// NO.19-009 | 03/2019

DISCUSSION PAPER

// BERND FITZENBERGER, ANNETTE HILLERICH-SIGG, AND MARESA SPRIETSMA

Different Counselors, Many Options: Career Guidance and Career Plans in Secondary Schools

Leibniz Association

ZEW

Different Counselors, Many Options: Career Guidance and Career Plans in Secondary Schools

Bernd Fitzenberger[*], Annette Hillerich-Sigg[†], Maresa Sprietsma[‡]

March 12, 2019

Abstract: Career guidance assists students with the school-to-work transition. Based on a survey in secondary schools in Germany, we analyze career guidance activities and how these affect career plans. The take-up of career guidance depends upon the school track attended and upon the school and class room context, while personal characteristics are hardly relevant. The effects of counseling depend upon the counselor. Counseling by the employment agency reduces plans for educational upgrading and increases the probability of applying for an apprenticeship, while the effects of school counselors work in the opposite direction for lower track students.

Keywords: educational aspirations, career guidance, counseling, career planning, school-to-work transition, secondary school
JEL classification: J24, I28, I21

Acknowledgments: We gratefully acknowledge financial support by the Baden-Württemberg Stiftung for the research project "Übergänge am Ende der Sekundarstufe I in weiterführende Schulen und die berufliche Bildung" as part of the program "Netzwerk Bildungsforschung (Network Educational Research)". We thank Holger Bonin and the researchers in the Netzwerk Bildungsforschung for very helpful comments. We are grateful to many school representatives in the cities of Freiburg and Mannheim for their support in undertaking the school survey, which provides the data for our analysis. All errors are our sole responsibility.
Corresponding Author: Bernd Fitzenberger, Humboldt University Berlin, School of Business and Economics, Spandauer Strasse 1, 10099 Berlin, Germany. E-mail: bernd.fitzenberger@wiwi.hu-berlin.de.

[*]HU Berlin, IFS, IZA, ROA, Cesifo, ZEW, Email: fitzenbb@hu-berlin.de
[†]ZEW – Leibniz Centre for European Economic Research, HU Berlin, Email: hillerich@zew.de
[‡]HdBA Mannheim, Email: Maresa.Sprietsma@arbeitsagentur.de

1 Introduction

Adolescents have to make far reaching decisions regarding the continuation of education and the transition into the labor market after graduation from secondary schools under considerable uncertainty about their abilities and the expected returns from different paths (McNally, 2016; Heckman et al., 2018). Career guidance assists students making these decisions by providing career related information, mentoring, and first hand job experience. Most of the literature on career guidance for the U.S. focuses on keeping students in the education system and making proper decisions regarding tertiary education (e.g. Bettinger et al., 2012) whereas a major part of the European literature focuses on the choice between a general track and a vocational track within the school-based educational system (e.g. Goux et al., 2015). The case of Germany is of particular interest because at the age of 15 or 16, upon completing the first level of secondary schooling, students can enter the labor market by starting an apprenticeship or they may decide to continue schooling in order to complete a second higher educational degree (Biewen and Tapalaga, 2017). This paper analyzes the determinants of take-up of career counseling and work experience placements as well as their effects on career planning in Germany based on a survey we conducted at the end of lower and middle track secondary schools.

The decision to start an apprenticeship is complex because it involves the choice among more than 300 training occupations and the timing of the entry into the labor market with lasting consequences on later life outcomes (Bonin et al., 2016; Hanushek et al., 2016). This decision is made under imperfect information and students may have many options but too little information (Lavecchia et al., 2016; Arcidiacono et al., 2012). Moreover, there is concern whether adolescents make rational human capital investment decisions, which are in their long-term interest (Koch et al., 2015; Lavecchia et al., 2016).[1] Especially lower performing students and students from low-income families might have difficulties with making the optimal educational decision. They might have lower self-confidence or lower expectations with respect to the returns to education (Lavecchia et al., 2016). Finally, students could have high and possibly unrealistic educational aspirations, maybe reflecting overconfidence (DellaVigna, 2009; Goux et al., 2015). All these factors may prevent them from forming a realistic assessment of their educational

[1] Students might be subject to a present bias, i.e. weighting present utility more than the future outcomes (Golsteyn et al., 2014; Lavecchia et al., 2016). Students may also face projection bias, i.e. adolescents project their present preferences on the future and evaluate the future value accordingly. Hence they might decide against changing school or moving for an apprenticeship (DellaVigna, 2009; Lavecchia et al., 2016), also because the status quo may seem the most salient option.

potential and their labor market opportunities.

Career guidance assists students with regard to educational decisions and the transition into the labor market, typically involving the provision of information as well as counseling and mentoring. Key goals are to help students engage in career planning in order to form realistic expectations and aspirations, to raise the awareness for career related choices and to reduce choice avoidance. Career guidance may also signal the possibly high returns of better educational outcomes such as grades or higher educational degrees (see e.g. Harmon et al., 2003; Holtmann et al., 2017) and Hanushek et al. (2016). Thus, the effects on career plans are ambiguous with regard to whether student become more likely to apply for an apprenticeship or to continue general schooling after graduation from secondary school.

In Germany, both schools and employment agencies provide career guidance. As part of local policy initiatives, there can be further types of support such as additional coaching, organized contacts with firms, or career guidance events. The take-up of career guidance and its effects are underresearched by education economists (Bonin et al., 2016). We conducted a school survey in two cities in Southwest Germany and contribute to the literature by addressing two research questions. First, we provide evidence on the supply of different types of career guidance and on the determinants of the individual take-up. Second, we estimate the effect of the take-up of career guidance on career planning. This way we shed light into the black box of career guidance in secondary schools. We focus on students in the middle and lower secondary school tracks. Because career planning is a more pressing issue for lower track students, career guidance is offered here most intensively. One of our key findings is that the take-up of counseling with the employment agency or the school counselor and the quantity of work experience placements are barely related to individual characteristics, including parental background or grades. Overall, there is only limited evidence that students facing greater difficulties in career planning engage more intensively in career guidance activities.

The effect of career guidance on the state of career planning is measured by whether students have applied for apprenticeships, plan to continue schooling, and report a desired occupation. Following Borghans et al. (2015), our two IV approaches rely on the strong, arguably exogenous variation in take-up across classes as instruments for the different career guidance activities. Based on the IV estimates, there is no evidence for endogeneity of all career guidance activities, except for the quality of work experience

placements.

Our findings for the lower track show that frequent counseling by school counselors increases the probability of reporting a desired occupation but does not affect the other types of career planning. Further, counseling by the employment agency increases the probability of applying for apprenticeships and of reporting a desired occupation but reduces the probability of continuing schooling. Middle track students meeting the counselor of the employment agency have a higher probability of reporting a desired occupation and frequent meetings increase the probability of applying for an apprenticeship. Further, a higher number of work experience placements increases (reduces) the probability of applying for an apprenticeship (of continuing schooling). However, no such effects are found for lower track students. Altogether, the employment agency seems more effective in supporting career planning towards entering the labor market through an apprenticeship while school counseling rather tends to strengthen plans for a continuation of schooling. The employment agency seems to attenuate high educational aspirations.

Our paper contributes to the literature because there exists only scarce quantitative evidence on the effectiveness of career guidance for improving career planning. Mentoring programs in the U.S. within the school context show positive effects but results are modest and tend to dissipate (Rodríguez-Planas, 2014). The programs improve noncognitive and social skills, but not academic performance. A potential drawback is that mentees become aware of their disadvantages, leading to disappointment and negative behavior. Low-intensity treatments, which merely involve information or nudging, seem less effective than combining information with individual coaching (Bettinger et al., 2012; Oreopoulos and Petronijevic, 2018). Arcidiacono et al. (2012) emphasize that students' expectations about the returns to different educational paths can be incorrect and improvements of their educational choices are possible by correcting these expectations. Neumark and Rothstein (2007) shows that individual counseling programs improves transitions into post-secondary education or employment.

Existing studies for Europe indicate that the availability of information on possible career paths and educational investments tend to improve transitions into the labor market (Saniter et al., 2019; Peter and Zambre, 2017; Boockmann and Nielen, 2016) [Germany], Hoest et al. (2013) [Denmark], and Borghans et al. (2015) [Netherlands]. As a methodological aspect, which proves important for our study, Borghans et al. (2015) show that

variation in the take-up of counseling across schools is strong, which the study uses to instrument individual counseling. Their evidence shows that those taking up counseling are negatively selected with regard to the quality of their career planning decisions. Fitzenberger and Lickleder (2017) find that additional career assistance results in a revision of educational plans, which may reflect a growing awareness of opportunities and risks. Career guidance in secondary schools typically promotes work experience placements as a means to gain first hand labor market experience. Solga and Kohlrausch (2013) and Fitzenberger and Lickleder (2015) find that work experience placements increase the probability of starting an apprenticeship. For the UK, work experience placements show some positive but weak effects on career planning, employability and wages of students (Hillage et al., 2001; Mann and Percy, 2014; Messer, 2018). Holtmann et al. (2017) point to the importance of school leaving certificates for a successful transition into the labor market.

Surveying the literature, McNally (2016) emphasizes that information treatments must be tailored to the needs of students to be effective career guidance activities, which requires a lot of personalization, mentoring, and assistance in order to navigate the educational system successfully. Interventions may run the risk of being too late when crucial prior decisions have already been taken. Career guidance in Germany nowadays addresses these concerns. Activities start quite early in the last two years of secondary schools (especially in the lower track) and are quite intensive. In France, where students choose between a general and vocational track, intensive mentoring and coaching can adapt educational expectations which are better adapted to the low academic record of children, for whom it is better to continue in the vocational track (Goux et al., 2015).

The paper is organized as follows. Section 2 describes our survey. Section 3 provides descriptive evidence on the take-up and type of career guidance counseling and work experience placements. It also involves an analysis of the determinants of the use of counseling and the completion of work experience placements. Section 4 investigates the relationship between career guidance and career planning. Section 5 concludes. Our additional appendix involves further detailed results.

2 Data

The data are based on our survey among secondary school students in 9^{th} and 10^{th} grade in spring 2014 in the two cities of Mannheim and Freiburg, both in the state of

Baden-Württemberg thus sharing the same institutions. We focus on the lower track and the middle track of the German education system because after graduating these students traditionally aim for an apprenticeship or a further vocational school track.[2] For the middle track, the survey only involves 10^{th} graders, while there are both 9^{th} and 10^{th} graders in the lower track.

Using a paper and pencil questionnaire, we surveyed students during a lesson in the classroom, provided parents gave their consent. In addition, we surveyed parents and teachers. Parents were asked about their educational degree, migration background, and educational aspirations for their children. Teachers had to assess the highest educational degree achievable by each student and each student's non-cognitive skills.

The use of financial incentives for participation in the classroom survey was not allowed. The overall response rate in participating classes was 29 %, an acceptable number for such a survey. Table 1 involves descriptive statistics of the students in the sample and in the overall population. The share with migration background and the female share are comparable to the overall student population. We oversample lower and middle track students for whom traditionally career guidance is more important than for upper track students.

< Table 1 about here >

Table 2 presents descriptive statistics of the included students by secondary school type. As expected, students in lower track schools show a more disadvantaged socioeconomic background. Fewer parents hold a college degree and fewer students speak German in their family (we take this as an indicator of migration background). Students in the lower track also obtain worse grades in mathematics. Note that grading differs by school track, with grading being more lenient in lower tracks. Thus, the observed grade difference understates the difference in math competence. Further, lower track students show somewhat lower openness to new experiences and agreeableness and their friends are less ambitious. They do not, however, feel less supported in their effort and achievement at school.

< Table 2 about here >

[2] In our setting, the lower track is 'Werkrealschule', the successor of the former 'Hauptschule', the middle track 'Realschule', and the upper track 'Gymnasium'. The survey includes students from all three tracks of secondary school.

We observe that students have high educational aspirations, which on average are likely to be unrealistic, thus reflecting overconfidence in their academic ability. Half of the student in the middle track and 25.5 % in the lower track consider a college degree achievable. The majority of students (70 %) reports a desired occupation. A large share of students plans to continue general schooling to complete a higher educational certificate after graduating, which can be quite a rational strategy in light of both the difficulties to find an apprenticeship immediately after graduation and the fact that the labor market on average strongly rewards higher education levels. Roughly one third of the lower and middle track students has applied for an apprenticeship position at the time of the survey.

3 Take-up of Career Guidance

As career guidance measures, our analysis considers counseling and work experience of students. Counseling is provided by teachers, school-based counselors, and the local employment agency. Work experience placements are common in Germany to familiarize students with work environments, with the option to apply for an apprenticeship later on. This section describes these measures and provides evidence on take-up.

3.1 Counseling

Career guidance through individual counseling and coaching of secondary school students has expanded over the last decades in Germany, especially in the lower track where is has become a major part of the school curriculum (Kohlrausch and Solga, 2012; Saniter et al., 2019). Career guidance is provided by local employment agencies and from within the schools. In all of Germany, local employment agencies offer counseling both in schools and in the job information centers of the agency. In some cases, especially in the lower track, counselors of the employment agency offer counseling hours in the school. Counselors of the employment agency are case workers with expertise on youth labor markets. Their key goal is to support the transition into an apprenticeship.

