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DISCUSSION PAPER SERIES

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# ABSTRACT

## Is Being Competitive Always an Advantage? Degrees of Competitiveness, Gender, and Premature Work Contract Termination

In this study, we examine the influence of competitiveness on the stability of labour relations using the example of premature employment and training contract termination in the apprenticeship education sector. The paper extends the small but growing evidence on the external relevance of competitiveness by analysing gender differences in the correlation between competitiveness and labour market success and whether these effects depend on how the students' propensity to compete is measured. By matching a large experimental dataset with administrative data identifying contract terminations, we find that both gender and test specification matter. While competitive men assigned to a difficult competitiveness task are less likely to drop out of the contract than non competitive men, there is no such effect observable for those assigned to the easier task. On the other hand, competitive women are more likely to drop out than non competitive women, irrespective of how competitiveness is measured.

**JEL Classification:** C9, J16, J24
**Keywords:** competitiveness, non-cognitive skills, gender, apprenticeship

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# 1 Introduction and motivation*

In recent years, personality traits, or non-cognitive skills, have found a stable place in economic literature; many of these non-cognitive skills are powerful predictors of educational outcomes, the labour market, and other life outcomes. This study focuses on one specific trait: competitiveness. Building on the influential work by Gneezy et al. (2003) and Niederle and Vesterlund (2007), various experimental studies have documented that men have a higher propensity to prefer a competitive environment, whereas women are more likely to opt for certain returns (for an overview see Bertrand, 2011, 2018; Blau & Kahn, 2017; Croson & Gneezy, 2009; Niederle, 2017; Sutter et al., 2019). While such a gender gap in competitiveness is confirmed in most, but not all, studies, the literature is considerably less abundant and less conclusive regarding external relevance, that is, the question of whether competitiveness is correlated with real-world outcomes (c.f. Bertrand, 2011).

The present paper contributes to this question by analysing the relationship between competitiveness, measured in an incentivised laboratory experiment, and the stability of apprentices' work and training contracts in the Swiss apprenticeship system. Moreover, we allow for heterogeneous effects and differentiate by gender and type of measurement of competitiveness. As Hoyer et al. (2020) show, the task type, or more specifically the difficulty of the task used in the experiments, affects the propensity to compete and thus might also affect the consequences of being competitive.

We believe that our analysis has various advantages. First, competitiveness was measured several years before the outcomes occurred; therefore, there was no risk of simultaneity or reverse causality. Second, linking our laboratory test results to administrative data on the success or failure of the employment and training contract prevents sample attrition, which often leads to biased results in similar studies, especially in the case of failures in the labour market. Moreover, the administrative data contain accurate information on the causes of contract termination, which are also often biased in self-reported data. The dissolution of an apprenticeship contract can have serious consequences for both employers and apprentices and can thus only be carried out for weighty reasons, which are verified by the state authorities. The administrative data are, therefore, a significant advantage for our analyses in terms of data quality. Third, apprenticeship contract termination is a high-stake decision and hence more relevant than laboratory results alone (Croson & Gneezy, 2009). Fourth, apprentices are usually adolescents and thus at an age where the gender gap in willingness to compete is strong

*We thank all the people who have contributed to the design and collection of the data, in particular Katharina Jaik and Noemi Peter. We are also very grateful to the cantonal administration of the Canton of Berne for letting us use the administrative records of apprenticeship contracts, in particular Christoph Dueby and Pascal Buercher, and to the participants of various seminars, especially Uschi Backes-Gellner, Thomas Bolli and Sandra McNally for helpful comments. Finally, we also owe gratitude to the Swiss State Secretariat for Education, Research and Innovation for the financial support provided through its Leading House on the Economics of Education.

and stable (Sutter et al., 2019). Finally, while Hoyer et al. (2020) examined the impact of different test formats on the gender gap in competitiveness, the present study is, to our knowledge, the first to examine whether such differences in test formats also lead to different real-world outcomes.

The results show that this indeed is the case, as the correlations between competitiveness and the risk of terminating an apprenticeship contract prematurely differ not only by gender but also by the task used to measure competitiveness. For men, competitiveness is related to fewer contract terminations, but only for those assigned to the more difficult task. If competitiveness is measured through the easier task, a propensity to compete does not affect contract termination, as we control for school performance before entering the apprenticeship. On the other hand, competitive women are significantly more likely to terminate the contract than non-competitive women, irrespective of the competitiveness measurement. The correlation is robust to various model specifications, and the effect size is economically meaningful: being competitive increases the chances of a dropout for females by 9 percentage points, with an average dropout share of 13%. Furthermore, the analysis shows that the main reason for dropping out among competitive women is conflicts with employers.

The remainder of the paper is structured as follows: The next section briefly puts our analyses in the context of the existing literature. Section 3 provides information about the educational setting, the data sources, and the concepts of competitiveness used in this study. In Section 4, we present the empirical results, and Section 5 concludes with a discussion of the results.

