to compare individuals with an ethnic minority vs. majority background and, due to its random sampling, is representative for the adult population in Germany. Compared to data from high school or college students, a comprehensive sample of adults can be better related to phenomena in the labor market (and other markets). A particularly important advantage of the NEPS dataset is the inclusion of personality variables: NEPS does not only include the Big Five personality traits but also the feeling of connectedness to the people in Germany and gender equality values, which might be relevant in the context of applicants with an ethnic minority background. Finally, since this study focuses on ethnic minority vs. majority individuals (partly motivated by research on discrimination between these groups), it is more appropriate to use data from the same country for both ethnic groups (i.e., individuals with a German vs. non-German background in Germany) than data from separate countries (i.e., residents of Germany vs. residents of other countries) as available in the World Value Survey (see Lancee et al. 2017; Veit and Thijsen 2021).

Since the present study aims to improve the explanation of ethnic discrimination as observed by correspondence studies, I restrict my sample analogously to that studies (e.g., Kaas and Manger 2012). First, I drop individuals above 65 years, who are mostly eligible for old-age pensions in Germany. Second, I drop individuals without German citizenship and those who have migrated to Germany at the age of six or later, i.e., after the start of elementary school (“first-generation immigrants” according to Olczyk, Will, and Kristen 2014); this also allows to

focus on ethnic background (versus citizenship and own migration decisions).[1] This restriction is—like the other restrictions—applied to all individuals in the sample and is not used for the distinction between ethnic minority vs. majority individuals (for the definition of this variable, see Section 4.2). Third, I only include individuals who have obtained a secondary schooling qualification in Germany, which should also ensure sufficient German language skills and facilitates the comparability of educational achievement across groups.

The final sample consists of 6,330 individuals, with each individual being observed only once. Of all individuals, 291 have an ethnic minority background from at least one of their parents.

4.2. Variables

Big Five personality traits: The Big Five measure used in the NEPS dataset is the 11-item version of the 10-item short measure of the Big Five (BFI-10; Rammstedt and John 2007).[2] Openness is measured with the following two items: “I have little interest in artistic things” (reversed item) and “I have a vivid imagination, I am an imaginative person”. Conscientiousness is assessed with the following two items: “I am easy-going and tend to be a bit lazy” (reversed item) and “I am thorough when completing my tasks”. Extraversion is captured with the following two items: “I am quite cautious, reserved” (reversed item) and “I am out-going and

[1] In order to facilitate a sufficient sample size, I do not require birth in Germany (Kaas and Manger, 2012) but socialization in Germany. This choice is in line with the correspondence test used by Di Stasio et al. (2021).

[2] The use of the 11-item version, which includes one additional item for agreeableness, is recommended to increase the degree of reliability and validity for agreeableness (Rammstedt and John, 2007: 209–210).

sociable". Agreeableness is measured with the following three items: "I trust other people easily, I believe in the good in people", "I tend to be critical of other people" (reversed item), and "I am considerate towards others, sensitive". Emotional stability is assessed with the following two items: "I am relaxed and don't get stressed easily" and "I easily become nervous and unsure of myself" (reversed item). All Big Five personality traits are originally measured on a Likert scale from 1 (*does not apply at all*) to 5 (*applies completely*).

While the use of a short measure comes at the expense of lower internal consistencies, this scale shows high values of retest reliability, convergent validity, and discriminant validity (Rammstedt and John 2007). Moreover, although these personality measures are self-assessments, they have an acceptable degree of external validity, as assessed by using peer ratings of personality (Costa and McCrae 1992; Rammstedt and John 2007). Because the respondents have been informed at the beginning of the interview that the NEPS data are published only in anonymous form, they have no incentive to give false answers.

All Big Five personality traits are taken from wave 8 (year 2015/16). The Big Five personality traits are also assessed in wave 5 (2012/13). If the information on Big Five personality traits is missing in wave 8 but available for the same individual in wave 5, then I use the respective information from wave 5.