In contrast, career guidance within schools is typically managed by schools or local school authorities in cooperation with municipalities without being standardized across Germany. Thus, there is a lot of regional variation in the type and quantity of school-based counseling. Often, one teacher or the head teacher is in charge of career guidance

for students, providing job information and some assistance with applications for work experience placements or apprenticeships. Further, there exists a large number of local programs providing additional intensive career guidance mostly targeted to the lower track. In Mannheim, the local career guidance counseling project ("Ausbildungslotsen") was extended in 2013 with the aim of providing individual coaching to all lower track students. Coaches were hired by local educational providers and allocated to schools, with typically one coach per school. Most coaches are trained social workers. In Freiburg, the program "Successful into Apprenticeship" ("Erfolgreich in Ausbildung") for the lower track has been running since the late 2000's. It involves additional classroom based career guidance as well as group and individual counseling both provided by local educational providers (Fitzenberger and Lickleder, 2015). The primary goal of these programs is to foster transition into apprenticeships or other types of vocational training, similar to the goals of the employment agency.

The effect of counseling may differ because of the different background of counselors in the employment agency and school-based counselors and because the employment agency focuses on the immediate transition into the labor market while school-based counseling may put a greater emphasis on the continuation of schooling in order to prepare students in a better way for the labor market.

Table 3 shows first evidence on the take-up of different types of career guidance by students in the middle and lower tracks of secondary school. Career guidance by counselors within school is used more intensively by students of the lower track.[3] Whereas 85 % of the students in the lower secondary school track have taken up the support of counselors at school, only 37 % of students in the middle track speak with a school counselor about career guidance, reflecting that the school-based counseling programs focus on the lower track. In addition, in the lower track students have more meetings (7.7 on average) with school counselors than in the middle track (2.4 on average). Hence, individual coaching of lower track students not only involves almost all students but is also quite intensive.

< Table 3 about here >

Counseling offered by the employment agency is the most commonly used type of career guidance for middle track students. 71 % of the students in the middle track and 50 % of those in the lower track have at least one meeting with a counselor of the employment

[3]Students were told the names of the counselors working at their school so that they were able to refer to the right person.

agency. However, in the lower track this type of counseling is less intensive than the counseling by school counselors. For the middle track, our subsequent analysis focuses on counseling by the employment agency.

Teachers play only a minor role as counselors for career guidance as only 34 % of the lower track students and 21 % of the middle track students make use of such support. Students in the lower track on average meet 4.4 times with teachers, whereas students from the middle track have 2 meetings. The majority of the lower track students meets with two or more different counselors (school counselors, teachers, employment agency etc.) while middle track students mostly have only contact with one counselor. Overall, students in the lower track thus receive significantly more career guidance than students in the middle track.

Table 4 shows the different types of support provided by teachers, school counselors, and employment agency as well as evidence on students' satisfaction with the support both conditional upon meeting one of the counselors. The most important type of support is a discussion of career and education options. Lower track students also receive support by school counselors regarding applications (73 %) and information about vacant apprenticeships (54 %). The employment agency mostly offers information on career and education options for middle track students and on vacant apprenticeships for lower track students. Teachers also discuss career and education options with the majority of students (80 %) and they provide application support for about half of the students in both tracks.

< Table 4 about here >

The majority of students consider the different types of counseling helpful. With 80 % satisfied students school counselors seem to be most helpful, but the employment agency is deemed helpful by 70 % of the students in the lower track and 78 % in the middle track. Support by teachers is considered somewhat less helpful by middle track students.

Which student and parent characteristics affects take-up of counseling by school counselors and the employment agency? We focus on these two because take-up of career guidance by teachers is lower (Table 3) and difficult to separate from regular schooling. One plausible hypothesis is that students receiving less support from their parents as well as low-performing students are more likely to take up career guidance (henceforth, need-hypothesis [NH]), because they need more support. A second hypothesis is that schools

and teachers affect the amount of career guidance that students actually use (henceforth, supply-hypothesis [SH]), because they affect students' behavior by communicating the benefit of career guidance and the importance of career planning.

Our analysis of the take-up of counseling with school counselors and with the employment agency distinguishes between the incidence of take-up and the intensity of counseling (for school counselors/employment agency intensive use means at least three/two meetings).[4]

< Tables 5 and 6 about here >

First, we consider the determinants of take-up in the lower school track. Table 5 report the average marginal effects of probit regressions on the take-up probability. There are almost no significant individual determinants of take-up of counseling at school or at the employment agency in the lower track schools. Female students are more likely than male students to meet the school counselor at least once whilst students with missing grade information are less likely to do so than students with grade information. The gender effect on take-up disappears when accounting for school fixed effects. Neither family characteristics nor personality traits prove significant.

Because very few middle track students meet with school counselors, Table 6 focuses meeting a counselor at the employment agency. Students with many peers wanting to reach the university-entry degree are more likely to meet with the employment agency as well as students with an internal locus of control and with good grades in German. Contrary to the lower track, middle track students meeting counselors at the employment agency are positively selected.

Regarding the intensity of counseling in the lower track, students in 9^{th} grade meet both counselors less often than students in 10^{th} grade, as to be expected. The frequency of meetings does not depend upon grades or personality traits - except for extraversion showing a positive effect for school counselors and external/internal locus of control showing a positive/negative effect for counselors at the employment agency. Students who do not speak German at home are more likely to have more than three meetings with the school counselor as well as students who feel that their parents are proud

[4]Our results on the determinants of intensive use are robust, when we restrict the analysis to a sample including only students that had at least one meeting. These results are omitted here and available upon request.

of their educational achievement. In the middle track, good mathematics grades and agreeableness have a negative effect on the frequency of meetings with the employment agency, while having less ambitious friends show a positive impact and other personal or parental characteristics do not prove important. The positive effect of ambitious friends points to the importance of peer effects. Thus, intensive counseling predominately reaches students with migration background in the lower track and students with lower grades in the middle track, but at the same time most individual characteristics and parent background variables are insignificant.

Our findings on take-up and intensity are robust to accounting for school fixed effects. The OLS regressions reported in Tables A.1 and A.2 in the Appendix provide very similar findings as the Probit regressions discussed above, also after accounting for class fixed effects. Further, the OLS regressions show that including school fixed effects and class fixed effects increases the explanatory power considerably. Thus, the school and the classroom setting are an important determinant of the take-up and intensity, being even more relevant than personal characteristics. This is in line with the supply-hypothesis, while our findings provide only weak evidence for the need-hypothesis.

3.2 Work Experience Placements

A key channel for secondary school students to acquire practical job experience in different occupations is through work experience placements in local firms, which is the second type of career guidance activity we consider. The state of Baden-Württemberg has school type specific targets for the total duration of work experience placements (Schröder, 2015). Most placements last about a week. In addition, there are also job visit days in firms ("Praxistage"), sometimes organized by sponsors and partner firms of the school.

While job visit days are not used intensively in our sample (on average less than 2 days), work experience placements are a much more important career guidance activity (Table 7). On average, lower track students complete 3.5 placements with an average total duration of about 23 days (exceeding the state target of at least 20 days for the lower track Schröder (2015)), while middle track students complete on 2.1 placements with a total duration of 12 days. The differences are highly significant and sizeable, especially in light of the fact that about two thirds of the lower track students are in 9^{th} grade (see Table 2) while all middle track students are in 10^{th} grade.

75 % of students find work experience placements by themselves, while the second most frequent channel involves family and relatives. However, with a share of 36.8 % lower track students use this search channel significantly less than students in the middle track. This probably reflects in part the social selection by track (see Table 2). In the lower track, students received additional support for searching work experience placements from counselors and teachers, while this is not the case for middle track students.

< Table 7 about here >

Middle track students on average rated their work experience placements better than lower track students, both regarding the quality of supervision during the work experience placement and how much they enjoyed the work experience placement. Only a third of all students in the sample completed a work experience placement in their desired future occupation. The fit of the placements to the students' interests might be an important channel for successful career planning as students can adjust their expectations and preferences. Table 8 contrasts the sector shares among all actual placements, among placements rated best by each student, and among the desired occupations. Manufacturing and health have the highest share of desired occupations and many students have work experience placements in these sectors. However, some sectors (like trade and sales, social/care work, education) show a lot of placements, even though student interest is much lower. At the same time, there are other sectors (like public service/administration, information technology) that often fit the desired future occupation but only a few student complete placements in these sectors. The evidence in Table 8 reveals a mismatch between desired occupations and actual placements, suggesting that there is a need to inform students about the actual labor market opportunities and to make students form more realistic expectations (Goux et al., 2015). It could also point to the need to offer more diversified placements.

< Table 8 about here >

Next, we analyze the determinants of both the quantity and the quality of work experience placements (Table 9 for lower track and 10 for middle track). The quality of work experience placements is measured by the dummy variable for a match between sector of placement and desired occupation. Female students in the lower track are less likely to have completed at least three work experience placements but more likely to do their

work experience placements in their desired occupation. Students who speak German in their families and students whose parents have a tertiary degree are slightly less likely to have completed at least three placements. Thus, in contrast to counseling, we find no evidence that students in need complete more placements. Lower track students who have at least one meeting with the employment agency counselor are more likely to have completed at least three placements. The effect of counseling at the employment office is ambivalent in the middle track. While take-up shows a negative effects, intensive counseling moves the effect back to zero. Personality traits and grades do not seem to play a role. In the middle track, no personal and family characteristics are significant. There is only evidence that more conscientious and more agreeable students are more likely to have completed at least three placements.

Turning to the quality dimension of work experience placements, none of the included variables is significant in the lower track, except for gender. In the middle track, students whose parents have obtained a tertiary degree as well as students with an external locus of control are somewhat less likely to complete a placement in the desired occupation. The placements of lower track students seem to be of better quality if they were found through family or relatives. Middle track students are more likely to complete a placement in their desired occupation when they searched for it by themselves. Frequent counseling at the employment agency increases the probability of completing a placement in the desired occupation in the lower track but not in the middle track.

< Tables 9 and 10 about here >

Columns (2) and (4) in Tables 9 and 10 include school fixed effects. Schools might differ in the default number of placements students are expected to complete, in their network of cooperating firms offering placements, and the effort to help students complete adequate placements (e.g. by reorganizing the school curriculum to provide enough time for placements during regular school weeks). The marginal effects of personal and family characteristics do not change much compared to columns (1) and (3).

The OLS regressions for work experience placements reported in Tables A.3 and A.4 in the Appendix provide very similar findings to the Probit regressions discussed above, also after accounting for class fixed effects. The OLS regressions also show that including school fixed effects and class fixed effects increases the explanatory power considerably, when analyzing the quantity of placements, which is similar to the results for counseling. In contrast, the increase in explanatory power is quite small, and basically negligible

when considering the adjusted R^2, regarding the quality of placements. Confirming the supply-hypothesis, school specific factors are important for the quantity of work experience placements. However, quality placements are affected by personal characteristics and to some extent by counseling at the employment agency, whilst school and class fixed as well as school-based counseling do not matter.

4 The State of Career Planning

Now, we investigate as to whether more career guidance activities improve the state of career planning among students. We first provide Probit and OLS effect estimates. Then, as a robustness check, we address the possible endogeneity of career guidance by estimating IV regressions. We using two separate sets of instruments, either within-class averages in take-up or class variation in take-up after controlling for school-fixed effects. The IV approaches rely on the assumption that there are exogenous class differences in the take-up of career guidance Borghans et al. (2015).

A first measure of the advancement of career planning is the probability of reporting a desired occupation. For students, who intend to apply for an apprenticeship, being able to state a desired occupation is a signal of improved career planning. Note that students in our sample do not report unrealistic "dream jobs" as their desired occupation. 75 % of the lower track and 58 % of the middle track students report a desired occupation that requires an apprenticeship. The students were asked separately which level of educational degree they think they can achieve and in the vast majority of cases the students' educational aspirations fit their desired occupations' required degree (83 % of lower track and 85 % of middle track students). Thus, even though the high educational aspirations seem unrealistic on average, students appear to have a realistic view about the educational level needed to work in their desired occupation, indicating some realism in career planning.

Our second measure of career planning is the probability of having applied for an apprenticeship. A successful application typically requires a sufficient level of career planning. Additionally, applying for an apprenticeship shows that the students do not avoid making choices but actively make decisions for their future.

Our third measure of career planning is whether students plan to continue general secondary education in the next school year. This usually implies reaching a higher sec-

ondary school degree. As a higher secondary school degree might increase chances to find a more advanced apprenticeship position or even enter college, planning an upgrading can serve as measure of career planning because it implies knowledge of the apprenticeship labor market. However, it could also imply a lower level of career planning as students might opt for continuing school to avoid the occupational choice because they might prefer something that they already know over uncertainty in an apprenticeship.

4.1 Estimating the Effect of Career Guidance

Tables 11 and 12 report the average marginal effects of the probit regressions for the three measures of career planning: Reporting a desired occupation, applying for apprenticeships and planning to continue school. The regressions are not accounting for the endogeneity of career guidance. In Section 4.2, we summarize findings from two IV approaches as robustness checks which show the robustness of the key findings discussed in the following.[5]

< Table 11 about here >

Lower track students meeting with a counselor at the the employment agency are more likely to report a desired occupation and to have applied for an apprenticeship, and less likely to continue schooling. The frequency of the meetings with the employment agency does not show significant effects. Students that met more often with school counselors are more likely to report a desired occupation as well. There are no significant effects of school counselors on other career planning measures. Students with at least one work experience placement in their desired occupation are more likely to apply for apprenticeships, while a high number of placements is negatively related to applying for an apprenticeship. The experience of different job environments may indicate that finding a suitable apprenticeship is difficult because the student sees the need for revising his/her career plan or because it is difficult for the student to match his/her preferences with the available apprenticeships. Thus, advice by school counselors and adequate placements significantly affect career planning, though not in a linear way. Specifically, the employment agency shapes students' career plan towards the labor market and away from continuing general schooling.

[5]There is one exception: Our IV approaches do not work in a satisfactory way for work experience placement in the desired occupation.

