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Institutional constraints and the translation of college aspirations into intentions – Evidence from a factorial survey

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Abstract

This article examines under which conditions high school students' college aspirations (unconstrained wishes) translate into (constrained) college intentions. Drawing on the Wisconsin model of status attainment and sociological rational choice theory, it is argued that—while educational aspirations are mainly the result of socialization processes within families and schools—educational intentions are constrained by institutional opportunities and barriers emerging from the higher education system, which might influence students from different social backgrounds in different ways. The focus lies on four institutional characteristics of German higher education institutions—namely geographical distance, reputation, selection procedures and the information provided by colleges. Methodologically, I draw on a factorial survey on application intentions for college programs that is integrated in a survey of Berlin high school students who indicated an aspiration to attend college one year before graduating. The findings suggest that distance from home is an especially strong constraint on college application intentions. The effects of the institutional dimensions, however, rarely differ for students from different social backgrounds. Nevertheless, social background differences can be observed regarding the overall strength of application intentions indicating that socially advantaged students feel generally less constrained by the institutional characteristics presented to them. The implications of these findings are discussed.

Keywords: social inequality, college aspiration, higher education, institutional constraints, Germany, vignette study

1. Introduction

Not all high school students who wish to go to college (i.e., have a high educational aspiration) think that they will be able to fulfill this wish (i.e., have also a high educational intention). This discrepancy between educational aspirations and intentions is stronger for students from more disadvantaged social backgrounds (Hanson, 1994; Stephenson, 1957; Vaisey, 2010). Furthermore, intentions are more

strongly associated with educational attainment and thereby also with later occupational positions and life chances than aspirations (Haller, 1968). To better understand social stratification in modern societies, it is thus important to uncover conditions under which high educational aspirations translate into respective intentions. Against this background, this article examines institutional opportunities and barriers in higher education (HE) that might constrain high school students with college aspirations to also develop more realistic college intentions.

There is a long tradition of research on educational aspirations in sociology and social psychology which has primarily developed in the context of the Wisconsin model of status attainment (for a comprehensive overview see Sewell, Hauser, Springer, & Hauser, 2004). Early on, different authors recognized the multidimensionality of the concept and distinguished between two theoretical constructs: educational aspirations, on the one hand, and educational intentions or expectations on the other (e.g., Haller, 1968; Hanson, 1994; Kerckhoff, 1976; Stephenson, 1957; Vaisey, 2010).¹ While the former are defined as *unconstrained wishes*, the latter are interpreted as *constrained*, because they “take into account real-life perceptions of what is possible given students’ location in the web of class and status relationships” (Lloyd, Leicht, & Sullivan, 2008, p. 3). It is, however, not only students’ location in the stratification system and—related to this—their economic, cultural and social resources (i.e., where students come from) that constrains them (Kerckhoff, 1976). Also actual or perceived *institutional barriers* (i.e., what confronts students) might contribute to the fact that not all students are able (or willing) to translate their college aspirations into respective intentions. For instance, HE programs that charge high tuition fees and apply very strict admission requirements should be rather constraining, especially for socially less advantaged students.

The distinction between aspirations and intentions is not only theoretically important; it should also be reflected in empirical research. Yet, in many studies on the topic “it is unclear whether realistic expectations or idealistic wishes are being measured” (Stocké, Blossfeld, Hönig, & Sixt, 2011, p. 107). Some authors do, however, approach this theoretical distinction empirically, by posing or analyzing differentiated survey questions (e.g., Hanson, 1994; Hauser & Anderson, 1991; Khattab, 2015; Lloyd et al., 2008; Vaisey, 2010). However, while it seems reasonable to measure unconstrained wishes in an abstract way, it is difficult to capture the core of institutionally constrained educational intentions via global survey questions such as “Considering all practical constraints, what is the highest level of education you ever expect to complete?” (Faye Carter, 1999, p. 25; for Germany see Stocké, 2005). Such items include institutional opportunities and barriers only in a very abstract way. This raises the question: What are the “constraints” students consider?

This article approaches these theoretical and methodological challenges by dealing with German high school students from different social backgrounds *who wish to enroll in HE* and examines under

¹ An early terminological suggestion was made by Haller (1968) who distinguished between idealistic and realistic aspirations. However, within the subsequently published literature the terms aspirations for the former and intentions, expectations or plans for the latter are commonly used (e.g., Hanson, 1994; Khattab, 2015) and are also applied in this article.

which conditions they are also more likely to *intend to realize this high educational aspiration* and to apply for college. Existing research on educational aspirations and intentions has concentrated on social-psychological variables (e.g., Sewell & Shah, 1968), the neighborhood and school context (e.g., Alwin & Otto, 1977) as well as subject and track placement (e.g., Buchmann & Park, 2009; Kerckhoff, 1977). I, instead, focus on *institutional opportunities and constraints in the HE system*. Based on rational choice (RC) theory, I examine four characteristics of HE institutions that relate to students' perceptions of costs, benefits and success probabilities—geographical distance, college reputation, selection procedures and information provided by HE institutions—and analyze in what way they discourage high school students or encourage them to follow their college aspiration. These specific HE characteristics can be expected to interact differently with the social background of prospective students as some of them might have a rather socially inclusive influence (e.g., provided information as this reduces existing information asymmetries) whereas others might increase the social origin gap (e.g., distance as this increases costs).

Methodologically, I draw on data from Berlin high school seniors that include a factorial survey on HE application intentions. The factorial survey contains vignettes—or fictive descriptions—on application scenarios for study programs with varying configurations of institutional characteristics (including distance, institutional prestige, selection procedures, information provided by colleges). Students were asked on an 11 point scale whether they would apply under these more or less constraining circumstances. I focus on those students who stated a college aspiration in order to examine under which conditions (presented in the vignettes) this *high aspiration translates into a college application intention* (measured via the vignette ratings).

One advantage of vignettes compared to single survey questions is that they directly cover the institutional set up confronting students rather than abstractly summarizing it. They are thus a more appropriate and direct way to measure constrained educational intentions. Another advantage is that preferences for specific institutional features are not confounded with social-background-specific information. In the vignettes information on study programs is presented to all students that some of them would otherwise not have. Social-background-specific information on educational opportunities (Erikson & Jonsson, 1996) is thus reduced and differences regarding application intentions can be attributed to the influence of institutional features presented in the vignettes rather than information asymmetry.

The article proceeds as follows: In Section 2, I give an overview of the German (higher) education system. In Section 3, I, firstly, review the literature on educational aspirations and intentions and on the influence of college characteristics on the perceptions and decisions of high school students. Based on RC theory, I, secondly, derive general and social-group-specific hypotheses about the influence of these institutional characteristics on college application intentions. In Section 4, I describe the research design, including the factorial survey, data base, variables and analytical strategy. Afterwards, I present the findings (Section 5) before summarizing and discussing them (Section 6 and 7).

2. Notes on the German (higher) education system

As the German (secondary) education system is highly stratified (Allmendinger, 1989), in 2012 only 57% of all school leavers graduated from an upper secondary school thereby obtaining a HE entry certificate—the so called (*Fach*)Abitur (Authoring Group Educational Reporting, 2014, p. 91). Furthermore, only around 70% of Abitur holders eventually enroll in a HE program (Authoring Group Educational Reporting, 2014, p. 124). Despite strong social inequality at earlier transitions, also the transition to HE is socially selective (e.g., Hillmert & Jacob, 2010; Mayer, Müller, & Pollak, 2007), even though previous tracking leads to a positive selection of upper secondary students in terms of school performance and motivation (Mare, 1980). One explanation for this phenomenon is the strength of the German vocational education system which especially attracts students from lower social backgrounds (Powell & Solga, 2011). For apprenticeships in some attractive occupations (e.g., bank and insurance clerks) the Abitur is a legal or de facto requirement. Thus, some students obtain the Abitur to increase their chances of getting into specific vocational programs and not primarily to enter HE (Protsch & Solga, 2015; Schindler & Lörz, 2012).

In contrast to the stratified secondary system, the German HE system has long been characterized as homogeneous in terms of institutional quality and prestige, with the differentiation between universities and universities of applied sciences as the main stratifying element (Teichler, 2005).² The homogeneity of the university sector has, however, changed in the course of internationalization and expansion processes. In order to enhance competitiveness, differentiation and profiling of universities was politically fostered, for instance through the so-called excellence initiative (Hartmann, 2006). Despite this development, the German HE system is still much less stratified than, for instance, the US or UK system.

Formally, access to German HE is open to all those who hold a HE entrance certificate.³ However, universities are—under certain conditions—allowed to restrict student numbers to cope with the growing number of applicants. In 2013, 51% of all undergraduate programs were restricted, with strong variation between federal states and subjects (Herdin & Hachmeister, 2014). Selection criteria beyond the grade point average (GPA) have long been negligible. However, German HE institutions have become more autonomous in defining their admission procedures since a reform in 2004 (Heine, Didi, Haase, & Schneider, 2008). Accordingly, some faculties complement students' GPA with other

² The more practically oriented universities of applied sciences developed since the 1970s and expanded rapidly (Mayer et al., 2007). In 2012, they accounted for around 37% of new enrolments. Even though also the number of private institutions increased, still only six percent of all students are enrolled in private institutions (Authoring Group Educational Reporting, 2014, p. 120).

