

Herber, Stefanie

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The Role of Information in the Application for Merit-Based Scholarships: Evidence from a Randomized Field Experiment*

Stefanie P. Herber[†]

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This paper analyzes whether information asymmetries prevent high-achieving students from non-academic families where nobody attained a university degree from applying for merit-based aid. I randomly assigned German higher education students to receive either general information on federally funded scholarships or additionally personalized information on details of the application process, conveyed by a similar role model. The role model treatment did significantly increase non-academic and male students' application probabilities for federally funded merit-based scholarships. Providing only general information on the scholarship system triggered participants' own information search for alternative funding sources and increased application rates for other, not federally funded scholarships. *JEL*: I22, I24, D83

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[†]University of Bamberg, Bamberg Graduate School of Social Sciences (BAGSS), Feldkirchenstr. 21, 96052 Bamberg, Germany, phone: +49-951-863-2482, fax: +49-951-863-3635, e-mail: stefanie.herber@uni-bamberg.de.

1 Introduction

Student financial aid is designed both to provide equal educational opportunities and to promote the most talented students. While need-based aid emphasizes the goal to equate chances, merit-based aid focuses on promoting talents. Both forms of financial aid share the common feature that they are only effective if eligible students are aware of their existence and both willing and able to complete the complex paperwork involved when filing the application.

Regarding need-based financial aid, previous literature has built a case for information asymmetries and different levels of (parental) assistance between students of different socio-economic backgrounds (Scott-Clayton 2013). A lack of information and assistance helps to explain why many eligible students of low socio-economic backgrounds do not file the application for need-based student aid (Dynarski and Scott-Clayton 2006; King 2006). Providing information and assistance can help diminishing this problem (e.g. Bettinger et al. 2012).

There is, however, only sparse evidence on information asymmetries with respect to merit-based aid in tertiary education. Scholarship providers in Germany screen applicants in a highly competitive process, which makes the students' applications only worthwhile if they feel to have a viable chance of success. The selection process not being stipulated by the government, eligibility requirements vary extensively between scholarship providers and are often not clear-cut, e.g. with respect to college GPA needed to apply. This leaves room for information asymmetries.

This paper provides first-time evidence on whether a lack of information can lead qualified students, especially these of non-academic families, to abstain from applying for highly selective scholarships. If this was the case, scholarships would reinforce social inequalities because funded students do not only profit from lucrative financial and non-monetary awards but also from an active social network consisting of many high-profile and influential alumni.

I consider two manifestations of information asymmetries: Firstly, prospective applicants must know about the scholarship providers and their respective application requirements. It is challenging to compile the distinctive details of the respective application procedures as currently only 1% of all German tertiary education students are funded by these merit-based scholarships. Compiling information is even more demanding for students whose parents (and social surroundings) have not studied and have therefore never applied for merit-based scholarships.

Secondly, potential applicants have to rate their own performance against that of their competitors in the selection process. Although all students face uncertainty about their own eligibility relative to that of other applicants, non-academic students are disadvantaged in various ways: On the one hand, they can rarely benchmark their own performance

against acquaintances who were successfully awarded a scholarship. On the other hand, students of non-academic backgrounds are considerably underrepresented in the German scholarship body (Middendorff et al. 2009). Therefore, students of these backgrounds lack role models to convey the credible assurance that they can be equally successful.¹ From a psychological point of view, the scholarship system’s structure is prone to arouse the so-called social identity threat (Steele et al. 2002): Their non-academic background places these students’ performance under threat if stereotyped as “educationally deprived”.² The social selectivity in the scholarship body contributes to the often perceived “cultural centeredness” of the system (Steele et al. 2002, p. 420) and reinforces scholarship providers’ rather elitist appeal.³ Although generally perceived as centered on a certain elitist subgroup, scholarships must, as tax-financed means of student aid, reflect the plurality of society and select eligible students from all social backgrounds in order to prevent talent loss. Finally, even if non-academic students take the next step to gather information on eligibility requirements, they might worry that stereotypes might affect their chances to succeed because the eligibility criteria are flexible and potentially subjective (Steele et al. 2002, p. 422). Anticipating these challenges and the stereotype threat, students of non-academic backgrounds might abstain from applying.

In a randomized field experiment with over 5,000 German students, I assess whether the provision of information on details of the application process can increase application rates for merit scholarships. Participants were randomly allocated to either the control or one of two treatment groups. In the first treatment group, participants received general, publicly available information on scholarships only. In the second treatment group, participants additionally received tailored information on the application process and probabilities of success, provided by a real, current scholarship holder. To ease identification, the scholarship holder resembled the participant in several characteristics, acting as a role model.

The results confirm former findings from the information interventions literature (Booij et al. 2012; Kerr et al. 2014) and suggest that the provision of general information was not effective in increasing application rates for merit-based scholarships. However, it triggered own information search as the treatment group was significantly more likely to report applications for other aid programs. The role model treatment more than doubled merit aid applications of non-academic students, thereby confirming the importance of role models (Marx and Roman 2002; Nguyen 2008; Dinkelman and Martínez A. 2014).

This paper adds in several ways to the existing literature. To the best of my knowledge,

¹ This might help to explain why non-academic students are less confident about their academic qualifications as reported by Chevalier et al. (2009).

² Croizet and Claire (1998) provide experimental evidence that students of low socio-economic backgrounds and at risk to confirm the stereotype of reduced abilities show lower test performance.

³ Translated literally, German scholarship foundations are promoting endowment, rather than providing aid on grounds of performance. Another example is that the Bavarian scholarship programs are regulated in the “Bavarian Elite Aid Act”.

it is the first field experiment analyzing the effect of information provision in a highly competitive setting such as the application for merit-based scholarships. Up to now, little is known about whether information asymmetries between students of different socio-economic backgrounds do also matter for high performing students. Furthermore, previous studies report mixed results as to whether the provision of information can indeed trigger behavioral changes and how interventions should be designed to do so. I shed further light on the design of interventions by testing whether participants lack information per se or tailored information provided by a similar role model. Finally, drawing on unique data on students' decision to apply, I am able to disentangle students' self-selection into the pool of potential scholarship holders from other factors influencing whether they are indeed awarded the scholarship, keeping eligibility to receive funding constant.

The rest of this paper proceeds as follows. After a review of the relevant literature in the next section, section 3 provides a short overview of the institutional background of merit-based student aid in Germany. Section 4 details the experimental set-up. Section 5 describes the data and gives brief descriptive analyses on heterogeneous information asymmetries and application experiences at baseline. Section 6 reports results of the experiment and section 7 concludes. Supplemental tables, further details and robustness checks can be found in the appendix.

2 Previous literature

Whereas the application effect of providing information about merit-based scholarships has, to the best of my knowledge, not been studied so far, numerous papers employed experimental set-ups to assess the behavioral impact of information provision on other outcomes, e.g. college enrollments, persistence or test performance.

A first strand of literature intends to close information asymmetries by providing “pure”, general information, e.g. in the form of statistics or leaflets. Whereas effective in developing countries or rural areas, where official statistics are often unavailable, not reliable or poorly understood (Jensen 2010; Nguyen 2008), the pure provision of printed statistics or general facts has proven rather ineffective in industrialized countries (Booij et al. 2012; Kerr et al. 2014).

Another part of the literature examines treatment effects of providing personalized information or assistance. Bettinger and Baker (2011) were among the first to analyze the impact of individualized student coaching within a randomized field experiment. They found that treated students showed increased college retention and completion rates. Confirming these findings, Castleman et al. (2014) demonstrated that providing recent high school graduates with counseling on financial aid matters, college enrollment deadlines and assistance with paperwork increased retention and completion of college. Many other studies provide evidence that coaching at school increases the quality of educa-

tional choices or later labor market outcomes (e.g. Carrell and Sacerdote 2013; Saniter and Siedler 2014).

In their field experiment, Bettinger et al. (2012) explicitly tested for the advantages of personalized information and counseling. The authors studied the effect of information provision and assistance on US low-income students' filing of the free application for federal student aid (FAFSA). The FAFSA needs to be completed in order to become eligible for most student aid programs. Bettinger et al. (2012) gave a brochure with general information on costs and benefits of studying to all experimental groups, including the control group. They additionally provided a second group with estimates on individual student aid amounts and encouraged them to file the FAFSA. Over and above both receiving general and personalized aid information, the third group was also offered assistance in completing the FAFSA. The probability of aid receipt, enrollments and persistence in college was significantly higher only in the third, personally assisted, group. Personalized information without assistance did not prove superior to general information.

Hoxby and Turner (2013) studied a context closely related to that of my field experiment. They gave partly individualized information on the application process and personal expected net college costs at highly selective institutions to talented low-income students. Applications at up to eight colleges were refunded. Although information was provided in written form and students did not meet a counselor in person, students' application and admittance rates to highly selective colleges increased.

Finally, other studies use role models (or: peer counselors) to increase credibility of the information provided and induce participants to emulate them. Nguyen (2008), for example, treated fourth-graders in Madagascar with two different interventions: A part of the students was shown statistics on average educational returns in school. Another treatment group met a role model of same or different background sharing his/her story of success with the children. Combining the provision of official statistics and meeting a role model of low socio-economic background had the largest effects on estimated returns and actual achievement of students of similar background. Comparable results were reported by Dinkelman and Martínez A. (2014). They presented a 15-minute film where role models of similar socio-economic status described financial aid possibilities to low-income eighth-graders in Chile. The treatment increased high school enrollments and reduced school absenteeism. Role models are also effective in stereotyped contexts such as math tests where women's ability is negatively stereotyped (e.g. Marx and Roman 2002). Role models need not even share the stereotyped social identity (Steele et al. 2002, p. 428), although shared characteristics can increase effectiveness (Behncke et al. 2010; Marx and Ko 2012).

What can be taken away from this brief overview is that, especially students of non-academic backgrounds should be more likely to show positive treatment effects if information is tailored and they can easily identify with a role model from their peer group.

General information has, on the contrary, proven rather ineffective in impacting behavior.

Unlike Bettinger et al. (2012), I do not provide the control group with any information on scholarships. It is unsettled whether German students, especially freshmen, are aware of the rarely awarded scholarships at all. In any case should US students be more likely to know that the FAFSA must be completed to receive any form of student aid. It is therefore, a priori, not clear whether confronting students with potentially publicly available information does already exert an effect.

3 Institutional background

3.1 The German student aid system

In international comparison, studying in Germany is relatively cheap⁴ because colleges do not charge tuition. Financial student assistance is likewise less pronounced when compared to countries charging high fees such as the US or UK. This means at the same time that German high schools usually lack a study adviser who could advise students on financial aid matters. In 2013, roughly one quarter of all German students claimed need-based income-contingent aid as of the Federal Training Assistance Act, short “BAfoeG”, the most common form of financial support (Federal Statistical Office 2014a). Half of the BAfoeG amount is usually granted as a subsidy, the other half as an interest-free loan that must be repaid within 20 years after a grace period of five years. On average, funded students draw on a monthly funding amount of EUR 425 BAfoeG covering about half of the average monthly spendings of unmarried full-time students (Middendorff et al. 2013, p. 304, p. 254).⁵ The departments of the student services are responsible for counseling, processing of the students’ applications and calculating the respective funding amounts. These departments are closely associated with the respective tertiary education institutions, making BAfoeG a well-known funding source that students come across latest when they look for a room in one of the departments’ student dormitories or charge their service cards for the canteens also operated by the student services.