Connectedness to Germany: Feeling of connectedness to the people in Germany is captured with five items: "I feel closely connected to the people in Germany", "I find it unpleasant to be associated with people in Germany" (reversed item), "I feel myself part of German society", "It is important to me to belong to the people in Germany", and "I feel very comfortable when I am with people from Germany". The items are originally measured on a Likert scale from 1 (*agree*) to 4 (*disagree*). I invert the scale so that larger values reflect a stronger agreement with the

respective item. The variable is assessed in wave 8. If the information is missing in wave 8, then I use the information from wave 4 (2011/12) where available.

Gender equality values: Gender equality values are captured with five items: “It’s the man’s job to earn money and the woman’s job to take care of the household and family” (reversed item), “Men and women should have the same duties in the home”, “Women can use technical devices as well as men”, “Men are better suited for certain professions than women” (reversed item), and “The proportion of women in politics should be equal to that of men”. The items are originally measured on a Likert scale from 1 (*completely disagree*) to 4 (*completely agree*). The variable is taken from wave 7 (2014/15) because it is not assessed in wave 8. If the information is missing in wave 7, then I use the information from wave 4 where available.

Each of the personality traits, attitudes, and values is built as the average of the respective items, and reversed items are inverted beforehand. In this way, a larger number in a personality variable always reflects a higher score in the respective personality characteristic (e.g., a larger number in conscientiousness means that the individual is more conscientious, and a larger number in gender equality values means that the individual has a stronger preference for gender equality).

In order to facilitate the comparability of variable values across personality characteristics and the calculation of relative differences between groups, I rescale all personality characteristics to an equivalent, continuous scale from 0 to 1. For the personality traits, this is implemented by subtracting 1 and dividing by 4 for each individual. For connectedness to Germany and gender equality values, the rescaling is implemented by subtracting 1 and dividing by 3 for each individual.

Ethnic minority background: Ethnic minority background is captured with a dummy variable (1 = ethnic minority background, 0 = ethnic majority background). Because the ethnic background is not directly assessed in the dataset, I primarily use information about maternal and paternal country of birth to approximately identify the ethnic background. An individual is assigned an ethnic minority background if she or he has a migration background, defined in the following way: At least one parent has not been born in Germany. Individuals without migration background are assigned an ethnic majority background.

However, individuals with migration background who might be descendants of ethnic Germans only are not assigned an ethnic minority background and are instead dropped from the sample. There has been a large migration of ethnic Germans from East European countries to Germany since 1945 (Sudeten Germans, *Aussiedler*, and *Spätaussiedler*). The most common origin countries of these ethnic German migrants are the former Czechoslovakia (respectively the successor states Czech Republic and Slovakia), Poland, Romania, and the former Soviet Union (respectively the successor states Kazakhstan, Russia, Kyrgyzstan, Ukraine, and Uzbekistan) (Bundeszentrale für politische Bildung 2018). Individuals for whom both of the following conditions hold are dropped from the sample: (a) They have a migration background only from these listed countries, and (b) they report German as a native language. The reason for dropping these individuals is that it is unclear whether they have an ethnic minority background. This affects 56.6% of the individuals with migration background in the sample.

Control variables: In order to explain potential ethnic differences and to relate the findings to literature on discrimination, I use control variables in a part of the analyses. In particular, I control for factors that are typically observed in applications and held constant in correspondence

studies that detect discrimination. Therefore, I include as control variables demographic factors and measures of the qualification level.

As demographic factors, individual's gender (1 = female, 0 = male), age in the month of the interview (in years), and squared age are considered. I also control for individuals' marital status (1 = married, 0 = not married) and their number of children, because such family status variables are often observed in applications in the German context, especially in the past (compare, e.g., Kaas and Manger 2012).[3] I further include individuals' own country of birth (one dummy variable for each country), which is commonly observed in applications in Germany (e.g., Kaas and Manger 2012; Koopmans, Veit, and Yemane 2019).[4] Finally, I consider the federal state of residence with dummy variables (one variable for each of the 16 German states).

As a first measure of qualification level, I consider the education level according to the CASMIN score (Comparative Analysis of Social Mobility in Industrial Nations; König, Lüttinger, and Müller 1988). The CASMIN score captures the highest educational qualification or degree obtained by an individual, using nine categories: no school leaving qualification, general elementary education, basic vocational training, intermediate general education, intermediate vocational qualification, general maturity, vocational maturity, lower tertiary education, and higher tertiary education. In line with the sample restrictions described above, individuals in the first category (no school leaving qualification) are dropped from the sample. I

[3] I additionally perform a robustness check without these family status variables (see Section 5.4).