³ More recently, also vocationally qualified persons can enroll in HE under certain conditions. However, they still account for only 2.6% of the student population (Authoring Group Educational Reporting, 2014, p. 126).

admission instruments such as interviews, aptitude tests or letters of motivation (Heine, Briedis, Didi, Haase, & Trost, 2006).⁴

Around 400 officially recognized German HE institutions exist (Authoring Group Educational Reporting, 2014, p. 29, 120) meaning that geographical distances between students' place of residence and the closest university are rather moderate (not exceeding 90 km (Spieß & Wrohlich, 2010, p. 474)). However, as many German college programs restrict the number of places, one could expect that also students from urban areas need to move in order to enroll in their preferred subject. Despite this mobility pressure German high school graduates have a strong preference for HE institutions that are close to their home town: in 2005, 86% of all new students studied in the same federal state in which they obtained their Abitur or in a neighboring one (KMK, 2007). Moreover, the share of immobile students from socially disadvantaged backgrounds was above average (Authoring Group Educational Reporting, 2014, p.125).

In Germany, the financial burden of HE attendance is rather low. Study fees have been (re)abolished in all federal states and means-tested financial aid (50% grant, 50% interest free loan) is available for students from lower-income families. Therefore, moving costs can be expected to be the most substantial component of study costs.

In summary, compared to educational systems with a less stratified secondary but a more diversified tertiary sector, such as the Anglo-American ones, the German system is particularly interesting, as it should yield conservative estimates of the influence of HE institutional constraints on college intentions, because a positively selected group of high school students is confronted with a comparably homogeneous HE system.

3. Previous research and theoretical considerations

In the following, I will review the literature on educational aspirations and intentions and on the influence of college characteristics on individual perceptions and decisions. Based on RC theory, I will afterwards explain why and how these institutional characteristics influence the (social-background-specific) translation of college aspirations into intentions.

3.1. Why do institutional opportunities and constraints matter?

Hanson (1994) conducted one of the few studies that explicitly address differences in college aspirations and intentions (see also Stephenson, 1957). She used longitudinal data on US high school

⁴ Heine et al. (2006) have shown that, in 2005, around 28% of German study programs applied aptitude tests, eight percent conducted an interview and five percent required the submission of a letter of motivation. According to a survey among first year students in 2011/12, ten percent of them had to attend a special application procedure to be admitted to their study program (Scheller et al., 2013, p. 72). This number only refers to those students who got admitted and is thus likely to be underestimated as it does not include those who were deterred from or rejected after applying.

seniors to examine (a) whether they reported a discrepancy between college aspirations and expectations (first wave), (b) whether expectations were reduced over time and (c) whether they could be achieved. Social origin is especially influential for the first dimension: whereas she found evidence of misaligned aspirations and expectations for 25% of students from lower social backgrounds, this was the case only for 12% of students from higher social backgrounds. Also Vaisey (2010) found that 14% of non-poor youth reported lower expectations than aspirations, whereas 31% of poor respondents stated the same.

Why do these differences between aspirations and intentions occur? Early on, Kerckhoff (1976) criticized the socialization approach taken by the Wisconsin model for neglecting the influence of opportunity structures on students' perceptions. Some authors have incorporated this idea and interpret educational aspirations as "desired outcomes that are not limited by constraints" (Hauser & Anderson, 1991, p. 270). Educational intentions, on the other hand, are understood as conscious reflections of external barriers and opportunities (Kerckhoff, 1976).

From a comparative perspective, Buchmann and Park (2009, p. 249) have shown that in stratified educational systems such as the German one, educational intentions are strongly influenced by school track because students' assignment to "different educational trajectories sends them a clear message about the qualifications they will receive" (see also Kerckhoff, 1977). Yet, variation regarding students' educational aspirations and intentions also exists within a given school track: Despite becoming eligible for HE, some high school students do not aspire to enroll in college (see Section 2) while others have a college aspiration but might nevertheless feel unlikely to achieve this goal. For the latter group, constraints are less likely to be imposed by the secondary school system but by institutional features of the HE system.

3.2. Which institutional opportunities and constraints influence college intentions?

Several studies have identified different characteristics of HE institutions—especially distance, academic reputation or graduates' labor market prospects—as being relevant for students' application/enrollment intention or decision (Briggs & Wilson, 2007; Drewes & Michael, 2006; Hällsten, 2010; Hoxby & Avery, 2013; Simoes & Soares, 2010; Soutar & Turner, 2002; for descriptive evidence on Germany see Scheller, Isleib, & Sommer, 2013).

Some of these studies approach undergraduate students retrospectively to detect characteristics that might have influenced their choices (Briggs & Wilson, 2007; Simoes & Soares, 2010). This design might lead to biased answers as decisions that have already been taken are often rationalized afterwards (Chapman, 1986).

A more direct and objective approach is, for instance, applied by Drewes and Michael (2006) for Canada, Hoxby and Avery (2013) for the US and Hällsten (2010) for Sweden. These studies use data on applications (or sending of test scores as application proxy) and analyze if college characteristics influence application decisions. In all three studies, distance has a strong negative influence.

Furthermore, Hällsten (2010, p. 842) concludes that the preferences of students from lower social backgrounds “seriously limit the range of possible alternatives” that are open to them. The findings of Hoxby and Avery (2013) indicate a similar pattern (especially regarding the selectivity of colleges).

The studies cited so far focus on students who are already enrolled in or applied for college programs thereby neglecting the factors influencing those who are already deterred in the pre-application phase. Thus, for high school students with college aspirations who nevertheless refrain from their wish (by not even applying for HE or because they have been rejected), it is impossible to examine the influence of college attributes on their decision against applying or enrolling.

Studies approaching high school students, preferably close to the time of application decisions, avoid this limitation. However, there are also problems with asking students directly about institutional characteristics that they consider important for their educational intentions. Direct and often abstract survey questions can hardly reflect the institutional complexity that confronts high school students. Soutar and Turner (2002) hence employed a conjoint analysis: They presented descriptions of different hypothetical universities with randomly varied attributes to Australian high school students. Afterwards, students were asked to indicate their preferences. The findings suggest that course suitability, academic reputation and future job prospect were among the most important characteristics. The factorial survey applied in the current study (see Section 4.1) follows a similar logic in that it presents holistic application scenarios instead of individual college characteristics.

Despite their limitations, the studies discussed here enhance our knowledge on college attributes that influence (d) high school or college students. Most of them devote, however, little attention to social inequality (important exemptions are Hällsten, 2010; Hoxby & Avery, 2013). The following section thus focusses on social background differences and discusses in what way institutional opportunities and barriers in the HE system interact with students’ social background in shaping their educational intentions.

3.3. College intentions, institutional constraints and students’ social background

How can differences in educational intentions be understood theoretically? Different authors emphasize that educational intentions (unlike aspirations) have a rational core (e.g., Morgan, 1998; Stocké, 2005). This interpretation is incorporated in several studies that understand intentions as deriving from rational calculations and thus locate them theoretically and empirically within a RC framework (e.g., Becker & Hecken, 2009; Lörz, 2012). I adapt this general understanding to explain from a RC perspective why social inequality in educational intentions evolves and how students’ social background can be expected to interact with institutional constraints.

Sociological RC theory (e.g., Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996) focuses on the individual decision-making process, thereby assuming that students calculate the expected costs (C), benefits (B) and success probabilities (P) of available educational (or non-educational) options and then

choose the one that promises the highest expected utility (U). Social inequality in educational decisions results from social-background-specific evaluations of these components that are due to differences in social, cultural and economic resources in the family (and wider social network) and similarities in how important it is “to avoid downward social mobility” (Breen & Goldthorpe, 1997, p. 283). The latter makes a HE degree particularly beneficial for students from privileged social backgrounds as such a degree is often crucial for them to maintain their parental social status. In contrast, for students from lower social backgrounds a vocational degree is often sufficient to avoid social demotion (Breen & Goldthorpe, 1997). However, educational expansion and credential inflation might have led students from privileged social backgrounds to consider “ordinary” HE degrees as an insufficient strategy to secure social reproduction. They might thus consider it increasingly important to “use their advantages to secure quantitatively similar but qualitatively better education” (Lucas 2001:1652). Furthermore, due to resource constraints, the relative costs of HE are higher for students from lower social backgrounds, even if the absolute costs do not differ in general. Finally, the expected probability of success in HE is smaller for them, as they perform less well at school (so-called “primary effects” in Boudon’s (1974) terminology). But they also perceive and actually have lower success chances net of school performance, as they have less information and support from their social networks to build on (Erikson & Jonsson, 1996).

A parsimonious formalization of RC theory was proposed by Erikson and Jonsson (1996, p. 14): $U = PB - C$. Students choose HE if its expected utility U is higher than the utility of alternative options. If the probability of graduating (P) is 0 also the potential benefit of a HE degree (B) is 0 while the costs (C) remain the same. For this study this means that college aspirations translate into college intentions if $U(\text{HE}) > U(\text{alternatives})$.

From these general theoretical assumptions, the first hypothesis on the social-background-specific *strength* of college intentions can be derived. If it is true that avoiding downward social mobility is a major force underlying educational decisions (Breen & Goldthorpe, 1997), for students from privileged backgrounds it should always be more beneficial and thus more rational to attend college than to choose non-college options (as long as their academic ability suffices for obtaining a degree), even if a certain college program does not fully meet their preferences. Furthermore, when considering HE attendance, they should be less constrained by costs and perceived success probabilities. I thus assume that socially privileged students have a higher *level* of application intentions net of varying institutional constraints than their less privileged peers (**H1**).