In contrast to that, the scholarship culture is still rather underdeveloped with currently not even 2% of all tertiary education students funded by some form of merit-based aid.⁶ The most common form of merit-based aid in tertiary education is provided by the 13 privately-owned foundations for the promotion of young talent, called “Begabtenfoerderungswerke” (BFW). Unlike BAfoeG, merit-based scholarships and the BFW are

⁴ On average, unmarried full-time students, living outside parents’ home report monthly spendings of EUR 794 (Middendorff et al. 2013, p. 254, own calculation).

⁵ Therefore, most students have to draw on several financial resources. Therein, financial support by parents and own income from working besides the studies or in the semester break are most important (Middendorff et al. 2013, p. 593).

⁶ Own calculation based on Federal Statistical Office (2014b); Federal Ministry of Education and Research (2014a) and Federal Ministry of Education and Research (2014b) for 2013.

completely separate of any (higher) education institution, requiring a high degree of the student's own responsibility to get informed and complete the application. Although privately owned, the BFW are funded by the German state, and therefore obliged to reflect the plurality of society. Hence, there exist ideologically neutral, rather politically and rather religiously associated foundations as well as foundations that are close to companies or trade-unions. The Federal Ministry of Education and Research is continuously extending funding amounts to increase the amount of scholarship holders. In 2013, EUR 198.8 million were provided to support 25,900 students enrolled in bachelor's or master's programs and 4,400 PhD students, summing up to 1% of the overall student body (Federal Ministry of Education and Research 2014a). The ideologically neutral German National Scholarship Foundation is the oldest and largest BFW, promoting more than 40% of all funded scholars (German National Scholarship Foundation 2014, p. 210). After the report of Middendorff et al. (2009) on the social selectivity in the German scholarship system spurred notable political and media attention (e.g. Kerbusk 2009), special funds of EUR 8.2 million were placed at the BFWs' disposal to increase the share of scholarship holders from "underrepresented groups".

In general, students have to apply of their own accord and to each BFW separately to participate in the respective selection processes for a scholarship. Some BFW allow applications for funding at the undergraduate level even before students officially enroll at university, others require students to be enrolled in their first or second semesters (tables A7 to A9 in the appendix give an overview). If the BFW also offers scholarships for Master's studies, students are usually required to apply before they start the program. From the respective pool of applicants, each BFW selects its own future scholars. When asked about acceptance rates, the BFW argue not to stick to a fixed rate but to admit all promising applicants.

As the BFW are completely separate of any higher education institution, neither the amount nor the receipt of the scholarship is tied to visiting a certain university or being enrolled in a certain program. A parallel funding by more than one BFW at the same time is not possible. Likewise, BAfoeG and merit-based financial assistance are mutually exclusive options. Yet, scholarships carry not only the advantage over BAfoeG that they do not have to be repaid. Monthly scholarship awards are moreover geared to the income-contingent BAfoeG amounts, i.e. they are also based on financial need, but supplemented by a lump-sum amount of EUR 300. The maximum award of monthly EUR 970 is enough to concentrate fully on studying. Beyond its financial advantages, a scholarship is considered a distinction worth being included in the curriculum vitae. In this vein, the BFW aim at promoting and developing highly skilled young academics who are willing to take over responsibility. Therefore, the BFW provide conceptual support such as interdisciplinary seminars, study trips, summer academies and personal support. With respect to their later career, funded scholars profit from a rich alumni network that

meets regularly and includes many high-profile politicians, researchers and managers, who had been funded themselves.

Given that students of non-academic homes can draw on less financial resources and lack both counseling by college-experienced parents and a highly qualified network, they should benefit most from merit-based scholarships.

3.2 The application process for merit-based aid

The federal law only regulates that students are eligible to receive funding of the BFW “if their talent and personality promise outstanding performance during their studies and in working life” (Federal Ministry of Education and Research 2014c, p. 3, own translation). They must furthermore meet some formal requirements, e.g. full-time studies, permanent residence permit and enrollment at state-approved tertiary education institutions. The further refinement of the aptitude criteria and the selection process is left to the discretion of each BFW.

Most BFW establish the following criteria to assess applicants’ aptitude: Firstly, applicants have to demonstrate “high performance” in high school or college. Secondly, applicants have to play an active part in society, politics or culture, i.e. must be socially engaged, preferably compatible with the mission of the respective institution. Thirdly, qualifying students must show responsibility, motivation and dependability. Lastly, they should identify with the provider’s alignment and goals, e.g. applicants at a Catholic BFW should identify with Catholic values. However, providers may put different emphases on the relative importance of these components and may also judge the “total package”. Most BFW establish application thresholds with respect to acceptable age and semester ranges. Some BFW append additional criteria, such as explicitly considering the applicant’s socio-economic background. All in all, regulations and thresholds differ strongly between providers (tables A7 to A9 in the appendix give an overview).

Whether students meet the requirements to be funded during their studies is usually assessed in a very competitive procedure of several stages. For example, the German National Scholarship Foundation requires applicants to take an extensive test on their chances of academic success. After passing the aptitude test, they are invited to a selection seminar involving two interviews and a group discussion on short papers presented by the candidates. In 2013, 28.2% of the participants in the selection process were awarded a scholarship (German National Scholarship Foundation 2014, p. 211).

The federal government explicitly supports the high heterogeneity in the application requirements and the selection processes to secure plurality in the scholarship body. However, the resultant complexity increases transaction costs on the applicant’s side to find an appropriate BFW. Given that students of non-academic background may lack important insights into the merit-based aid system because friends or parents with scholarships

are much more common sources of information and motivation to apply than the high school or university,⁷ heterogeneous application requirements might equally well rather be detrimental to plurality.

Moreover, personality traits and civic engagement being core qualification requirements, it is impossible to define standardized eligibility cut-offs for sufficient qualification. Although academic merit should be easily quantified and compared, only a minority of BFW define a grade point average candidates must meet to successfully apply (GPA better than 2.0 on a five-point scale, 1.0 representing the best possible grade). In contrast to the transparent criteria underlying the provision of BAfoeG, students are highly dependent on forming expectations about their chances to succeed when applying for a scholarship.

4 The scholarship information experiment

The scholarship experiment was framed as a two-wave online survey on study finances with special focus on scholarships. The first survey was conducted between late October and early December 2013, the second survey took place around half a year later (April/May 2014), i.e. in the first weeks of the winter and summer lecture periods, respectively.⁸ To incentivize participation, students were offered the possibility to participate in a lottery which was tied to completing both waves.

4.1 Wave 1

For wave 1, participants were recruited via universities' official mailing lists where possible but also by means of printed posters and online study groups. The goal of the first survey was to gather information on the respondent's socio-economic and study background, to assess her knowledge of the German scholarship system and to proxy whether she meets the requirements for a scholarship. Participants were furthermore questioned on previous applications for scholarships. After completing the questionnaire,

⁷ A subsample of 376 participants in the experiment was holding a BFW scholarship. I exploited this coincidence by asking them additional questions after the general part of the second survey, containing items on the sources that had informed them about the existence of BFW scholarships and the people who made them applying (multiple selections were possible). 36% were informed by friends and 22% by their parents, while 18% mention to have participated in an information program at their high schools or universities and only 4% report that an instructor at university or school had provided information on scholarships. More than half indicated that their parents had brought them to apply, 46% state that friends were the motivating factor. School teachers were named in 35% of cases and university lecturers by only 19%.

⁸ A third wave was conducted in May 2015, i.e. one year after the second wave, to give insights into whether students' scholarship applications were successful or not. Unfortunately, the response rate of students who applied after wave 1 was too small to conduct reliable analyses. However, the data could be exploited to fill about 100 missings of time-invariant variables from wave 1, e.g. with respect to parental academic background.

respondents were randomly assigned to one of three different groups:

Control group: The control group was directly filtered to the last page where official university e-mail addresses were collected to invite the participants for the second survey.⁹

General information treatment group: Participants were exposed to a text containing general information about merit-based scholarships, the amount of monthly funding and formal application requirements. Text and graphics intended to offer objective information without explicitly encouraging students to apply. The wording was similar to an official website of the BFW Working Group (2013), especially when describing the respective application requirements. It was however stressed that students should gather more detailed information from the BFW directly.

Role model treatment group: The role model treatment group also received the general information text but was additionally provided with “custom-fit” insights through a written, personal testimony of a (real) student funded by one of the BFW.¹⁰ Role models were asked to answer a set of questions concerning personal benefits from scholarship, and application requirements with a focus on the importance of academic achievement and social engagement. They were further asked to detail the application and admission procedure, and to estimate the chances to win a scholarship if belonging to a group currently under-represented in the scholarship body. Although answers to these questions were tailored to the requirements of the specific BFW, all interviews shared a motivating tenor and stressed that an application, although strenuous, is worth the trouble – especially for students of non-academic backgrounds for whom the information was designed.

To avoid bad fit between role model and participant, e.g. a participant identifying with a left-wing party being matched with a BFW associated with a conservative party, students were allocated to a role model based on their political and/or religious association. In order to achieve good matches, an algorithm selected the interview which had the highest accuracy of fit with respect to field of studies and gender between the interviewed scholarship holder and the respondents. In other words, similarity was established on observed and controlled characteristics.¹¹ All interviews were headed with a warrant of apprehension (name, subject of studies, educational institution, semester, educational path to university) and showed the scholar on a casual photograph, so that participants could easily learn about the role model’s characteristics.

⁹ Once enrolled at university, each German student receives a personal e-mail address, hosted by the university’s computing center. Respondents were asked to provide these addresses to restrict the sample to enrolled students and to detect duplicates.

¹⁰ For the sake of credibility of and identifiability with the information and the scholarship holder, I decided to actually conduct interviews with 34 real scholars rather than confronting the participant with artificial vignettes. As I show later in the appendix, results are insensitive to potential slight variations between texts.

¹¹ As I show in the appendix, slight differences in the quality of matching did not affect participants’ application rates significantly (tables A4 and A5).

4.2 Wave 2

Six months after the first survey, students who agreed to be contacted again, were, via e-mail, provided with a personal link to access the second questionnaire. The second survey aimed at updating information from the first survey, observing whether students' knowledge on scholarships changed and refining judgment about their possible eligibility for a scholarship. Most importantly, respondents were questioned about whether they applied for a scholarship between both waves. As both personality traits and cognitive abilities are selection criteria for scholarships, the second survey included a short measurement of the Big Five Inventory BFI-S (Gerlitz and Schupp 2005) and a 12-item-short-form of Raven's Advanced Progressive Matrices APM test (Raven et al. 1988), developed by Bors and Stokes (1998) and administered online as a non-speed test.¹²

5 Data

5.1 Descriptives

As the focus of the study was to consider only students enrolled in both waves of the survey and insofar potentially eligible to receive a scholarship, the sample was restricted to current students. Therefore, PhD students, recent graduates, college drop-outs etc. were removed from the sample. After removing these 574 cases, 8,817 students who completed the first survey remained. Of these, 64.3% also finished the second interview.¹³ Response rates for the second survey are very similar between groups (controls: 65.0 %, info treatment: 64.2 %, role model treatment: 63.6 %) with differences between groups not being statistically significant (chi-squared test: $\chi^2 = 1.287$, $\text{Pr}=0.525$).¹⁴ Participants with non-response on at least one of the items used as control variables were listwise deleted (1.6% of the sample), resulting in a final analytic sample of 5,531 participants equally spread over groups. Participants study at about 180 different colleges (universities and universities of applied sciences), i.e. more than 40% of all German colleges are represented. Table I outlines descriptive statistics within and between the three experimental groups.¹⁵

¹² Both the BFI-S (Hahn et al. 2012) and the APM (Bors and Stokes 1998, p. 393) are characterized by acceptable test-retest stabilities so that the inclusion of these measures as controls should not bias the results, even though data was collected during wave 2.

