



Intended college enrollment and educational inequality: Do students lack information?*



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ABSTRACT

Despite increasing access to university education, students from disadvantaged or non-academic family backgrounds are still underrepresented in universities. In this regard, the economics literature has focused on the role of financial constraints as a cause of these observed differences in educational choices. Our knowledge of potential effects of other constraints regarding university education is more limited. We investigate the causal relationship between information and educational expectations using data from a German randomized controlled trial in which students in high schools were given information on the benefits of as well as on different funding possibilities for university education. We find that the provision of information increases intended college enrollment for students from a non-academic family background, both two to three months and one year after the intervention. In contrast, it leads students from academic backgrounds to lower their enrollment intentions in the short run. However, this effect does not persist. Our results suggest that educational inequality can be reduced by providing students from non-academic families with relevant information.

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1. Introduction

Around the world, post-secondary educational decisions are consistently related to individuals' socio-economic background. In Germany, the probability of starting university education is 37% for students with a university entrance qualification from non-academic backgrounds,¹ but the probability is 84% for respective students from academic backgrounds (Middendorff, Apolnarski, Poskowsky, Kandulla, & Netz, 2013). The economics literature has focused on the role of financial constraints as a cause of these observed differences in educational choices. This fo-

cus stems partly from the fact that most studies are based on English-speaking countries where tuition fees present a high financial burden. In countries like Germany, however, university education is free of charge² and the government provides means-tested financial support to finance living expenses. Thus, financial constraints are less likely to explain the observed differences in enrollment rates. The results of Steiner and Wrohlich (2012) support this argument, as they find only a small elasticity of student aid (BAföG) on participation in tertiary education in Germany.³

A relatively understudied explanation for the differing decisions to enroll in college for students from different socio-economic background is a potential lack of information. Given that educational choices are usually modeled as the result of cost-benefit considerations, it is essential that students know about costs and benefits of university education and how they compare to the alternatives. Since the odds of success and the returns to education are uncertain, students must base their decisions on the

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¹ Students are considered to come from a non-academic family background if none of their parents holds a university degree.

² In 2006, seven out of sixteen states in Germany introduced tuition fees (around EUR 1000 per year), which triggered a lively discussion about fairness in access to university education. However, by 2014 all states had abolished tuition fees.

³ Even in the English-speaking world the effect of financial aid programs is mixed (for an overview see Dynarski, 2002).

expectations they form using the information available to them at the time. These expectations are, in turn, shaped by the socio-economic environment of students (Bifulco, Fletcher, Oh, & Ross, 2014; Manski, 1993a; 1993b; Oxoby, 2008). Consequently, expectations and information sets may differ by students' educational backgrounds. Heterogeneous information sets at the time of the decision making may explain why students from different educational backgrounds arrive at different educational choices. Thus, directly providing information may help students to make a more informed and background independent decision.

This paper investigates how students' intended college enrollment changes as a result of expanding their information set. We use data from a randomized controlled trial in Germany in which high school students were provided with information about the benefits and funding possibilities of university education one year prior to their graduation exams. During this in-class information intervention, labor market benefits of university education were compared to vocational education. The presentation was given using a standardized script in order to ensure that information was consistently presented across the random sample of high schools.

A growing number of studies investigate the relationship between information and educational choices based on field experiments. Some studies provide information about costs and benefits of education (Kerr, Pekkarinen, Sarvimäki, & Uusitalo, 2015; McGuigan, McNally, & Wyness, 2016; Oreopoulos & Dunn, 2013), while other studies focus on specific information, i.e. provide students solely with information on financing possibilities (Booij, Leuven, & Oosterbeek, 2012; Herber, 2015) or examine the effect of information on the application process for college and financial aid (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2012; Hoxby & Turner, 2014) or the admissions process (Castleman, Page, & Schooley, 2014). Furthermore, there are studies exploring the influence of (general) information on educational decision making in developing countries (Nguyen, 2008; Loyalka, Song, Wei, Zhong, & Rozelle, 2013; Jensen, 2010; Dinkelman & Martinez, 2014) where the lack of information may be even more severe as obtaining information is more difficult.