Sociological RC theory, however, acknowledges that individual decisions are embedded in institutional contexts: they depend on previous educational decisions (e.g., advanced placement courses or the type of upper secondary school the student has chosen) as well as on the post high school opportunity structure that frames rational evaluations and might change the parameters of the evaluation process. For the students considered in this study—those (soon to be) eligible for HE *and* with college aspirations—the institutional set up of HE can be expected to be especially relevant for the translation

of college aspirations into intentions. Students anticipate institutional opportunities and constraints and include them in their rational calculation.

Regarding institutional type, for instance, Reimer and Pollak (2010) have shown that German students from lower social backgrounds more frequently opt for universities of applied sciences instead of traditional universities. Besides institutional type, several further characteristics of HE institutions can be expected to affect students' rational calculations (see Section 3.2). Acknowledging that the selection of college characteristics is not exhaustive, I consider the following four in this article: distance, selection procedures, information and reputation. They refer to specific components of the evaluation process as described below. As intentions precede actual application and enrolment decisions, not only the long-term processes of attending HE and graduating but also the short-term processes of applying and getting admitted should influence rational evaluations of available options:

Distance: expected costs C (of attending HE)

Reputation: expected benefit B (of graduating from a specific HE institution)

Selection procedures: expected probability P (of obtaining a degree and of getting admitted), expected costs C (of applying)

Information: expected probability P (of obtaining a degree and of getting admitted)

In the following sections I briefly explain why and how these college characteristics can be assumed to interact with students' social background in shaping their evaluation of costs, benefits and success probability and thereby influencing their intention to apply for HE.

3.3.1. *Distance (C)*

Studying at a university that is far away from the students' place of residence causes both economic (moving, travel, rental) *costs* and social costs, as it involves leaving social networks and familiar structures (Spieß & Wrohlich, 2009). Even though this applies to all students, students from socially disadvantaged backgrounds have less economic resources at their disposal and are more strongly embedded in their local social networks than their socially privileged peers (Lörz, 2008). Accordingly, several authors have shown that a longer distance between students' place of residence and the closest university leads to a lower enrolment rate, especially for students from low-income families (e.g., Frenette, 2006; López Turley, 2009).⁵ Increasing distance should thus decrease the probability of having an application intention in general (**H2**). This relationship, however, should be stronger for students from socially disadvantaged backgrounds (**H2low**).

⁵ For Germany, evidence on the interaction between social background and distance is mixed. Spieß and Wrohlich (2010) do not find social-group-specific differences—though they report a negative association between distance and HE attendance in general. In contrast, Lörz's (2008) findings suggest that German college students from academically educated families travel longer distances on average.

3.3.2. Reputation (B)

Institutional reputation is related to the *benefit* of educational options, as graduating from a prestigious university promises rewarding labor market outcomes (e.g., Monks, 2000; Rivera, 2011). It might be especially important for students from privileged social backgrounds because—in the course of educational expansion—the value of HE credentials has been deflated. Thus, for privileged students who wish to maintain their parents’ social status, it might be essential to graduate from institutions offering higher rewards (Reimer & Pollak, 2010). This is less the case for students from lower social backgrounds, as they can already reproduce or even enhance their parents’ status by enrolling in a less prestigious institution.

Research confirms that in highly stratified HE systems where prestige is often associated with high economic and social costs, more prestigious institutions yield higher levels of social selectivity (Boliver, 2013; Davies & Guppy, 1997; Jerrim, Chmielewski, & Parker, 2015; Triventi, 2013; for Germany see Winkler, 2014). While quality differentials have recently become more visible in the traditionally homogeneous German HE system, cost differentials between universities are still negligible and myths around particularly prestigious and thus presumably intimidating institutions (“Oxbridge” or the Ivy League) (Shiner & Noden, 2015) do not exist (see Section 2).

In the German context, I thus expect reputation to send positive signals in general and to increase the likelihood that high school students intend to apply (**H3**). This association should, however, be stronger for students from high social backgrounds as they might—due to their status maintenance motive—interpret reputation-related benefits as more valuable (**H3high**).

3.3.3. Selection procedures (P and C)

Theoretically, selection procedures relate to several components of the rational evaluation process and might thus influence the translation of college aspirations into intentions in different ways. Firstly, they might function as pull factors for prospective students, because complex selection procedures⁶—especially aptitude tests—might be interpreted as “pre-tests” by students and increase otherwise missing information on their general ability to study or their match to specific programs. They might thus increase students’ perceived *probability of successfully graduating* from a college program. This might especially—but not exclusively—be important for students from lower social backgrounds as they can less easily retrieve such information from their familial network.⁷ Following this, complex selection procedures should in general increase the likelihood that students with college aspirations intend to apply for HE (**H4**).

⁶ In this case, complex selection procedures refer to attending an interview, submitting a letter of motivation or participating in an aptitude test as compared to simply presenting a high school diploma (see Section 4).

⁷ Complex procedures might also signal program quality as well as motivation of admitted students. Furthermore, a strict selection of students is often positively related to institutional reputation and might thus be interpreted as beneficial, especially by students from privileged social backgrounds. However, in the factorial surveys (Section 4.1) reputation and selection are not confounded, meaning that it is possible to assess the effect of selection procedures over and above its presumed connection to prestige.

However, as complex selection procedures are also related to *material and non-material application costs* (as exemplified by the discussion on test preparation in the US: Buchmann, Condron, & Roscigno, 2010; Grodsky, Warren, & Felts, 2008) they might, secondly, also deter students—especially those from lower social backgrounds who can less easily afford these costs due to less financial resources and support from their social networks. While selection procedures might increase the probability of successfully obtaining a degree (given admission), they might also make it *more difficult to gain admission*, meaning that investments in test preparation may not pay off. Students from privileged social backgrounds are less cost-sensitive, so the anticipation of application costs and admission chances might not constrain their application intention.⁸ Research has shown that complex and restrictive procedures lead—intentionally or not—to a strongly selective student body (e.g., Karabel, 2005; Zimdars, Sullivan, & Heath, 2009). Some studies indicate, however, that it is not so much the direct institutional selection that leads to a socially selective intake of students, but the anticipation of selective application processes—i.e., of their costs and of presumably lower admission chances—that deters certain students (Brown & Hirschman, 2006; Martin, Karabel & Jaquez, 2005). Thus, for students from lower social backgrounds, also a negative influence of complex selection procedures on their intention to apply can be assumed (**H4low**).⁹

3.3.4. Information (P)

The availability and quality of information provided by HE institutions facilitates the assessment of *success probabilities* for getting admitted to a college program (information on application processes and selection criteria) and obtaining a degree (information on study contents and requirements).¹⁰

Even though students are at times suspicious of the presumably biased information provided by HE institutions (Slack, Mangan, Hughes, & Davies, 2014), empirical findings also suggest that students rate institutional sources, especially university websites, as important (Briggs & Wilson, 2007; Simoes & Soares, 2010). Information sources and search patterns, however, differ between students from different social backgrounds (e.g., Erikson & Jonsson, 1997). Besides being embedded in HE-experienced social networks, students from privileged social backgrounds are more likely to use

⁸ Socially advantaged students should be willing to bear the costs of applying for many, also selective programs even if they have low admission chances for some of them; they might still try to get in because the potential benefit of earning a degree exceeds the application costs (especially if one assumes that the probability of obtaining a degree is positively related to the selectivity of the program once students are admitted). Hoxby and Avery (2013), for instance, showed that high-achieving, high-income students applied more often and to more selective colleges than their equally high-achieving, but low-income peers.

⁹ For students from lower social backgrounds I have suggested two opposing hypotheses regarding the influence of selection procedures: The first relates to the (long-term) perception of a higher probability of obtaining a degree, the second to the (short-term) anticipation of the probability of getting admitted given an application and to higher application costs. Given the design, I will only be able to test the total effect of selection procedures.

¹⁰ Depending on the content of the information, it may also relate to the evaluation of costs (e.g., availability of dormitories) and benefits (e.g., information on related occupational fields). Empirically I, however, mainly measure information on success probabilities.

different information sources (university websites among them) to increase their already existing knowledge and to engage in active information search (Slack et al. 2014).

Hence, comprehensive and easily available information should help prospective students to orient themselves within the increasingly complex HE system and should thus positively influence the intention to apply for all students (**H5**). However, information provided by universities should be more important for students from lower social backgrounds, who cannot access the same helpful advice, because their family and wider social network often lack first-hand experience and are culturally more detached from the HE system. Therefore, the association between information and application intentions should be stronger for this group (**H5low**).¹¹

In summary, I have argued that high educational aspirations alone might not be sufficient for pursuing the HE pathway. Students undergo a process in which their aspirations encounter institutional opportunities and barriers in the HE system that influence whether college aspirations are translated into equally high intentions or whether they are adjusted towards more “accessible” options. As the characteristics of HE institutions relate to (differing assessments of) costs, benefits and success probabilities of educational options, I expect their influence to (partly) differ by social background. However, in order to evaluate educational options rationally, students need to be informed about these options. For instance, students need to be aware of institutional prestige or they need to know how to access information before they can assess its utility. It is now widely acknowledged that “individual choices in education are characterized by a high level of uncertainty in a number of dimensions” (de Paola & Gioia, 2012, p. 193). Furthermore, empirical evidence points to social background differences regarding the availability and processing of relevant information (see Section 3.3.4). Thus, when measuring educational intentions, different preferences for institutional characteristics—and hence different cost-benefit-evaluations—might be confounded with social-background-specific knowledge on these characteristics. The factorial survey which I present in Section 4.1 reduces this problem as it levels out information asymmetries by providing information on college programs. The hypotheses on application intentions thus refer to the effect of (social-background-specific) preferences for particular institutional characteristics net of information differentials.