¹³ More than one third of wave 2 non-respondents (12.2% of those who finished wave 1) could not be contacted due to typos in the e-mail addresses collected. The high share of mistakes in e-mail addresses is probably due to the fact that most universities provide their students with randomly created, and hence hard to remember, addresses to prevent spam and identification of the respective students.

¹⁴ Using the wave 1 data set and regressing participation in wave 2 on the treatment dummies, the later baseline controls and the interaction of both does moreover not imply differential attrition: Neither the treatment dummies nor their interactions with any control variable are statistically significant at the 5%-level.

¹⁵ Figure A1 in the appendix shows that kernel density plots for the Big Five Inventory between groups are very similar.

Characteristics are balanced over groups, indicating that randomization was successful.¹⁶

(Table I about here.)

I emphasize here that the descriptives, results and conclusions are only internally valid for the participants in the experiment as the sample was not drawn on a representative basis.¹⁷ I therefore shortly outline deviations from the general student body in the following and focus on discussing means for the control group.

The table shows that, as is often found in survey-based studies, female and university respondents are largely overrepresented, compared to official register data amounting to 48% female and 65% university students (Federal Statistical Office 2014c). Using the 20th Social Survey by Middendorff et al. (2013) as a benchmark, respondents are, on average, of similar age (23 years, not reported) and semester. 48% of participants are of academic background, defined as descending from families where at least one parent achieved a college degree. The share of students of academic backgrounds more or less equals the 50% share reported in the Social Survey. 16% had already applied for a scholarship at a BFW, 14% had applied elsewhere for a scholarship. Current scholarship holders (6%) are clearly overrepresented as their overall share in the general student population amounts to only 1%.

To proxy students' eligibility to receive a scholarship, the further analyses control for the fit of application requirements. As described above, dual degree students (12%), those studying in a second degree (4%) or part time (1%) are mostly ineligible to receive scholarships. Most providers require applicants to be at least younger than 35 years – which nearly all students in the sample are. Qualified applicants should officiate voluntary work (which half of the sample does) and show above-average academic performance. As one third of respondents were college freshmen in wave 1, they were not able to report grades of their studies yet.¹⁸ Therefore, I used the study grades at baseline, where available, and substituted these by high school GPA if missing (2,010 cases).¹⁹

Because college drop-outs with a higher likelihood of low achievements were dropped, the analytic sample is positively selected with respect to academic performance: About 45% of the sample fall into the “high performance” group which is, according to the BFW that impose explicit GPA-cutoffs, defined as a GPA better than 2.0 on the German

¹⁶ Members of the first treatment group were marginally less likely to have applied for other scholarships ($p=0.06$). Applying procedures correcting for alpha inflation, e.g. Bonferroni-Holm, no statistically significant differences were found on an overall significance level of 1%.

¹⁷ As merit-based aid aims at promoting the more committed students only, the self-selected sample should however be almost congruent with the BFWs' target group.

¹⁸ There are also subjects of studies, e.g. Law, where the first semesters are not graded at all and grades are, naturally, missing.

¹⁹ This strategy should be unproblematic as students have to demonstrate their academic ability when applying for scholarships and will also have to use their high school diploma if they did not receive any college grades yet. Furthermore, if I used achievements as reported in the second semester, I would be unable to rule out bias introduced by potential treatment-related changes in achievement.

five-point grading scale. 46% of the sample score between GPA 2.0 and 2.9 (medium performance), only 9% score lower than that.

The average score of the cognitive test amounts to 7.21 (S.D. = 2.70) and is very close to the original offline version (mean = 7.15, S.D. = 2.34) used by Bors and Stokes (1998, p. 393).

As already outlined above, it is difficult to define the subsample with a viable chance to apply. Defining eligible students as students with high academic performance, who are younger than 35 years, are neither dual nor second degree students and officiated voluntary work within the past 12 months, a share of 21.4% of this sample can be considered as potentially eligible. This fraction reduces to 19% when I subtract current scholars. All these shares are equally spread over groups.

If not indicated otherwise, all analyses control for socio-economic and study-related characteristics, fulfillment of application requirements variables, the respective baseline levels of the dependent variable (applied at a BFW or applied at other non-BFW providers) and baseline scholarship receipt. Cognitive test scores and personality traits are added as indicated.

5.2 Application determinants

There are of course several reasons for why students of non-academic backgrounds are underrepresented in the scholarship body. For example, a lower share of qualified students of non-academic backgrounds must translate into an equally reduced share in the overall scholarship body. Even if the probability to meet the requirements was unrelated to socio-economic characteristics, the selection process could introduce selectivity. College-experienced parents might, for example, coach their children, or students of non-academic background might perform worse when in a situation of social threat. Providing information can only exert a positive effect if equally talented students of non-academic backgrounds are already underrepresented at the stage of applications.

To explore whether this is indeed the case, I specify a logit model where I regress applications for a BFW scholarship up to the interview at wave 1 on a set of socio-economic, college and eligibility controls (table II).

(Table II about here.)

As expected, the application requirements are highly relevant determinants of the application decision with academic performance, voluntary work and meeting the age requirement being most important.²⁰ Keeping all these factors at their observed values,

²⁰ Of course, second degree students and students who are too old to be eligible may have applied earlier. The dummy flagging respondents older than 34 years does therefore also capture a time trend of scholarships being less frequent and known at the time they would have been eligible to apply.

students of universities of applied sciences are predicted to be about four percentage points less likely to report a previous application than students enrolled at universities. As the share of students who work besides their studies is higher in the applied sciences group, this effect is likely to capture more time constraints and a smaller financial need to apply for a scholarship.²¹

Furthermore, the results in column 1 suggest that respondents' socio-economic background influences the application behavior. All else equal, the predicted probability to report an application was 2.5 percentage points lower for students of families without academic experience than for students from academic homes. High achieving university students with an average number of semesters (4.4), meeting all application requirements and reporting a party identification, had a 5.14 percentage points lower predicted probability to have applied if of non-academic background ($p=0.006$). Given the small overall application share of 16%, this effect is remarkably large.

Omitted variable bias might however explain differences in applications if personality or cognitive abilities drive both application behavior and are correlated with socio-economic background. I therefore include covariates for cognitive test scores (column 2) and personality traits (column 3). It is well established that conscientious students who are likely to be motivated and to behave achievement-oriented perform better in college (e.g. O'Connor and Paunonen 2007). Accordingly, I find that conscientious participants were predicted to be four percentage points more likely to have applied (column 3), over and above controlling for cognitive test scores (column 4). Participants with high levels of agreeableness, being less assertive in their behavior, were predicted to be less likely, while extroverted individuals were predicted to be more likely to have applied when cognitive test scores are added. None of the controls can however close the application gap between students of different socio-economic backgrounds which persists in the full specification (column 4).

Women were less likely to have applied once personality traits are added. In the full specification, their predicted probability was 4.22 percentage points lower ($p < 0.05$) when considering eligible university students with average values on personality, test scores and number of semesters.

Although I am not claiming causality here, the results provide some evidence that not only students of non-academic backgrounds but also women are already underrepresented when applying for scholarships, keeping eligibility requirements constant. The lower application probability of women confirms the significantly smaller share of female scholarship holders in the German National Scholarship Foundation detected by Kuhlmann et al. (2012).

²¹ Students' or parents' financial resources might be simultaneously affected by scholarship receipt (high income reduces the scholarship amount; scholarship funding increases financial resources). Lacking data on income, I cannot address this issue, unfortunately.

5.3 Information asymmetries

Is the decision to abstain from applying related to a lack in knowledge about scholarships? When asked about reasons for not applying, participants attach most importance to insufficient knowledge on application requirements, followed by insufficient voluntary work and grades (table A1 in the appendix). Table III shows that students who had never applied at a BFW so far were indeed poorly informed about scholarships. More than half of the participants indicated to be very or rather uninformed about scholarships, while only 9% stated to be informed or very informed.

(Table III about here.)

This pattern is also found in participants' abilities to answer questions about scholarships correctly. Only 10% of the non-applicants were able to provide an estimate of the scholarship amount within an interval of EUR 50 around the true value of EUR 800.²² More than one third could not name a single scholarship provider.

Several yes-no items tried to further assess students' perceptions of scholarships. Nearly half of the students knew that an application is possible without top margin grades. Most participants were informed about the possibility to apply at the BFW directly and knew that a scholarship need not be repaid. Yet, about 80% thought that a strict grade point average existed, which, if not met, led to a loss of funding. In a nutshell, participants were inadequately informed and especially lacked knowledge on the flexibility of requirements. Summing up correct answers, respondents answered, on average, slightly less than half of the six items correctly. Less than 1% of the respondents answered all items correctly (not reported).

To explore information asymmetries, I regress the number of correctly answered questions on a set of controls, including eligibility requirements, restricting the sample to those who had not applied at a BFW up to the first wave to prevent reverse causality. The sample therefore includes both respondents totally unaware of scholarships and those who might have considered applying but decided against it. Table IV reports average marginal effects of an ordered logistic regression, evaluated at the probability to answer five of the six correctly.²³

(Table IV about here.)

Unsurprisingly, academic achievement was again associated strongest with a high predicted probability of above-average knowledge: The predicted probability to answer five

²² Respondents were asked to name the equivalent scholarship amount to EUR 500 of BAfoeG. Respondents therefore needed to know that the scholarship amount equals BAfoeG but that scholarship holders receive an EUR 300 lump-sum payment on top.

²³ Estimates across all other cut-offs are shown in the appendix exemplary for the specification of column 1 in table IV (see figures A2 and A3 in the appendix). Patterns for the other specifications are similar.

questions correctly was about 8 (13) percentage points lower for participants with moderate (low) academic achievements, *ceteris paribus*. Dual study students usually ineligible to receive scholarships were predicted to be 2.4 percentage points less likely to provide five correct answers. Older students tend to be better informed, possibly because they had more opportunities to meet scholarship holders during their studies in comparison to young students. The socially engaged who are more likely to meet funded scholars during voluntary work, were predicted to be about 1.6 percentage points more likely to answer five questions correctly.

The predicted probability of above-average knowledge for a non-academic at university with an average number of semesters, meeting all eligibility requirements was about 3 percentage points ($p=0.00$) or roughly 20% lower than that of a comparable student with college-educated parents. Calculating the same average marginal effect with respect to gender, women's predicted probability was about 5 ($p=0.00$) percentage points or roughly 20% lower than that of men. These results are only marginally affected when controlling for potential differences in cognitive abilities (column 4).

To explore in how far this effect is mitigated by informal knowledge within the social network, I add a dummy for acquaintances with a scholarship holder (column 2). People who indicated to know a (former) scholar had substantially higher predicted probabilities to be informed. As significantly less non-academic students were acquainted with a scholar than their counterparts from academic homes ($\chi^2=78.57$, $Pr=0.00$), the difference in knowledge between academic and non-academic students drops by 20% but is not completely offset. Note that the inclusion of the informal knowledge dummy does not affect the gender gap. As I cannot reject the hypothesis that men and women differ in their probabilities to know a scholar ($\chi^2=0.24$, $Pr=0.63$), results suggest that information asymmetries might be a relevant obstacle for non-academic students but probably not for women.

In column 3, I isolate the effect for those who had actively looked for information but then decided against applying by adding a dummy on own information search. The influence of grades, voluntary work and dual studies is reduced, indicating that the most eligible did indeed inform themselves and are thus better informed. But even then, gaps with respect to academic background and gender persist. The same holds for including cognitive test scores and personality traits in columns 4 and 5.