[4] Due to the construction of the sample—all individuals have obtained primary and secondary schooling in Germany—the vast majority of individuals in the final sample (99.8% of ethnic majority individuals and 94.2% of ethnic minority individuals) were born in Germany.

add a category for individuals who have obtained a doctoral degree. I use a dummy variable for each category.

While total work experience is not included in the dataset, I consider the duration of current unemployment in months as an (inverted) measure of work-related qualification level. If an individual is currently not unemployed, the value 0 is assigned.

5. Analyses and results

5.1. Descriptive statistics

Table 1 presents means and standard deviations of the dependent variables and control variables in the two groups (ethnic majority background and ethnic minority background). The mean value of each personality characteristic is similar in both groups. On average, ethnic minority individuals have slightly higher scores in openness (difference of 0.03 points on the scale from 0 to 1, $p = .021$) and extraversion (difference of 0.03 points, $p = .046$) than ethnic majority individuals. There are no significant mean differences in the other personality characteristics (all $p > .10$). Ethnic minority individuals tend to be younger (difference of 2.46 years, $p < .001$) and have apparently 0.13 fewer children, on average (marginally significant with $p = .078$). Furthermore, ethnic minority individuals are 2 percentage points more likely to have a very low education level (i.e., only general elementary education; $p < .001$) but apparently also 1 percentage point more likely to have a doctoral degree ($p = .066$) than ethnic majority individuals.

As the standard deviations in Table 1 indicate, the variance of personality characteristics is also similar between groups. Moreover, these results show that, for each personality characteristic, the mean difference between groups is remarkably smaller than the within-group

standard deviations, which suggests that differences between groups are much smaller than differences between individuals within groups.

[TABLE 1 ABOUT HERE]

More detailed information on the distributions of personality characteristics is available in Section 1 of the online supplemental materials (see link provided on the first page of this manuscript). Specifically, Figures S.1–2 show the distribution of each personality characteristic in each group (ethnic majority and ethnic minority background) as well as in specific subgroups of ethnic minority background. Furthermore, Figure S.3 in the online supplemental materials shows the distributions of different combinations (averages) of personality characteristics in the different groups and subgroups.

5.2. OLS regressions without control variables

I perform two linear regression analyses to investigate the relationships between ethnic minority background and personality characteristics. First, each personality characteristic is regressed on ethnic minority (vs. majority) background without control variables. This analysis resembles the descriptive statistics but includes sampling weights. Econometric models of the following form are tested:

$$p_i = \beta_0 + \beta_1 e_i + \varepsilon_i, \tag{1}$$

where i is the individual, p_i is a personality characteristic of the individual, e_i is the dummy variable indicating ethnic minority (vs. majority) background, β_0 is the constant, β_1 is a coefficient, and ε_i is the individual-specific error term.

Table 2 shows the results of this analysis. Ethnic minority background has a small and marginally significant positive association with openness (0.04 points on the scale from 0 to 1, p = .052) and a small and marginally significant negative association with conscientiousness (–

0.03 points, p = .059). Ethnic minority background is not significantly related to any of the other Big Five personality traits, connectedness to Germany, or gender equality values (each p > .10). Notably, the R-squared values are all close to zero, which indicates that ethnic minority background explains almost nothing of the total variance in personality characteristics.

[TABLE 2 ABOUT HERE]

5.3. OLS regressions with control variables

As the second regression analysis and main analysis in this study, I use multiple linear regressions that differ from the first regression analysis only by additionally including the control variables on demographic factors and qualification level. The econometric models now have the following form:

$$p_i = \beta_0 + \beta_1 e_i + \beta_2 c_i + \varepsilon_i, \tag{2}$$

where c_i is a vector of the control variables and β_2 is a vector of coefficients.

Table 3 shows the results of this analysis. When holding the control variables constant, the positive association between ethnic minority background and openness is still small in magnitude (0.06 points) but becomes highly significant (p = .005). Similarly, the negative association of ethnic minority background with conscientiousness is still small but more significant (–0.03 points, p = .035) than before. Again, ethnic minority background is not significantly related to any of the other personality characteristics (each p > .10).