4. Research design

4.1. Factorial survey: constructing application scenarios

¹¹ Comprehensive information can also decrease application intentions, if they indicate, for instance, that the application process is very costly and difficult or if the course’s demands and material costs are very high. With the factorial survey I cannot differentiate between different contents as we only varied the quality of information (comprehensive vs. sparse). I can thus only examine if institutionalized information is generally valued and if this is especially the case for students who can less easily access information through private channels.

Factorial surveys have mainly been applied in research about human judgment (Jasso, 2006). More recently, *behavioral intentions* have also been assessed in studies on hiring and training intentions (Di Stasio, 2014; Karpinska, Henkens, Schippers, & Wang, 2015) or on intentions to accept job offers (Abraham, Auspurg, & Hinz, 2010). To my knowledge, there is no factorial survey on educational intentions.

Factorial surveys follow an experimental logic in that the levels of theoretically important dimensions are varied randomly over the vignettes and—also randomly—assigned to respondents. This avoids selection bias and the influence of confounded variables can be separated making causal claims feasible—“the multicollinearity of the ‘real’ world is avoided” (Rossi, 1979, p.179, emphasis in original). At the same time, they can be included in large scale surveys (Mutz, 2011). In contrast to direct and abstract survey questions, vignettes approximate more realistic situations. In the current study, for instance, they approximate complex institutional configurations of college programs. Furthermore, necessary information to answer questions are not imputed by the respondents, but standardized by the researcher (Alexander & Becker, 1978). Providing standardized information also means to compensate for information asymmetries between students.

There are, however, also concerns about the external validity of vignettes. This problem might firstly occur when unrealistic scenarios are constructed that do not reflect real decision processes (Wallander, 2009). To circumvent this problem, the vignettes constructed for the current study have been pre-tested with around 25 high school students to secure that they are meaningful for the respondents and that important variables are included. Secondly, vignette answers measure intentions rather than real actions so that it remains unclear whether respondents would act in the same way in similar situations (Collett & Childs, 2011). The current paper is interested in evaluating application intentions and does not claim to measure actual decisions. A validation study conducted by Hainmueller, Hangartner and Yamamoto (2015, p.3995) is, furthermore, encouraging with regard to the external validity of survey experiments. Comparing vignette and conjoint studies on *intentions* to support naturalization in Switzerland with behavioral data, they find that “the effects of the applicant attributes estimated from the survey experiments perform remarkably well in recovering the effects of the same attributes in the behavioral benchmark.”

The vignettes in the current study consist of short text boxes that describe application scenarios for study programs including seven dimensions with two to four levels (Table 1, a sample vignette is provided in Appendix Figure A1). The vignette universe (Cartesian product of all levels: $3 \times 2 \times 4 \times 2 \times 2 \times 2 \times 2$) consists of 384 vignettes. A D-efficient fraction of 298 vignettes was drawn from this universe and allocated to 76 decks à five vignettes (D-efficiency: 99.9278).¹² These decks constitute a very good representation of the universe in that both orthogonality (minimal correlation between dimensions

¹² The most efficient solution found with the software SAS was sampling 298 vignettes, duplicate some and allocate them to $380/5 = 76$ decks. A D-efficient design (especially regarding the allocation of vignettes to decks) was preferred to minimize high correlations or complete confounding of dimensions within decks.

overall and within decks) and level balance (levels occur with the same frequency) was maximized. This secures maximal precision of parameter estimates as well as high statistical power. All main effects and two-way interactions have been orthogonalized so that these parameters can be estimated independently from each other (for further information on experimental designs see Auspurg & Hinz, 2015; Dülmer, 2007). Appendix Table A2 confirms that there is no correlation between vignette dimensions. Almost perfect level balance can be observed in Table 2 (Section 4.3).

[Table 1]

Each respondent assessed one randomly assigned deck. To reduce sequence effects, the vignette order within each deck was also randomized for each respondent. Furthermore, the number of dimensions (7) and of vignettes per respondent (5) were kept low to reduce fatigue and learning effects (Auspurg & Hinz, 2015). Appendix Table A3 demonstrates that the randomized allocation was successful as correlations between respondents' characteristics and vignette dimensions are negligible.

4.2. Data and sample restriction

Data derive from a panel study called "Berliner Studienberechtigten-Panel" (Best Up). It consists of a sample of 27 schools in Berlin (20% of upper secondary schools) and includes three school types that typically lead to a HE entrance qualification: nine grammar schools (*Gymnasium*), nine vocational grammar schools (*Oberstufenzentren*) and nine comprehensive schools (*integrierte Sekundarschulen*) (for more information on the Best Up data see Peter, Rusconi, Solga, Spieß, & Zambre, 2016).

Within the German HE system, Berlin represents an urban area that offers, on the one hand, plenty of study options¹³ and a comparably differentiated structure in terms of subject offer, reputation and quality. On the other hand, external demand for study places is especially high so that the sampled students are confronted with a special supply-demand relation (KMK, 2007). Given varying institutional and structural HE opportunities between and within German federal states, the restriction to Berlin reduces possibly confounding influences.

To obtain a high share of students from lower social backgrounds and to homogenize the school context the sampling of the 27 schools focused on districts with a high share of low-educated people (ISCED level 0-2) among the adult population. Thus, social background differences can more easily be attributed to the family because they are less confounded with, for instance, a higher quality of schools in privileged districts. The sample is not representative for Berlin or Germany. Thus, rather than providing population estimates the aim of this study is to uncover institutional influences leading to (socially selective) intentions to apply for HE.

¹³ According to a comprehensive data base provided by the German Rectors' Conference (<http://www.hochschulkompass.de/hochschulen/hochschulen-in-deutschland-die-hochschulsuche.html>, accessed: 28/12/2015), 41 HE institutions are listed in Berlin (seven universities, five colleges of art and music, 29 universities of applied sciences). The share of restricted study programs amounts to 65% and thus lies above the German average (Herdin & Hachmeister, 2014).

We aimed to survey the whole cohort of 11th / 12th graders (depending on school type) in these 27 schools in the early summer of 2013, around one year before their final examinations (paper and pencil class-room interview). The second wave was conducted in autumn 2013 at the beginning of the last high school year (personalized online interview).¹⁴ This wave includes the factorial survey and is thus the basis for the following analyses.

As the second survey was conducted online, we were able to measure the duration of specific questionnaire modules. It was thus possible to deliberately exclude respondents who finished the vignette module in less than 25 seconds (4.9% of the sample) as reading a vignette, processing the information and evaluating it in less than 5 seconds is hardly possible.¹⁵ Very fast response times indicate satisficing (Krosnick, 1991; Sauer et al., 2011) and are thus likely to bias the results.

For theoretical reasons, I additionally restricted the sample to those respondents who stated a college aspiration, as I aim to examine under which conditions this aspiration is translated into an application intention (further 16.5% deleted). To do so, I used the following question: “If only your wishes would count: What type of education do you wish to pursue after leaving school?”¹⁶ This leads to a positive selection of the sample in terms of social background and school performance¹⁷ (see Appendix Table A4 for a descriptive comparison between excluded and included cases). After listwise deletion (5.4%), the final case number amounts to 825 respondents (4032 vignette cases).

4.3. Variables

The *dependent variable* measures the *intention to apply under certain conditions* described in the vignettes. As I restricted the sample to respondents who stated a college aspiration, the dependent variable also measures *under which conditions college aspirations translate into application intentions*. The 11 points scale is treated as a metric variable. Methodological comparisons show that there is often rarely a difference between linear and ordered probit or logit models when working with similar vignette scales so that the more easily readable linear models are applied (Auspurg & Hinz, 2015).¹⁸

¹⁴ Number of eligible units wave 1: 2648. Number of completed interviews wave 1: 1578. Response rate wave 1: 60% (40% unit non-response). During the first interview we collected postal and email addresses of wave 1 participants and sent 1559 personalized links for participation in the second survey (1578 – 15 invalid addresses – four wave 1 respondents who did not give their consent to be contacted again). Number of completed interviews wave 2: 1105.

¹⁵ Mean duration of the module: 2 min 50s, median: 2 min 25s. These numbers are similar to response times reported by Sauer, Auspurg, Hinz and Liebig (2011, p. 96) for the first five ratings of equally complex vignettes.

¹⁶ This question originally comes from the German National Education Panel Study (A49_T_Panel_2012©NEPS; see Stocké et al., 2011).

¹⁷ Respondents that have a college aspiration (included in the sample) have on average better grades and more frequently a (double-)academic family background as compared to those without a college aspiration (excluded). Respondents with a migration background are overrepresented in the final sample. This is in line with prior research that reports high educational aspirations of migrants (Kristen, Reimer, & Kogan, 2008).

¹⁸ To secure the robustness of the results, I also run all analyses as ordered probit models with no substantial changes in the results (available upon request).

Social background is operationalized via a composite measure accounting for both parents' education with three categories: no parent with a HE degree (non-academic background), one parent with a HE degree (single-academic background) and two parents with a HE degree (double-academic background). I employ this joined model rather than conventional (only father's background) or dominance (only highest background) models for two reasons. First, if both parents have different educational experiences "it seems to be the case that children are not unequivocally pulled towards the higher status parent's platform, but range somewhere between them" (Korupp, Ganzeboom, & van der Lippe, 2002, p.37). Second, research has shown that joint models are superior in explaining educational attainment or class destination as cultural resources accumulate (Beller, 2009). Accordingly, I expect that students from single-academic backgrounds take an intermediate position in the following analyses. I further expect the difference between students from non-academic and single-academic backgrounds to be larger than the difference between single- and double-academic background students as parents who both lack any HE experience can hardly be a source of HE-related cultural resources or provide access to academic social networks.