6 The effects of information provision

6.1 Method

As treatments were randomly assigned, the treatment effects of the information provision can be identified by simple comparison of participants' behavior over groups, using

ordinary least squares (OLS).²⁴ The intent-to-treat (ITT) effect is estimated by specifying the following linear probability model:

$$(1) \quad y_i = \beta_0 + \beta_1 \cdot \text{INFORMATION} + \beta_2 \cdot \text{ROLE MODEL} + \mathbf{x}'_i \cdot \boldsymbol{\beta}_3 + \epsilon_i,$$

where y_i is the binary outcome variable for student i , i.e. the application for a scholarship at the time of the second survey. *INFORMATION* and *ROLE MODEL* are the treatment dummies indicating whether the student belonged to the first treatment group, receiving general information, or whether she was part of the second treatment group (role model treatment, including general information). \mathbf{x}_i is a vector of baseline controls, ϵ_i represents the error term, estimated using robust standard errors in the following. β_1 and β_2 are the coefficients of interest as they represent the intent-to-treat effects of the information and role model treatment, respectively. As the role model treatment also included the information treatment, β_2 represents the composite effect of both treatments with respect to no treatment. Heterogeneous ITTs are investigated by adding interactions between the treatment dummies and the binary variable ν_i , controlling for the vector of remaining covariates, $\boldsymbol{\theta}_i$:

$$(2) \quad y_i = \beta_0 + \beta_1 \cdot \text{INFORMATION} + \beta_2 \cdot \text{ROLE MODEL} + \beta_3 \cdot \nu_i \\ + \beta_4 \cdot \text{INFORMATION} \cdot \nu_i + \beta_5 \cdot \text{ROLE MODEL} \cdot \nu_i + \boldsymbol{\theta}'_i \cdot \boldsymbol{\beta}_6 + \mu_i.$$

6.2 Results

How did these differences in knowledge and thinking about applying carry over to factual behavioral changes? To investigate ITTs on applications between wave 1 and wave 2, I present analyses on the full sample first. The full sample also comprises students rather ineligible for scholarships and therefore less likely to report an application. In a second step, I will therefore reduce the sample to those most likely to fulfill the BFWs' application requirements.

(Table V about here.)

First, table V presents the overall impact of both treatments on scholarship applications, irrespective of whether students applied at a BFW or for a scholarship of a different provider.²⁵ Only the information treatment had a marginally statistically significant effect on applications in the full sample (column 1). Considering the especially uninformed subgroups reveals that non-academic students' application rates were 2.5 percentage points higher in the information and 2.2 percentage points higher in the role model treatment

²⁴ Non-linear specifications yield similar results.

²⁵ Results without covariates are very similar. I report covariates-adjusted results only as these are more efficient and take care of potential remaining differences between groups. Unadjusted results are available upon request.

group (columns 2, 3). Including gender interactions in columns 4 and 5 reveals that the information treatment indeed affected only men’s application rates by statistically significant 3.6 percentage points. The impact on women was not statistically significant ($p=0.56$ in column 4, $p=0.55$ in column 5). Results with additional controls for personality traits or cognitive test scores are similar.

To closer investigate where students applied, table VI breaks down the effects for applications at BFW and non-BFW institutions. Some private institutions such as companies or cities provide scholarships for students born in the region or enrolled in a certain subject of studies. These scholarships impose less restrictive criteria and are therefore potentially easier to win than the BFW-scholarships. However, they do also pay less. Focusing first on applications at one of the BFW (columns 1-5) reveals that the role model treatment increased non-academic students’ application rates by highly statistically significant 2 percentage points (columns 2 and 3). In other words, compared to the respective control group, the role model treatment more than doubled non-academics’ application probabilities. In contrast to that, the respective treatment effect is not statistically significant for students of college-educated families ($p=0.15$). Columns 4 and 5 do furthermore again show that only men were positively affected by the role model treatment.

(Table VI about here.)

Note moreover that the BFW-applications of participants offered the general information only were not significantly affected. ITTs found in the second treatment group should therefore stem from the interview text and not from the general information text also provided to the general information group.

The effect pattern between both treatment groups is, however, reversed when investigating applications for other scholarships not provided by the BFW (columns 6-10). Participants in the general information group were 1.5 points more likely to report applications for such non-BFW scholarships while the coefficient for members of the other treatment group is negligibly small and insignificant (column 6). The negative signs of the socio-economic and gender interactions point to a smaller effect for academic and female students, yet, the interactions are not significantly different from zero (columns 7-10).

In table VII, I investigate whether different short-run reactions in participants’ behavior might explain why the information treatment increased applications for other but not for BFW-scholarships. Columns 1 and 2 report ITTs on students’ self-reported active information search after the experiment.²⁶ The general information treatment providing only basic information on scholarships triggered own active information search in the meantime, whereas the effect for participants in the role model treatment group who were

²⁶ Unfortunately, only those who had never applied for any scholarship at baseline were asked whether they had actively looked for information or thought about applying.

provided with extensive information is significantly smaller ($p = 0.08$) and not statistically significant. In this vein, students in the information treatment group might have come across other, probably more suitable or less challenging, scholarship opportunities and applied there, while those treated more extensively restricted their attention to applying at a BFW.

In how far did the information provided lead students to consider applying? Columns 3 and 4 reveal that both treatments had an equally large impact on whether participants thought about a scholarship application (F-test $p=0.51$).

(Table VII about here.)

To purge the sample of mostly ineligible students, table VIII restricts the sample to an approximation of the target population. I start by dropping all students likely to be ineligible to apply at most BFW because they are too old or study in ineligible programs (columns 1-3). Then, I also drop students beyond the most favored range of semesters (columns 4-5). In columns 6-9, I exclude moderately and low performing students and in columns 10-12 also those who exert no voluntary work. Due to space limitations, I depict results without interactions only for the first sample reduction (column 1) and the most restrictive sample (column 10).

(Table VIII about here.)

Several important conclusions can be drawn from this analysis: Firstly, the more the sample is restricted to the most relevant population, the larger become role model treatment effects, while info treatment effects stay negligible in size and statistical significance. It could have been expected that ITTs in the general information group do not increase, taking into account that these students applied at higher rates elsewhere, irrespective of their factual eligibility to receive BFW-scholarships. It is, however, surprising that although ITTs in the role model group increase up to 1.2 points, this effect is not statistically significant in the full sample. Possible explanations for this finding are the information's strong focus on non-traditional students and the fact that, the more the sample is restricted to the most eligible students, the higher the probability that they had already applied before entering the experiment, especially if not being of non-academic background, i.e. not suffering from information asymmetries.²⁷

When looking at heterogeneous effects, ITTs for non-academics and males rise steadily up to 6.5 (column 11) and 9.6 percentage points (column 12). Moreover, the gender differential persists and quadruples from $1.9 - 2.5 = -0.6$ points in column 3 to $9.6 - 11.8 = -2.2$ points in the sample including only socially engaged (column 12). However, I cannot reject the hypothesis that the point estimates are equal to zero.

²⁷ In the "volunteer" sample, predicted probabilities for students of academic backgrounds to already have applied up to wave 1 were more than 20 percent larger than those of non-academic students.

Or, in other words: The higher the probability that male respondents indeed qualify for scholarships, the more did the information provided by role models trigger them to accept the challenge and apply. Whereas effective for males, the role model treatment did not significantly increase application rates of highly eligible females. This gender gap is not due to potential systematic gender differences in personality traits or cognitive abilities (appendix, tables A2 and A3).

If the hypothesis is true that the general information led participants, irrespective of their qualification for highly selective BFW-scholarships, to actively look for other scholarships, BFW-ineligible should not have applied less often for other alternatives. Without showing in detail, I repeated the analysis from table VIII but restricted the sample up to the least eligible participants. ITT estimates are about the same size as in the unrestricted sample and larger for participants who received the info treatment.

7 Conclusion

Two thirds of all German merit-based aid holders come from families where at least one parent achieved a college degree, whereas students of academic background only make up half of the overall student population (Middendorff et al. 2009, p. 24). Given that educational achievements and socio-economic background are correlated, Middendorff et al. (2009) argue that the likelihood to encounter students of non-academic backgrounds in the group of qualified students is lower than the likelihood to come across students whose parents have studied. While this is doubtlessly the case, it has never been asked before whether non-academic students qualified to receive merit-based scholarships apply indeed as frequently as equally talented students of academic homes, and are equally well informed about scholarship opportunities. If qualified students of college inexperienced families apply less often, although they might profit most from the scholarships' advantages, the merit-based system cannot unfold non-academic students' talent and undermines its social mandate.

The findings from this paper provide first evidence that participants in the randomized field experiment were indeed significantly less informed if descending from families without academic experience. Keeping educational achievements, cognitive test scores, important application requirements and a range of other covariates constant, students of non-academic backgrounds were also significantly less likely to report former applications for merit-based aid. Therefore, even if students of all socio-economic groups are equally likely to succeed in the application process for scholarships, the smaller share of non-academics' applications will carry over to their underrepresentation in the scholarship body.

However, if lower application rates are mainly resulting from information asymmetries, providing information about scholarship opportunities is a very inexpensive instrument to influence students' choice sets after leaving high school. The findings here suggest that

providing information on scholarships led students to consider applying. Moreover, factual application rates of non-academic students six months later doubled when a scholar with similar characteristics shared custom-fit information.²⁸ The second survey took place after 6 months. As not all scholarship providers' application deadlines fell into this time span, it is very likely that the treatment effects would be even larger if applications were questioned 9 or 12 months later.

At the same time, providing publicly available information alone increased the awareness of scholarships in general and triggered applications for other, less selective ones. Yet, general information was not suitable to affect applications for highly selective merit-based aid. This suggests that the decisive information asymmetry is not the ignorance of mere facts about scholarships but rather the information that a similar person made it.

My results do, however, also suggest that female participants were unaffected from applying for scholarships after offered detailed information, while men seem to have embraced the opportunity to apply. Several reasons lend itself to understanding this phenomenon.

First, academic performance is key to a successful scholarship application. Although I kept college grades and cognitive test scores constant, female participants were repeatedly found to underestimate their own abilities and less confident about their own performance (e.g. Deaux and Farris 1977; Chevalier et al. 2009). Women might therefore have abstained from applying, although qualified. This assumption is somehow corroborated in my sample as female participants' self-assessed academic performance with respect to their peers, keeping grades constant, is less optimistic than that of men. Another explanation is women's generally higher average performance in college (Vincent-Lancrin 2009). If women compare their own achievement to that of their peer group, their self-assessment might be lower just because the average level of performance in a female-dominated peer group is higher.

As merit-based scholarships are awarded in a highly demanding selection process and the role model treatment provided detailed information on its competitiveness, gender differences in competitiveness might also explain why women in the second treatment group did not apply more often. A wide range of studies provide evidence that women shy away from competition while men embrace it and even perform better when competing (Gneezy et al. 2003; Gneezy and Rustichini 2004; Niederle and Vesterlund 2007; Morin forthcoming). With respect to merit-based aid, Kuhlmann et al. (2012) provide evidence that women having been recommended to the largest German scholarship providing insti-

²⁸ Please note again, that it was unfortunately not possible to examine whether students indeed received the scholarship because the response rate of applicants in a follow-up 1.5 years after the first wave was too low to conduct meaningful analyses. As students who reported to have applied before their participation in the first survey were however not less successful if of non-academic background, it is very likely that the higher number of qualified students' applications translates into a higher number of scholarship winners.

tution are less successful in the assessment centers than their male counterparts, although equally well qualified. Learning about details of the later selection process might therefore shift women's lower odds to succeed in the process to an earlier stage: Anticipating the challenge to compete and potential problems to prevail in the process, women might abstain from applying in the first place. More evidence is however needed to investigate reasons for the gender gap and assess whether the findings from this non-representative sample can be generalized to the full student population. Prospective studies should therefore include a direct measure of participants' tastes for competition and level of self-confidence to set limits to possible reasons of the gender gap.