Only a few other personal characteristics affect career planning: Surprisingly, 9th grade students are more likely to report a desired occupation and to plan to continue general schooling while being less likely to have applied for apprenticeships. This is in line with our expectations since students nowadays only start to apply for apprenticeships at the end of grade 10 - in contrast to the past when students were still graduating from the lower track at the end of grade 9 (Fitzenberger and Lickleder, 2015). Students whose parents value educational performance as well as students with better math grades are more likely to plan continuing school. The included measures for personality traits are hardly related to the probability of applying for apprenticeships or continuing schooling.

< Table 12 about here >

Table 12 presents the results for middle track students. We find a positive relationship between career guidance measures and career planning for middle track students as well. However, the influence apparently differs by school type. Middle track students that met with the employment agency are more likely to report a desired occupation. Students that had more than two meetings with the employment agency are more likely to have applied for apprenticeships. There is no effect of counseling by the employment agency on the plan to continue general schooling. Quantity and quality of work experience placements influence career planning a very similar way. More than three placements results in a higher probability of having applied for an apprenticeship and a lower probability of planning to continue school. A placement in the desired occupation is highly relevant for career planning because such students are more likely to apply for apprenticeships and less likely to plan to continue schooling.

Students whose parents are proud of their educational achievement are more likely to report a desired occupation. Personality traits seem to be more relevant for the career planning of middle track students than for lower track students. Whereas extrovert students and students with an internal locus of control are more likely to report a desired occupation, students who score high on openness to experience, neuroticism and conscientiousness have a lower probability of reporting a desired occupation. Female students and students with better grades in German and in Maths are less likely to apply for apprenticeships and more likely to plan to continue school. Student who score high on agreeableness and risk taking are more likely to apply for apprenticeships. Given grades, parental background and peers are also related to career planning. Students who

learned German at home are less likely to have applied for apprenticeships. Students whose parents have a tertiary education and students who have many friends aiming to reach the university-entry degree are more likely to plan continuing schooling.

Considering parental background, peers, and grades, especially middle track students who plan to continue schooling seem to be positively selected. There is a positive effect of counseling on career planning regarding the probability of reporting a desired occupation and of applying for apprenticeship in both school tracks. However, we do not find stronger effects of school counselors than of the employment agency's counselors in the lower track. There is a slightly negative effect of counseling on plans to continue school. A work experience placement in the desired occupation increases the probability of applying for an apprenticeship.

Our results are robust to different specifications of the estimation models as the step-wise addition of control variables and school dummies in Tables A.5 to A.10 show.

4.2 IV Approaches

A key concern is that the effect estimates reported in Section 4.1 may reflect unobserved student differences which both affect career guidance and career planning, possibly resulting in an endogeneity bias in the effect estimates of the take-up of career guidance. Based on a priori reasoning, there may be positive or negative selection. On the one hand, students meeting with the employment agency or school counselors may be more motivated, or they may have concrete plans to enter the labor market. In that case, career planning may be more advanced independently of career guidance. On the other hand, students whose state of career planning is less advanced may seek more counseling or are advised to do so.

As a robustness check, we test whether endogeneity questions our key findings based on two alternative IV approaches. Variation in take-up of career guidance between classes may be driven by supply differences (Borghans et al., 2015), which are unrelated to career planning conditional on the covariates controlled for, or by learning based on the behavior of other students in class. Factors driving supply differences may involve constraints in the work schedule of counselors, teacher attitudes towards career guidance or randomness in scheduling, time conflicts, and cancellations of career guidance activities.

Define the latent career guidance propensity for student i by

$$cg_i^* = \gamma^{CG} cg_{class} + \delta^{CG} Z_i^{CG} + u_i^{CG}\,, \tag{1}$$

with error term u_i^{CG}. The take-up dummy is determined by $cg_i = I[cg*_i > 0]$, where $I[.]$ is the indicator variable. Analogously, the observed dummy for career planning cp_i is determined by $cp_i = I[cp*_i > 0]$, where

$$cp_i^* = \beta^{CP} cg_i + \delta^{CP} X_i^{CP} + u_i^{CP} \tag{2}$$

with error term u_i^{CP}. Here, cg_i represents one of the different career guidance activities (counseling by the school counselor or by the employment agency, frequency of counseling, quantity and quality of work experience placements) and cp_i represents one of the three observed states of career planning. X_i denotes the observed covariates already considered in section 3. Z_i includes X_i and the instruments considered.

Our first IV approach directly follows Borghans et al. (2015) and instruments individual participation in career guidance using the average participation in career guidance at the class level. The instrument is computed as leave-one-out average of the share of students participating in the respective measure in the class of the student. If there are less than 5 observations per class those observations are added to the parallel classes of the same grade at the same school in order to lose fewer observations. Only, if there is no further class in the same grade, then the observations are dropped. For our instrument to be valid it should be a good predictor of actual take-up. This is likely to be the case because there is a lot of variation in take-up across classes which is not explained by our rich set of personal characteristics (similar to the variation across schools reported in Borghans et al. (2015)), see Tables A.1 to A.4 in the appendix. The same supply of career guidance may affect students within a class in the same direction such that certain options may appear more salient than others. The impact of the leave-one-out instrument may also reflect peer effects.

The first stage of our instrumental variables estimations shows mostly large and highly significant effects in nearly all cases (Table A.11). The class-level averages are good predictors of the individual take-up of counseling in all cases, albeit significance is low for the quantity of counseling in the middle track.[6] The instrument works for the

[6] Almost all lower track students have met at least once with school counselors. Hence, it is not surprising that the coefficient on the instrument is lower for this case. Still it is highly significant.

quantity of work experience placements only in the lower track - and not at all for the quality of placements, with the latter to be expected in light of the findings in Tables A.3 to A.4.

Our second IV approach uses the within school variation across classes in take-up of career guidance activities. Recall that Tables A.1 to A.4 in the appendix involve stepwise first stage OLS regressions where columns (1) involve personal characteristics, columns (2) add school fixed effects, and columns (3) add class fixed effects. As discussed above, adding class fixed effects strongly increases the explanatory power (measured by R^2), except for the quality of work experience placements. The partial increase in explanatory power due to the school fixed effects and the class fixed effects is stronger for the lower track, while still being sizeable for the middle track. Table A.12 shows that the partial effect of class fixed effects (contrasting columns (2) and (3) in Tables A.1 to A.4) is highly significant in all cases.

In the following, we consider tests for the endogeneity of counseling in both tracks and of the quantity of work experience placements in the lower track. The first stage estimations do not work for work experience placements in the desired occupation in a satisfactory way. For our analysis, we use the Probit fitted values from the first stage for all career guidance variables as instruments (except for placements in desired occupations).[7] We instrument all career guidance activities while using the same specifications as in Tables 11 and 12, except for using a linear probability model for the outcome equation instead of a Probit regression. We test for the endogeneity of the potentially endogenous variables "take-up employment agency", "2 or more meetings employment agency", "3 or more work experience placements" (for both tracks) as well as "take up school counselors" and "3 or more meetings school counselors" (only for lower track). To implement the test for multiple endogenous regressors and clustered standard errors, we use a modified Hausman test following Cameron and Miller (2015, p. 352).[8] The p-values for the tests are given in Table A.13. Almost all tests show that the null hypothesis of exogeneity of all career guidance activities considered can not be rejected at conventional levels.[9] Hence, there is no reason to suspect endogeneity bias for the effect estimates of counseling and the quantity of work experience placements discussed in Section 4.1. Because the

[7] See Wooldridge's (2010) Procedure 21.1 for details.

[8] We estimate $cp_i^* = \beta^{CP} cg_i + \delta^{CP} X_i^{CP} + \gamma \hat{\nu}_i + u_i^{CP}$ where $\hat{\nu}_i$ are fitted residuals from the first stages. A component of cg_i are considered endogenous, if we reject $H_0 : \gamma = 0$ for the corresponding coefficient.

[9] For a test size of 5%, there are 2 rejections among the 48 individual tests in Table A.13, i.e. the few rejections occur about as often as to be expected under the null hypothesis.

modified Hausman test provides no evidence for endogeneity, we do not report and discuss the IV estimates here.[10]

5 Conclusions

This paper analyzes the take-up of career counseling and work experience placements as well as their effects on career planning, based on a survey we conducted in lower and middle track secondary schools in Germany. We distinguish between incidence and quantity of counseling and between quantity and quality of work experience placements.

Career guidance is offered more intensively to students in the lower track than in the middle track, reflecting that career planning is a more pressing issue for lower track students. A key finding is that the take-up of counseling with the employment agency or the school counselor and the quantity of work experience placements are barely related to individual characteristics, including parental background or grades. Noteworthy exceptions are: Lower track students from non-German speaking families are more likely to meet with school counselors frequently, and in the middle track low-performing students are more likely to use intensive counseling by the employment agency. Lower track students who do not speak German at home and whose parents did not obtain a tertiary degree are more likely to receive three or more placements. Overall, there is only limited evidence that students facing greater difficulties in career planning are more engaged in career guidance. Rather, there are strong differences in take-up of career guidance across schools and classes, which are unrelated to the individual characteristics of the students.

As a quality measure we use whether students receive a work experience placement in their desired occupation. In contrast to the other activities, this quality indicator is much less affected by school and class effects and also depends very little on individual characteristics. One noteworthy exception: In the middle track, frequent counseling by the employment agency and own search effort show a positive effect on the quality of placements, which suggests a positive selection of students with high quality placements.

The second part of our study estimates the effect of career guidance on the state of career planning, measured by whether students have applied for apprenticeships, plan to continue schooling, and report a desired occupation. Following Borghans et al. (2015),

[10] As a caveat, we acknowledge that the IV coefficient estimates for the effects of counseling and work experience placements are typically not significant. Detailed results are available upon request.

our two IV approaches rely on the arguably exogenous variation in take-up across classes as instruments for the different career guidance activities. Based on the IV estimates, there is no evidence for endogeneity of all career guidance activities, except for the quality of work experience placements. For this reason, we focus on the Probit estimates of the effects of career guidance on career planning.

Our findings show that a higher number of work experience placements improve career planning only in the middle track, where students with at least three work experience placements are more likely to have applied for an apprenticeship. For lower track students, there is an opposite effect. Placements in the preferred occupation are associated with better career planning in both school tracks, a finding which we do not interpret as causal. Further, a higher number of placements show a negative effect on the probability of continuing schooling for middle track students, which is consistent with placements making an apprenticeship more attractive relative to the continuation of schooling. However, the number of placements does not show such an effect for lower track students, i.e. the policy implications of our findings are ambiguous in light of the fact that educational policies focus on the number of placements. Possibly, lower track students are less ready to apply for an apprenticeship and more placements can not change that. Schools and counselors are not successful in improving the quality of placements, which rather depends on the students' own search activities or the help of their family.

For lower track students, frequent counseling by school counselors increases the probability of reporting a desired occupation, while counseling by the employment agency increases the probability of applying for apprenticeships and of reporting a desired occupation but reduces the probability of planning to continue schooling. Frequent school counseling does not affect the other types of career planning. Middle track students meeting the counselor of the employment agency have a higher probability of reporting a desired occupation and frequent meetings increase the probability of applying for an apprenticeship. In sum, the employment agency is more effective in supporting career planning towards entering the labor market through an apprenticeship than school counseling. The employment agency seems to attenuate high educational aspirations, similar to the treatment considered in Goux et al. (2015) for the case of France.

Altogether, our findings suggest that career guidance can significantly improve secondary school students' career planning. However, the impact depends upon the focus of counseling because students have to choose between the continuation of schooling or entering the labor market by applying for an apprenticeship.

References

Arcidiacono, P., V. J. Hotz, and S. Kang (2012): "Modeling college major choices using elicited measures of expectations and counterfactuals," Journal of Econometrics, 166, 3–16.

Bettinger, E. P., B. T. Long, P. Oreopoulos, and L. Sanbonmatsu (2012): "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block Fafsa Experiment," The Quarterly Journal of Economics, 127, 1205–1242.

Biewen, M. and M. Tapalaga (2017): "Life-cycle educational choices in a system with early tracking and 'second chance'options," Economics of Education Review, 56, 80–94.

Bonin, H., B. Fitzenberger, and A. Hillerich (2016): "Schule–Berufsausbildung–Arbeitsmarkt: Herausforderungen und Potenziale der ökonomischen Berufsbildungsforschung," Perspektiven der Wirtschaftspolitik, 17, 208–231.

Boockmann, B. and S. Nielen (2016): "Mentoring Disadvantaged Youth during School-to-Work Transition: Evidence from Germany," IAW Discussion Paper 123, Institut für Angewandte Wirtschaftsforschung.

Borghans, L., B. H. H. Golsteyn, and A. Stenberg (2015): "Does Expert Advice Improve Educational Choice?" PLoS ONE, 10, e0145378.

Cameron, C. A. and D. L. Miller (2015): "A Practitioner's Guide to Cluster-Robust Inference," Journal of Human Resources, 50, 317–372.

DellaVigna, S. (2009): "Psychology and Economics: Evidence from the Field." Journal of Economic Literature, 47, 315 – 372.

Fitzenberger, B. and S. Lickleder er (2015): "Career Planning, School Grades, and Transitions: The Last Two Years in a German Lower Track Secondary School," Journal of Economics and Statistics (Jahrbuecher fuer Nationaloekonomie und Statistik), 235, 433–458.

——— (2017): "Additional Career Assistance and Educational Outcomes for Students in Lower Track Secondary Schools," ZEW Discussion Paper 17-024, Centre for European Economic Research, Mannheim.