## 2 Related literature

To date, several studies show that competitiveness is related to different preferences, such as choices in post-compulsory education (Buser et al., 2014, 2021; Buser et al., 2017), preferences regarding compensation regimes (Flory et al., 2015), or wage expectations (Reuben et al., 2017). Whether competitiveness is related to different incomes is not entirely clear: While Reuben et al. (2015) and Buser et al. (2021) report such effects on wages, Manning and Saidi (2010) found no substantial correlation between the gender gap in earnings in industries with and without performance pay. Very recently, Buser et al. (2021) show that two measures of competitiveness, an incentivised experiment and an un-incentivised survey measure, are correlated with income, occupational and educational levels, and college major choice. Moreover, they compare the predictive power of competitiveness to that of other traits, including the Big Five, and show that competitiveness is at least as relevant as the other traits. The paper that is most similar to ours is the article by Almås et al. (2016a). They study whether differences in competitiveness are linked to college entries and college dropouts and find that competitive adolescents

are more likely to choose a college track but more likely to drop out, particularly among young women. The authors find a similar effect concerning the willingness to take risks and argue that competitive, risk-loving adolescents might choose a college track despite lacking academic skills. This shows that it is important to look at different educational choices and whether the subjects are eventually successful in their chosen route.

Based on the literature, the direction of a potential correlation between competitiveness and apprenticeship contract termination is not clear, ex-ante. On the one hand, there might be a negative relationship (i.e., competitive persons dropping out less often than non-competitive persons). For instance, Alan and Ertac (2019) argue that competitiveness is closely related to other non-cognitive skills or personality traits such as motivation, grit, or perseverance. If competitive apprentices have a higher level of motivation or perseverance, we expect them to stick more often to their choices when facing difficulties and thus be less likely to terminate their contract. Compared to a purely educational setting, it could also be that the more competitive environment of an apprenticeship, together with the possibility of doing "real work", might appeal to competitive people and thereby foster the motivation and performance of competitive apprentices (cf. Gneezy et al., 2003; Ors et al., 2013).

On the other hand, competitive persons might also fail more often. As in the college setting of Almås et al. (2016a), competitive school-leavers might be prone to overestimate their abilities, therefore choosing a program that is too demanding and eventually dropping out due to performance issues. Moreover, the propensity to compete and the consequence of acting competitively might differ by gender. Evidence shows that the willingness to compete depends on societal norms (Gneezy et al., 2009), the gender structure of peers (Booth & Nolen, 2012), or whether the choice to compete is publicly observable (Yagasaki, 2019). Likewise, societal norms might also play a role in the outcomes associated with competitive behaviour. Especially in hierarchical settings such as apprenticeships: employers might expect women to act according to prescriptive gender norms or stereotypes, such as acting kind, modest, collaborative, and obedient, whereas men are expected to be more "agentic" (i.e., achievement-orientated, assertive, self-confident, and decisive) (e.g. Eagly & Karau, 2002; Heilman, 2012; Smith & Huntoon, 2014). Competitive women who do not conform to these prescriptive societal norms might be penalised and be more likely to encounter problems and conflicts, similar to the context of negotiations (e.g. Bowles et al., 2007). Thus, a propensity to compete might be detrimental for a successful transition through apprenticeships for females, especially since the role of personality traits or non-cognitive skills is more important in the context of labour market relationships than in purely school-based settings, where success is mostly determined by academic performance. Hence, competitiveness might lead to conflicts between employers and female apprentices but not for males.

Incentivised experiments commonly used to determine competitiveness give a binary measure: either you are competitive (if you chose the tournament) or you are not (if you

chose the piecewise payment). In our dataset, we exploit the advantage of having two different tasks that were used to measure competitiveness (see Section 3.3). A few studies have applied different test types, while recently, Hoyer et al. (2020) also analyse whether the propensity to compete depends on the task type. Their results confirm a large gender gap, but only when the task is easy, while the gender gap is not statistically significant when the tasks are difficult. Interestingly, there is no such difference in our case: men are significantly more likely to compete than women in both task forms, although the "numbers" task was perceived as significantly more gender-stereotypical than the "letters" task (see Buser et al., 2017). However, if we look at the shares of students who choose to compete, there is an equally large difference between the two test forms as there is between the genders (see Table 1). While the literature to date has focused on the gender gap, the possibility that the test form may have an equally large impact on real-world outcomes has not yet been explored.

# 3 Institutional information, data sources, and concepts

## 3.1 Apprenticeships and contract termination in Switzerland

In Switzerland, vocational education and training (VET) is the most popular post-compulsory educational program: approximately 2 out of 3 students finishing compulsory school start a vocational education. The vast majority (approximately 90%) of these students attend a so-called dual education (apprenticeship), where education and training are provided by both schools and training firms. Important for this study, and in contrast to VET systems in many other countries, apprentices must apply for vacant training positions in firms, the same way as applying to regular jobs. Moreover, they are hired by the training firms as trainees and regular employees, thereby substituting unskilled and, as the apprenticeship proceeds, skilled workers. This presents an ideal environment to analyse the impact of non-cognitive skills on early labour market outcomes, as an apprenticeship corresponds to a normal fixed-term employment relationship, with the difference that apprentices are protected by a specific apprenticeship contract, which can only be terminated by mutual agreement or in specific situations.