Some BFW have already established small mentoring programs where current scholarship holders get in touch with students from underrepresented groups and share information on scholarships. These programs are highly cost-effective as scholarship holders act on a voluntary work basis. The results of this paper suggest that these programs can indeed be a fruitful and inexpensive endeavor to promote nonacademic students.

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Table I:
Pre-treatment descriptive statistics

	(1) Controls		(2) General info		(3) Role model		(1) - (2)		(1) - (3)	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)	Diff.	(P-value)	Diff.	(P-value)
Female	0.68	(0.47)	0.68	(0.47)	0.67	(0.47)	0.00	(0.96)	0.00	(0.84)
Semester	4.43	(3.50)	4.39	(3.34)	4.53	(3.48)	0.04	(0.73)	-0.09	(0.42)
Educational background										
Non-academic background	0.52	(0.50)	0.50	(0.50)	0.53	(0.50)	0.03	(0.12)	-0.01	(0.71)
Academic background	0.48	(0.50)	0.50	(0.50)	0.47	(0.50)	-0.03	(0.12)	0.01	(0.71)
Type of institution										
University	0.87	(0.33)	0.87	(0.34)	0.86	(0.35)	0.00	(0.72)	0.02	(0.16)
Applied sciences	0.11	(0.31)	0.11	(0.31)	0.12	(0.33)	-0.00	(0.91)	-0.01	(0.22)
Other educational institution	0.02	(0.14)	0.02	(0.15)	0.02	(0.15)	-0.00	(0.55)	-0.00	(0.55)
Application requirements										
High performance	0.45	(0.50)	0.47	(0.50)	0.44	(0.50)	-0.02	(0.18)	0.00	(0.78)
Medium performance	0.46	(0.50)	0.44	(0.50)	0.46	(0.50)	0.02	(0.20)	-0.00	(0.90)
Low performance	0.09	(0.29)	0.09	(0.29)	0.09	(0.29)	0.00	(0.91)	-0.00	(0.79)
Older than 34 years	0.01	(0.10)	0.01	(0.08)	0.01	(0.11)	0.00	(0.23)	-0.00	(0.64)
Dual studies	0.12	(0.32)	0.11	(0.32)	0.10	(0.30)	0.00	(0.77)	0.01	(0.21)
Second degree	0.04	(0.19)	0.04	(0.19)	0.03	(0.18)	-0.00	(0.70)	0.00	(0.67)
Observations	1850		1839		1842		3689		3692	

Table I:
Continued

	(1) Controls		(2) General info		(3) Role model		(1) - (2)		(1) - (3)	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)	Diff.	(P-value)	Diff.	(P-value)
Application requirements (continued)										
Other non-eligible studies	0.01	(0.08)	0.01	(0.08)	0.00	(0.07)	-0.00	(0.83)	0.00	(0.37)
Volunteer work	0.50	(0.50)	0.52	(0.50)	0.52	(0.50)	-0.02	(0.31)	-0.02	(0.36)
Former application										
Applied at BFW	0.16	(0.37)	0.17	(0.37)	0.16	(0.37)	-0.01	(0.48)	-0.00	(0.71)
Applied for other scholarship	0.14	(0.35)	0.12	(0.33)	0.13	(0.34)	0.02	(0.04)	0.01	(0.30)
Current receipt										
BFW scholarship wave 1	0.06	(0.24)	0.06	(0.23)	0.06	(0.24)	0.01	(0.52)	0.00	(0.76)
Other scholarship wave 1	0.04	(0.20)	0.03	(0.18)	0.03	(0.17)	0.01	(0.27)	0.01	(0.08)
Cognitive abilities										
Cognitive test score	-0.01	(1.02)	0.02	(0.99)	0.01	(0.98)	-0.03	(0.40)	-0.02	(0.50)
Observations	1850		1839		1842		3689		3692	

Notes: The last two columns report p-values of independent samples t-tests. “Other educational institutions” include e.g. teacher training colleges. Dual studies combine academic and practical phases financed by companies. Students in their second degree enrolled for a second undergraduate education after finishing their first undergraduate degree. Students in dual studies or their second degree are ineligible for most BFW-scholarships. “Other non-eligible studies” include e.g. part-time students. “Former application” indicates all applications up to wave 1 or current scholarship receipt in wave 1. “Other scholarships” includes also the “Deutschlandstipendium” and other, e.g. company-provided scholarships. Cognitive test scores were standardized.

Table II:
Determinants of the application for a merit scholarship: Logit model

	(1)	(2)	(3)	(4)
Female	-0.016 (0.010)	-0.012 (0.010)	-0.023** (0.010)	-0.020** (0.010)
Semester	0.004*** (0.001)	0.004*** (0.001)	0.003** (0.001)	0.003** (0.001)
Non-academic background	-0.025*** (0.009)	-0.023** (0.009)	-0.026*** (0.009)	-0.024*** (0.009)
Applied sciences	-0.043** (0.017)	-0.041** (0.017)	-0.050*** (0.017)	-0.048*** (0.016)
Other educational institution	-0.032 (0.034)	-0.034 (0.034)	-0.026 (0.033)	-0.028 (0.033)
Medium performance	-0.160*** (0.010)	-0.154*** (0.010)	-0.145*** (0.010)	-0.140*** (0.010)
Low performance	-0.294*** (0.033)	-0.287*** (0.033)	-0.267*** (0.033)	-0.261*** (0.033)
Older than 34 years	-0.186** (0.087)	-0.187** (0.086)	-0.184** (0.085)	-0.187** (0.085)
Dual studies	-0.039** (0.017)	-0.035** (0.017)	-0.035** (0.017)	-0.031* (0.017)
Second degree	-0.029 (0.026)	-0.028 (0.026)	-0.034 (0.026)	-0.032 (0.026)
Other non-eligible studies	-0.017 (0.069)	-0.013 (0.069)	-0.023 (0.068)	-0.018 (0.067)
Volunteer work	0.173*** (0.010)	0.172*** (0.010)	0.167*** (0.010)	0.165*** (0.010)
Party identification	0.028*** (0.010)	0.030*** (0.010)	0.024** (0.010)	0.025** (0.010)
Cognitive test score		0.022*** (0.005)		0.025*** (0.005)
Openness			-0.002 (0.005)	-0.003 (0.005)
Conscientiousness			0.039*** (0.005)	0.040*** (0.005)
Extraversion			0.007 (0.005)	0.011** (0.005)
Agreeableness			-0.012*** (0.005)	-0.013*** (0.005)
Neuroticism			-0.005 (0.005)	-0.003 (0.005)
Observations	5531	5531	5531	5531
McFadden's Pseudo- R^2	0.158	0.162	0.171	0.176

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Notes: Each column reports average marginal effects from a separate logistic regression on the probability that the participant had applied for a BFW scholarship at baseline. I conducted a principal component analysis and orthogonal varimax rotation (total explained variance = 65.28%) on the Big Five Inventory. I then extracted the five factors by regression scoring.

Table III:
Knowledge level of non-applicants at baseline (wave 1)

	Mean	(S.D.)
Subjective knowledge level		
(Very) informed	0.09	(0.29)
Partly informed	0.36	(0.48)
(Very) uninformed	0.55	(0.50)
Knowledge on characteristics		
Scholarship amount correctly estimated	0.10	(0.30)
No scholarship provider known	0.36	(0.48)
Correct answer with respect to:		
Grades needed	0.46	(0.50)
Application possibilities	0.80	(0.40)
Amount need not be repaid	0.71	(0.46)
Prolongation requirement	0.22	(0.42)
Knowledge indicator		
Sum of correctly answered	2.92	(1.35)
Observations	4622	

Notes: Participants who indicated not to know the answer to the question and those who failed to provide the correct answer were coded as 0, participants who came up with the correct answer were coded as 1. The “Knowledge indicator” sums participants’ correct answers from all six objective knowledge items in the table.

Table IV:
Ordered logit model for knowledge on scholarships: average marginal effects

	(1)	(2)	(3)	(4)	(5)
Female	-0.034*** (0.006)	-0.034*** (0.006)	-0.038*** (0.006)	-0.030*** (0.006)	-0.034*** (0.006)
Semester	0.004*** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.002** (0.001)
Non-academic background	-0.021*** (0.005)	-0.016*** (0.005)	-0.020*** (0.005)	-0.019*** (0.005)	-0.015*** (0.005)
Applied sciences	-0.006 (0.008)	-0.005 (0.008)	-0.011 (0.008)	-0.004 (0.008)	-0.008 (0.008)
Other educ. institution	-0.004 (0.018)	-0.002 (0.019)	-0.012 (0.018)	-0.007 (0.018)	-0.012 (0.018)
Medium performance	-0.076*** (0.006)	-0.074*** (0.006)	-0.050*** (0.006)	-0.073*** (0.006)	-0.046*** (0.006)
Low performance	-0.128*** (0.010)	-0.120*** (0.010)	-0.087*** (0.009)	-0.123*** (0.010)	-0.079*** (0.009)
Older than 34 years	0.057** (0.025)	0.058** (0.024)	0.038 (0.023)	0.057** (0.024)	0.039* (0.023)
Dual studies	-0.024*** (0.008)	-0.023*** (0.008)	-0.022*** (0.008)	-0.023*** (0.008)	-0.020** (0.008)
Other non-eligible studies	0.040 (0.036)	0.048 (0.046)	0.045 (0.035)	0.046 (0.036)	0.055 (0.035)
Volunteer work	0.016*** (0.005)	0.011** (0.005)	0.009* (0.005)	0.016*** (0.005)	0.005 (0.005)
At least one acquaintance		0.052*** (0.006)			0.038*** (0.005)
Actively looked for information			0.128*** (0.007)		0.122*** (0.007)
Cognitive test score				0.015*** (0.003)	0.012*** (0.003)
Observations	4622	4622	4622	4622	4622
P-value overall Brant test	0.775	0.761	0.715	0.624	0.515

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Notes: The table shows average marginal effects from an ordered logit model. Average marginal effects are calculated for the probability to answer five of the six items correctly. Figures A2 and A3 in the appendix show how average marginal effects vary over cut-offs. The sample is restricted to those who had not applied for a scholarship up to wave 1.

Table V:
ITTs for full sample and heterogeneous effects: OLS

	Dependent: Application at a BFW or elsewhere				
	(1)	(2)	(3)	(4)	(5)
Information treatment	0.016*	0.025**	0.025**	0.036**	0.035**
	(0.009)	(0.012)	(0.012)	(0.016)	(0.016)
Role model treatment	0.007	0.022*	0.023*	0.024	0.023
	(0.009)	(0.012)	(0.012)	(0.016)	(0.016)
Academic	-0.001	0.016	0.017	-0.001	-0.001
	(0.008)	(0.013)	(0.013)	(0.008)	(0.008)
Female	0.005	0.005	0.000	0.023*	0.017
	(0.008)	(0.008)	(0.009)	(0.013)	(0.014)
Interaction effects					
Information * Academic		-0.019	-0.020		
		(0.019)	(0.019)		
Role model * Academic		-0.032*	-0.033*		
		(0.018)	(0.018)		
Information * Female				-0.030	-0.028
				(0.020)	(0.020)
Role model * Female				-0.024	-0.024
				(0.019)	(0.019)
Big5 Controls			✓		✓
Cognitive test scores			✓		✓
Observations	5195	5195	5195	5195	5195

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: ITTs reported with respect to the control group. Each estimation controls for the covariates of table I, application at baseline and the receipt of other scholarships at baseline. Additional covariates or interactions with both treatment groups are added as indicated. 336 participants were dropped because they were already funded by a scholarship (parallel funding not possible).