Explanatory variables measuring characteristics of HE institutions are four out of seven vignette dimensions (see Table 1 for measurement details): distance between home and university city, reputation, selection procedures and information provided on the university website.

I also include several *control variables* that can be expected to influence application intentions, namely school performance (German and math grades), gender, migration background, school type and the remaining vignette dimensions. Respondents from eight randomly selected schools attended a workshop about study costs, returns and ways to finance HE; this variable is also included. Lastly, the duration of the vignette module and the vignette position within the deck are controlled.

Descriptive statistics are presented in Table 2. Due to the experimental design, the levels of the vignette dimensions occur with the same frequency (level balance).

[Table 2]

4.4. Estimation method

To account for the multilevel structure of the data and thus for the lack of independence of respondents' error terms, linear random intercept models are calculated (Rabe-Hesketh & Skrondal, 2008).¹⁹ Models are calculated for the whole (restricted) sample and separately for the three social background groups. The last column of Table 3 presents results of Wald tests that show whether the model fit increases when all possible interactions between categories of one vignette dimension and categories of social background are added to a model without interactions (for a similar application see

¹⁹ As respondents are nested in schools, I also calculated the models with schools as a third level. However, there is no variance on this level and the standard errors do rarely differ between the two-level and three-level solution. I thus only present the results for the two-level (respondents and vignettes) models.

Auspurg & Gundert, 2015). This reveals whether overall social background differences in vignette ratings regarding different institutional characteristics exist.²⁰ Additionally, another Wald test compares a model including main effects of social background and thus allowing the intercept to vary by social background with a model that only includes vignette and control variables. The result of this test shows whether allowing for different intercepts by social background improves the model fit. Thus, the importance of social group differences regarding levels (of the dependent variable) and effects (of vignette dimensions) can be assessed.

As mentioned in Section 4.2, the Best Up data do not derive from a probability sampling and are thus not representative for schools or individual students in Berlin and Germany. In this study, the p-values therefore aim to assess the precision of the coefficient estimates and the probability that non-zero estimates are due to the existence of systematic relationships in the data rather than to chance. Estimates should, however, not be interpreted as referring to a well-defined population.

5. Findings

Figure 1 displays the distribution of the dependent variable for the three social background groups. Table 3 shows the linear random intercept coefficients representing the effect of institutional characteristics and of social background on students' intention to apply for the whole (restricted) sample and differentiated by students' social background. As an addition, Table A5 in the Appendix A also displays all included control variables and interaction effects between students' social background and the vignette dimensions. For an easier interpretation of the results, interactions between vignette dimensions and social background are plotted in Figure 2.

Figure 1 indicates that the level of application intentions differs between the social background groups: Students from a non-academic background and also those from a single-academic background chose the middle category and those below comparably often. Contrarily, students from an academic, especially from a double-academic background, chose the positive extreme value more frequently so that their distribution appears to be skewed to the right. This lends first descriptive support for **H1** as it seems that academic-background students feel generally less constrained by the institutional characteristics presented in the vignettes—they would apply “in any case” for various study programs.²¹ This descriptive finding is supported by the multivariate models (Table 3). The Wald test comparing M1 with a model that does not include the social background variable reveals a better model fit for the

²⁰ An overall significance of the Chi-square value does, however, not mean that all single interaction effects contribute to a better model fit. The other way around, it cannot be derived from a non-significant Chi-square value that each single interaction effect is not significant. I will discuss occurring deviations.

²¹ This tendency to choose the extreme value relatively often and thus potentially not to discriminate between the vignettes does, however, not challenge the validity of the effects reported in Table 3 because the randomized allocation of vignettes to respondents prevents a correlation between vignette dimensions and students' general study affinity. To check the robustness of the results, I also ran tobit models (available upon request) to correct for a potential bias due to censoring of the data (Auspurg & Hinz, 2015, pp. 101-103). The substantive meaning of the results does not change (the coefficients are only slightly larger).

former. This again indicates that the level of application intentions differs between the social background groups and thus supports **H1**. As can be seen in M1, this difference, however, is largely driven by students from a double-academic background, who have a clearly higher intention to apply than students from a non-academic background (net of institutional characteristics presented in the vignettes).

[Figure 1]

[Table 3]

Regarding the influence of institutional attributes, distance is negatively related to application intentions in all models (**H2**). Compared to HE institutions which are very far away, a medium and short distance increases the intention to apply by around one and two points respectively on the 11 points scale. Overall, the Wald test shows that including interactions between social background and distance does not lead to a better model fit which contradicts the assumption that distance is more deterrent for non-academic background students (**H2low**). However, examining this finding in more detail reveals a slightly different pattern. Social background differences with regard to short and long distances are negligible as can be seen by comparing M2-M4 or by glancing at the upper left graph in Figure 2. Thus, while a short distance between one's home and the university is equally attractive for all students, a long distance is equally deterrent. However, students from non-academic backgrounds slightly differ from their more privileged peers regarding their application intentions for medium-distant universities. As compared to a short distance, a medium distance influences application plans of students from a non-academic background slightly more negatively than application plans of students from a double-academic background ($p < 0.1$).

A good university reputation increases the intention to apply by around one point for all students (**H3**). Even though the effect is slightly stronger for students from academic backgrounds, this difference is negligible thus not lending support to **H3high**. Thus, prospective students seem to consider prestigious HE institutions as equally beneficial regardless of their social background.

Compared to distance and reputation, the effects of selection procedures beyond the GPA are not substantial. For students from academic backgrounds only interviews have a slightly positive effect that is worth mentioning. For students from non-academic backgrounds most coefficients are even smaller. However, all coefficients have a positive sign indicating that these students are not deterred by more complex selection procedures (and their (short-term) costs combined with presumably lower admission chances). Thus, I reject the hypotheses regarding selection procedures as they do not generally function as a pull factor for students (**H4**) and do also not deter students from a non-academic background (**H4low**).

Regarding information provided by universities, the slightly positive effect is quite similar for students from a non-academic and from a single-academic background. The better model fit that is achieved when the interaction term is added (last column) is largely driven by students from double-

academic backgrounds. Thus, **H5** and **H5low** are only partly supported in this context: H5 is not supported for students from double-academic backgrounds who do not seem to be positively influenced by additional information. H5 low is only supported when comparing students from a non-academic and from a double-academic background.

Though not the focus of this study, the findings demonstrate that it is valuable to measure social background with a joined model including both parents. Students from single-academic backgrounds—though mostly taking the expected middle position—are often more similar to students from non-academic than from double-academic backgrounds. Having two tertiary educated parents—and thus a higher accumulation of economic, cultural and social resources—seems to make the difference with regard to both the level of application intentions and the influence of institutional college characteristics. Thus, aggregating both academic background groups would hide important insights.

[Figure 2]

6. Summary and discussion of the findings

In summary, the findings show that institutional opportunities and constraints in HE influence how high school students' college aspirations are translated into intentions. Whereas distance on average decreases the probability that students in the sample have an application intention (**H2**), reputation (**H3**) increases this probability. Information provided by universities has a slightly positive effect (**H5**). Selection procedures beyond the GPA, however, do not on average have a noteworthy influence (contradicting **H4**).

In line with previous research (Frenette, 2006; López Turley, 2009; Spieß & Wrohlich, 2010), the findings clearly indicate that distance to the university— i.e., expected social and material costs—is the most decisive constraints on application intentions. This finding mirrors the low willingness to move that has generally been observed for German students (KMK, 2007). Students' restricted geographical scope is especially problematic for students coming from areas with a low supply of HE opportunities or an unfavorable supply-demand relation (as is the case for the Berlin students analyzed in this article). Furthermore, the restriction of college places by the universities also limits students' changes of getting a place close to their home. This especially applies to students who prefer selective subjects (e.g., medicine or psychology). Thus, the opportunity structure for prospective students from different regions and with different subject preferences strongly varies. One could expect a lower willingness to compromise on local and/or subject preference among students from lower social backgrounds, for whom a HE degree is not essential to reproduce their parents' social status. A dense coverage of HE institutions with a broad subject choice thus seems to be especially important—even in Germany, which is geographically less vast than many other countries.

As this paper is based on a study conducted in an urban area, it would be valuable to examine the influence of distance on application intentions of students from rural areas. This has already been done for actual enrolment decisions (e.g., Spieß and Wrohlich, 2010). However, do high school students from rural areas have lower educational aspirations in the first place? Or do they not feel able to fulfill their college aspirations due to a low supply of HE institutions in their region?

Regarding social-background-specific differences, students mainly differ in terms of the *level* of their college application intention (**H1**). Especially students from a double-academic background seem to have a stronger study affinity that is less constrained by the institutional setting presented in the vignettes. This is in line with RC theory, which assumes that socially privileged students (rationally) strive for a HE degree in order to maintain their parents' social status (e.g., Breen & Goldthorpe, 1997).