Golsteyn, B. H., H. Grönqvist, and L. Lindahl (2014): "Adolescent Time Preferences Predict Lifetime Outcomes," The Economic Journal, 124, F739–F761.

Goux, D., M. Gurgand, and E. Maurin (2015): "Adjusting Your Dreams? High School Plans and Dropout Behaviour," The Economic Journal, 127, 1025–1046.

Hanushek, E., G. Schwerdt, L. Woessmann, and L. Zhang (2016): "General Education, Vocational Education, and Labor-Market Outcomes over the Life-Cycle," Journal of Human Resources, forthcoming.

Harmon, C., V. Hogan, and I. Walker (2003): "Dispersion in the economic return to schooling," Labour Economics, 10, 205–214.

Heckman, J. J., J. E. Humphries, and G. Veramendi (2018): "Returns to Education: The Causal Effects of Education on Earnings, Health, and Smoking," Journal of Political Economy, 126, 197–246.

Hillage, J., J. Kodz, and G. Pike (2001): "Pre-16 Work Experience Practice in England: An Evaluation," Research Report 263, UK Department for Education and Employment.

Hoest, A., V. M. Jensen, and L. P. Nielsen (2013): "Increasing the admission rate to upper secondary school: the case of lower secondary school student career guidance," Education Economics, 21, 213–229.

Holtmann, A. C., L. Menze, and H. Solga (2017): "Persistent Disadvantages or New Opportunities? The Role of Agency and Structural Constraints for Low-Achieving Adolescents' School-to-Work Transitions," Journal of Youth and Adolescence, 1–23.

Koch, A., J. Nafziger, and H. S. Nielsen (2015): "Behavioral economics of education," Journal of Economic Behavior & Organization, 115, 3 – 17.

Kohlrausch, B. and H. Solga (2012): "Übergänge in die Ausbildung: Welche Rolle spielt die Ausbildungsreife?" Zeitschrift für Erziehungswissenschaft, 15, 753–773.

Lavecchia, A., H. Liu, and P. Oreopoulos (2016): "Behavioral Economics of Education: Progress and Possibilities," in Handbook of the Economics of Education, ed. by S. M. Eric A. Hanushek and L. Woessmann, Elsevier, vol. 5 of Handbook of the Economics of Education, chap. 1, 1 – 74.

Mann, A. and C. Percy (2014): "Employer engagement in British secondary education: wage earning outcomes experienced by young adults," Journal of Education and Work, 27, 496–523.

McNally, S. (2016): "How important is career information and advice?" IZA World of Labor, 317, 1–10.

Messer, D. (2018): "Work placements at 14-15 years and employability skills," Education + Training, 60, 16–26.

Neumark, D. and D. Rothstein (2007): "Do School-to-Work Programs Help the "Forgotten Half"?" in Improving School-to-Work Transitions, ed. by D. Neumark, Russell Sage Foundation, 87–133.

Oreopoulos, P. and U. Petronijevic (2018): "Student Coaching: How Far Can Technology Go?" Journal of Human Resources, 53, 299–329.

Peter, F. H. and V. Zambre (2017): "Intended college enrollment and educational inequality: Do students lack information?" Economics of Education Review, 60, 125 – 141.

Rodríguez-Planas, N. (2014): "Do youth mentoring programs change the perspectives and improve the life opportunities of at-risk youth?" IZA World of Labor, 62, 1–10.

Saniter, N., D. D. Schnitzlein, and T. Siedler (2019): "Occupational Knowledge and Educational Mobility: Evidence from the Introduction of Job Information Centers," Economics of Education Review, 69, 108–124.

Schröder, R. (2015): "Reformen zur Berufsorientierung auf Bundes- und Landesebene im Zeitraum 2004-2015," Tech. rep., Bertelsmann Stiftung.

Solga, H. and B. Kohlrausch (2013): "How Low-achieving German Youth Beat the Odds and Gain Access to Vocational Training—Insights from Within-Group Variation," European Sociological Review, 29, 1068–1082.

Wooldridge, J. M. (2010): Econometric Analysis of Cross Section and Panel Data, The MIT Press, 2nd ed.

Tables

Table 1: Representativeness of the Sample

	Mannheim		**Freiburg**	
	Population	**Sample**	**Population**	**Sample**
Lower Track	19 %	29 %	13 %	29 %
Middle Track	24 %	16 %	21 %	27 %
Upper Track	47 %	32 %	58 %	31 %
Share with Migration Background	47 %[a]	42 %[b]	21 %[c]	22 %[b]
Female	50 %	53 %	50 %	52 %

Notes: a Education Report Mannheim school year 2012-2013: Population share below the age of 27 with migration background. b Share of surveyed students growing up in bilingual families. c Online Statistics Freiburg school year 2012-2013: Population share below the age of 27 with migration background.

Table 2: Descriptive Statistics of the Sample by School Type

	Type of Secondary School		sig
	lower track	middle track	
Female	0.54	0.45	*
City	0.56	0.43	**
9th grade	0.68	–	
German spoken in family	0.81	0.94	***
at least one parent with college degree	0.11	0.34	***
Parents encourage effort in school	0.65	0.63	
Parents are proud of educational achievement	0.69	0.65	
Ambitious friends: Many friends strive for upgrading	0.26	0.69	***
Good or excellent grade in Math	0.19	0.39	***
Good or excellent grade in German	0.31	0.32	
Grades variable missing	0.08	0.02	**
College degree is achievable	0.25	0.46	***
College entry degree is achievable	0.22	0.42	***
Personality Traits (Big Five, scale 1-7)			
Conscientiousness	4.8	4.85	
Extraversion	4.66	4.88	
Agreeableness	5.11	5.39	**
Neuroticism	4.18	4.06	
Openness to new experiences	4.6	4.9	**
Locus of Control (scale 1-7)			
External LOC	3.28	3.17	
Internal LOC	5.92	5.83	
Risk aversion (risk averse 0-10 risk loving)	6.31	6.37	
Application for apprenticeship	0.3	0.34	
Planning upgrading of school degree	0.49	0.59	*
Reporting desired occupation	0.7	0.67	
Observations	159	161	

Stat. significant difference * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Take-up of Career Guidance Counseling Services by School Track

	Type of Secondary School lower track	middle track	sig
meeting school counselor	0.85	0.37	***
Av. number of counseling meetings	7.72	2.35	***
meeting employment agency	0.50	0.71	***
Av. number of counseling meetings	1.99	1.60	**
meeting teacher	0.34	0.21	***
Av. number of teacher meetings	4.42	1.92	***
counseling outside school	0.12	0.09	
multiple take-up of difference services			
meeting 1 counselor	0.28	0.48	***
meeting 2 counselors	0.38	0.24	***
meeting 3 counselors	0.22	0.14	*
meeting 4 counselors	0.01	–	

Stat. significant difference: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Type of Support Provided by Career Guidance Counselors by School Type

	lower track	middle track	sig
School counselor			
Type of Support provided			
Discussion of career/ educational options	0.84	0.93	*
Support with applications	0.74	0.37	***
Information about vacant apprenticeships	0.54	0.44	
Matching of apprenticeships	0.40	0.31	
Support was helpful	0.80	0.80	
Employment agency			
Type of Support provided			
Discussion of career/ educational possibilities	0.68	0.86	***
Support with applications	0.28	0.20	
Information about vacant apprenticeships	0.54	0.32	***
Matching of apprenticeships	0.39	0.32	
Support was helpful	0.70	0.77	
Teacher			
Type of Support provided			
Discussion of career/ educational possibilities	0.79	0.79	
Support with applications	0.48	0.45	
Information about vacant apprenticeships	0.29	0.21	
Matching of apprenticeships	0.29	0.15	
Support was helpful	0.79	0.65	

Conditional on take up. Stat. significant difference: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Probit Regression: Take-Up of Counseling with an Employment Agency or School Counselor – Lower Track (Marginal effects)

	School counselors				Employment agency			
	Take up		at least 3 meetings		Take up		at least 2 meetings	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Female	0.109**	0.035	-0.048	-0.202**	-0.051	-0.118	-0.023	-0.082
	(0.055)	(0.032)	(0.094)	(0.096)	(0.099)	(0.096)	(0.082)	(0.081)
City (=Mannheim)	-0.055	-0.466***	0.180	0.070	-0.074	-0.044	-0.052	-0.133
	(0.073)	(0.137)	(0.162)	(0.279)	(0.118)	(0.220)	(0.099)	(0.141)
9th Grade	-0.015	0.006	-0.190	-0.345***	-0.137	-0.145	-0.262***	-0.316***
	(0.075)	(0.038)	(0.127)	(0.123)	(0.113)	(0.121)	(0.075)	(0.061)
German spoken	-0.074	-0.057	-0.342**	-0.402***	-0.046	-0.015	0.066	0.099
in family	(0.078)	(0.035)	(0.140)	(0.122)	(0.116)	(0.127)	(0.086)	(0.099)
Parents college	0.007	-0.011	0.067	0.068	0.062	0.083	-0.155	-0.154
	(0.066)	(0.034)	(0.094)	(0.139)	(0.125)	(0.128)	(0.146)	(0.134)
Parents encourage	0.012	-0.003	-0.117	-0.126	-0.063	-0.059	-0.072	-0.079
effort in school	(0.054)	(0.035)	(0.086)	(0.082)	(0.097)	(0.099)	(0.068)	(0.068)
Parents proud of	0.049	0.018	0.266**	0.242**	0.058	0.049	0.160*	0.127
educ. achievement	(0.054)	(0.030)	(0.109)	(0.106)	(0.135)	(0.141)	(0.088)	(0.090)
Ambitious friends	-0.029	-0.035	0.093	-0.031	-0.035	-0.069	-0.023	-0.048
	(0.055)	(0.030)	(0.116)	(0.109)	(0.107)	(0.106)	(0.093)	(0.114)
Good Math grade	0.011	-0.009	-0.117	-0.246**	-0.086	-0.065	-0.010	-0.036
	(0.052)	(0.024)	(0.102)	(0.111)	(0.123)	(0.121)	(0.102)	(0.099)
Good German grade	0.015	0.020	-0.115	-0.088	-0.005	-0.047	-0.045	-0.045
	(0.069)	(0.039)	(0.092)	(0.101)	(0.128)	(0.126)	(0.061)	(0.064)
Grades missing	-0.155**	-0.095**	-0.236	-0.206	-0.417**	-0.337*	-0.223	-0.090
	(0.077)	(0.038)	(0.204)	(0.193)	(0.192)	(0.187)	(0.185)	(0.158)
Openness	-0.053**	-0.029**	-0.012	0.002	0.031	0.033	0.004	0.002
	(0.022)	(0.012)	(0.036)	(0.043)	(0.040)	(0.039)	(0.027)	(0.024)
Extraversion	-0.007	0.001	0.079**	0.101**	-0.026	-0.016	0.004	0.008
	(0.024)	(0.016)	(0.038)	(0.043)	(0.041)	(0.038)	(0.033)	(0.035)
Conscientiousness	-0.012	-0.003	-0.013	-0.020	0.052	0.044	0.044	0.039
	(0.022)	(0.014)	(0.049)	(0.058)	(0.034)	(0.037)	(0.036)	(0.042)
Neuroticism	-0.006	-0.000	0.053	0.071	-0.047	-0.026	-0.050	-0.027
	(0.024)	(0.016)	(0.047)	(0.051)	(0.045)	(0.047)	(0.033)	(0.035)
Agreeableness	0.038	0.022	0.044	0.040	0.046	0.039	0.095**	0.077*
	(0.028)	(0.015)	(0.037)	(0.038)	(0.039)	(0.040)	(0.040)	(0.042)
external	0.029**	0.019***	0.022	0.009	0.066*	0.047	0.105***	0.077**
locus of control	(0.014)	(0.006)	(0.043)	(0.054)	(0.036)	(0.038)	(0.034)	(0.031)
internal	0.034	0.023	0.020	0.006	-0.022	-0.059	-0.068*	-0.105**
locus of control	(0.034)	(0.020)	(0.041)	(0.041)	(0.045)	(0.049)	(0.037)	(0.041)
Risk loving	0.011	0.006	0.005	-0.000	0.013	0.014	0.016	0.014
	(0.009)	(0.004)	(0.015)	(0.019)	(0.013)	(0.014)	(0.012)	(0.012)
School dummies	no	yes	no	yes	no	yes	no	yes
pseudo R^2	0.126	0.247	0.151	0.282	0.076	0.131	0.185	0.277
Observations	154	154	154	154	153	153	153	153

Marginal effects. Standard errors clustered by class in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Probit Regression: Take-Up of Counseling with an Employment Agency – Middle Track (Marginal effects)