However, such contract terminations are not uncommon: Of all Swiss apprentices that started their training in 2014, 21% terminated their apprenticeship contract prematurely, before the fixed-term contract ended. Not every contract termination means that the apprentice leaves the VET system entirely or does not complete upper-secondary education, but contract terminations often have negative consequences for the apprentices and the training companies. In some cases, apprentices cannot immediately start further training and lose valuable time or, if they change professions, must repeat apprenticeship years; some of these students even drop out of the system altogether.

One of the advantages of our official administrative dataset is that we know the official

reasons for contract termination. As mentioned, apprenticeship contracts cannot be terminated without specific reasons, protecting both apprentices and training companies from abuses. Therefore, the reason for the termination of the contract must be reported to the cantonal department of education, which will also verify the situation. This leads to two advantages for our study. First, these official reasons are more reliable than self-reported reasons, which are often biased. Second, it allows us to explore the exact reasons that led to the termination of the contract in a differentiated way. In particular, it allows us to exclude those contract terminations from the sample that occurred due to what we call "exogenous" factors (3.9% of all observations). Exogenous factors are i) economic reasons, such as the bankruptcy of the training company, ii) health reasons, or iii) private reasons, such as deaths in the family. Since we are interested in the effects of personal (non-cognitive) skills or traits on premature contract termination, we exclude those exogenous contract terminations for the main analysis and use them for a falsification test in Section 4.4.

Excluding these exogenous cases, the remaining dropout share was 12.8% (females: 12.3%, males: 14.2%). Among these, 4.5% drop out because their (school-) performance is insufficient; 5.0% reorient themselves and change their occupation or employer; 3.3% terminate their contract due to conflicts with the employer or contract violations. The adverse consequences for those who terminate their contract due to a reorientation can be expected to be less severe compared to apprentices with conflicts or performance problems. For the latter, it might become challenging to find a new training company.

## 3.2 Data sources

The primary data for this study were collected among 1 514 eighth-grade students, that is, approximately one and a half years before the end of compulsory schooling, in 87 classes from 28 schools in the German part of the canton of Berne in Switzerland (see also Buser et al., 2017; Jaik & Wolter, 2019). The students were surveyed twice: first at the beginning of 8th grade and a second time just weeks before the end of compulsory schooling at the end of 9th grade. In the first survey during the 2013/2014 school year, the students completed a computerised survey by class, which included information on students' grades, socioeconomic background, and future educational plans as well as incentivised experimental measures for various non-cognitive skills, including our measure for competitiveness (see Section 3.3, and Appendix A for a variable description). In the second survey in 2015, the students reported their educational choices for the time after compulsory schooling, among other questions. For the second survey, we could track 96% of the students in the initial sample.

To identify who successfully completed their training and who dropped out, we matched the administrative records of all apprentices in the canton of Berne to our sample. These administrative data contain only the cohort who started their apprenticeship in

school year 15/16 and not later cohorts. This is one of the reasons why the dropout rate in our sample is lower (16.8%) than the national average since those adolescents who enter an apprenticeship directly are generally better in school than those who start after one or more intermediate years. Out of 1009 students in the survey who planned to attend a vocational education program, 808 students reported starting their apprenticeship with no delay.

The administrative data contain personal information, the apprenticeship occupation, whether the contact was prematurely terminated, and, in the case of a termination, the official reason for the termination of the contract. Due to privacy protection, the exact names of the students had to be deleted in the survey data and were also not provided in the administrative records. Therefore, we had to match the two samples using the following procedure: (1) For every person in our survey sample, we matched all possible entries in the administrative data with the same exact date of birth and gender. This does not always allow us to uniquely identify the individuals in both datasets because several individuals in the administrative data have the same gender and birthday as the individuals in our sample. (2) Therefore, in a second step, we also checked whether the locations of the (compulsory) school and the training firm were at reasonable distances.[1] The survey data and the administrative records have no information on the private addresses of the students or apprentices; this is also due to the young age of the apprentices, and that, commonly, apprentices select a training firm that is geographically closest to their private home. (3) Out of all possible pairs from steps 1 and 2, we only matched those where the travel distance was less than 25 minutes and the apprenticeship occupation corresponded to the planned occupation. Finally, we removed duplicates and incorrect labelling of occupations.