Table VI:
ITTs for full sample and heterogeneous effects: OLS

	Dependent: Application at a BFW					Dependent: Application elsewhere				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Information treatment	0.001 (0.005)	0.007 (0.007)	0.007 (0.007)	0.003 (0.009)	0.003 (0.009)	0.015* (0.008)	0.019* (0.011)	0.019* (0.011)	0.032** (0.014)	0.031** (0.014)
Role model treatment	0.005 (0.006)	0.020*** (0.008)	0.020*** (0.008)	0.023** (0.011)	0.023** (0.011)	0.002 (0.008)	0.002 (0.010)	0.003 (0.010)	-0.000 (0.012)	-0.000 (0.012)
Academic	-0.004 (0.005)	0.010 (0.008)	0.010 (0.008)	-0.004 (0.005)	-0.004 (0.005)	0.004 (0.007)	0.006 (0.011)	0.007 (0.011)	0.004 (0.007)	0.004 (0.006)
Female	-0.003 (0.005)	-0.003 (0.005)	-0.006 (0.006)	0.006 (0.008)	0.004 (0.008)	0.008 (0.007)	0.008 (0.007)	0.005 (0.007)	0.015 (0.011)	0.012 (0.012)
Interaction effects										
Information * Academic		-0.012 (0.011)	-0.012 (0.011)				-0.007 (0.016)	-0.007 (0.016)		
Role model * Academic		-0.032*** (0.011)	-0.032*** (0.011)				0.000 (0.015)	-0.001 (0.015)		
Information * Female				-0.003 (0.011)	-0.003 (0.011)				-0.024 (0.017)	-0.024 (0.017)
Role model * Female				-0.026** (0.013)	-0.026** (0.013)				0.004 (0.016)	0.004 (0.016)
Big5 Controls			✓		✓			✓		✓
Cognitive test scores			✓		✓			✓		✓
Observations	5195	5195	5195	5195	5195	5195	5195	5195	5195	5195

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: ITTs reported with respect to the control group. Each estimation controls for the covariates of table I, application at baseline and the receipt of other scholarships at baseline. Additional covariates or interactions with both treatment groups are added as indicated. 334 participants were dropped because they were already funded by a scholarship (parallel funding not possible).

Table VII:
ITTs on pre-application outcomes: OLS

	Active information search		Thought about applying	
	(1)	(2)	(3)	(4)
Information treatment	0.036** (0.018)	0.034* (0.018)	0.059*** (0.020)	0.057*** (0.020)
Role model treatment	0.004 (0.018)	0.006 (0.018)	0.044** (0.020)	0.044** (0.020)
Big5 Controls		✓		✓
Cognitive test scores		✓		✓
Observations	2670	2670	2670	2670

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: ITTs reported with respect to the control group. Each estimation controls for all covariates of table I, including the baseline level of the respective dependent variable. The sample size is smaller as only those who had not applied for scholarships at baseline were questioned on these dependent variables.

Table VIII:
ITTs of application for a BFW-scholarship, approximation of the relevant sample: OLS

	Formal			Formal+Semester			Performance			Performance+Semester			Volunteer		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)			
Information	-0.004 (0.006)	0.004 (0.007)	-0.005 (0.009)	0.019 (0.016)	0.012 (0.016)	0.013 (0.016)	-0.005 (0.019)	0.057* (0.031)	0.018 (0.027)	-0.025 (0.019)	0.005 (0.024)	-0.018 (0.028)			
Role model	0.002 (0.006)	0.019** (0.008)	0.019* (0.011)	0.027* (0.016)	0.059** (0.025)	0.034* (0.018)	0.044* (0.024)	0.066* (0.034)	0.115** (0.050)	0.012 (0.021)	0.065** (0.030)	0.096** (0.043)			
Academic	-0.005 (0.005)	0.013 (0.008)	-0.005 (0.005)	0.026 (0.018)	0.005 (0.011)	0.038** (0.018)	0.000 (0.010)	0.071** (0.032)	0.011 (0.020)	-0.004 (0.016)	0.048* (0.028)	-0.002 (0.016)			
Female	-0.002 (0.005)	-0.002 (0.005)	0.006 (0.009)	-0.003 (0.011)	0.024 (0.016)	0.000 (0.011)	0.024 (0.019)	0.007 (0.021)	0.056* (0.029)	-0.011 (0.018)	-0.010 (0.017)	0.028 (0.029)			
Interaction effects															
Info * Academic		-0.017 (0.012)		-0.033 (0.025)		-0.044* (0.024)		-0.095** (0.046)			-0.056 (0.036)				
Role * Academic		-0.037*** (0.012)		-0.032 (0.027)		-0.066** (0.026)		-0.081 (0.052)			-0.102** (0.041)				
Info * Female			0.002 (0.012)		-0.014 (0.023)		-0.007 (0.024)		-0.018 (0.040)			-0.009 (0.036)			
Role * Female			-0.025* (0.013)		-0.070** (0.029)		-0.063** (0.029)		-0.133** (0.059)			-0.118** (0.049)			
Observations	4232	4232	4232	1182	1182	1781	1781	550	550	896	896	896			

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: ITTs reported with respect to the control group. Each estimation controls for socio-economic characteristics, application requirements, former applications and current receipt of other scholarships than BFW-scholarships. Starting from the full sample and excluding current scholarship holders of wave 1, the sample is further restricted as follows: “Formal” = drop dual degree, part-time, second degree students, students older than 34 years in wave 1 and current recipients of a scholarship; “Formal+Semester” = additionally drop students in their Bachelor’s but higher than in second semester at baseline or in their Master’s and higher than first semester in wave 2; “Performance” = in addition to “Formal”, keep only high performing students; “Performance+Semester” = in addition to “Formal+Semester”, keep only high performing students; “Volunteer” = in addition to “Performance”, keep only socially engaged students.

A Appendix

A.1 Robustness checks

A.1.1 Robustness of the gender gap

I found that although female participants were generally less likely to apply and worse informed, they were insensitive to receiving information about scholarships.

If men and women differed systematically in personality traits or cognitive abilities, gender-specific ITTs would be a mere reflection of differences in these characteristics. For example, women were found to be more agreeable (Costa Jr. et al. 2001). If applying for scholarships is no viable option for highly agreeable individuals who cannot prevail in the assessment center (which is corroborated by the results of table II in the main document), ITTs vary by the level of agreeableness and not by gender per se. Including the interaction between agreeableness and the treatment dummies should therefore be significantly negative and absorb the gender effect.

To investigate whether the gender gap diminishes once treatment effects are allowed to vary with personality traits, I include the respective interactions with the treatment dummies and repeat the ITT estimation for male and female participants separately (tables A2 and A3). All tables show that letting treatment effects vary by personality traits or cognitive test scores cannot close the gender gap.

A.1.2 Robustness to matching quality

A matching algorithm allocated each member of the second treatment group to the most similar role model. To draw from the pool of available role models, the algorithm matched political party identification and religious denomination in a first step. If several role models were available on that basis, a role model of the same field of studies and/or gender was randomly selected. For 1% of participants, the algorithm could not select a matching role model in the first step, e.g. if the participant indicated to be socially engaged in a religious denomination not covered by the German BFW. In that case, only field of studies and/or gender were matched. If there was more than one most similar role model, the algorithm randomly allocated the participant to one role model. Due to this procedure, the level of similarity to the role model differed slightly between participants and might have introduced bias.

If a higher quality of matching positively impacted participants' application behavior, controls accounting for similarity to the role model should be significantly positive. Adding controls for all matching dimensions (dummy = 1 if characteristics coincide, 0 otherwise) in column 1 of table A4, I do not find any of the dummies significantly different from zero. To explore whether matching quality might have been more important for students of non-academic backgrounds or women and could therefore account for significant treatment

effects found, I interact these variables with similarity controls in columns 2 and 3. I do again not find statistically significant effects. I rerun these analyses in table A5 but sum up the total number of similarities. Taking participants who were matched on half of the matching criteria as a reference group, those matched worse should have been less and those matched better should have been more likely to apply if similarity had a positive and relevant impact. Again, no clear pattern with respect to signs of coefficients evolves and none of the dummies is significantly different from zero. Additionally, both the differential effect for students of non-academic backgrounds and women are robust to the inclusion of similarity indicators. Potentially different matching qualities between different student groups can therefore not explain different application rates.

It is luring but false to conclude from this that similarity to the role model did not matter at all. As similarity had to be maximized in order to secure the relevance of the provided information for the treated, the variation in matching quality between participants is rather small, thereby impeding the probability to detect significant effects. Moreover, not all information to assess the overall degree of similarity was collected for all participants. For example, participants were only asked about their religious denomination if socially engaged in church. Attachment to church might be most relevant for participants with voluntary work in church. However, religious but socially not engaged participants could also feel similar to a matched role model of a religious BFW, although I cannot control for this match.²⁹

To explore whether overall fit between participant and matched BFW mattered, I regress participants' scholarship applications on a self-reported evaluation of personal fit with the BFW they were matched to.³⁰ Note that the self-assessed item asked respondents to evaluate the similarity to the BFW funding the role model rather than to the role model itself. I therefore cannot isolate the effect of similarity between participant and BFW's association from the effect of similarity between the participant and the specific role model. Table A6 reveals that a good or very good self-assessed fit increases the probability to have applied by highly statistically significant 4 percentage points.

A last issue addressed here is whether slight differences in content or writing style

²⁹ Religious denomination was coded to be similar (=1) if participants reporting voluntary work within church were matched with a BFW of equal religious denomination and dissimilar (=0) if matched with a BFW of other religious denomination. Participants without religious social engagement were coded as 1 if matched with a non-religious BFW. This coding takes into account that religious BFW favor applicants socially engaged in church and with the same religious denomination. I also tested an alternative coding setting the similarity dummy only for those participants to 1 who were matched according to their religious engagement, considering all others as unmatched. Although this coding introduces an imbalance between religious and not religious participants – the latter always considered to be matched worse even if they might perfectly identify with the matched non-religious role model – the similarity dummy stays statistically insignificant.

³⁰ The self-assessed measure was surveyed in wave 2 as: “Please think back to the last survey. You have read an interview with a < male/female > scholar of < name of BFW >. If you wanted to apply for a scholarship, how good would this BFW fit your personal political, religious and ideological attitude?”

between interview texts might have influenced application rates significantly – apart from similarity to the role model. I regressed application behavior on dummies for all 34 interview texts, taking the text which was most frequently drawn by the algorithm as the reference category, and controlled for the quality of matching (not reported, results available on request). I found only one of the 33 interview dummies significantly different from zero on the 5%-level – which is in line with a usual rate of false discoveries in multiple testing. Moreover, this text was only shown to less than 10% of participants in the role model treatment group and should therefore not affect the results.