In contrast, the influence of universities' institutional characteristics only rarely differs between students from different social backgrounds in this study (contradicting **H2low**, **H3high**, **H4low**, **H5low**). One exception relates to the influence of a medium-sized geographical distance, which has a more negative effect on the application intentions of students from non-academic backgrounds than on their double-academic-background peers. One possible interpretation is that—even though all students prefer staying close to home—moving to a medium-distance city is a less severe barrier for students from (double-)academic backgrounds because this still allows them to be integrated into their social networks and thus implies lower social costs. However, they have to bear the economic costs of commuting or moving to both a long- and medium-distant city. Thus, the findings indicate that economic costs constrain students from academic backgrounds to a lesser extent provided the social costs remain low. This is not the case for students from non-academic backgrounds, for whom the economic costs of moving seem to be a general barrier. In Germany, students who do not live together with their parents and are eligible for means-tested financial aid (BAföG) receive an additional fixed rate of around €250. However, in many university cities this might not cover the costs for the rent, bills and travels. Increasing financial aid for geographically mobile students might thus help to reduce social inequality in HE.

A second exception relates to information provided by universities, which increases the intention to apply among students from single- and non-academic backgrounds whereas it has no effect on students from double-academic backgrounds. Apparently, the latter do not need external information as they have two parents and their social networks as information sources. Students from a single-academic background, however, seem to supplement “hot” information provided by their social networks with “cold” information provided by HE institutions (Slack et al., 2014).

There are no substantial social background differences regarding the influence of selection procedures and university reputation. The German students from disadvantaged social backgrounds that I considered in this study are seemingly not (yet) deterred by reputation and selection procedures. HE policy makers should interpret this as good news as research conducted in stratified HE systems routinely shows that certain, very prestigious institutions strongly inhibit the transition chances of students from lower social backgrounds because of institutional selection by universities on the one hand

and self-exclusion by students on the other (e.g., Boliver 2013, Avery & Hoxby 2010). In a country like Germany, where prestige is not (yet) a strong stratifying factor it is difficult to directly test whether and how reputation impacts on prospective students. This is one advantage of the factorial survey as it allows us to examine how they react to or perceive something that is just on its way of being institutionalized. In the German context, the findings suggest that the concept of institutional reputation seems to be interpreted as something positive by students. This is not only the case for students from higher social backgrounds who might interpret graduating from a prestigious institution as a way of maintaining their parents' social status, but also for students whose parents do not have any HE experience. Thus, myths around "inaccessible" and costly HE institutions, as observed, for instance, in the UK (e.g., Shiner & Noden, 2015), are not part of their decision-making process. This should be seen as an opportunity for German HE institutions, which are supposed to differentiate and establish profiles, to adopt a careful strategy in dealing with the concept of prestige so that it does not exclude groups of prospective students. The same applies to selection procedures—which students currently do not seem to care much about but which might have a socially exclusive influence should they become more complex and demanding (as has been shown for the US or UK (e.g., Buchmann et al., 2010; Zimdars et al., 2009)).

7. Conclusion

In this article, I have examined the institutional conditions under which the college aspirations of students from different social backgrounds translate into more concrete college application intentions. Examining the influence of institutional opportunities and barriers in HE adds to the literature on educational aspirations and intentions, as these opportunities and barriers lie at the heart of *constrained intentions*. As especially educational intentions are related to actual attainment (Haller, 1968), this research also improves—more generally—our understanding of the factors diverting high school students from the HE pathway—against their wishes.

What distinguishes this study from previous quantitative research on this topic? In contrast to many studies that examine the influence of college characteristics, I not only analyze students who already applied or enrolled in HE, but included all high school students with an aspiration to attend college. This enabled me to identify institutional influences that might lead to *self-exclusion by students*, who might refrain from applying despite their college aspirations (and are thus not included in studies focusing on the pool of college students or applicants).

Methodologically, this is to my knowledge the first sociological study that has applied a quasi-experimental factorial survey to examine the influence of college characteristics on high school students' educational intentions (for a marketing perspective, see Soutar & Turner, 2002). This enabled me, first, to operationalize the translation of aspirations into *constrained intentions* in a more direct and accessible way than it is possible by posing abstract and direct survey questions that can hardly reflect the complex

institutional setting confronting high school students. Secondly, I was able to analyze the influence of different institutional features simultaneously and thus show their relative importance. By presenting information on college programs, I could, thirdly, compensate for information asymmetries between students from different social backgrounds. I can therefore be more certain that the influence of college characteristics relates to preferences for the institutional settings presented in the vignettes—and thus to different cost-benefit-assessments of these options—rather than to (social-background-specific) information on these options. Thus, when observing actual applications and transitions, the findings might differ from those presented here—not only because a different phase in the transition to HE is concerned, but also because of the presumed information deficit among socially disadvantaged students. The findings presented in this study refer to a setting in which all students are at least basically informed about college characteristics and thus indicate what influence institutional college characteristics would have if students were informed.

One should keep in mind that the findings of this study refer to students in specific high schools in a specific urban area (Berlin) in Germany that provides many college opportunities, a differentiated HE landscape (including, for instance, two “excellence universities”) and at the same time high external demand (see Section 2). I thus understand this research as one further step to increase our knowledge on institutional constraints and social inequality in HE—one that is especially methodologically valuable, as it avoids problems that are inherent in other quantitative (and often representative) studies. Further research in different regional and national contexts is necessary to complete the picture.

This study was conducted in a context that is likely to contribute to conservative estimates with regard to both the general influence of college characteristics and social background differences for several reasons. First, in Germany, previous tracking leads to a rather homogeneous, positively selected high school student body that encounters a comparably homogeneous HE system. One could expect the (social-background-specific) influence of institutional attributes to be much stronger in more differentiated HE systems (e.g., Boliver, 2013; Davies & Guppy, 1997; López Turley, 2009). Thus, further research should continue to look at differentiated systems to generate a more comprehensive picture on how institutional college characteristics influence the translation of educational aspirations into intentions and later decisions. Research conducted in other national contexts should also include additional institutional variables, such as college tuition fees, which were not applicable in the German case.

Furthermore, the focus on students with high educational aspirations led to a further homogenization of the group under consideration as high school students who obtain the Abitur in order to increase their chances for an attractive apprenticeship are not considered. This is probably a second reason for the comparably weak social background differences. A third reason might be inherent in the research question and design. Institutional constraints might be perceived as less severe as long as they are viewed from a “safe distance”. However, social inequality in HE is well documented in Germany, also for the positively selected group of high school graduates (e.g., Mayer et al. 2007; Powell & Solga,

2011; Schindler & Lörz, 2012). So when and why do students from lower social backgrounds get lost? Of course, the translation of college aspirations into more concrete application intentions constitutes a preliminary stage on the long road to HE—some important thresholds have already been taken, but the final steps are still to come. High school students—also those with high educational aspirations—need to pass additional thresholds before they eventually manage the transition: they need to implement their application intention, they need to get admitted and they need to accept an offer. Institutional constraints and opportunities might have a stronger influence at these later stages because they lack the hypothetical character of the vignette scenarios. Furthermore, gatekeeping processes on part of the universities might be influential in channeling applicants into or away from HE. Thus, in order to get a comprehensive understanding of social inequality in the transition to HE, further research should consider the whole process and the role that HE institutions play during these different stages.

The German HE system is characterized by low HE enrollment rates and high social inequality (Authoring Group Educational Reporting, 2014). Low enrollment rates are often interpreted as a problem for the economic development of a “knowledge society” (OECD, 2008). Furthermore, it is problematic on normative grounds if formally eligible students anticipate that they will not be able to fulfill their wishes and if members of specific social groups are disproportionately disadvantaged in this regard. Even though the social background differences detected in this study have not been very strong, one should keep in mind that I analyzed a very positively selected group with a particularly high potential to be mobilized for HE: those who become *formally eligible* and also *wish to pursue the HE pathway*. Removing actual and perceived barriers and thus increasing their chances of enrolling in HE should be a political priority. Another priority should, however, involve reducing social inequality in educational aspirations, without which the transition to HE seems even less likely.

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Appendix A

[Figure A1]

[Table A2]

[Table A3]

[Table A4]

Table 1: Vignette dimensions and levels.

Dimension	Levels
1) Distance between student's place of residence and university city	a) very close / place of residence (commuting on a daily basis possible) b) medium distance (commuting at weekends possible) c) long distance (sporadic visits possible) (To support respondents' geographical imagination, examples of cities were added for each distance.)
2) Reputation of university	a) medium b) very good
3) Selection procedures	a) only GPA b) GPA + letter of motivation c) GPA + interview d) GPA + aptitude test
4) Information about application and admission procedure	a) sparse information on university website b) comprehensive information on university website
5) Personal interest in subject	a) medium b) high (favorite subject)
6) Social networks (support with application)	a) no acquaintances for support available b) acquaintances for support available
7) Size of the university city	a) medium b) big

Table 2: Descriptive sample statistics.

	Range	N	Mean (SD)
Dependent variable			
<i>Intention to apply</i>	0-10	4032 (total vig.)	6,12 (2,77)
Level 1 predictors (vignette dimensions)			
<i>Distance:</i>			
Short	0-1	1359	.34
Medium	0-1	1330	.33
Long	0-1	1343	.33
<i>Selection procedure:</i>			
Only GPA	0-1	1017	.25
GAP + letter of motivation	0-1	993	.25
GPA + interview	0-1	1019	.25
GPA + aptitude test	0-1	1003	.25
<i>Reputation</i> (0: medium, 1: high)	0-1	2038	.51
<i>Information</i> (0: sparse, 1: comprehensive)	0-1	2017	.50
<i>Interest in subject</i> (0: medium, 1: high)	0-1	2015	.50
<i>Size of city</i> (0: medium, 1: big)	0-1	2029	.50
<i>Support from network</i> (0: no, 1: yes)	0-1	2005	.50
Level 2 predictors (individual /school variables)		825 (total resp.)	
<i>Academic background:</i>			
Non-academic background	0-1	505	.61
Single-academic background	0-1	190	.23
Double-academic background	0-1	130	.16
<i>German grade</i> (0: failed to satisfactory, 1: good to very good)	0-1	357	.43
<i>Math grade</i> (0: failed to satisfactory, 1: good to very good)	0-1	299	.36
<i>Gender</i> (0: female, 1: male)	0-1	322	.39
<i>Migration background</i> (0: no, 1: at least one parent born outside Germany)	0-1	402	.49
<i>School type:</i>			
Gymnasium	0-1	248	.30
Comprehensive school	0-1	307	.37
Vocational gymnasium	0-1	270	.33
<i>Workshop</i> (0: no, 1: yes)	0-1	255	.31

Source: Best Up, wave 2, own calculation. Only respondents with college aspirations.