Despite all the information used, we could not uniquely identify all individuals of our sample in the administrative data. There are several possible reasons for this. In some cases, more than one student in a certain region has the same birthday, gender, and occupation. Furthermore, there are potential false declarations in the survey data, as some students might have changed or delayed their apprenticeship plans after the second and final survey and had therefore not started their apprenticeship in the year that we observe. In the end, we managed to uniquely match 660 cases or 82% of the survey sample. To analyse whether we systematically failed to match students with particular characteristics, we regress a dummy variable indicating whether the individual was matched (1) or not (0) on all variables used in the study (Appendix B). The regression results suggest that foreign-born or older students are significantly less likely to be matched. The most plausible reason is that students with these characteristics are more likely to delay their entry into an apprenticeship but fail to indicate so in the survey. However, more important for our analyses is the observation that there are no systematic

[1] To calculate the necessary travel time, we used georoute (Weber & Péclat, 2017).

differences between those that were successfully matched and those we could not match to the administrative data for the rest of our variables, including all our variables for non-cognitive skills.

### 3.3 Competitiveness

The variable of our main interest in this study is the willingness to compete, measured and defined as in the experiment developed by Niederle and Vesterlund (2007) and subsequently used in many other studies. In this initial lab experiment, the students are asked to solve a simple numerical task that adds four two-digit numbers and pays for each correct answer. There are three rounds with different payment schemes. In the first (non-competitive) round, they can earn a small amount (approximately 25 cents) for every correct answer (piece-rate), while in the second round, the students compete against three randomly selected classmates and are only paid (about 1 US$ per correct answer) if they outperform their competitors. In the third and final round, the students must choose between the piece-rate payment or the competition. This binary choice is used as the measure of the willingness to compete.

In addition to the numerical task designed by Niederle and Vesterlund (2007), we randomised the sample on the class level and assigned half of the students a different but similar task. The reason for this second task is that the first—adding up numbers—might be perceived as a stereotypically male task and could therefore decrease the willingness to compete for the girls (e.g. Apicella & Dreber, 2015). For this reason, a second task was introduced, where the students had to count how many times a particular letter appeared in a random set of 50 letters. A follow-up survey among the students showed that this task was seen as significantly less stereotypically male by the students (see Buser et al., 2017).

In addition to being gender-neutral, this "letters" task was also much easier to solve. On average, the students solved approximately twice as many letter tasks in the first two rounds compared to the number tasks (Table 1, Panel A). In the letter task, girls scored slightly better (p=0.081), while there was no difference in the numbers task.

Panel B in Table 1 shows the share of subjects who chose to compete by gender and task type. As observed by most other studies, females are significantly less willing to compete for both tasks: The share of competitive females is approximately 14 percentage points lower than the share of competitive males. This result contrasts with the findings of Hoyer et al. (2020), who found that the gender gap only appeared in the simple task but was much smaller when the tasks were more difficult in a sample of university students.

Interestingly, the share of competitive students differs not only by gender but also by task type, even though the chances of winning the competition are exactly the same for both tasks. In line with Hoyer et al. (2020), the students in our sample were significantly more willing to compete when assigned to the easier letters task. This "task difficulty

Table 1: The Competitiveness Variable

| | Numbers | Letters | Difference |
|---|---|---|---|
| **Panel A: Scores & Gender** | | | |
| All | 3.911 | 8.680 | |
| Females | 3.879 | 8.979 | |
| Males | 3.934 | 8.474 | |
| Gender gap | −0.055 | 0.505* | |
| **Panel B: Share tournament** | | | |
| All | 0.428 | 0.581 | −0.153*** |
| Females | 0.350 | 0.496 | −0.145** |
| Males | 0.486 | 0.640 | −0.154*** |
| Gender gap | −0.136*** | −0.144** | |

gap" suggests that easier tasks might induce more students to compete since "performing well in a task" might be "interpreted as a signal that one's ability is higher than expected" (Hoyer et al., 2020). In our study, the competitiveness gap between the easier and more difficult task variants has the same magnitude as the gender gap. Hence, to determine whether someone tends to be competitive, task difficulty is as crucial as the person's gender.

Such heterogeneity in choosing to compete suggests that competitiveness is not a dichotomous, binary trait or characteristic of individuals but that they adapt their strategy depending on the context. This finding allows us to analyse the impact of competitiveness on the risk of dropping out of an apprenticeship in Chapter 4.2 by gender and task type.

## 3.4 Descriptive statistics

Although we rely only on a subsample of the data used by Buser et al. (2017), the share of competitive students is almost the same: 41% of female students and 56% of male students choose to compete (Table 2). We use three sets of control variables in our analyses. The first includes three different measures of additional non-cognitive skills. These comprise measures for overconfidence, risk aversion, and locus of control. The second includes the typical controls used in the literature on dropouts (e.g. Bradley & Lenton, 2007; Gambin & Hogarth, 2016; Greig, 2019; Stromback & Mahendran, 2010), such as measures for cognitive skills, migration status, characteristics of the place of residence (rural vs urban) and the share of males or females in the chosen training occupation. Two different variables are used as proxies for cognitive abilities. In addition to the grade point average (average of math and language grades), we included the school track, which indicates students' academic performance in Switzerland.