A.2 Figures

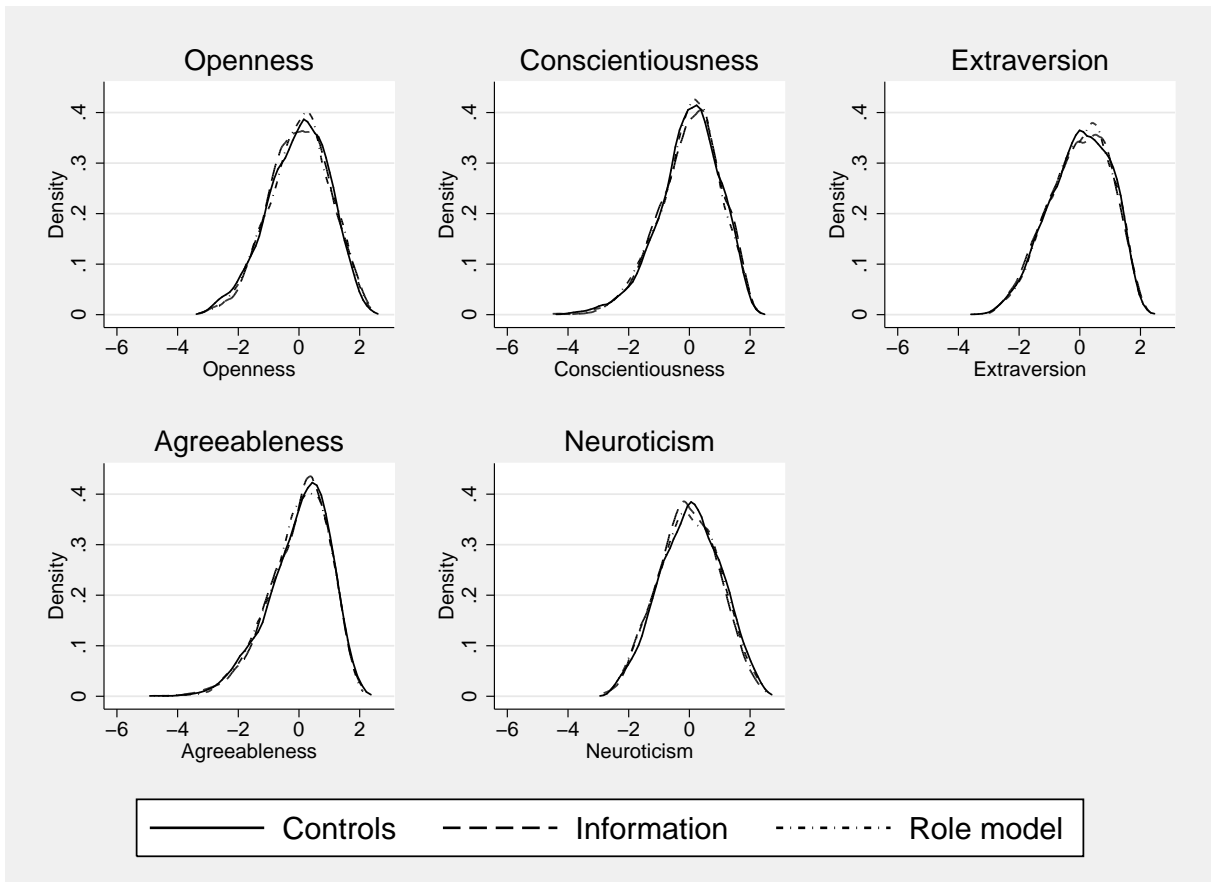


Figure A1:
Differences in the Big Five Inventory between experimental groups

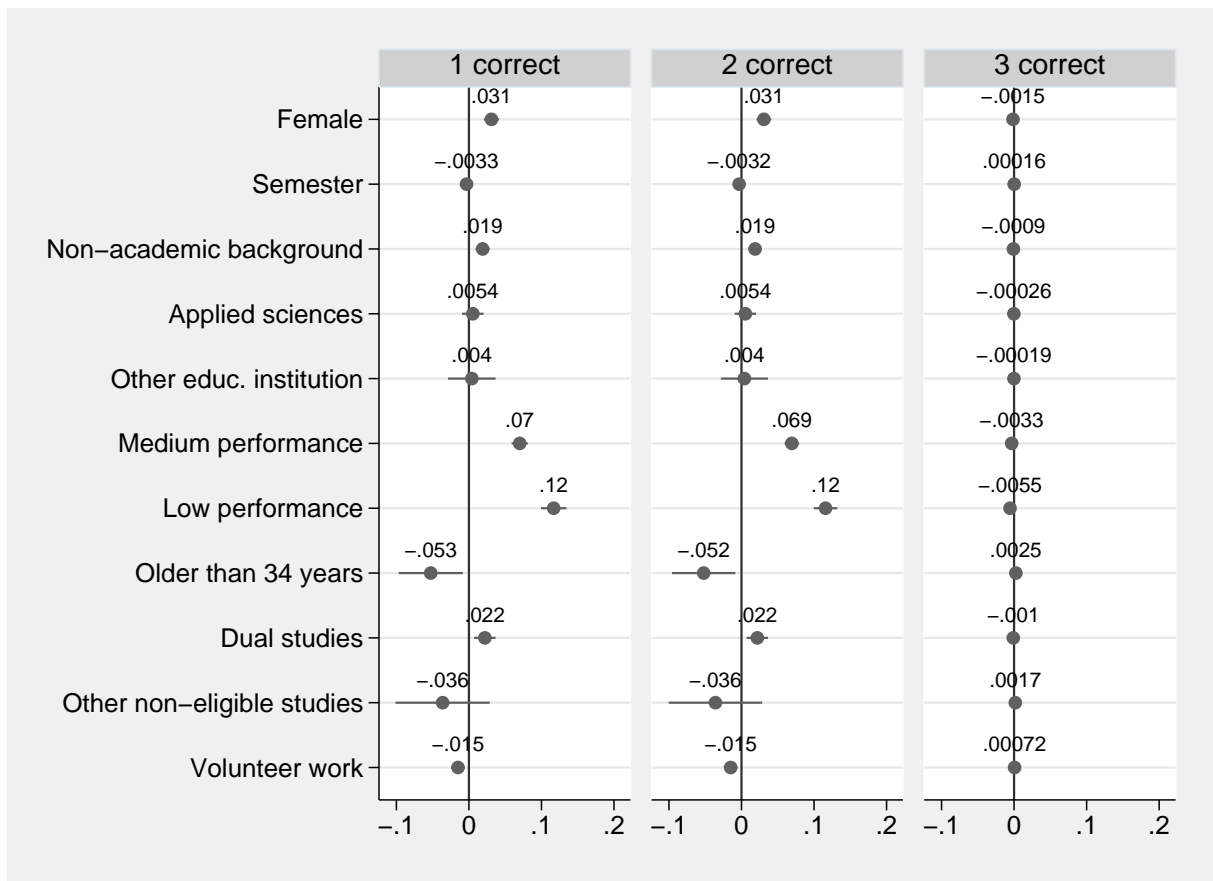


Figure A2:
Information asymmetries over cut-offs (1/2)

Notes: Average marginal effects from an ordered logit model using 95%-confidence intervals. Positive (negative) values indicate a higher (lower) likelihood to answer the respective number of items correctly.

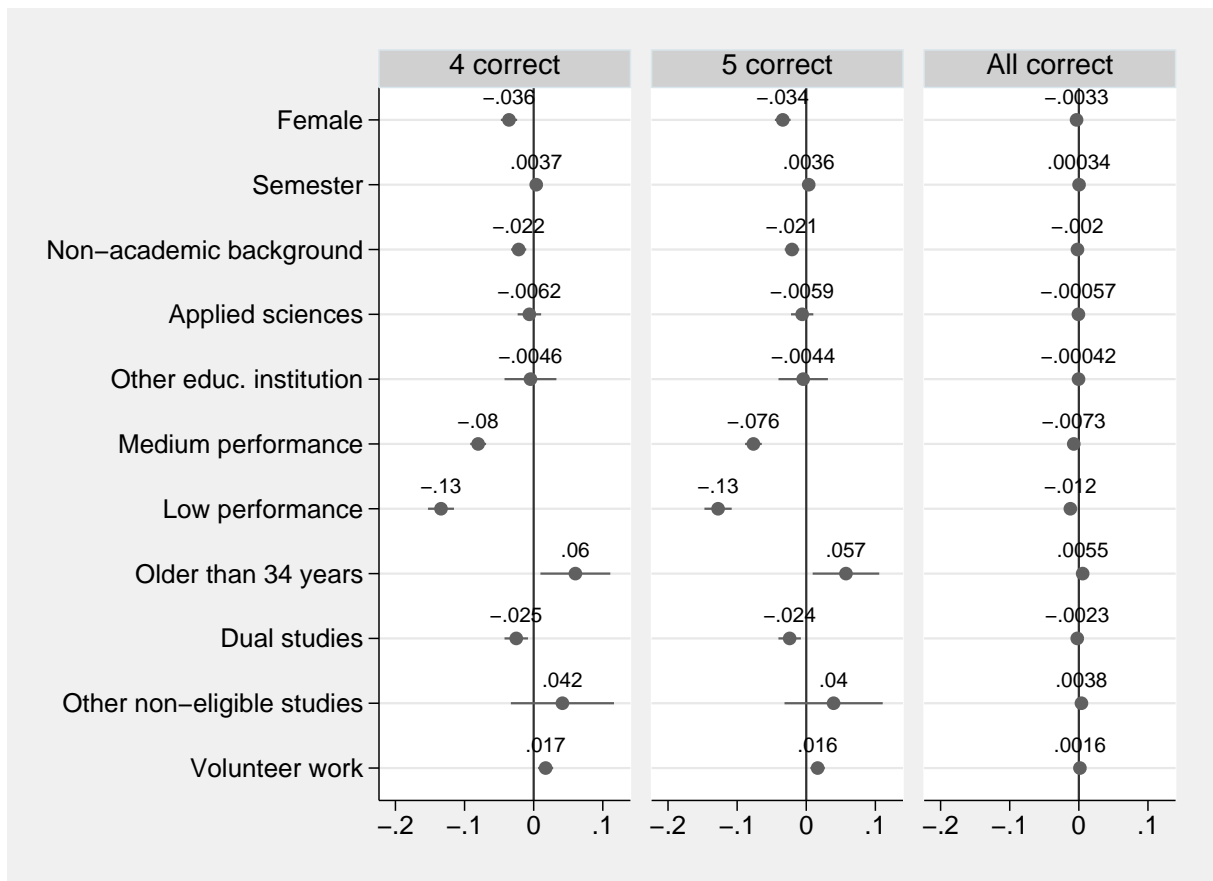


Figure A3:
Information asymmetries over cut-offs (2/2)

Notes: See figure A2.

A.3 Tables

Table A1:
Pre-treatment reasons for not applying

	Mean	(S.D.)
My grades are not good enough.	3.03	(0.90)
My voluntary work is not sufficient.	3.05	(0.91)
The funding amount I would receive is too small to be worth the application.	1.62	(0.76)
I know too little about the application requirements.	3.18	(0.86)
I received too little support by my college lecturers.	2.47	(1.03)
I do not need a scholarship as I can draw on other financial sources.	2.49	(0.94)
The application process is too complicated.	2.58	(0.90)
I do not want to incur liabilities tied to funding, e.g. seminar participation.	2.30	(0.97)
Observations	2670	

Notes: The sample size is smaller as only participants who mentioned to never have applied for a scholarship at wave 1 were questioned. The exact wording of the question was: “The following list contains reasons for why some students do not apply for a scholarship. In how far do these reasons also apply to you?” Participants rated each answer on a 4-point scale from “1 – Does not apply at all” to “4 – Applies fully”. The order of the items in the table equals the order in which they were asked in the survey.