	Employment agency			
	Take up		at least 2 meetings	
	(1)	(2)	(1)	(2)
Female	-0.096	-0.090	-0.007	0.024
	(0.066)	(0.062)	(0.062)	(0.043)
City (=Mannheim)	0.116	0.928***	0.073	1.166***
	(0.105)	(0.101)	(0.092)	(0.162)
German spoken in family	0.129	0.055	-0.010	0.051
	(0.125)	(0.133)	(0.132)	(0.100)
Parents college	-0.058	-0.081	-0.102	-0.050
	(0.080)	(0.092)	(0.084)	(0.065)
Parents encourage effort in school	-0.114	-0.121	0.024	-0.007
	(0.088)	(0.086)	(0.052)	(0.045)
Parents proud of educ. achievement	0.115**	0.166***	0.061	0.074
	(0.057)	(0.060)	(0.078)	(0.058)
Ambitious friends	0.232**	0.298***	0.115*	0.135**
	(0.091)	(0.065)	(0.068)	(0.054)
Good Math grade	0.063	0.044	-0.113**	-0.060*
	(0.079)	(0.074)	(0.047)	(0.035)
Good German grade	0.123*	0.082	-0.069	-0.029
	(0.075)	(0.077)	(0.098)	(0.076)
Openness	0.034	0.077*	0.031	0.037
	(0.037)	(0.040)	(0.027)	(0.024)
Extraversion	-0.097***	-0.119***	-0.052	-0.049*
	(0.034)	(0.043)	(0.033)	(0.027)
Conscientiousness	-0.038	-0.030	0.011	0.001
	(0.029)	(0.035)	(0.032)	(0.029)
Neuroticism	0.007	-0.008	-0.025	-0.032
	(0.037)	(0.038)	(0.034)	(0.029)
Agreeableness	0.062	0.027	-0.061**	-0.039*
	(0.038)	(0.042)	(0.024)	(0.020)
external locus of control	0.006	-0.002	0.018	0.023
	(0.043)	(0.046)	(0.045)	(0.040)
internal locus of control	0.155***	0.180***	-0.004	0.003
	(0.054)	(0.049)	(0.051)	(0.043)
Risk loving	0.018	0.004	0.019	0.007
	(0.015)	(0.015)	(0.014)	(0.010)
School dummies	no	yes	no	yes
pseudo R^2	0.147	0.282	0.097	0.258
Observations	160	160	160	160

Marginal effects. Standard errors clustered by class in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Descriptive Statistics on Work Experience Placements by School Type

	Type of Secondary School		sig
	lower track	middle track	
Number of "Job Visit Days"	1.83	1.75	
Number of work experience placements	3.52	2.08	***
Av. duration of work experience placement (days)	7.96	6.00	***
Total duration of work experience placements (days)	22.52	11.99	***
Search channels for work experience placements			
Student by him/herself	0.72	0.75	
School counselor	0.15	0.01	***
Teacher	0.10	0.03	***
Family/relatives	0.37	0.51	***
Work experience placement Quality			
Quality of supervision at work experience placement (scale 0-3)	1.56	1.75	***
Enjoyed work experience placement (scale 0-3)	1.43	1.57	**
work experience placement in desired occupation	0.43	0.37	**
Most enjoyed work experience placement in desired occupation	0.47	0.40	

Stat. significant difference * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Sector of Work Experience Placements, Best work experience placement and Desired Occupation

Sector	Work experience pl.	Best Work experience pl.	Desired occupation
Health	20.6%	21.4%	17.0%
Trade and sales	18.3%	17.9%	14.8%
Social/care work, education	17.0%	12.4%	11.2%
manufacturing/engineering	15.8%	16.9%	17.3%
Humanities	1.1%	1.4%	1.1%
Information technology	1.7%	1.7%	5.1%
Natural Sciences	1.3%	1.4%	2.9%
skilled crafts and trades	4.1%	2.4%	2.2%
Construction	2.8%	3.4%	3.2%
Creative/Entertainment	5.0%	6.6%	5.8%
Food production/gastronomy	4.5%	5.2%	5.1%
Public service/administration	2.1%	3.8%	7.2%
Other Services	5.6%	5.5%	7.2%
Observations	753	290	277

Table 9: Probit Regression: Determinants of Quantity and Quality of Work Experience Placement (Lower Track)

	3 or more Work experience pl.		Work experience pl. in desired occup.	
Female	-0.187**	-0.121	0.309***	0.371***
	(0.075)	(0.086)	(0.086)	(0.097)
City (=Mannheim)	-0.133	0.111	0.122**	0.287***
	(0.122)	(0.131)	(0.060)	(0.097)
9th Grade	-0.228**	-0.328***	0.096	0.058
	(0.108)	(0.086)	(0.093)	(0.091)
German spoken in family	-0.235**	-0.320***	-0.115	-0.142
	(0.098)	(0.102)	(0.091)	(0.096)
Parents college	-0.293*	-0.312**	0.244	0.278
	(0.152)	(0.154)	(0.180)	(0.186)
Parents encourage effort in school	0.087	0.084	0.121	0.120
	(0.110)	(0.118)	(0.091)	(0.086)
Parents proud of educ. achievement	0.093	0.113	0.000	0.011
	(0.097)	(0.099)	(0.096)	(0.096)
Ambitious friends	-0.162	-0.119	-0.022	0.036
	(0.099)	(0.110)	(0.113)	(0.115)
Good Math grade	0.077	0.062	-0.012	-0.024
	(0.120)	(0.120)	(0.139)	(0.140)
Good German grade	0.064	0.122	0.115	0.132
	(0.086)	(0.083)	(0.110)	(0.111)
Grades missing	-0.004	-0.026	0.283*	0.271
	(0.144)	(0.149)	(0.167)	(0.167)
Openness	0.007	0.004	-0.053	-0.057
	(0.033)	(0.033)	(0.040)	(0.042)
Extraversion	-0.013	-0.012	0.013	0.019
	(0.039)	(0.045)	(0.032)	(0.032)
Conscientiousness	0.091***	0.093**	0.026	0.026
	(0.034)	(0.040)	(0.047)	(0.051)
Neuroticism	0.025	0.004	-0.037	-0.047
	(0.030)	(0.033)	(0.035)	(0.037)
Agreeableness	-0.046	-0.058	0.004	0.001
	(0.038)	(0.042)	(0.040)	(0.045)
external locus of control	-0.039	-0.048	-0.042	-0.043
	(0.039)	(0.047)	(0.051)	(0.052)
internal locus of control	-0.066	-0.022	-0.039	-0.022
	(0.056)	(0.059)	(0.053)	(0.056)
Risk loving	-0.007	-0.017	0.023	0.019
	(0.018)	(0.019)	(0.016)	(0.018)
Take-up employment agency	0.086	0.158**	-0.066	-0.064
	(0.098)	(0.077)	(0.133)	(0.146)
2 or more meetings employment agency	0.084	0.145	0.218*	0.250**
	(0.130)	(0.142)	(0.113)	(0.108)
Take-up school counselor	-0.020	-0.022	0.102	0.135
	(0.120)	(0.135)	(0.165)	(0.174)
3 or more meetings school counselor	0.044	0.047	0.063	0.061
	(0.081)	(0.091)	(0.115)	(0.118)
Own placement search			0.069	0.039
			(0.124)	(0.127)
Placement search family			0.221**	0.195**
			(0.105)	(0.097)
Placement search counselor			-0.039	-0.035
			(0.164)	(0.178)
School dummies	no	yes	no	yes
pseudo R^2	0.143	0.233	0.178	0.205
Observations	159	159	159	159

Marginal effects of probit estimations. Standard errors clustered by class in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Probit Regression: Determinants of Quantity and Quality of Work Experience Placement (Middle Track)

	3 or more Work experience pl.		Work experience pl. in desired occup.	
Female	0.010	-0.027	0.111	0.114
	(0.079)	(0.082)	(0.091)	(0.091)
City (=Mannheim)	-0.084	-0.204	-0.178**	-0.295***
	(0.090)	(0.158)	(0.086)	(0.109)
German spoken in family	0.069	0.051	-0.035	-0.066
	(0.131)	(0.126)	(0.156)	(0.177)
Parents college	0.058	0.022	-0.189**	-0.233**
	(0.060)	(0.059)	(0.096)	(0.091)
Parents encourage effort in school	-0.092	-0.059	-0.025	-0.051
	(0.065)	(0.068)	(0.092)	(0.096)
Parents proud of educ. achievement	-0.082	-0.084	0.148	0.170*
	(0.066)	(0.069)	(0.092)	(0.097)
Ambitious friends	-0.000	-0.022	0.055	0.086
	(0.104)	(0.101)	(0.083)	(0.089)
Good Math grade	0.004	0.007	-0.102	-0.099
	(0.064)	(0.063)	(0.095)	(0.096)
Good German grade	-0.017	0.003	-0.142	-0.202*
	(0.049)	(0.053)	(0.103)	(0.109)
Openness	-0.021	-0.020	-0.022	-0.025
	(0.020)	(0.020)	(0.037)	(0.038)
Extraversion	0.012	0.008	0.025	0.019
	(0.026)	(0.030)	(0.039)	(0.044)
Conscientiousness	0.065**	0.068**	-0.012	-0.017
	(0.028)	(0.028)	(0.048)	(0.050)
Neuroticism	0.032	0.049**	-0.003	-0.009
	(0.023)	(0.023)	(0.041)	(0.047)
Agreeableness	0.099***	0.097***	-0.005	-0.011
	(0.032)	(0.033)	(0.044)	(0.040)
external locus of control	0.038	0.022	-0.126***	-0.146***
	(0.040)	(0.043)	(0.042)	(0.039)
internal locus of control	-0.060	-0.060	0.041	0.032
	(0.047)	(0.047)	(0.073)	(0.072)
Risk loving	0.026*	0.026*	0.011	0.013
	(0.014)	(0.014)	(0.018)	(0.020)
Take-up employment agency	-0.122*	-0.148*	-0.011	-0.069
	(0.068)	(0.089)	(0.099)	(0.104)
2 or more meetings employment agency	0.117	0.155*	-0.072	-0.026
	(0.073)	(0.092)	(0.085)	(0.085)
Own placement search			0.199*	0.227**
			(0.104)	(0.106)
Placement search family			0.098	0.151
			(0.101)	(0.111)
School dummies	no	yes	no	yes
pseudo R^2	0.112	0.149	0.123	0.159
Observations	161	161	161	161

Marginal effects of probit estimations. Standard errors clustered by class in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Probit Regression: Career Planning for Lower Track students (Marginal Effects)

	reporting desired occupation	application apprenticeship	planning upgrading
Take-up	0.165**	0.375***	-0.250*
employment agency	(0.077)	(0.088)	(0.130)
2 or more meetings	-0.157	-0.143	0.134
employment agency	(0.132)	(0.093)	(0.171)
Take-up	0.070	0.065	-0.169
school counselor	(0.154)	(0.092)	(0.208)
3 or more meetings	0.173*	0.095	0.135
school counselor	(0.092)	(0.098)	(0.158)
3 or more	0.043	-0.144*	0.040
Work experience pl.	(0.099)	(0.081)	(0.123)
Work experience pl. in		0.251***	-0.086
desired occupation		(0.072)	(0.094)
Female	0.148*	-0.046	0.003
	(0.080)	(0.091)	(0.094)
City	0.064	0.211*	-0.021
(= Mannheim)	(0.078)	(0.109)	(0.116)
9th grade	0.193***	-0.320***	0.227**
	(0.058)	(0.074)	(0.114)
German spoken	0.019	0.209	0.030
in Family	(0.104)	(0.141)	(0.108)
Parents college	0.085	-0.007	-0.002
	(0.144)	(0.109)	(0.101)
Parents encourage	0.149*	-0.110	0.330***
effort in school	(0.086)	(0.092)	(0.086)
Parents proud of	-0.001	-0.032	0.095
educ. achievement	(0.097)	(0.103)	(0.145)
Ambitious friends	-0.076	-0.120	-0.068
	(0.059)	(0.084)	(0.098)
Good Math grade	-0.125	-0.133	0.368***
	(0.090)	(0.108)	(0.102)
Good German grade	-0.069	-0.077	0.208
	(0.105)	(0.089)	(0.147)
Grades missing	0.071	0.092	0.237
	(0.110)	(0.127)	(0.182)
Openness	-0.092***	-0.014	0.036
	(0.033)	(0.038)	(0.054)
Extraversion	-0.017	0.027	-0.019
	(0.040)	(0.027)	(0.041)
Conscientiousness	0.035	0.051	0.051
	(0.031)	(0.038)	(0.040)
Neuroticism	-0.015	-0.037	0.076*
	(0.040)	(0.030)	(0.045)
Agreeableness	0.025	-0.070*	-0.062
	(0.037)	(0.036)	(0.057)
external	-0.007	0.070*	-0.002
locus of control	(0.032)	(0.039)	(0.037)
internal	-0.033	-0.042	0.104
locus of control	(0.038)	(0.050)	(0.084)
Risk loving	0.011	-0.022	0.020
	(0.012)	(0.018)	(0.018)
pseudo R^2	0.192	0.373	0.257
Observations	159	159	147

Marginal effects of Probit estimations. Standard errors clustered by class in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Probit Regression: Career Planning for Middle Track students (Marginal Effects)

	reporting desired occupation	application apprenticeship	planning upgrading
Take-up	0.272***	-0.022	-0.008
employment agency	(0.075)	(0.106)	(0.136)
2 or more meetings	0.050	0.254**	-0.005
employment agency	(0.089)	(0.111)	(0.150)
3 or more	0.006	0.181**	-0.199***
Work experience pl.	(0.089)	(0.082)	(0.076)
Work experience pl. in		0.182**	-0.310***
desired occupation		(0.081)	(0.094)
Female	0.176	-0.155*	0.054
	(0.122)	(0.080)	(0.122)
City	0.027	0.157*	-0.088
(= Mannheim)	(0.097)	(0.089)	(0.086)
German spoken	-0.021	-0.312***	0.248*
in Family	(0.147)	(0.087)	(0.136)
Parents college	-0.000	-0.096	0.270**
	(0.058)	(0.113)	(0.128)
Parents encourage	0.059	0.114	-0.060
effort in school	(0.089)	(0.092)	(0.116)
Parents proud of	0.233**	0.067	-0.137
educ. achievement	(0.105)	(0.081)	(0.100)
Ambitious friends	-0.049	-0.122*	0.181**
	(0.058)	(0.071)	(0.088)
Good Math grade	-0.093	-0.126	0.236**
	(0.089)	(0.087)	(0.096)
Good German grade	-0.144	-0.235**	0.250**
	(0.103)	(0.092)	(0.119)
Openness	-0.053*	-0.000	-0.038
	(0.030)	(0.039)	(0.046)
Extraversion	0.084**	-0.030	0.019
	(0.039)	(0.028)	(0.034)
Conscientiousness	-0.051*	0.021	0.004
	(0.028)	(0.040)	(0.050)
Neuroticism	-0.107***	-0.021	0.049
	(0.029)	(0.053)	(0.062)
Agreeableness	-0.077	0.179***	-0.090
	(0.050)	(0.047)	(0.063)
external	-0.095***	0.029	-0.020
locus of control	(0.033)	(0.035)	(0.045)
internal	0.106*	-0.040	0.029
locus of control	(0.056)	(0.055)	(0.080)
Risk loving	-0.017	0.046***	0.000
	(0.014)	(0.017)	(0.023)
pseudo R^2	0.201	0.316	0.287
Observations	159	161	153