Table 2: Descriptive statistics

| | Females (N=261) | | Males (N=373) | | T-test | |
|---|---|---|---|---|---|---|
| | Mean | StDev | Mean | StDev | Diff | P-val |
| Dropouts | 0.123 | 0.329 | 0.142 | 0.350 | -0.019 | 0.479 |
| Competitiveness | 0.414 | 0.493 | 0.555 | 0.498 | -0.141 | 0.000 |
| Overconfidence | -0.187 | 1.014 | 0.133 | 0.974 | -0.320 | 0.000 |
| Risk-taking | 0.307 | 0.462 | 0.394 | 0.489 | -0.088 | 0.024 |
| Locus of control | -0.038 | 1.006 | 0.053 | 0.966 | -0.091 | 0.253 |
| Share male | 0.308 | 0.241 | 0.778 | 0.245 | -0.469 | 0.000 |
| Lower ability track | 0.326 | 0.470 | 0.354 | 0.479 | -0.028 | 0.462 |
| GPA | 4.705 | 0.444 | 4.637 | 0.415 | 0.069 | 0.047 |
| Foreigner | 0.080 | 0.273 | 0.062 | 0.241 | 0.019 | 0.360 |
| Urbanity | 0.337 | 0.474 | 0.324 | 0.469 | 0.013 | 0.737 |
| VET requirements | 0.448 | 0.091 | 0.430 | 0.097 | 0.018 | 0.021 |
| Mismatch VET-choice | -0.508 | 1.179 | 0.369 | 1.213 | -0.877 | 0.000 |

Furthermore, to account for the occupational choice, we use two variables describing the apprenticeship: a measure of the occupation's skill requirements and a variable capturing a potential cognitive mismatch (see Appendix A for a definition), as the latter could also be a reason for premature contract termination. The cognitive mismatch (variable "mismatch VET-choice") is measured as the difference between the math requirements of the occupation and the student's relative math score. In addition, we also estimate regressions with occupational fixed effects (see the last paragraph in Section 4.1). Finally, we also estimated various specifications with proxies for socioeconomic status (SES), such as parental education, housing, numbers of cars, or the number of books at home. However, we dropped these SES controls in the final models because they were not correlated with dropping out from an apprenticeship. Similar to the findings of Almås et al. (2016b) in Norway, we find that family background appears to affect educational choices but not contract terminations.

# 4 Empirical Analysis

We present the empirical analyses and results in four steps. First, we look at the gender gap in non-cognitive determinants on VET contract terminations. Next, we repeat the analyses by separating the easier and the more difficult task in our experiment, measuring competitiveness to determine whether the task difficulty matters. Third, we expand our analysis by looking at the different reasons for dropping out of an apprenticeship. Finally, we add a falsification test by analysing the relationship between non-cognitive skills and those contract terminations that we consider exogenous and should therefore not be affected by personality traits.

## 4.1 The gender gap in competitiveness and contract termination

To analyse whether the propensity to compete is related to contract termination, we regress the binary dropout variable on competitiveness using probit estimators[2] and a set of other non-cognitive skills and additional variables as controls. Table 3 shows the average marginal effects for all variables. We use clustered standard errors at the class level to account for unobservable class-level effects (of the classes the apprentices originated from). In Columns 3–6, we estimate subgroup effects for males and females, where we interact all non-cognitive skills variables and the variables for the share of males, foreigners, and urbanity[3] with gender.

For the whole sample, where both males and females are included (Columns 1 and 2), non-cognitive skills are not related to non-exogenous contract terminations: The coefficients are essentially zero. Ability (i.e., the lower ability track and the GPA) appears to be the best predictor for contract terminations. Furthermore, students in urban regions terminate their apprenticeship contracts more often.

Looking at the effect of competitiveness for men and women separately, however, shows different results. Although competitive male apprentices appear less likely to drop out than non-competitive male apprentices (Column 3), this effect is driven entirely by covariance with ability. Once the ability proxies are included in Column 4, the effect of competitiveness is not significantly different from zero, even at the 10% level. In line with Almås et al. (2016a), competitiveness does not matter for contract terminations, at least among boys. The only other non-cognitive skill that is correlated with contract termination in our results is overconfidence.

For female apprentices, we find a statistically significant correlation between competitiveness and contract terminations. Competitive young women are more likely to drop out than non-competitive women, and this effect cannot be explained by other control variables. The point estimates even increase once we add controls (Column 6 in Table 3). Moreover, the average marginal effect is not only statistically significant—the p-value is 0.017, close to the 1% significance level—but is also economically significant. A competitive female apprentice is 9 percentage points more likely to drop out than a non-competitive female. This is a very strong effect, considering that the dropout share overall is approximately 13% in our sample. Contrary to male apprentices, overconfidence does not appear to affect the likelihood of dropping out for girls, but the locus of control is correlated with the risk of dropping out. Female apprentices with a higher locus of control (internal locus of control) are less likely to drop out than female apprentices with a low level of locus of control (external locus of control).