[TABLE 3 ABOUT HERE]

Based on the significant group differences in Table 3, I additionally calculate relative differences in personality characteristics between ethnic majority vs. minority individuals (who have otherwise similar demographic factors and a similar qualification level). For the calculation of relative group differences, I define ethnic minority individuals as the reference group because

this is often done in correspondence studies when assessing ethnic discrimination (Oreopoulos 2011; Booth, Leigh, and Varganova 2012; Kaas and Manger 2012; Koopmans, Veit, and Yemane 2019; Di Stasio et al. 2021). In order to calculate the relative group difference in openness, one can divide the absolute difference in openness between ethnic majority vs. minority individuals (–0.06 points; see Table 3) by the mean value of openness among ethnic minority individuals (0.63 points; see Table 1). This implies a relative ethnic difference of –9.5%. Accordingly, the relative difference in conscientiousness between ethnic majority vs. minority individuals amounts to 0.03 / 0.74 = 4.1%.

5.4. Robustness checks

In order to test whether there are statistical ethnic differences when distinguishing different subgroups, when omitting or adding control variables, or when analyzing other dependent variables that are usually unobserved in applications, I perform seven robustness checks (based on the models with control variables described in Section 5.3). The detailed results of the robustness checks are available in Section 2 of the online supplemental materials (see link provided on the first page of this manuscript).

In the first robustness check, I use separate analyses for females and males. Second, I distinguish individuals with an ethnic minority background from EU vs. non-EU countries. Third, I distinguish individuals with an ethnic minority background from mostly non-Islamic non-EU countries vs. mostly Islamic non-EU countries. Fourth, I omit control variables on marital status and number of children, as these characteristics are not always observed in applications. Fifth, I control for the performance at secondary school (i.e., final grade as well as type, federal state, and year of secondary schooling qualification) among those individuals for whom this information is available. Sixth, I use as dependent variables different average scores

of personality characteristics. Lastly, I investigate differences in German language skills, as measured by competence tests, between individuals with an ethnic minority vs. majority background.

The results of the robustness checks are similar to the baseline results described above. The robustness checks indicate that the positive association between ethnic minority background and openness found above is driven by males (i.e., ethnic minority men vs. ethnic majority men). The negative association between ethnic minority background and conscientiousness is driven by females (i.e., ethnic minority women vs. ethnic majority women) and by individuals with an ethnic minority background from non-EU countries, especially countries with a Muslim majority. The strongest relative difference in personality characteristics (or combinations of personality characteristics) between ethnic majority vs. minority individuals (or any subgroups) found in the robustness checks is the relative difference in conscientiousness between individuals with an ethnic majority vs. Islamic non-EU background; this relative difference amounts to 17.1%. I note that ethnic minority background is not significantly related to German language skills in the final sample.

6. Conclusion and discussion

In the present study, I analyze differences in personality characteristics (personality traits, attitudes, and values) between individuals with an ethnic minority vs. ethnic majority background. The study is motivated by research on discrimination, as a common understanding of statistical discrimination theory predicts that discrimination is based on actual statistical group differences in unobserved characteristics of applicants. I use a large representative sample of the adult population in Germany for the analyses. The results suggest that ethnic minority individuals score, on average, slightly higher in openness and slightly lower in conscientiousness

than ethnic majority individuals. These group differences become more robust—but remain quantitatively small—when control variables are included. I find no significant group differences in the other Big Five personality traits, feeling of connectedness to Germany, or gender equality values.

Since the analyzed differences in personality characteristics between ethnic minority vs. majority individuals are insignificant or small in magnitude, the results suggest that ethnic minority individuals are, overall, well integrated into the majority culture with respect to their personality traits, attitudes, and values. It is particularly notable that no significant differences in connectedness to Germany or gender equality values are found between ethnic minority vs. majority individuals. As the robustness checks show, there are also no significant differences in attitudes and values between ethnic majority individuals and different subgroups of ethnic minority individuals (e.g., with non-EU or Islamic background). In this context, one should remember that the present study—in line with correspondence studies on labor market discrimination—focuses on ethnic majority and ethnic minority individuals who both received all of their education in the same country of residence. Therefore, these ethnic minority individuals have spent many years in their country of residence (and were mostly born there), which means that there has been much time for socialization and integration processes.