Marginal effects of Probit estimations. Standard errors clustered by class in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Additional Appendix

Table A.1: Robustness Check: OLS Regression Take-up of Counseling including Class/School Dummies – Lower Track

	School counselors at least 3 meetings			Take up			Employment agency at least 2 meetings		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Female	-0.037	-0.116	-0.028	-0.042	-0.099	-0.089	-0.025	-0.086	-0.080
	(0.089)	(0.081)	(0.063)	(0.098)	(0.088)	(0.098)	(0.081)	(0.073)	(0.084)
City (=Mannheim)	0.147	-0.206	0.075	-0.071	0.072	-0.175	-0.039	-0.009	-0.041
	(0.147)	(0.239)	(0.239)	(0.120)	(0.182)	(0.140)	(0.103)	(0.063)	(0.109)
9th Grade	-0.154	-0.260***	-0.006	-0.128	-0.114	-0.032	-0.241**	-0.277***	-0.221**
	(0.114)	(0.091)	(0.205)	(0.113)	(0.118)	(0.107)	(0.099)	(0.074)	(0.084)
German spoken	-0.271**	-0.257**	-0.285***	-0.050	-0.007	-0.046	0.044	0.090	-0.013
in family	(0.117)	(0.093)	(0.090)	(0.115)	(0.126)	(0.133)	(0.081)	(0.099)	(0.096)
Parents college	0.062	0.048	0.075	0.059	0.074	0.048	-0.121	-0.116	-0.138
	(0.073)	(0.092)	(0.089)	(0.128)	(0.132)	(0.126)	(0.121)	(0.115)	(0.128)
Parents encourage	-0.088	-0.099	-0.080	-0.062	-0.039	-0.006	-0.071	-0.061	-0.056
effort in school	(0.082)	(0.072)	(0.078)	(0.096)	(0.094)	(0.117)	(0.075)	(0.075)	(0.084)
Parents proud of	0.211**	0.137	0.180**	0.054	0.053	0.080	0.133	0.111	0.103
educ. achievement	(0.099)	(0.092)	(0.077)	(0.138)	(0.139)	(0.150)	(0.091)	(0.090)	(0.095)
Ambitious friends	0.076	-0.010	0.081	-0.023	-0.042	0.006	-0.011	-0.051	-0.066
	(0.103)	(0.079)	(0.076)	(0.101)	(0.097)	(0.097)	(0.104)	(0.116)	(0.114)
Good Math grade	-0.087	-0.135	-0.113	-0.087	-0.076	-0.137	-0.029	-0.042	-0.056
	(0.099)	(0.096)	(0.093)	(0.124)	(0.120)	(0.146)	(0.085)	(0.072)	(0.075)
Good German grade	-0.094	-0.078	-0.105	-0.005	-0.033	-0.032	-0.043	-0.051	-0.105
	(0.085)	(0.083)	(0.092)	(0.128)	(0.120)	(0.136)	(0.068)	(0.066)	(0.074)
Grades missing	-0.205	-0.119	-0.015	-0.367**	-0.308**	-0.361**	-0.171	-0.091	-0.173
	(0.192)	(0.145)	(0.139)	(0.150)	(0.147)	(0.147)	(0.146)	(0.149)	(0.155)
Openness	-0.005	0.009	0.033	0.028	0.024	0.014	0.003	0.005	0.019
	(0.034)	(0.037)	(0.039)	(0.039)	(0.038)	(0.040)	(0.024)	(0.022)	(0.023)
Extraversion	0.059*	0.068*	0.036	-0.025	-0.015	-0.007	-0.012	-0.003	-0.020
	(0.031)	(0.034)	(0.031)	(0.040)	(0.033)	(0.035)	(0.037)	(0.039)	(0.037)
Conscientiousness	-0.011	-0.015	-0.055	0.048	0.036	0.026	0.047	0.038	0.021
	(0.046)	(0.044)	(0.040)	(0.032)	(0.034)	(0.037)	(0.032)	(0.034)	(0.039)
Neuroticism	0.032	0.035	-0.014	-0.044	-0.014	-0.027	-0.037	-0.014	-0.053
	(0.043)	(0.046)	(0.044)	(0.047)	(0.044)	(0.050)	(0.032)	(0.031)	(0.034)
Agreeableness	0.041	0.035	0.028	0.039	0.033	0.005	0.062*	0.052	0.059
	(0.033)	(0.029)	(0.024)	(0.038)	(0.037)	(0.040)	(0.034)	(0.038)	(0.037)
external	0.020	-0.004	0.017	0.059	0.045	0.049	0.079**	0.060*	0.063*
locus of control	(0.039)	(0.042)	(0.048)	(0.036)	(0.037)	(0.038)	(0.034)	(0.033)	(0.036)
internal	0.020	0.006	0.017	-0.013	-0.055	-0.042	-0.053	-0.089**	-0.100**
locus of control	(0.037)	(0.031)	(0.032)	(0.045)	(0.044)	(0.047)	(0.044)	(0.039)	(0.042)
Risk loving	0.005	-0.004	-0.014	0.012	0.016	0.018	0.013	0.013	0.018*
	(0.012)	(0.012)	(0.011)	(0.013)	(0.013)	(0.014)	(0.010)	(0.011)	(0.010)
School dummies	no	yes	no	no	yes	no	no	yes	no
Class dummies	no	no	yes	no	no	yes	no	no	yes
Constant	-0.026	0.486	0.648	0.289	0.271	0.564	0.040	0.196	0.585
	(0.305)	(0.427)	(0.407)	(0.469)	(0.408)	(0.429)	(0.446)	(0.340)	(0.347)
R^2	0.184	0.340	0.464	0.100	0.184	0.325	0.171	0.264	0.425
Adjusted R^2	0.069	0.217	0.305	-0.029	0.031	0.115	0.052	0.126	0.247
Observations	154	154	154	153	153	153	153	153	153

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

Table A.2: Robustness Check: OLS Regression Take-up of Counseling including Class/School Dummies – Middle Track

	Employment agency					
	Take up			at least 2 meetings		
	(1)	(2)	(3)	(1)	(2)	(3)
Female	-0.086	-0.103	-0.067	-0.017	-0.005	-0.013
	(0.065)	(0.062)	(0.069)	(0.064)	(0.063)	(0.069)
City (=Mannheim)	0.099	0.149	0.091	0.070	0.440***	0.382***
	(0.100)	(0.183)	(0.271)	(0.101)	(0.061)	(0.061)
German spoken in family	0.124	0.107	0.010	-0.028	0.066	0.011
	(0.144)	(0.174)	(0.166)	(0.147)	(0.147)	(0.153)
Parents college	-0.052	-0.059	-0.045	-0.078	-0.061	-0.061
	(0.079)	(0.080)	(0.088)	(0.083)	(0.080)	(0.089)
Parents encourage effort in school	-0.109	-0.132	-0.121	0.030	0.004	0.002
	(0.083)	(0.087)	(0.096)	(0.055)	(0.059)	(0.071)
Parents proud of educ. achievement	0.099	0.104*	0.072	0.064	0.083	0.056
	(0.059)	(0.060)	(0.051)	(0.082)	(0.071)	(0.080)
Ambitious friends	0.217**	0.214**	0.209**	0.115	0.147*	0.165*
	(0.088)	(0.081)	(0.085)	(0.072)	(0.071)	(0.088)
Good Math grade	0.068	0.060	0.050	-0.101**	-0.057	-0.073
	(0.075)	(0.064)	(0.066)	(0.048)	(0.046)	(0.054)
Good German grade	0.093	0.087	0.108	-0.045	-0.008	0.036
	(0.074)	(0.077)	(0.081)	(0.109)	(0.085)	(0.089)
Openness	0.027	0.047	0.054	0.028	0.036	0.039
	(0.035)	(0.037)	(0.037)	(0.027)	(0.025)	(0.028)
Extraversion	-0.092***	-0.090**	-0.077**	-0.050	-0.048	-0.049
	(0.031)	(0.033)	(0.037)	(0.034)	(0.033)	(0.035)
Conscientiousness	-0.034	-0.026	0.001	0.007	-0.000	0.018
	(0.025)	(0.024)	(0.024)	(0.032)	(0.033)	(0.034)
Neuroticism	0.004	0.007	-0.002	-0.016	-0.027	-0.030
	(0.037)	(0.039)	(0.039)	(0.034)	(0.032)	(0.034)
Agreeableness	0.053	0.047	0.052	-0.062*	-0.040	-0.033
	(0.035)	(0.038)	(0.037)	(0.030)	(0.023)	(0.024)
external locus of control	0.005	0.017	0.016	0.011	0.031	0.039
	(0.042)	(0.042)	(0.044)	(0.050)	(0.048)	(0.050)
internal locus of control	0.146**	0.152***	0.136**	-0.009	-0.019	-0.016
	(0.054)	(0.052)	(0.053)	(0.056)	(0.053)	(0.054)
Risk loving	0.019	0.011	0.013	0.018	0.008	0.009
	(0.014)	(0.014)	(0.016)	(0.014)	(0.011)	(0.014)
School dummies	no	yes	no	no	yes	no
Class dummies	no	no	yes	no	no	yes
Constant	-0.402	-0.461	-0.573	0.544	0.187	0.063
	(0.497)	(0.549)	(0.571)	(0.480)	(0.455)	(0.488)
R^2	0.164	0.196	0.275	0.096	0.235	0.278
Adjusted R^2	0.064	0.060	0.085	-0.012	0.106	0.088
Observations	160	160	160	160	160	160

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

Table A.3: Robustness Check: OLS Regression Participation in Work Experience Placements including Class/School Dummies – Lower Track

	3 or more Work experience pl.			Work experience pl. in desired occup.		
	(1)	(2)	(3)	(1)	(2)	(3)
Female	-0.162**	-0.081	-0.072	0.248***	0.285***	0.279***
	(0.067)	(0.076)	(0.089)	(0.075)	(0.080)	(0.098)
City (=Mannheim)	-0.125	0.066	0.044	0.101	0.222**	0.178
	(0.120)	(0.127)	(0.125)	(0.059)	(0.084)	(0.163)
9th Grade	-0.200*	-0.255***	-0.173	0.079	0.042	0.216
	(0.099)	(0.073)	(0.134)	(0.082)	(0.081)	(0.151)
German spoken in family	-0.167*	-0.201**	-0.161*	-0.100	-0.115	-0.053
	(0.085)	(0.091)	(0.092)	(0.092)	(0.094)	(0.101)
Parents college	-0.273*	-0.268*	-0.288*	0.216	0.227	0.285
	(0.155)	(0.153)	(0.156)	(0.171)	(0.180)	(0.204)
Parents encourage effort in school	0.073	0.066	0.047	0.096	0.096	0.110
	(0.105)	(0.108)	(0.114)	(0.084)	(0.080)	(0.084)
Parents proud of educ. achievement	0.070	0.075	0.033	-0.017	-0.007	0.005
	(0.094)	(0.089)	(0.092)	(0.083)	(0.083)	(0.093)
Ambitious friends	-0.131	-0.079	-0.159	-0.028	0.012	-0.059
	(0.098)	(0.101)	(0.118)	(0.107)	(0.111)	(0.131)
Good Math grade	0.059	0.042	-0.013	-0.005	-0.008	-0.045
	(0.111)	(0.103)	(0.125)	(0.123)	(0.121)	(0.166)
Good German grade	0.059	0.089	0.138	0.092	0.100	0.163
	(0.085)	(0.081)	(0.088)	(0.094)	(0.095)	(0.100)
Grades missing	-0.009	-0.028	-0.021	0.250	0.236	0.314
	(0.137)	(0.142)	(0.176)	(0.167)	(0.172)	(0.217)
Openness	0.007	0.005	0.012	-0.048	-0.051	-0.064
	(0.035)	(0.032)	(0.039)	(0.036)	(0.038)	(0.045)
Extraversion	-0.009	-0.008	-0.027	0.013	0.018	0.004
	(0.040)	(0.040)	(0.043)	(0.030)	(0.029)	(0.038)
Conscientiousness	0.083**	0.080**	0.084**	0.019	0.015	0.024
	(0.031)	(0.030)	(0.031)	(0.040)	(0.043)	(0.048)
Neuroticism	0.019	-0.001	-0.030	-0.032	-0.036	-0.027
	(0.029)	(0.026)	(0.036)	(0.034)	(0.035)	(0.043)
Agreeableness	-0.042	-0.047	-0.039	0.005	0.003	0.010
	(0.039)	(0.038)	(0.044)	(0.036)	(0.039)	(0.045)
external locus of control	-0.029	-0.028	-0.032	-0.030	-0.032	-0.042
	(0.037)	(0.039)	(0.041)	(0.050)	(0.050)	(0.053)
internal locus of control	-0.061	-0.026	-0.048	-0.023	-0.011	0.023
	(0.053)	(0.055)	(0.067)	(0.049)	(0.052)	(0.054)
Risk loving	-0.006	-0.013	-0.006	0.015	0.011	0.019
	(0.018)	(0.017)	(0.018)	(0.014)	(0.015)	(0.018)
Take-up employment agency	0.083	0.129*	0.205**	-0.069	-0.060	-0.092
	(0.094)	(0.067)	(0.079)	(0.122)	(0.137)	(0.150)
2 or more meetings employment agency	0.064	0.108	0.008	0.195*	0.210*	0.314**
	(0.124)	(0.123)	(0.146)	(0.108)	(0.108)	(0.148)
Take-up school counselor	-0.021	-0.029	-0.009	0.089	0.111	0.076
	(0.125)	(0.135)	(0.153)	(0.148)	(0.158)	(0.178)
3 or more meetings school counselor	0.031	0.034	-0.017	0.054	0.058	0.092
	(0.073)	(0.083)	(0.092)	(0.106)	(0.110)	(0.169)
Own placement search				0.065	0.039	0.115
				(0.116)	(0.122)	(0.158)
Placement search family				0.188*	0.161*	0.105
				(0.092)	(0.086)	(0.101)
Placement search counselor				-0.030	-0.030	0.021
				(0.151)	(0.165)	(0.186)
School dummies	no	yes	no	no	yes	no
Class dummies	no	no	yes	no	no	yes
Constant	1.201***	1.102***	1.179**	0.233	0.212	-0.239
	(0.362)	(0.360)	(0.424)	(0.382)	(0.383)	(0.426)
R^2	0.169	0.262	0.340	0.216	0.242	0.295
Adjusted R^2	0.028	0.109	0.116	0.061	0.065	0.032
Observations	159	159	159	159	159	159