This existing evidence shows that providing information improves students' knowledge. As we would expect, these improvements are larger for students from low socio-economic backgrounds indicating that *ex ante* students might underestimate the returns to post-secondary education or their probabilities of succeeding in higher education. Yet, it is still unclear under which circumstances and in which contexts the provision of information impacts educational choice. The type of information, the mode of presenting information, as well as the duration and the level of interaction varies greatly across studies. Correspondingly, results are mixed, allowing neither the conclusion that information impacts educational choices nor that it does not. Most existing studies, however, find a significant effect on students' knowledge, some find an effect on their educational aspirations, but few studies find an effect on actual behavior. In addition, most evidence refers to countries with comparatively high tuition fees. In these countries the extent to which information can affect educational decisions may be restricted as financial constraints might likely outweigh the lack of information.

Hence, looking at data from a German randomized controlled trial may shed further light on the effectiveness of information provision in a tuition free context. We analyze the differential effects of providing information on intended college enrollment for students' from different educational backgrounds. We estimate the treatment effect on intended college enrollment (1) two to three months after the information provision, i.e. one year prior to high school graduation and (2) one year after

the intervention, i.e. shortly after students graduated from high school.⁴

We argue that students' intended college enrollment is a valid indicator for their actual enrollment, especially the closer enrollment intentions are measured to students' actual post-graduation decision. By analyzing intended college enrollment shortly after high school graduation, i.e. closer to the actual decision making, we might get at the potential effect of providing information on actual college enrollment. In support of this argument the empirical correlation between stated enrollment intentions and actual enrollment is very strong. Based on data from a German panel of high school students, 95% of students who state an enrollment intention half a year prior to high school graduation do enroll within three and a half years after graduation (Heine, 2010; Spangenberg, Beuße, & Heine, 2011).⁵

Additionally, examining intended college enrollment one year prior to high school graduation, i.e. two to three months after the information intervention, can yield further insights on the effectiveness of providing information as it partly abstracts from supply side restrictions. This is because these enrollment intentions are more likely to reflect students' individual preferences for university education that are less dependent on the number of places available at universities or enrollment restrictions based on grade point averages. Thus, while intended college enrollment measured a year prior to high school graduation may already give us an indication about actual choices, enrollment intentions measured shortly after high school graduation, i.e. at the time students make their post-secondary educational decisions, are likely to be linked to actual enrollment.

Our results indicate that students process the information provided and adjust their subjective beliefs on benefits of college education accordingly. The information treatment also affects students' intended college enrollment. We show that the information intervention increases intended college enrollment for students from non-academic family backgrounds by 8 percentage points in the short run, i.e. two to three months after the intervention. This effect persists when measuring intended college enrollment one year later, suggesting that the provision of information might also increase their college enrollment. For students from academic family backgrounds, we find a marginally statistically significant decrease in intended college enrollment two to three months after the intervention. However, this negative effect disappears one year later, indicating that information provision is unlikely to play a role for these students' post-secondary educational choices.

Our study relates to the information treatments assessed by Oreopoulos and Dunn (2013), McGuigan et al. (2016) and Kerr et al. (2015). Yet, to the best of our knowledge, the study by Kerr et al. (2015) is the only other study providing information on the costs and benefits of university education in a tuition free country. Kerr et al. (2015) focus on students' choice of major in Finland and, thus, provide students close to graduation with major-specific information. They find no significant effect on major-specific applications or enrollment rates. The authors conclude that a potential lack of information on labor market success may not be important for educational choices. Complementing their analysis, our study adds to the existing literature by examining the effect of providing information on the decision about

⁴ Hereafter we refer to students' intended college enrollment one year prior to high school graduation as short run since these enrollment intentions are measured shortly after the information provision (two to three months later); similarly, we refer to students' intended college enrollment shortly after high school graduation as enrollment intentions one year later as these are measured one year after the information intervention.

⁵ Although this correlation is not necessarily informative about trajectories for treated students in this paper, it corroborates the predictive power of intentions for actual behavior.

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