What do the results of this study tell us about potential explanations of discrimination? Since I find that, on average, ethnic minority (vs. majority) individuals score slightly lower in conscientiousness, it is possible that some decision makers discriminate against ethnic minority applicants based on this statistical difference (i.e., statistical discrimination). However, there are several reasons to believe that the support for the theory of statistical discrimination found in the present study is only weak. First, the relative difference in conscientiousness between ethnic

majority vs. minority individuals with control variables amounts to only 4.1%, and the largest difference in conscientiousness between ethnic majority individuals and any subgroup of ethnic minority individuals amounts to 17.1%. These statistical differences are much smaller than the ethnic discrimination detected by field experiments, which typically amounts to 25–100% (see Section 2.1). Second, if one accounts for multiple hypothesis testing (because several dependent variables are tested), then, with a Bonferroni correction (Abdi 2007), the *p*-value threshold for statistical significance must be divided by the number of dependent variables (i.e., 7), which leads to a threshold of $p < .10/7 = .014$. The result for conscientiousness in the main analysis (see Section 5.3) does not fulfill this criterion, so its significance can be doubted. Third, ethnic minority individuals score, on average, slightly higher in openness (this result from Section 5.3 survives a Bonferroni correction), which has been found to be a rather positive determinant of work performance (Barrick, Mount, and Judge 2001), and there are no significant ethnic differences in other personality characteristics in the main results. Fourth, the robustness checks indicate that no subgroup of ethnic minority individuals scores lower than ethnic majority individuals in any personality characteristic except conscientiousness and that ethnic minority (vs. majority) individuals do also not score lower in averages of personality characteristics. Finally, employers do have the possibility to invite both ethnic majority applicants and ethnic minority applicants to an interview, so it is not necessary to discriminate against anyone based on ethnic background. Overall, it therefore appears improbable that ethnic labor market discrimination is only based on the weak statistical differences in personality characteristics suggested by the results—although this possibility cannot be ruled out with certainty, as the precise employer beliefs and their relationship with discrimination are not known.

Of course, discrimination might also be based on statistical differences in unobserved characteristics other than personality characteristics. However, there is good reason to believe that concerns about personality characteristics are particularly important for ethnic discrimination. For example, all of the Big Five personality traits have been found to be related to work performance (Barrick, Mount, and Judge 2001), and previous evidence suggests that employer beliefs about conscientiousness, agreeableness, feeling of connectedness to the majority population, and gender equality values are relevant for ethnic discrimination in the labor market (Midtbøen 2014; Kunst, Thomsen, and Dovidio 2019; Kristinsson and Sigurdardottir 2020; Weichselbaumer 2020) and might even fully explain the observed discrimination (Kaas and Manger 2012).

In contrast to (accurate) statistical discrimination, it is possible that the group differences in personality characteristics that decision makers subjectively expect are larger than the actual statistical group differences; i.e., that decision makers have, on average, exaggerated stereotypes about group differences. This would be in line with the theory of stereotypes proposed by Bordalo et al. (2016). For example, if some employers have a particularly strong preference for applicants whom they expect to be very conscientious and have exaggerated beliefs about ethnic differences in this personality trait, then this might lead to the substantial ethnic discrimination that is observed in field experiments.

Next to (statistically accurate and/or inaccurate) beliefs, other mechanisms might also contribute to ethnic discrimination. Possible mechanisms include taste-based discrimination (Becker 1957/1971) in terms of a personal preference against selecting individuals from particular groups, implicit bias (e.g., Bertrand, Chugh, and Mullainathan 2005), a lack of attention toward applications from minorities (“attention discrimination”; Bartoš et al. 2016), and

expected discrimination from coworkers (Hedegaard and Tyran 2018), managers (Glover, Pallais, and Pariente 2017), or customers (e.g., Bar and Zussman 2017).

