



# The role of information in the application for highly selective scholarships: Evidence from a randomized field experiment



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## ARTICLE INFO

### Keywords:

Information asymmetries  
Student financial aid  
Merit-based scholarship  
Role model  
Field experiment

### JEL classification:

I22  
I24  
D83

## ABSTRACT

This paper analyzes whether information asymmetries prevent students from a non-academic background, i.e., students who are the first in their families to study, from applying for highly selective scholarships. I randomly assigned German higher education students to receive either general information on these scholarships or additionally personalized information on details of the application process conveyed by a similar role model. The combination of the general information with the role model interview significantly increased application probabilities for scholarships of students from non-academic families. Providing general information on the scholarship system only triggered students' own information search for alternative funding sources and increased application rates for other not federally funded scholarships.

## 1. Introduction

The German government currently spends approximately EUR 244 million of fiscal revenue (Federal Ministry of Education & Research, 2017) to provide the most talented students in higher education with highly selective scholarships—irrespective of their socio-economic background. Yet, two thirds of all German scholarship holders come from families where at least one parent attained a university degree, although these students only make up half of the overall student population (Middendorff, Isserstedt, and Kandulla, 2009, p. 24). The magnitude of this difference is surprising considering that differences in university grades between students from an academic and a non-academic background are very small (Aspelmeier, Elliott, Love, McGill, & Pierce, 2012; Delaney, Harmon, & Redmond, 2011).<sup>1</sup>

This paper investigates whether equally qualified students apply less frequently for highly selective scholarships if they are from a family without university experience. Furthermore, I study in a randomized field experiment with over 5000 German students whether mitigating information asymmetries increases the application rates of students from non-academic backgrounds.

Scholarships in Germany are tax-funded, but awarded by privately-owned providers in a very competitive selection process to high-achieving applicants. The government sets formal baseline eligibility

and allows the 13 providers to define their own additional eligibility criteria. Consequently, the criteria vary extensively and are often not clear-cut. For example, most providers define no stringent grade point average needed to apply. For other selection criteria, such as certain personality traits, specifying cut offs is impossible. This lack in transparency leaves room for information asymmetries, risks talent loss of qualified low socio-economic status students, and reinforces social inequalities. The latter is further exacerbated by numerous non-monetary benefits from scholarships such as courses, personal support, and access to a social network of many high-profile alumni, which boost scholarship holders' careers after graduation.

By comparing the reactions of students to two different experimental information treatments, the field experiment provides insights into two manifestations of information asymmetries. First, prospective applicants need to know the scholarship providers and their application requirements. As currently only 1% of all German higher education students are funded by these highly selective scholarships, compiling the distinctive details of the respective application procedures is challenging. This is especially true for students from families (and social surroundings) where no one has studied and no one can contribute information on the existence and characteristics of scholarships.<sup>2</sup> The general information treatment where participants received basic, publicly available information on scholarships addresses mainly this

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<sup>1</sup> “Academic background” denotes families where at least one parent attained a university degree. “Non-academic background” denotes families where no parent attained a university degree.

<sup>2</sup> Furthermore, those students lack parents' “insider information” on student financial aid applications. This additional effect is addressed with the role model treatment discussed below.

information asymmetry.

Second, potential applicants have to rate their own performance against that of their competitors in the selection process. Although all students face uncertainty about the sufficiency of their own qualification, students from non-academic family backgrounds are disadvantaged in various ways. First, they can rarely benchmark their own performance against acquaintances who were successfully awarded a scholarship. Second, the “cultural centeredness” (Steele, Spencer, and Aronson, 2002, p. 420) of the German scholarship body reinforces the scholarship providers’ rather elitist appeal.<sup>3,4</sup> Consequently, even high-achieving students of low socio-economic status might worry that stereotypes about an “educationally deprived” background affect their chances to succeed (Steele et al., 2002, p. 422). The feeling of not belonging to the elite might put the applicants’ performance in the selection process under a stereotype threat or might even put students off applying entirely. Therefore, I provide participants in a second treatment group not only with the general scholarship information, but additionally with customized information from an interview with a current scholarship holder. This scholarship holder resembled the participant in several characteristics, acting as a role model. This second treatment aims at increasing the students’ sense of belonging to a system perceived as exclusionary. Also, the role model treatment intends to provide insider information similar to that shared by parents or peers experienced with the German scholarship system.

My results provide evidence of information asymmetries and differences in previous applications between students from an academic and a non-academic family background. Both treatments increased the scholarship-knowledge of students from non-academic families. Moreover, students from a non-academic family background who were matched into the role model treatment group were twice as likely to apply for highly selective scholarships. Restricting the sample to the most eligible students increases role model treatment effects substantially. Providing the general information treatment only did not affect application rates for highly selective scholarships. This may be because it triggered the students’ own information search for other, less selective, aid programs, and increased applications there.