The results show that while female apprentices are generally less willing to compete,

[2]We use probit estimators mainly to compare the coefficients to the multinominal cases in Section 4.3. However, the results with OLS estimators (not reported) are very similar.

[3]We tested whether the coefficients for males and females differ for all control variables, and interact only those that differ.

Table 3: Effects of competitiveness on contract termination

| | All | | Males | | Females | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Male | 0.017 | -0.024 | | | | |
| | (0.028) | (0.049) | | | | |
| Competitiveness | -0.010 | 0.015 | -0.070** | -0.037 | 0.075* | 0.089** |
| | (0.027) | (0.026) | (0.034) | (0.035) | (0.044) | (0.038) |
| Overconfidence | | 0.021 | | 0.037** | | -0.002 |
| | | (0.015) | | (0.018) | | (0.021) |
| Risk-taking | | -0.010 | | -0.022 | | 0.008 |
| | | (0.024) | | (0.033) | | (0.039) |
| Locus of control | | -0.005 | | 0.017 | | -0.038** |
| | | (0.014) | | (0.017) | | (0.019) |
| Share male | | 0.038 | | -0.033 | | 0.140 |
| | | (0.066) | | (0.076) | | (0.086) |
| Lower ability track | | 0.128*** | | 0.133*** | | 0.121*** |
| | | (0.033) | | (0.034) | | (0.034) |
| GPA | | -0.103* | | -0.107** | | -0.096* |
| | | (0.053) | | (0.055) | | (0.051) |
| Foreigner | | 0.040 | | -0.058 | | 0.178** |
| | | (0.042) | | (0.056) | | (0.091) |
| Urbanity | | 0.080*** | | 0.139*** | | -0.005 |
| | | (0.027) | | (0.039) | | (0.034) |
| VET requirements | | 0.126 | | 0.132 | | 0.118 |
| | | (0.199) | | (0.208) | | (0.187) |
| Mismatch VET-choice | | -0.010 | | -0.011 | | -0.010 |
| | | (0.022) | | (0.023) | | (0.021) |
| Observations | 634 | 634 | 634 | 634 | 634 | 634 |

Probit regressions (Average marginal effects, AME) of the binary variable indicating at least one (non-exogenous) contract termination. Standard errors are clustered at class level. Columns (3)-(6) are subgroup effects for males and females, respectively, where competitiveness, overconfidence, risk-taking, locus of control, share male, foreigner and urbanity is interacted with the gender. * p <0.1, ** p <0.05, *** p <0.01.

they have a higher risk of terminating their contracts prematurely. In contrast, there is no such adverse effect for male apprentices once we control for their ability. These results hold even after including the requirement levels of the occupations and a variable capturing the distance between the individual math skill level and the math requirement level of the occupation as controls. Nevertheless, the results might still be the consequence of men and women choosing different occupations and reflect differences in dropout rates in these occupations. To rule out this possibility, we repeat the same regressions as in Table 3 but include a dummy for every occupation with more than 5 observations[4] (see

[4]Together, these dummies cover approximately 83% of the sample

Table 7 in Appendix C). All coefficients are very similar[5] to those in Table 3, and thus, we conclude that the results are not driven by the gendered choice of occupations.

## 4.2 Contract termination and different degrees of competitiveness

In this section, we examine whether the effect of competitiveness on our outcome, premature contract termination, depends on the task type used to measure competitiveness. As discussed in Section 3.3, students were randomly assigned to two different tasks: numbers and letters. The latter was much easier to solve, and subjects assigned to the letters task were substantially more likely to compete. Therefore, we assume that those students who chose to compete in the difficult task have strong competitive behaviour, while those who are competitive only when assigned to the easy task tend to have weak competitive behaviour. Of course, most of the competitive students in the easy test are also highly competitive, since they would have chosen the competitive option in the difficult test as well, but since the students only had to take one of the tests, we cannot identify highly and weakly competitive students in the easy test. Nevertheless, we can assume that the sample of students assigned to the simple task contains significantly more students who are only weakly competitive, and therefore, the effect of competitiveness may be different for both task types.

Table 4 shows the results, using the same regressions as in Table 3, but with the competitive variables split up into two variables representing the two task types. The variable "Competitive, numbers" is 1 if the subject was assigned to the numbers task and chose to compete, and zero otherwise. The variable "Competitive, letters" is 1 if the subject was assigned to the letters task and chose to compete, and zero otherwise. The coefficients of the control variables are very similar to the results in Table 3 and are therefore not reported again in Table 4.

Within the full sample (men and women together), all effects are statistically nondifferent from zero (Columns 1 and 2), except for competitive students assigned to the letters group, who appear to be more likely to drop out. The effects separated by gender in Columns (3)–(6) suggest that this coefficient is driven by females. In particular, if competitiveness was measured by the letters task, being competitive is associated with a substantially higher risk of dropping out for female apprentices. While the effects for both tasks are positive, only the one for women assigned to the letters task is significantly different from zero. However, a Chi2 test suggests that both coefficients, the one for competitive in the numbers task and the one for the letters task, are not significantly different (p=0.656).