A limitation of this study is that the information on personality characteristics are self-reported by participants and therefore might be subject to any bias in self-perception. This concern is mitigated by the fact that the employed measure of the Big Five personality traits is psychologically validated and shows acceptable degrees of external validity, as individuals' self-reports are significantly positively correlated with peers' perceptions of these individuals (Rammstedt and John 2007). Nevertheless, future research should ideally use more objective measures of personality characteristics.

Furthermore, future research might investigate ethnic differences in additional personality characteristics, especially more attitudes and values. And while the measures of personality characteristics available for the present study mostly capture general psychological constructs, future research might consider measures that are more directly related to behavior in specific life domains (e.g., at work).

Discrimination, which is in many countries legally prohibited, is a serious problem for individuals (e.g., Lang and Spitzer 2020), societies (Algan et al. 2010), and potentially for organizations (Lee et al. 2015; Huber, Lindenthal, and Waldinger 2021) and economies (e.g., Lundberg and Startz 1983). Even if discrimination is based on actual statistical group differences, individual applicants often differ from their group mean and then might be wrongly rejected. One promising way to reduce discrimination based on ethnic background is the use of anonymous applications, so that the ethnic background cannot (directly) influence the callback decision (Krause, Rinne, and Zimmermann 2012). A second possibility is increasing the amount of (reliable) individual-level information about applicants in order to reduce the influence of

beliefs about groups. While the use of survey-based personality tests in application processes might not provide reliable information (as applicants might have an incentive to present themselves in a certain way), the use of references or reference letters might be effective for reducing discrimination against applicants with an ethnic minority background (Kaas and Manger 2012; Kristinsson and Sigurdardottir 2020; Weichselbaumer 2020). Furthermore, in line with contact theory (Allport 1954), it has been found that closer intergroup contact in the private, school, or work domain predicts more positive attitudes and less discrimination toward individuals from other groups (e.g., Pettigrew and Tropp 2006; Dustmann, Vasiljeva, and Piil Damm 2019; Rao 2019; Schindler and Westcott 2021). Policies that support such closer contact might help to reduce discrimination in the future.

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Table 1

Means and standard deviations in different groups

Variables	Operationalization	(1) Ethnic majority background (n_0 = 6,039)	(2) Ethnic minority background (n_1 = 291)	(3) *p*-value of mean difference
Openness	0–1 (continuous)	0.60 (0.23)	0.63 (0.22)	.021
Conscientiousness	0–1 (continuous)	0.75 (0.17)	0.74 (0.17)	.465
Extraversion	0–1 (continuous)	0.60 (0.22)	0.63 (0.23)	.046
Agreeableness	0–1 (continuous)	0.64 (0.14)	0.64 (0.16)	.802
Emotional stability	0–1 (continuous)	0.59 (0.19)	0.60 (0.19)	.550
Connectedness to Germany	0–1 (continuous)	0.82 (0.15)	0.83 (0.16)	.565
Gender equality values	0–1 (continuous)	0.69 (0.16)	0.69 (0.17)	.762
Female	0 = no, 1 = yes	0.51 (0.50)	0.53 (0.50)	.589
Age	In years	50.45 (9.15)	47.99 (9.55)	.000
Married	0 = no, 1 = yes	0.70 (0.46)	0.69 (0.46)	.659
Number of children	Metric	1.67 (1.25)	1.54 (1.15)	.078
Education: general elementary education	0 = no, 1 = yes	0.02 (0.12)	0.04 (0.21)	.000
Education: basic vocational training	0 = no, 1 = yes	0.13 (0.34)	0.10 (0.30)	.137
Education: intermediate general education	0 = no, 1 = yes	0.02 (0.12)	0.01 (0.12)	.806
Education: intermediate vocational qualification	0 = no, 1 = yes	0.33 (0.47)	0.32 (0.47)	.809
Education: general maturity	0 = no, 1 = yes	0.02 (0.14)	0.03 (0.18)	.139
Education: vocational maturity	0 = no, 1 = yes	0.18 (0.38)	0.15 (0.36)	.171
Education: lower tertiary education	0 = no, 1 = yes	0.11 (0.31)	0.10 (0.30)	.674
Education: higher tertiary education	0 = no, 1 = yes	0.18 (0.39)	0.20 (0.40)	.359
Education: doctoral degree	0 = no, 1 = yes	0.02 (0.13)	0.03 (0.17)	.066
Current unemployment duration	In months (0 if currently not	2.22 (17.72)	2.55 (14.98)	.752

Variables	Operationalization	(1) Ethnic majority background (n_0 = 6,039)	(2) Ethnic minority background (n_1 = 291)	(3) *p*-value of mean difference
	unemployed)			

Notes. Standard deviations in parentheses. Two-sided *t*-tests are used to assess differences in means.