The contribution of this paper is threefold. First, the role model treatment goes beyond providing objective information and exploits both customized information and the power of connection with a similar successful person. Thereby, I simulate the effects of an effective treatment that schools and universities could adopt quite easily. Second, the paper provides evidence that access to specific information in a system without tuition fees can effectively increase students’ applications for scholarships. I focus on students’ applications because the scholarship providers’ choice is limited to the pool of applicants. Therefore, from a policy perspective, equal opportunities at the stage of applications are the basis to secure an efficient and equitable allocation of funds. Third, to the best of my knowledge, I provide the first evidence of scholarship applications and scholarship knowledge in Germany.

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 scholarships in Germany. Section 4 details the experimental set-up. Section 5 describes the data and provides brief descriptive analyses on heterogeneous information asymmetries and application experiences at baseline. Section 6 reports results of the experiment, and Section 7 concludes. The online appendix contains supplemental tables and figures, information on several robustness checks, and the survey instruments for both treatments.

<sup>3</sup> A group is culturally centered if members of a group share a specific exclusionary characteristic (for example social identity) and communicate the importance of this characteristic (Steele et al., 2002, p. 420).

<sup>4</sup> Translated literally, German scholarship foundations provide funding on grounds of endowment rather than performance. Another example is that the Bavarian scholarship programs are regulated in the “Bavarian Elite Aid Act”.

## 2. Previous literature

Taken as a whole, evidence on the effectiveness of information interventions in educational contexts is mixed. Whether interventions are effective depends on both the institutional contexts and the specific design of the information.

One major strand of literature investigates the effect of providing general non-customized information (e.g., statistics or leaflets on the returns to education). When official statistics are unavailable, not reliable, or poorly understood, a general information treatment can effectively increase years of schooling (Jensen, 2010), grades, and perceived returns to education (Nguyen, 2008) in developing countries or rural areas. In contrast, providing general information in industrialized countries has not increased take-up of need-based student financial aid (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2012; Booij, Leuven, & Oosterbeek, 2012), college enrollments (Carrell & Sacerdote, 2013), or channeled enrollment to degrees with higher educational returns (Kerr, Pekkarinen, Sarvimäki, & Uusitalo, 2014).<sup>5</sup>

There is less evidence on interventions using customized information or providing personal assistance. Bettinger et al. (2012) study students’ completion of the highly complex free application for federal student aid (FAFSA), which is central to access funds from most student aid programs in the US. The authors explicitly test the advantages of providing personalized information and counseling over providing general information on student financial aid. They find that only students in the personally assisted group, but not in the other groups, were significantly more likely to receive aid, enroll, and persist in college.

In contrast, recent studies show that customizing information can positively affect low socio-economic status students’ choice of more selective institutions or degrees (Hastings, Neilson, & Zimmerman, 2015; Hastings & Weinstein, 2008; Hoxby & Turner, 2013). Coaching and counseling have also been found to increase students’ organizational efforts, retention, and college completion (Bettinger & Baker, 2011; Castleman, Page, & Schooley, 2014), but also the quality of educational choices and later labor market outcomes (e.g., Borghans, Golsteyn, Stenberg, & van Wouwe, 2015; Carrell & Sacerdote, 2013; Saniter & Siedler, 2014).

Another possible way to increase the targeting of information is to send role models (or: peer counselors) to students. Role models enhance the credibility of the information provided, increase the sense of belonging, and can induce participants to emulate them. Social psychology studies have found that role models can be especially effective in stereotyped contexts where the performance of a specific group is negatively stereotyped, e.g., math tests (Marx & Roman, 2002) and university performance of students from non-academic families (Stephens, Hamedani, & Destin, 2014). Two studies from economics, Nguyen (2008) and Dinkelman and Martínez (2014), provide evidence that role models of similar background can decrease school absence and positively impact other outcomes of primary and secondary school children in Madagascar and Chile. In contexts with potential stereotype threat, role models need not even share the stereotyped social identity (Steele et al., 2002, p. 428) although shared characteristics can increase effectiveness (Behncke, Frölich, & Lechner, 2010; Marx & Ko, 2012).

In this study, I analyze the effects from both a general information treatment and a combined treatment, containing a role model interview with customized information. What is new about the treatment design here is that participants are given different role model interviews depending on the resemblance to the respective role model and the best matching scholarship foundation. Thereby, the interview is customized to the participant and provides insights into the application process of

<sup>5</sup> Peter and Zambre (2017) show, however, that information provision in German high schools can increase enrollment intentions of students from a non-academic family background while decreasing enrollment intentions of students from an academic family background.

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