For male students, on the other hand, being competitive is associated with lower risks of dropping out, with a large effect size, if the numbers task had measured competitive-

[5]Only the coefficient for the share of male apprentices is slightly larger and now significant on 10% level for females, suggesting that once we control for occupations, females in male-typical occupation might drop out more often.

Table 4: Effects of different task types on contract termination

| | All | | Males | | Females | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Male | 0.017 | -0.025 | | | | |
| | (0.028) | (0.049) | | | | |
| Competitive, numbers | -0.047 | -0.034 | -0.129*** | -0.117*** | 0.069 | 0.085 |
| | (0.038) | (0.034) | (0.033) | (0.031) | (0.070) | (0.064) |
| Competitive, letters | 0.032 | 0.061** | -0.010 | 0.023 | 0.093 | 0.116** |
| | (0.029) | (0.030) | (0.035) | (0.036) | (0.057) | (0.050) |
| Overconfidence | | 0.023 | | 0.040** | | -0.002 |
| | | (0.015) | | (0.018) | | (0.021) |
| Risk-taking | | -0.009 | | -0.019 | | 0.005 |
| | | (0.024) | | (0.033) | | (0.038) |
| Locus of control | | -0.004 | | 0.019 | | -0.037** |
| | | (0.014) | | (0.017) | | (0.019) |
| Share male | | 0.033 | | -0.037 | | 0.133 |
| | | (0.064) | | (0.073) | | (0.088) |
| Observations | 634 | 634 | 634 | 634 | 634 | 634 |
| Further controls | No | Yes | No | Yes | No | Yes |

Probit regressions (Average marginal effects, AME) of the binary variable indicating at least one (non-exogenous) contract termination. Standard errors are clustered at class level. Columns (3)-(6) are subgroup effects for males and females, respectively, where competitiveness, overconfidence, risk-taking, locus of control, share male, foreigner and urbanity is interacted with the gender. Further controls are Foreigner, Urbanity, Lower ability track, GPA, VET requirement and Mismatch VET-choice. * p <0.1, ** p <0.05, *** p <0.01.

ness. For male apprentices whose competitiveness was measured by the letters task, no correlation with the contract terminations can be found. The latter coefficient being close to zero is consistent with an interpretation that two effects cancel each other out here: on the one hand, there are also highly competitive students in the easier task group, as mentioned above, and these highly competitive students have a lower risk of terminating their contract. On the other hand, the group of weakly competitive students, who only choose to compete in the letters task, have a significantly increased risk of contract termination. However, since we assigned the students only to one of both tasks, we cannot isolate these effects.

Overall, the results show that the way competitiveness is measured is at least as important for predicting contract terminations from a labour and training contract as the gender dimension in competitiveness.

### 4.3 Specific reasons for contract termination

To explore in more depth why these reported effects emerge, we exploit the possibility to look at the different reasons for contract terminations separately by using multinomial

probit estimations and test for the mechanisms by gender and task (Table 5). Four possible outcomes are mirroring the official reasons for contract termination, as reported in paragraph 3.1: (1) no contact termination, (2) contract terminations due to a lack of performance (usually at vocational school), (3) contract terminations due to a change in occupation or employer (reorientations) and (4) contract terminations due to conflicts between employer and apprentice, including contract violations. Since all outcomes add up to 100%, the coefficient in the column "No c.t" always corresponds to the sum of the coefficients in Columns (2)–(4). For the regressions, we include the same control variables as in the previous sections.

First, we turn to the results for male apprentices (top panel). Competitive males in the number group were significantly less likely to drop out, as seen in the binominal regression in Table 4. Approximately half of the effect is due to fewer reorientations. Hence, highly competitive males are less likely to change their chosen occupation or their employer and thus appear to stick more to their initial choice. Furthermore, the negative coefficients for the other two dropout reasons suggest that competitive males in the numbers group have fewer contract terminations due to performance problems and conflicts, although these coefficients are small. This is consistent with an interpretation that competitiveness is related to another personality trait, "GRIT" (Alan & Ertac, 2019), but only for male apprentices and only if competitiveness is measured with a comparably difficult task. Competitive males in the letters group, on the other hand, behave no differently than non-competitive males, as all four coefficients are not significantly different from zero. Concerning the other non-cognitive skills, overconfident male apprentices are more likely to drop out prematurely, mainly due to a lack of performance, even after controlling for ability, job requirements, and job mismatch.

For competitive women, there are no such clear differences in terms of test variation. The coefficients of those assigned to the numbers task are statistically not different from the coefficients for the group assigned to the letters task. Hence, competitive female apprentices in both tasks appear to be more likely to drop out than non-competitive females. Looking at the reasons for dropout, all coefficients are positive, but those indicating performance issues are close to zero. Half of the negative competitiveness effect of females is found in the category of separations due to conflicts[6] between employers and apprentices. This indicates that the main reason why competitive women are more likely to drop out than non-competitive women is that they are more involved in employer-employee conflicts.