Table A2:
Impact of differences in personality traits and cognitive test scores: OLS (1/2)

	Openness		Conscientiousness		Extraversion	
	(1) Men	(2) Women	(3) Men	(4) Women	(5) Men	(6) Women
Dep.: BFW application W2						
Information treatment	0.003 (0.010)	0.000 (0.007)	0.002 (0.011)	0.001 (0.007)	0.003 (0.010)	0.000 (0.007)
Role model treatment	0.023** (0.011)	-0.002 (0.007)	0.025** (0.012)	-0.002 (0.006)	0.024** (0.011)	-0.003 (0.006)
Openness	0.010** (0.005)	0.001 (0.004)	0.009** (0.004)	-0.003 (0.003)	0.009** (0.004)	-0.003 (0.003)
Conscientiousness	0.010** (0.005)	0.001 (0.003)	0.008 (0.006)	0.006 (0.004)	0.010** (0.005)	0.001 (0.003)
Extraversion	0.011*** (0.004)	0.003 (0.003)	0.012*** (0.004)	0.003 (0.003)	0.012* (0.006)	0.004 (0.005)
Two-way interactions						
Info * Openness	0.004 (0.008)	-0.000 (0.006)				
Role * Openness	-0.006 (0.010)	-0.010* (0.006)				
Info * Conscientiousness			-0.005 (0.010)	-0.004 (0.007)		
Role * Conscientiousness			0.009 (0.012)	-0.010 (0.007)		
Info * Extraversion					-0.004 (0.009)	-0.001 (0.006)
Role * Extraversion					0.004 (0.010)	-0.001 (0.007)
Observations	1682	3513	1682	3513	1682	3513

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: ITTs reported with respect to the control group. Each estimation controls for the covariates of table I (refer to main article), including applications at BFW and the receipt of other scholarships at baseline.

Table A3:
Impact of differences in personality traits and cognitive test scores:
OLS (2/2)

	Agreeableness		Neuroticism		Cognitive test scores	
	(1)	(2)	(3)	(4)	(5)	(6)
	Men	Women	Men	Women	Men	Women
Dep.: BFW application W2						
Information treatment	0.002 (0.009)	0.000 (0.007)	0.007 (0.010)	0.000 (0.007)	0.004 (0.010)	-0.000 (0.007)
Role model treatment	0.025** (0.011)	-0.002 (0.007)	0.026** (0.012)	-0.004 (0.007)	0.023** (0.011)	-0.003 (0.007)
Agreeableness	0.002 (0.006)	0.005 (0.005)	0.003 (0.004)	0.002 (0.003)	0.003 (0.004)	0.002 (0.003)
Neuroticism	0.002 (0.005)	-0.003 (0.003)	-0.005 (0.006)	-0.004 (0.006)	0.002 (0.005)	-0.003 (0.003)
Cognitive test score	-0.003 (0.004)	0.001 (0.003)	-0.003 (0.004)	0.001 (0.003)	-0.003 (0.007)	0.005 (0.005)
Two-way interactions						
Info * Agreeableness	-0.007 (0.008)	-0.003 (0.007)				
Role * Agreeableness	0.010 (0.009)	-0.004 (0.006)				
Info * Neuroticism			0.011 (0.010)	-0.000 (0.008)		
Role * Neuroticism			0.010 (0.012)	0.003 (0.008)		
Info * Cognitive test score					-0.004 (0.010)	-0.006 (0.007)
Role * Cognitive test score					0.003 (0.012)	-0.008 (0.006)
Observations	1682	3513	1682	3513	1682	3513

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: ITTs reported with respect to the control group. Each estimation controls for the covariates of table I (refer to main article), including applications at BFW and the receipt of other scholarships at baseline.

Table A4:
Influence of similarity on applications in the role model treatment group

	(1)	(2)	(3)
Non-academic background	0.024*** (0.008)	-0.037 (0.069)	0.022*** (0.008)
Female	-0.019* (0.010)	-0.018* (0.010)	-0.110 (0.073)
Matching criteria			
Same party	-0.015 (0.016)	0.002 (0.019)	-0.045 (0.035)
Same religious denomination	-0.033 (0.034)	-0.082 (0.052)	-0.047 (0.055)
Same field of studies	0.006 (0.009)	0.014 (0.012)	0.020 (0.017)
Same gender	-0.002 (0.010)	0.004 (0.011)	-0.021 (0.028)
Interactions with matching criteria			
Same party * Non-academic		-0.031 (0.031)	
Same religious denom. * Non-academic		0.103 (0.065)	
Same field * Non-academic		-0.014 (0.017)	
Same gender * Non-academic		-0.010 (0.019)	
Same Party * Female			0.055 (0.039)
Same religious denom. * Female			0.031 (0.066)
Same field * Female			-0.024 (0.020)
Same gender * Female			0.034 (0.029)
Observations	1730	1730	1730

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: The table contains results of OLS regressions of the application in wave 2 for the second treatment group only. Results from non-linear models are similar. Each estimation controls for the covariates of table I (refer to main article), including applications at BFW and the receipt of other scholarships at baseline. All similarity dummies are equal to 1 if the characteristics of the participant and the role model coincide and 0 otherwise.

Table A5:
Influence of similarity on applications in the role model treatment group
by number of similarities

	(1)	(2)	(3)
Non-academic background	0.023*** (0.008)	0.028* (0.017)	0.022*** (0.008)
Female	-0.019* (0.010)	-0.018* (0.010)	-0.048 (0.032)
Number of similarities			
One of Four	0.012 (0.033)	0.025 (0.037)	0.004 (0.058)
Three of four	0.015 (0.011)	0.011 (0.013)	-0.013 (0.034)
Four of four	-0.003 (0.010)	0.012 (0.014)	-0.035 (0.033)
Interactions with no. of similarities			
One * Non-academic		-0.025 (0.068)	
Three * Non-academic		0.005 (0.021)	
Four * Non-academic		-0.027 (0.020)	
One * Female			-0.018 (0.060)
Three * Female			0.034 (0.036)
Four * Female			0.039 (0.035)
Observations	1730	1730	1730

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: See notes of table A4.

Table A6:
Influence of self-assessed fit on applications in the role model treatment
group: OLS

	(1)	(2)	(3)
Non-academic background	0.031** (0.012)	0.030** (0.012)	0.030** (0.012)
Female	-0.023* (0.013)	-0.020 (0.013)	-0.021 (0.014)
Self-assessed personal fit with BFW			
(Very) good fit	0.036*** (0.013)	0.037*** (0.013)	0.037*** (0.013)
(Very) bad fit	0.009 (0.014)	0.008 (0.014)	0.010 (0.014)
Matching criteria			
Same party		-0.012 (0.020)	
Same religious denomination		-0.040 (0.049)	
Same field of studies		0.013 (0.012)	
Same gender		0.007 (0.013)	
Number of similarities			
One of four			-0.009 (0.040)
Three of four			0.020 (0.016)
Four of four			0.003 (0.016)
Observations	1110	1110	1110

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Notes: The table contains results of OLS regressions of the application in wave 2 on a set of covariates for the second treatment group only. Results from non-linear models are similar. Each estimation controls for the covariates of table I (refer to main article), including applications at BFW and the receipt of other scholarships at baseline. Reference category of the self-assessed fit variable is “partly, partly” fit between the respondent and the matched BFW. I dropped those who answered “don’t know” (approximately 12% of cases) and for whom self-assessed fit is therefore missing.

Table A7:
Application requirements of the German Begabtenfoerderungswerke with religious association

Association Name	Eligible semesters	Eligibility criteria	Formal requirements	Application deadline
Muslim Avicenna-Studienwerk	BA: 1-2; MA: before start	High performance; social engagement; confession to Islam; interest in intercultural dialogue	No part-time studies; Muslim confession – exceptions possible on rare occasions	01.04.; 01.10. (still unknown at the time of the experiment because newly established)
Catholic Cusanuswerk	BA: 1-2; MA: before start	High performance; interdisciplinary focus; personality; social engagement; attachment to church	Catholic confession	01.07.
Jewish Ernst-Ludwig-Ehrlich Studienwerk	BA: 1; MA: before start	High performance; social engagement in Jewish community or other areas	Attachment to Jewish community	01.07.; 01.01.
Protestant Evangelisches Studienwerk Villigst	BA: 1-2; no MA	Social engagement; enthusiasm in own studies; good performance; interest in interdisciplinary topics	Attachment to protestant church favored; exceptions for students > 35 or second degrees possible; no part-time, distance or dual studies	01.03.; 01.09.

Notes: Wording and order of different eligibility criteria and formal requirements very close to current information provided on the respective BFWs' websites. Applicants may not exceed the number of maximal semesters which is contained in "Eligible semesters" when applying – calculations were based on a prescribed period of study of 6 semesters in the Bachelor's (BA) and 4 semesters in the Master's (MA) degree. Programs for PhDs and special programs for certain fields of studies etc. are not contained. Abbreviations: STEM = science, technology, engineering, and mathematics; uni AS = university of applied sciences.

Table A8:
Application requirements of the German Begabtenförderungswerke with political association

Association	Name	Eligible semesters	Eligibility criteria	Formal requirements	Application deadline
Social Democracy	Friedrich Ebert Foundation	BA: 1-3; MA: before start	Political and/or social engagement in cohesion with social democracy; talent; personality	Depends*; no part-time or second degrees	30.11., 30.4.
Liberal	Friedrich Naumann Foundation	BA: 1-4; MA: 1-2	High or outstanding performance; interdisciplinary interest; personality; liberal political and/or social engagement	No part-time, dual degree or second degree studies; no age restriction	15.11.
Christian, conservative	Hanns Seidel Foundation	Uni: BA: 1-2; Uni AS: BA: 1-3; MA: before start	High performance; social engagement; Christian social values; personal qualification	No second degree students; < 32 years	15.01.; 15.07.
Green	Heinrich Boell Foundation	BA: 1-3; no MA	Outstanding performance; interest in social/political issues; personality; supports the foundation's goals; focus on non-traditional, female, STEM- and uni AS students	No part-time, dual degree or second degree studies; no age restriction	Uni: 15.1., 15.7.; uni AS: 31.05., 30.11.
Christian, liberally conservative	Konrad Adenauer Foundation	BA: 1-2 if no MA intended; otherwise: 1-6; MA: before start	Cognitive abilities; high performance; interdisciplinary interest; supports the foundation's values; social engagement; personality	Dual studies possible if not part-time; no second degrees; distance studies possible; < 36 years	15.01.; 01.07.
Democratic socialism	Rosa Luxemburg Foundation	BA: 2-3; MA: 1	High performance; social engagement in cohesion with socialist/foundation's values; female, needy and non-academic students favored	Dual studies possible if not part-time; no second degrees	15.10.; 15.04.

Notes: See table A7. * Special requirements with respect to financial need, subject, high school GPA for freshmen.

Table A9:
Application requirements of the German Begabtenfoerderungswerke with other association

Association Name	Eligible semesters	Eligibility criteria	Formal Requirements	Application deadline	
Company- close	Foundation of German Business	BA: 1-2 if no MA intended; otherwise: BA: 1-6; MA: before start	High performance; social engagement; single-mindedness; social competence; general knowledge; joined-up thinking; ability to communicate	No second degree students; < 33 years	Flexible, depends on location
Ideologically neutral	German National Scholarship Foundation	Proposal: BA: 2-4, MA: 1-2; application: BA: 1-2, no MA	“Performance, initiative, responsibility”	No second degree students; no part-time students; dual studies possible; < 35 years	18.02.
Close to trade unions	Hans Boeckler Foundation	Flexible	Financial need; high achieving; social engagement	Special requirements for different programs, e.g. membership in a trade union	Depends on type of program

Notes: See table A7.

Appendix references

Costa Jr., Paul, Antonio Terracciano, and Robert R. McCrae, "Gender Differences in Personality Traits Across Cultures: Robust and Surprising Findings," *Journal of Personality and Social Psychology* 81 (2001), 322-331.