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

Table A.4: Robustness Check: OLS Regression Participation in Work Experience Placements including Class/School Dummies – Middle Track

	3 or more Work experience pl.			Work experience pl. in desired occup.		
	(1)	(2)	(3)	(1)	(2)	(3)
Female	0.027	-0.003	0.012	0.107	0.104	0.088
	(0.073)	(0.075)	(0.077)	(0.085)	(0.083)	(0.082)
City (=Mannheim)	-0.069	-0.175	-0.430***	-0.150*	-0.245**	-0.025
	(0.096)	(0.155)	(0.131)	(0.082)	(0.102)	(0.136)
German spoken in family	0.060	0.041	-0.013	-0.038	-0.076	-0.136
	(0.129)	(0.119)	(0.127)	(0.154)	(0.174)	(0.211)
Parents college	0.045	0.015	0.023	-0.168*	-0.196**	-0.204**
	(0.068)	(0.069)	(0.064)	(0.094)	(0.090)	(0.088)
Parents encourage effort in school	-0.092	-0.062	-0.019	-0.009	-0.025	-0.080
	(0.067)	(0.073)	(0.054)	(0.086)	(0.093)	(0.096)
Parents proud of educ. achievement	-0.080	-0.079	-0.090	0.125	0.133	0.098
	(0.070)	(0.070)	(0.069)	(0.091)	(0.089)	(0.105)
Ambitious friends	-0.023	-0.056	-0.027	0.053	0.071	0.109
	(0.106)	(0.105)	(0.108)	(0.085)	(0.092)	(0.107)
Good Math grade	-0.006	-0.009	-0.041	-0.086	-0.080	-0.066
	(0.066)	(0.064)	(0.080)	(0.088)	(0.091)	(0.093)
Good German grade	-0.017	-0.002	-0.027	-0.143	-0.187*	-0.185
	(0.049)	(0.055)	(0.069)	(0.099)	(0.103)	(0.108)
Openness	-0.020	-0.018	0.001	-0.022	-0.023	-0.021
	(0.023)	(0.022)	(0.021)	(0.036)	(0.037)	(0.038)
Extraversion	0.012	0.013	0.014	0.025	0.018	0.041
	(0.027)	(0.030)	(0.021)	(0.038)	(0.042)	(0.050)
Conscientiousness	0.055*	0.054*	0.059**	-0.014	-0.015	0.007
	(0.026)	(0.026)	(0.028)	(0.049)	(0.049)	(0.058)
Neuroticism	0.025	0.042	0.050*	-0.004	-0.008	-0.018
	(0.025)	(0.025)	(0.025)	(0.039)	(0.043)	(0.048)
Agreeableness	0.082**	0.074**	0.066	-0.004	-0.006	-0.002
	(0.029)	(0.031)	(0.040)	(0.038)	(0.033)	(0.038)
external locus of control	0.041	0.029	0.044	-0.105***	-0.117***	-0.092**
	(0.043)	(0.049)	(0.048)	(0.036)	(0.033)	(0.037)
internal locus of control	-0.056	-0.058	-0.061	0.040	0.032	0.017
	(0.046)	(0.049)	(0.052)	(0.067)	(0.066)	(0.071)
Risk loving	0.025	0.023	0.021	0.010	0.013	0.017
	(0.015)	(0.015)	(0.014)	(0.016)	(0.018)	(0.018)
Take-up employment agency	-0.094	-0.106	-0.142*	-0.014	-0.060	-0.061
	(0.074)	(0.084)	(0.077)	(0.097)	(0.095)	(0.099)
2 or more meetings employment agency	0.101	0.123	0.193*	-0.075	-0.032	-0.044
	(0.079)	(0.086)	(0.107)	(0.085)	(0.082)	(0.089)
Own placement search				0.178*	0.197*	0.199*
				(0.098)	(0.102)	(0.107)
Placement search family				0.086	0.122	0.158
				(0.098)	(0.106)	(0.106)
School dummies	no	yes	no	no	yes	no
Class dummies	no	no	yes	no	no	yes
Constant	-0.377	-0.278	-0.196	0.426	0.695	0.389
	(0.418)	(0.490)	(0.499)	(0.394)	(0.423)	(0.479)
R^2	0.108	0.148	0.310	0.150	0.191	0.259
Adjusted R^2	-0.012	-0.010	0.116	0.022	0.026	0.036
Observations	161	161	161	161	161	161

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

Table A.5: Robustness Check: Stepwise Probit Regression Effect of Career Guidance on Reporting a Desired Occupation – Lower Track (Marginal Effects)

	(1)	(2)	(3)	(4)	(5)	(6)
Take-up employment agency	0.107*	0.107*	0.138*	0.147*	0.166**	0.192***
	(0.065)	(0.065)	(0.072)	(0.080)	(0.077)	(0.075)
2 or more meetings employment agency	-0.125	-0.124	-0.122	-0.125	-0.162	-0.119
	(0.128)	(0.128)	(0.146)	(0.141)	(0.136)	(0.127)
Take-up school counselor	0.121	0.120	0.032	0.073	0.058	0.001
	(0.133)	(0.131)	(0.144)	(0.142)	(0.157)	(0.153)
3 or more meetings school counselor	0.095	0.095	0.172**	0.143*	0.185**	0.188*
	(0.082)	(0.081)	(0.082)	(0.085)	(0.092)	(0.107)
3 or more Work experience pl.		-0.007	0.021	0.035	0.037	0.028
		(0.081)	(0.096)	(0.099)	(0.100)	(0.113)
Female			0.138**	0.117	0.140*	0.147*
			(0.069)	(0.071)	(0.074)	(0.087)
9th Grade			0.173**	0.194***	0.181***	0.178***
			(0.068)	(0.067)	(0.059)	(0.062)
German spoken in family			0.048	0.054	0.040	-0.037
			(0.078)	(0.081)	(0.088)	(0.112)
Parents college			0.095	0.106	0.066	0.054
			(0.143)	(0.143)	(0.139)	(0.149)
Parents encourage effort in school			0.168**	0.178**	0.169**	0.182**
			(0.084)	(0.086)	(0.084)	(0.090)
Parents proud of educ. achievement			-0.031	-0.037	0.001	0.012
			(0.091)	(0.087)	(0.097)	(0.095)
Ambitious friends			-0.102	-0.097	-0.074	-0.081
			(0.069)	(0.077)	(0.059)	(0.055)
Good Math grade				-0.124	-0.124	-0.153
				(0.080)	(0.091)	(0.094)
Good German grade				-0.109	-0.078	-0.059
				(0.092)	(0.100)	(0.101)
Grades missing				0.102	0.057	0.035
				(0.117)	(0.108)	(0.101)
Openness					-0.094***	-0.096***
					(0.033)	(0.036)
Extraversion					-0.021	-0.010
					(0.038)	(0.041)
Conscientiousness					0.039	0.036
					(0.031)	(0.032)
Neuroticism					-0.012	-0.015
					(0.039)	(0.036)
Agreeableness					0.023	0.024
					(0.037)	(0.038)
external locus of control					-0.006	0.005
					(0.032)	(0.033)
internal locus of control					-0.035	0.000
					(0.037)	(0.041)
Risk loving					0.011	0.008
					(0.012)	(0.011)
School dummies	no	no	no	no	no	yes
Pseudo R^2	0.034	0.034	0.108	0.134	0.190	0.227
Observations	159	159	159	159	159	159

Marginal effects of Probit estimations, city omitted due to collinearity. Standard errors clustered by class in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.6: Robustness Check: Stepwise Probit Regression Effect of Career Guidance on Applying for Apprenticeship – Lower Track (Marginal Effects)

	(1)	(2)	(3)	(4)	(5)	(6)
Take-up employment agency	0.284***	0.316***	0.366***	0.376***	0.398***	0.403***
	(0.084)	(0.082)	(0.066)	(0.066)	(0.084)	(0.090)
2 or more meetings employment agency	-0.004	-0.030	-0.135	-0.141	-0.183*	-0.145
	(0.132)	(0.131)	(0.114)	(0.112)	(0.106)	(0.100)
Take-up school counselor	-0.051	-0.067	-0.026	-0.000	0.044	0.045
	(0.075)	(0.083)	(0.092)	(0.090)	(0.106)	(0.102)
3 or more meetings school counselor	0.158	0.166	0.161	0.131	0.144	0.088
	(0.108)	(0.113)	(0.104)	(0.102)	(0.096)	(0.106)
3 or more Work experience pl.		-0.121	-0.149**	-0.127*	-0.176**	-0.142*
		(0.080)	(0.069)	(0.073)	(0.074)	(0.077)
Work experience pl.		0.189***	0.247***	0.233***	0.278***	0.245***
in desired occupation		(0.071)	(0.065)	(0.063)	(0.070)	(0.076)
Female			-0.016	-0.030	-0.088	-0.092
			(0.065)	(0.063)	(0.085)	(0.091)
9th Grade			-0.285***	-0.275***	-0.365***	-0.372***
			(0.083)	(0.079)	(0.086)	(0.095)
German spoken in family			0.260**	0.259*	0.286**	0.199
			(0.130)	(0.134)	(0.126)	(0.127)
Parents college			-0.026	-0.012	-0.068	-0.019
			(0.132)	(0.141)	(0.122)	(0.106)
Parents encourage effort in school			-0.067	-0.055	-0.055	-0.086
			(0.088)	(0.089)	(0.084)	(0.091)
Parents proud of educ. achievement			-0.031	-0.033	-0.040	-0.028
			(0.086)	(0.092)	(0.103)	(0.100)
Ambitious friends			-0.111	-0.100	-0.110	-0.142
			(0.091)	(0.090)	(0.079)	(0.105)
Good Math grade				-0.162	-0.120	-0.128
				(0.109)	(0.107)	(0.103)
Good German grade				-0.134	-0.118	-0.113
				(0.095)	(0.090)	(0.085)
Grades missing				0.033	0.061	0.060
				(0.131)	(0.133)	(0.122)
Openness					-0.013	-0.016
					(0.035)	(0.037)
Extraversion					0.019	0.035
					(0.026)	(0.025)
Conscientiousness					0.063	0.061
					(0.039)	(0.038)
Neuroticism					-0.028	-0.035
					(0.033)	(0.033)
Agreeableness					-0.066*	-0.061
					(0.037)	(0.040)
external locus of control					0.067*	0.078**
					(0.040)	(0.037)
internal locus of control					-0.066	-0.039
					(0.052)	(0.050)
Risk loving					-0.022	-0.027
					(0.018)	(0.017)
School dummies	no	no	no	no	no	yes
Pseudo R^2	0.106	0.144	0.254	0.280	0.347	0.372
Observations	159	159	159	159	159	159

Marginal effects of Probit estimations, city omitted due to collinearity. Standard errors clustered by class in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.7: Robustness Check: Stepwise Probit Regression Effect of Career Guidance on Planning Upgrading – Lower Track (Marginal Effects)