Table 2

OLS estimates on ethnic minority background (vs. ethnic majority background) and personality characteristics, without control variables

Variables	(1) Openness	(2) Conscien-tiousness	(3) Extraversion	(4) Agreeable-ness	(5) Emotional stability	(6) Connected-ness to Ger-many	(7) Gender equality val-ues
Ethnic minority background	0.04+	-0.03+	0.04	0.01	0.00	-0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Constant	0.60**	0.75**	0.60**	0.64**	0.59**	0.82**	0.69**
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	6,330	6,330	6,330	6,330	6,330	6,330	6,330
R-squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes. Multiple linear regressions. Dependent variables (personality characteristics) measured on a continuous scale from 0 to 1. Sampling weights included in all models. Robust standard errors in parentheses. ***p* < .01. **p* < .05. +*p* < .10.

Table 3

OLS estimates on ethnic minority background (vs. ethnic majority background) and personality characteristics, with control variables

Variables	(1) Openness	(2) Conscien-tiousness	(3) Extraversion	(4) Agreeable-ness	(5) Emotional stability	(6) Connected-ness to Ger-many	(7) Gender equality val-ues
Ethnic minority background	0.06**	-0.03*	0.03	0.01	0.02	-0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Female	0.05**	0.05**	0.05**	0.05**	-0.08**	0.01	0.05**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age	0.00	-0.01+	-0.00	-0.01	0.00	0.01**	0.01**
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Age^2	-0.00	0.00*	0.00	0.00+	-0.00	-0.00**	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Married	-0.04**	0.01	0.01	0.00	0.00	0.04**	-0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Children	-0.00	0.01**	0.01+	0.00	0.00	0.00	-0.01**
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Education: general elementary education	-0.04	-0.05+	0.00	-0.01	0.02	-0.01	-0.03
	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)
Education: basic vocational training	-0.03+	0.01	0.01	0.01	-0.01	0.00	-0.00
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Education: intermediate general education	-0.01	-0.03	-0.02	0.04*	-0.02	-0.03+	-0.03
	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)
Education: general maturity	0.08**	-0.08**	-0.03	0.02	0.03	-0.10**	0.04*
	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Education: vocational maturity	-0.02	-0.03**	-0.02	0.02*	-0.02	-0.00	0.00
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Education: lower tertiary education	0.01	-0.02	-0.04+	0.00	-0.02	-0.04**	0.03*
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Education: higher tertiary education	0.08**	-0.04**	-0.02	0.01	-0.00	-0.03**	0.03**
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)

Variables	(1) Openness	(2) Conscien-tiousness	(3) Extraversion	(4) Agreeable-ness	(5) Emotional stability	(6) Connected-ness to Ger-many	(7) Gender equality val-ues
Education: doctoral degree	0.04	-0.01	-0.06+	0.01	-0.05*	-0.01	0.05**
	(0.03)	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)
Current unemployment duration	0.00	-0.00	-0.00**	-0.00	-0.00**	-0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.47**	0.85**	0.72**	0.71**	0.59**	0.39**	0.38**
	(0.15)	(0.10)	(0.14)	(0.08)	(0.12)	(0.09)	(0.09)
Observations	6,330	6,330	6,330	6,330	6,330	6,330	6,330
R-squared	0.06	0.09	0.05	0.06	0.08	0.11	0.08

Notes. Multiple linear regressions. Dependent variables (personality characteristics) measured on a continuous scale from 0 to 1. The reference category for education is intermediate vocational qualification. Dummies for country of birth and for federal state of residence as well as sampling weights included in all models. Robust standard errors in parentheses. **$p < .01$. *$p < .05$. +$p < .10$.