Table 3: Determinants of students' college application intention, by social background (linear random intercept models).

	M1: All	M2: Non-academic background	M3: Single- academic background	M4: Double- academic background	Wald test for subgroup differences ^a
Institutional opportunities and constraints (vignette dimensions)					
Distance , ref.: long					
Medium	1.039*** (0.0776)	0.907*** (0.102)	1.204*** (0.158)	1.310*** (0.187)	
Short	2.087*** (0.0773)	2.074*** (0.101)	2.158*** (0.156)	2.066*** (0.189)	6.03 (4)
Reputation : good	0.893*** (0.0635)	0.852*** (0.0830)	0.901*** (0.128)	1.044*** (0.155)	1.08 (2)
Selection procedure , ref.: only GPA					
GPA+letter of motivation	0.154* (0.0898)	0.105 (0.118)	0.189 (0.182)	0.295 (0.216)	
GPA+interview	0.294*** (0.0892)	0.223* (0.117)	0.416** (0.179)	0.406* (0.219)	2.2 (6)
GPA+aptitude test	0.231*** (0.0895)	0.247** (0.117)	0.254 (0.182)	0.178 (0.217)	
Information : Comprehensive	0.331*** (0.0634)	0.421*** (0.0830)	0.366*** (0.129)	-0.0113 (0.154)	6.54** (2)
Academic background , ref.: non-academic background					
Single-academic background	0.169 (0.159)				6.58** (2) ^b
Double-academic background	0.465** (0.184)				
Constant	3.331*** (0.222)	3.487*** (0.281)	3.011*** (0.445)	3.587*** (0.550)	
sd_respondent	1.6099	1.5806	1.6214	1.7095	
sd_vignette	1.9743	2.0190	1.9038	1.8907	
Rho	.3994	.3800	.4204	.4498	
Observations	4,032	2,465	926	641	
Number of id	825	505	190	130	

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

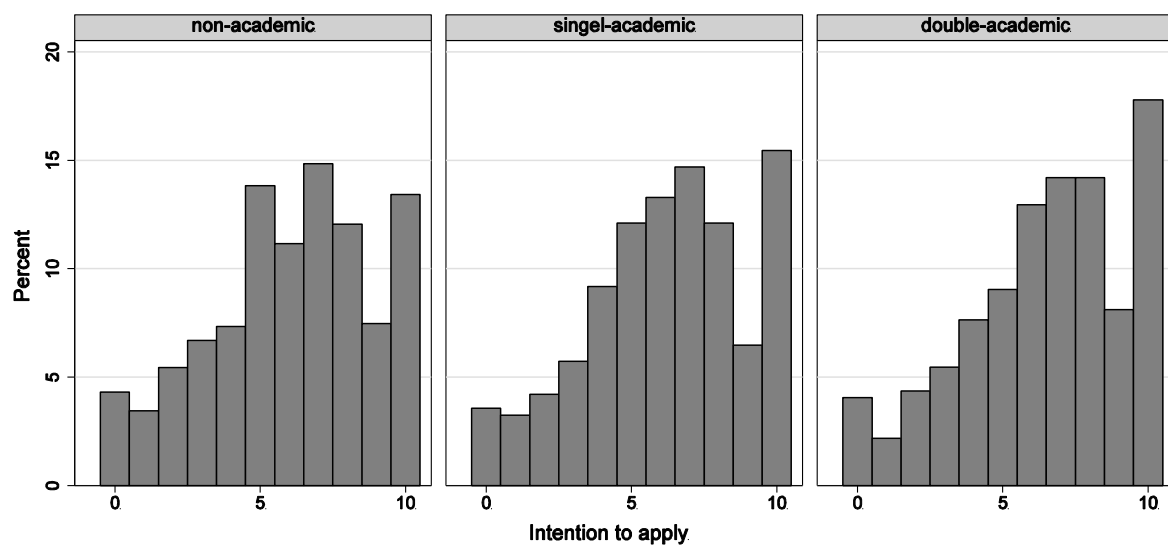
Source: Best Up, wave 2, own calculations. Sample: respondents with college aspirations. As the sample is not representative, estimates should not be interpreted as referring to a well-defined population. Significances indicate the precision of the estimates.

The following control variables are included in all models: German and math grades, gender, migration background, school type, workshop, duration of vignette module, position of vignette in deck, the remaining vignette dimensions (interest in subject, social network, city size)

^a Reported are Chi² values (df). This Wald test compares the goodness of fit of the unconstrained models (including an interaction terms between academic background and the respective vignette dimension) against a constrained model (M1) that allows only the intercept to differ between the academic background groups.

^b In this case the unconstrained model allows for a variation of the intercept by social background (M1) and is tested against a model including only vignette and control variables.

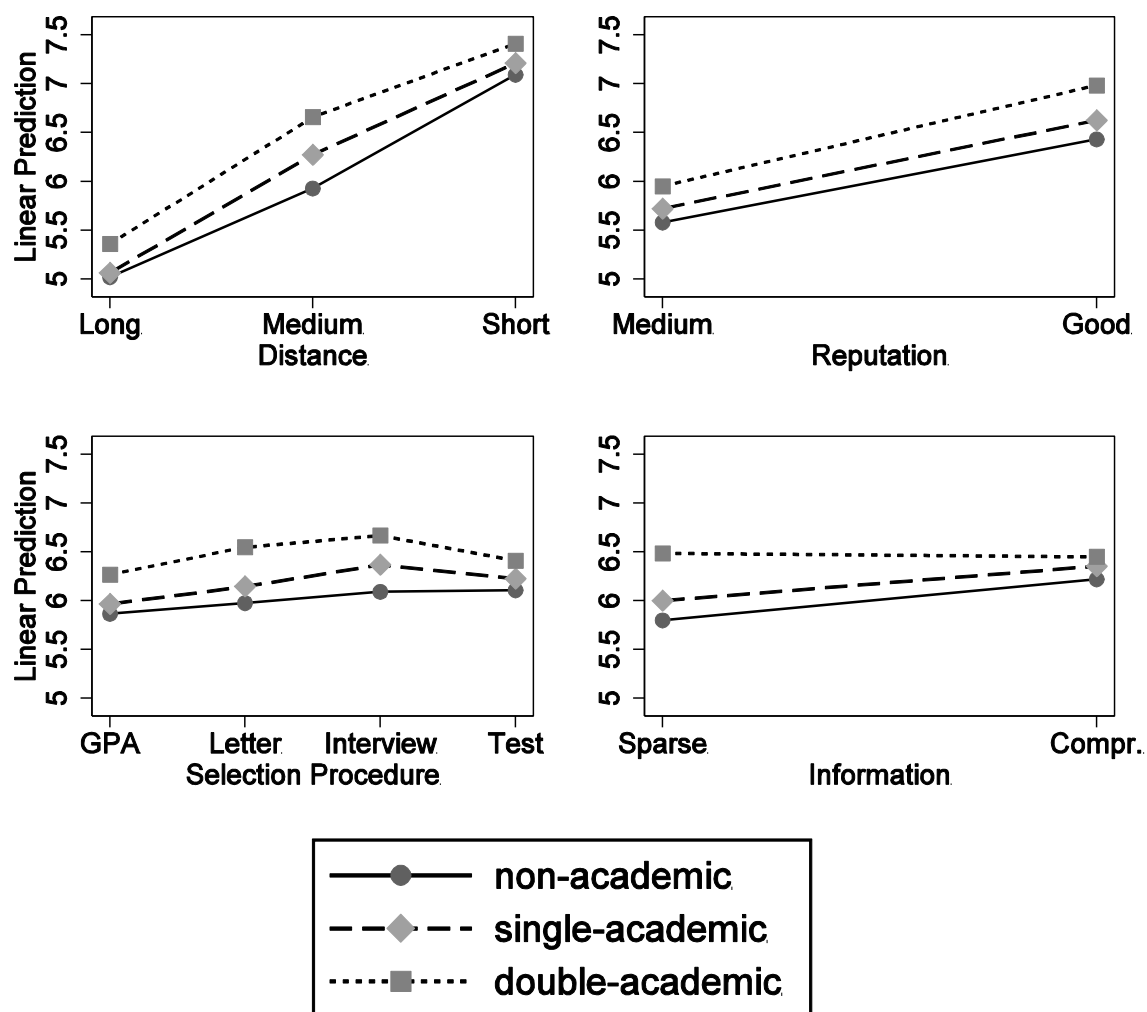
Figure 1: Distribution of vignette ratings (dependent variable), by social background.



Source: Best Up, wave 2, own calculation. Sample: respondents with college aspirations.

N non-academic background: 550, N single-academic background: 190, N double-academic background: 130.