	(1)	(2)	(3)	(4)	(5)	(6)
Take-up employment agency	-0.181**	-0.197**	-0.214**	-0.210*	-0.250*	-0.286*
	(0.088)	(0.091)	(0.096)	(0.121)	(0.131)	(0.153)
2 or more meetings employment agency	0.006	0.008	0.050	0.074	0.134	0.150
	(0.153)	(0.161)	(0.163)	(0.164)	(0.172)	(0.190)
Take-up school counselor	-0.014	-0.005	-0.048	-0.125	-0.167	-0.153
	(0.129)	(0.142)	(0.159)	(0.174)	(0.212)	(0.190)
3 or more meetings school counselor	0.036	0.031	0.052	0.150	0.132	0.132
	(0.129)	(0.132)	(0.145)	(0.155)	(0.159)	(0.142)
3 or more work experience pl.		0.108	0.086	0.045	0.041	0.022
		(0.109)	(0.117)	(0.126)	(0.123)	(0.136)
work experience pl. in desired occupation		-0.061	-0.097	-0.102	-0.089	-0.105
		(0.073)	(0.087)	(0.087)	(0.097)	(0.120)
Female			-0.047	-0.017	0.007	0.035
			(0.087)	(0.092)	(0.092)	(0.096)
9th Grade			0.184	0.181	0.230**	0.221
			(0.115)	(0.110)	(0.114)	(0.145)
German spoken in family			0.029	0.048	0.022	0.032
			(0.107)	(0.114)	(0.118)	(0.123)
Parents college			-0.066	-0.092	0.003	0.052
			(0.137)	(0.149)	(0.094)	(0.108)
Parents encourage effort in school			0.308***	0.317***	0.326***	0.374***
			(0.091)	(0.088)	(0.087)	(0.080)
Parents proud of educ. achievement			0.108	0.124	0.095	0.056
			(0.127)	(0.139)	(0.145)	(0.138)
Ambitious friends			-0.013	-0.050	-0.069	-0.030
			(0.101)	(0.103)	(0.100)	(0.118)
Good Math grade				0.365***	0.368***	0.370***
				(0.100)	(0.104)	(0.134)
Good German grade				0.234	0.212	0.291*
				(0.148)	(0.148)	(0.169)
Grades missing				0.265	0.241	0.274*
				(0.189)	(0.189)	(0.160)
Openness					0.037	0.033
					(0.054)	(0.058)
Extraversion					-0.018	-0.013
					(0.039)	(0.043)
Conscientiousness					0.051	0.051
					(0.040)	(0.046)
Neuroticism					0.075*	0.092**
					(0.044)	(0.044)
Agreeableness					-0.063	-0.056
					(0.057)	(0.056)
external locus of control					-0.001	0.002
					(0.038)	(0.040)
internal locus of control					0.105	0.088
					(0.085)	(0.085)
Risk loving					0.020	0.024
					(0.018)	(0.021)
School dummies	no	no	no	no	no	yes
Pseudo R^2	0.022	0.031	0.125	0.199	0.256	0.310
Observations	147	147	147	147	147	147

Marginal effects of Probit estimations, city omitted due to collinearity. Standard errors clustered by class in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.8: Robustness Check: Stepwise Probit Regression Effect of Career Guidance on Reporting a Desired Occupation – Middle Track (Marginal Effects)

	(1)	(2)	(3)	(4)	(5)	(6)
Take-up employment agency	0.156**	0.152**	0.145*	0.153**	0.273***	0.262***
	(0.074)	(0.075)	(0.075)	(0.075)	(0.079)	(0.073)
2 or more meetings employment agency	0.041	0.044	0.043	0.034	0.052	0.058
	(0.091)	(0.092)	(0.091)	(0.099)	(0.090)	(0.096)
3 or more work experience pl.		-0.049	-0.032	-0.037	0.007	0.044
		(0.068)	(0.072)	(0.076)	(0.089)	(0.100)
Female			-0.020	-0.009	0.178	0.164
			(0.074)	(0.079)	(0.124)	(0.133)
German spoken in family			-0.036	-0.038	-0.016	-0.104
			(0.131)	(0.131)	(0.148)	(0.182)
Parents college			-0.016	-0.012	-0.004	-0.026
			(0.055)	(0.060)	(0.055)	(0.047)
Parents encourage effort in school			0.029	0.033	0.061	0.067
			(0.082)	(0.081)	(0.090)	(0.087)
Parents proud of educ. achievement			0.186**	0.194**	0.231**	0.263**
			(0.091)	(0.095)	(0.108)	(0.108)
Ambitious friends			-0.057	-0.047	-0.051	-0.008
			(0.052)	(0.049)	(0.059)	(0.058)
Good Math grade				-0.046	-0.099	-0.083
				(0.084)	(0.078)	(0.097)
Good German grade				-0.029	-0.138	-0.196*
				(0.087)	(0.099)	(0.111)
Openness					-0.054*	-0.055**
					(0.031)	(0.025)
Extraversion					0.084**	0.063
					(0.039)	(0.042)
Conscientiousness					-0.050*	-0.049*
					(0.030)	(0.030)
Neuroticism					-0.106***	-0.124***
					(0.028)	(0.029)
Agreeableness					-0.077	-0.079
					(0.050)	(0.049)
external locus of control					-0.097***	-0.107***
					(0.034)	(0.035)
internal locus of control					0.105*	0.093*
					(0.057)	(0.055)
Risk loving					-0.016	-0.009
					(0.014)	(0.017)
School dummies	no	no	no	no	no	yes
Pseudo R^2	0.022	0.024	0.058	0.060	0.201	0.242
Observations	159	159	159	159	159	159

Marginal effects of Probit estimations, city omitted due to collinearity. Standard errors clustered by class in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.9: Robustness Check: Stepwise Probit Regression Effect of Career Guidance on Applying for Apprenticeship – Middle Track (Marginal Effects)

	(1)	(2)	(3)	(4)	(5)	(6)
Take-up employment agency	-0.088	-0.069	-0.023	0.009	-0.035	-0.012
	(0.107)	(0.113)	(0.103)	(0.107)	(0.113)	(0.083)
2 or more meetings employment agency	0.237**	0.256**	0.233**	0.210*	0.261**	0.252**
	(0.100)	(0.102)	(0.105)	(0.113)	(0.116)	(0.113)
3 or more work experience pl.		0.164***	0.228***	0.228***	0.166**	0.229***
		(0.061)	(0.064)	(0.065)	(0.081)	(0.069)
work experience pl. in desired occupation		0.217***	0.188***	0.167**	0.160**	0.146*
		(0.071)	(0.065)	(0.070)	(0.080)	(0.075)
Female			-0.124	-0.052	-0.111	-0.153**
			(0.080)	(0.090)	(0.079)	(0.073)
German spoken in family			-0.256***	-0.248***	-0.270***	-0.343***
			(0.074)	(0.081)	(0.095)	(0.091)
Parents college			-0.140	-0.119	-0.102	-0.101
			(0.110)	(0.115)	(0.112)	(0.122)
Parents encourage effort in school			0.139	0.169**	0.128	0.121
			(0.089)	(0.085)	(0.091)	(0.095)
Parents proud of educ. achievement			0.119	0.126	0.063	0.095
			(0.079)	(0.079)	(0.084)	(0.082)
Ambitious friends			-0.144*	-0.113	-0.120*	-0.058
			(0.082)	(0.085)	(0.068)	(0.066)
Good Math grade				-0.158*	-0.151*	-0.098
				(0.085)	(0.087)	(0.094)
Good German grade				-0.221**	-0.201**	-0.295***
				(0.097)	(0.098)	(0.099)
Openness					-0.015	-0.015
					(0.041)	(0.033)
Extraversion					-0.029	-0.053*
					(0.029)	(0.028)
Conscientiousness					0.029	0.031
					(0.038)	(0.043)
Neuroticism					-0.014	-0.046
					(0.053)	(0.049)
Agreeableness					0.169***	0.171***
					(0.048)	(0.041)
external locus of control					0.012	0.036
					(0.037)	(0.032)
internal locus of control					-0.044	-0.050
					(0.054)	(0.062)
Risk loving					0.052***	0.065***
					(0.017)	(0.020)
School dummies	no	no	no	no	no	yes
Pseudo R^2	0.031	0.090	0.167	0.220	0.303	0.399
Observations	161	161	161	161	161	161

Marginal effects of Probit estimations, city omitted due to collinearity. Standard errors clustered by class in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.10: Robustness Check: Stepwise Probit Regression Effect of Career Guidance on Planning Upgrading – Middle Track (Marginal Effects)

	(1)	(2)	(3)	(4)	(5)	(6)
Take-up employment agency	0.090	0.059	0.020	-0.021	-0.002	0.073
	(0.117)	(0.125)	(0.115)	(0.126)	(0.138)	(0.130)
2 or more meetings employment agency	-0.064	-0.083	-0.061	-0.002	-0.012	-0.182
	(0.114)	(0.124)	(0.141)	(0.158)	(0.149)	(0.161)
3 or more work experience pl.		-0.174*	-0.224**	-0.212**	-0.194***	-0.178**
		(0.098)	(0.092)	(0.090)	(0.073)	(0.088)
work experience pl. in desired occupation		-0.349***	-0.322***	-0.295***	-0.299***	-0.311***
		(0.080)	(0.081)	(0.089)	(0.096)	(0.088)
Female			0.098	0.021	0.034	0.029
			(0.097)	(0.111)	(0.110)	(0.124)
German spoken in family			0.209	0.218*	0.227*	0.357**
			(0.161)	(0.123)	(0.136)	(0.141)
Parents college			0.250*	0.250*	0.277**	0.302**
			(0.135)	(0.134)	(0.131)	(0.148)
Parents encourage effort in school			-0.051	-0.082	-0.060	-0.019
			(0.087)	(0.095)	(0.119)	(0.142)
Parents proud of educ. achievement			-0.129	-0.151	-0.138	-0.194
			(0.100)	(0.092)	(0.098)	(0.122)
Ambitious friends			0.245***	0.193**	0.177**	0.137
			(0.079)	(0.083)	(0.089)	(0.105)
Good Math grade				0.224**	0.257**	0.284***
				(0.096)	(0.106)	(0.108)
Good German grade				0.233*	0.232*	0.319**
				(0.129)	(0.125)	(0.130)
Openness					-0.031	-0.035
					(0.048)	(0.047)
Extraversion					0.017	0.065
					(0.036)	(0.046)
Conscientiousness					0.002	0.007
					(0.050)	(0.051)
Neuroticism					0.048	0.050
					(0.062)	(0.070)
Agreeableness					-0.089	-0.102
					(0.063)	(0.075)
external locus of control					-0.011	0.018
					(0.049)	(0.044)
internal locus of control					0.032	-0.000
					(0.080)	(0.094)
Risk loving					-0.002	-0.011
					(0.022)	(0.025)
School dummies	no	no	no	no	no	yes
Pseudo R^2	0.005	0.108	0.205	0.267	0.284	0.372
Observations	153	153	153	153	153	153

Marginal effects of Probit estimations, city omitted due to collinearity. Standard errors clustered by class in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.11: Robustness Check: First Stage Probit Regression – Counseling instrumented by Class Averages of Participation (Marginal Effects)

	Employment Agency		school counselors		3 or more	work. exp. pl.
	Take up	2 or more times	Take up	3 or more times	work exp. pl.	desired occ.
Lower Track						
IV: class average in participation	0.576*** (0.216)	0.626*** (0.194)	0.375*** (0.071)	0.938*** (0.191)	0.468*** (0.147)	-0.475 (0.439)
Observations	154	154	154	154	154	154
Middle Track						
IV: class average in participation	0.538*** (0.179)	0.332* (0.177)			0.171 (0.258)	-0.283 (0.332)
Observations	161	161			161	161

Marginal effects of Probit estimations. Controlled for gender, city, 9th grade, parents' background and support, friends, grades, grades missing, personality traits. Standard errors clustered by class in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.12: Robustness Check: Joint Significance of Class Dummies in Estimations of Career Guidance Participation

	Employment agency		School counselor		3 or more	work exp. pl.
	Take up	2 or more	Take up	3 or more	work exp. pl.	desired occ.
Lower Track						
p-value	0.00	0.00	0.00	0.00	0.00	0.00
Observations	159	159	159	159	159	159
Middle Track						
p-value	0.00	0.00			0.00	0.00
Observations	161	161	161	161	161	161

H_0: Coefficients are 0. Based on OLS estimations. Additionally controlled for gender, city, 9th grade, parents' background and support, friends, grades, grades missing, personality traits, school dummies.

Table A.13: Robustness Check: Modified Hausman Test for Endogeneity (p-values)

	Desired Occupation		Apprenticeship Appl.		Plan. Upgrading	
	IV (a)	IV (b)	IV (a)	IV (b)	IV (a)	IV (b)
Lower Track						
Take-up employment agency	0.081	0.636	0.305	0.111	0.767	0.185
2 or more meetings employment agency	0.723	0.135	0.568	0.661	0.957	0.589
Take-up school counselor	0.416	0.395	0.846	0.217	0.456	0.003
3 or more meetings school counselor	0.488	0.841	0.816	0.490	0.750	0.328
3 or more work experience placements	0.113	0.466	0.162	0.697	0.509	0.128
Test for Joint Significance	0.374	0.520	0.147	0.065	0.764	0.000
Middle Track						
Take-up employment agency	0.160	0.522	0.310	0.123	0.703	0.403
2 or more meetings employment agency	0.891	0.166	0.859	0.240	0.150	0.493
3 or more work experience placements	0.232	0.006	0.854	0.780	0.563	0.212
Test for Joint Significance	0.100	0.044	0.748	0.248	0.464	0.259

P-values of modified Hausman test with standard errors clustered by class following (Cameron and Miller, 2015), $H_0 : \gamma = 0$. Models (a) refer to class average participation as IV, models (b) to class dummies as IV.

Download ZEW Discussion Papers from our ftp server:

http://ftp.zew.de/pub/zew-docs/dp/

or see:

https://www.ssrn.com/link/ZEW-Ctr-Euro-Econ-Research.html
https://ideas.repec.org/s/zbw/zewdip.html

IMPRINT

ZEW – Leibniz-Zentrum für Europäische Wirtschaftsforschung GmbH Mannheim
ZEW – Leibniz Centre for European Economic Research

L 7,1 · 68161 Mannheim · Germany
Phone +49 621 1235-01
info@zew.de · zew.de

Discussion Papers are intended to make results of ZEW research promptly available to other economists in order to encourage discussion and suggestions for revisions. The authors are solely responsible for the contents which do not necessarily represent the opinion of the ZEW.