Figure 2: Predicted probabilities of application intention, by social background and vignette dimensions.



Source: Best Up, wave 2, own calculation. Sample: respondents with college aspirations.
The following control variables are included in all models: German and math grades, gender, migration background, school type, workshop, duration of vignette module, position of vignette in deck, the remaining vignette dimensions (interest in subject, social network, city size).

Figure A1: Sample Vignette

Application Scenario (1 out of 5 for each respondent)

The general admission requirements for a place in your *favorite subject* are your *GPA* and a *letter of motivation*. On the web page of the university you find *comprehensive information* on the application process. You also *know somebody who is well informed* about university applications and can give you helpful advice. The chosen university has a *very good reputation*. It is located in a *very close, medium-sized city* such as Potsdam so that it is possible to commute between your hometown and the university on a daily basis.

Would you apply for this study program?

Please choose one square on the scale. 0 means “no, in no case”, 10 means “yes, in every case”.

No / in no case yes / in every case

0 1 2 3 4 5 6 7 8 9 10

Table A2: Correlation between vignette dimensions, Cramer's V.

	distance	reputation	selection procedure	information	interest	network	city size
distance	1.0000						
reputation	0.0193	1.0000					
sel. proced.	0.0166	0.0208	1.0000				
information	0.0058	0.0067	0.0224	1.0000			
interest	0.0170	-0.0005	0.0141	0.0024	1.0000		
network	0.0209	-0.0024	0.0121	0.0264	-0.0125	1.0000	
city size	0.0071	-0.0116	0.0173	-0.0125	0.0092	-0.0072	1.0000

Source: Best Up, wave 2, own calculations. Sample: respondents with college aspirations.

Table A3: Correlation between vignette dimensions and respondents' characteristics, Cramer's V.

	Academic background	Migration background	German Grade	Math Grade	Gender	School type	workshop
distance	0.0063	0.0037	0.0114	0.0102	0.0037	0.0100	0.0037
reputation	0.0036	0.0041	0.0028	-0.0016	0.0028	0.0036	0.0079
sel. proced. information	0.0130	0.0182	0.0114	0.0097	0.0069	0.0092	0.0160
interest	0.0115	-0.0058	-0.0007	-0.0139	-0.0048	0.0091	-0.0074
network	0.0138	-0.0015	0.0016	-0.0018	-0.0066	0.0064	0.0019
city size	0.0063	-0.0063	0.0063	0.0049	-0.0068	0.0069	-0.0016
	0.0043	0.0136	-0.0065	-0.0067	-0.0060	0.0138	-0.0083

Source: Best Up, wave 2, own calculations. Sample: respondents with college aspirations.

Table A4: Descriptive statistics of students with and without a college aspiration.

	College aspiration (included)		No college aspiration (excluded)	
	N (825)	Mean (SD)	N (155)	Mean (SD)
<i>Academic background:</i>				
Non-academic background	505	.61	111	.72
Single-academic background	190	.23	35	.23
Double-academic background	130	.16	9	.06
<i>German grade</i> (0: failed to satisfactory, 1: good to very good)	357	.43	36	.23
<i>Math grade</i> (0: failed to satisfactory, 1: good to very good)	299	.36	34	.22
<i>Gender</i> (0: female, 1: male)	322	.39	60	.39
<i>Migration background</i> (0: no, 1: at least one parent born outside Germany)	402	.49	54	.35
<i>School type:</i>				
Gymnasium	248	.30	39	.25
Comprehensive school	307	.37	58	.37
Vocational gymnasium	270	.33	58	.37
<i>Workshop</i> (0: no, 1: yes)	255	.31	54	.35

Source: Best Up, wave 2, own calculations.

Table A5: Determinants of students' college application intention (linear random intercept models).

	M1: All	M1a: All	M2: Non-academic background	M3: Single-academic background	M4: Double-academic background
Institutional opportunities and constraints (vignette dimensions)					
Distance, ref.: long					
Medium	1.039*** (0.0776)	0.909*** (0.0993)	0.907*** (0.102)	1.204*** (0.158)	1.310*** (0.187)
Short	2.087*** (0.0773)	2.077*** (0.0988)	2.074*** (0.101)	2.158*** (0.156)	2.066*** (0.189)
Reputation: good	0.893*** (0.0635)	0.849*** (0.0811)	0.852*** (0.0830)	0.901*** (0.128)	1.044*** (0.155)
selection procedure, ref.: only GPA					
GPA+letter of motivation	0.154* (0.0898)	0.104 (0.1150)	0.105 (0.118)	0.189 (0.182)	0.295 (0.216)
GPA+interview	0.294*** (0.0892)	0.221* (0.1141)	0.223* (0.117)	0.416*** (0.179)	0.406* (0.219)
GPA+aptitude test	0.231*** (0.0895)	0.2419** (0.1143)	0.247** (0.117)	0.254 (0.182)	0.178 (0.217)
Information: Comprehensive	0.331*** (0.0634)	0.426*** (0.0811)	0.421*** (0.0830)	0.366*** (0.129)	-0.0113 (0.154)
Additional vignette dimensions					
Interest in subject: strong	0.794*** (0.0634)	0.877*** (0.0811)	0.877*** (0.0829)	0.646*** (0.129)	0.631*** (0.154)

Support from network: yes	0.355*** (0.0634)	0.253*** (0.0811)	0.256*** (0.0829)	0.399*** (0.128)	0.648*** (0.155)
Size of university city: big	0.408*** (0.0634)	0.392*** (0.0812)	0.392*** (0.0830)	0.436*** (0.128)	0.464*** (0.155)
Academic background + interactions					
Academic background, ref.: non-academic background					
Single-academic background	0.169 (0.159)	-0.025 (.2895)			
Double-academic background	0.465** (0.184)	0.285 (.3444)			
Distance*academic background					
Medium*single-academic		0.312 (.1915)			
Medium*double-academic		0.402* (.2179)			
Short*single-academic		0.075 (.1899)			
Short*double-academic		0.003 (.2192)			
Reputation*academic background					
Good*single-academic		0.059 (.1556)			
Good*double-academic		0.187 (.1796)			
Selection procedure*academic background					
Letter*single-academic		0.090 (.2213)			
Letter*double-academic		0.152 (.2512)			
Interview*single-academic		0.191 (.2178)			
Interview*double-academic		0.152 (.2543)			
Test*single-academic		0.019 (.2209)			
Test*double-academic		-0.087 (.2522)			
Information*academic background					
Compr.*single-academic		-0.066 (.1556)			
Compr.*double-academic		-0.457** (.1792)			
Interest*academic background					
Strong*single-academic		-0.221 (.1560)			
Strong*double-academic		-0.235 (.1794)			
Network*academic background					
Yes*single-academic		0.153 (.1552)			
Yes*double-academic		0.415** (.1792)			
City size*academic background					

Big*single-academic	0.054				
	(.1557)				
Big*double-academic	0.069				
	(.1798)				
Individual / school characteristics					
German grade: (very) good	-0.088 (0.139)	-0.089 (0.1388)	-0.381** (0.179)	0.413 (0.291)	0.201 (0.365)
Math grade: (very) good	0.050 (0.141)	0.052 (0.1413)	-0.030 (0.183)	0.113 (0.305)	0.420 (0.347)
Gender: male	-0.114 (0.134)	-0.113 (0.1340)	-0.036 (0.172)	-0.001 (0.288)	-0.554 (0.364)
Migration background: yes	0.007 (0.134)	0.008 (0.1337)	-0.001 (0.172)	0.226 (0.284)	-0.264 (0.355)
School type, ref.: Gymnasium					
Comprehensive school	0.203 (0.160)	0.206 (0.1600)	0.327 (0.208)	0.156 (0.330)	-0.113 (0.457)
Vocational school	0.296* (0.165)	0.299* (0.1652)	0.266 (0.211)	0.515 (0.382)	0.342 (0.421)
Workshop: yes	0.149 (0.140)	0.152 (0.1401)	0.087 (0.177)	0.180 (0.298)	0.466 (0.403)
methodological control variables					
Position of vignette, ref.: 1 st vignette					
2 nd vignette	0.0167 (0.0986)	0.004 (0.0988)	-0.0826 (0.129)	0.116 (0.198)	0.184 (0.241)
3 rd vignette	-0.0912 (0.0985)	-0.092 (0.0987)	-0.0778 (0.129)	-0.248 (0.199)	0.082 (0.240)
4 th vignette	-0.0161 (0.0987)	-0.023 (0.0990)	0.0278 (0.129)	-0.0446 (0.200)	-0.175 (0.239)
5 th vignette	-0.173* (0.0990)	-0.183* (0.0992)	-0.198 (0.129)	-0.153 (0.200)	-0.159 (0.241)
Duration of vignette module (min)	-0.009 (0.0124)	-.009 (0.0124)	-5.77e-06 (0.0194)	-0.018 (0.0282)	-0.002 (0.0212)
Constant	3.331*** (0.222)	3.398*** (0.2351)	3.487*** (0.281)	3.011*** (0.445)	3.587*** (0.550)
sd_respondent	1.6099	1.6078	1.5806	1.6214	1.7095
sd_vignette	1.9743	1.9726	2.0190	1.9038	1.8907
Rho	0.3994	0.3991	0.3800	0.4204	0.4498
Observations	4,032	4,032	2,465	926	641
Number of id	825	825	505	190	130

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

Source: Best Up, wave 2, own calculations. Sample: respondents with college aspirations. As the sample is not representative, estimates should not be interpreted as referring to a known population. Significances indicate the

precision of the estimates.