Concerning the changes of employers or reorientation to another occupation, we find an indirect effect of competitiveness and the risk of dropping out. As competitive women more often choose math-intensive and, therefore, male-dominated occupations (Buser et al., 2017), this environment and not the inclination to compete explains the results

[6]Contract violations are also covered in the group of conflicts, but there are very few females violating their contract.

Table 5: Effects on different reasons for contract termination

| **A Males** | (1) No c.t. | (2) Contract termination due to | (3) | (4) |
|---|---|---|---|---|
| | | Performance | Reorientation | Conflict |
| Competitive, numbers | 0.120*** | -0.038* | -0.055*** | -0.026* |
| | (0.029) | (0.023) | (0.016) | (0.015) |
| Competitive, letters | -0.023 | -0.016 | 0.018 | 0.021 |
| | (0.035) | (0.025) | (0.024) | (0.021) |
| Overconfidence | -0.040** | 0.022* | 0.004 | 0.014 |
| | (0.018) | (0.012) | (0.012) | (0.009) |
| Risk-taking | 0.019 | -0.004 | -0.003 | -0.012 |
| | (0.032) | (0.023) | (0.017) | (0.017) |
| Locus of control | -0.020 | 0.011 | 0.017 | -0.008 |
| | (0.016) | (0.011) | (0.011) | (0.008) |
| Share male | 0.026 | 0.053 | -0.040 | -0.039 |
| | (0.069) | (0.047) | (0.044) | (0.036) |
| **B Females** | No c.t. | Contract termination due to | | |
| | | Performance | Reorientation | Conflict |
| Competitive, numbers | -0.099 | 0.004 | 0.031 | 0.064 |
| | (0.061) | (0.010) | (0.038) | (0.053) |
| Competitive, letters | -0.131*** | 0.015 | 0.047 | 0.069* |
| | (0.048) | (0.025) | (0.032) | (0.040) |
| Overconfidence | 0.003 | -0.009 | -0.006 | 0.013 |
| | (0.020) | (0.007) | (0.011) | (0.013) |
| Risk-taking | -0.008 | 0.020 | -0.015 | 0.004 |
| | (0.038) | (0.020) | (0.022) | (0.023) |
| Locus of control | 0.040** | -0.012* | -0.015 | -0.013 |
| | (0.017) | (0.007) | (0.011) | (0.013) |
| Share male | -0.025 | -0.107* | 0.178*** | -0.046 |
| | (0.083) | (0.055) | (0.066) | (0.055) |
| Observations | 634 | 634 | 634 | 634 |
| Further controls | Yes | Yes | Yes | Yes |

Multinominal probit regressions (Average marginal effects, AME) of the outcomes 1) No contract termination (No c.t.), 2) Contract termination due to performance, 3) Contract termination due to reorientation and 4) Contract termination due to a conflict. Standard errors are clustered at class level. Both panels A and B are subgroup effects for males and females, respectively, where competitiveness, overconfidence, risk-taking, locus of control, share male, foreigner and urbanity is interacted with the gender. Further controls are Foreigner, Urbanity, Lower ability track, GPA, VET requirement and Mismatch VET-choice. * p <0.1, ** p <0.05, *** p <0.01.

to some extent. Indeed, if we exclude the variable "Share males" in the regression, the coefficients for competitiveness on the outcome "Program change" are larger and statistically significant at the 10% level for the letters group (Table 8 in Appendix C). If we include occupational dummies instead of the share males in Column (6), the coefficients decrease again.[7] These results mean that some of the competitive women who chose a male-dominated profession revise this decision again in the course of their training. This is also the case for non-competitive females, as the highly significant coefficient of "Share males" for the outcome "Program change" in Table 5 shows. On the other hand, there is also an opposite effect: women in male-dominated professions are less likely to drop out of apprenticeships because of performance problems. The two effects together mean that women in male-dominated occupations do not drop out of apprenticeships more often than women in non-male-dominated occupations.

In summary, highly competitive males are less likely to drop out of their apprenticeships, mainly due to fewer reorientations. For women, on the other hand, we do not observe such advantageous outcomes associated with being competitive. In contrast, the results are opposite when comparing competitive women with similarly competitive men in the numbers task group. Regarding the reasons for dropping out, competitive women (compared to non-competitive women) are more likely to drop out mainly due to conflicts with their employers.

### 4.4 Falsification test

The results presented thus far do not present causal evidence but correlations. From a causal perspective, these results might still be driven by unobserved confounding variables that correlate with contract terminations, although we carefully included a wide array of such variables known to affect contract terminations as controls. However, we cannot control for all aspects of the chosen apprenticeships; in particular, we do not have any information about the employer (i.e., the gender of the supervisor or mentor), the quality of the training, or the expectations of the training firm. However, our data's availability of the reasons for dropout allows us to provide additional insight by looking at the relationship between competitiveness and "exogenous" contract terminations. These contract terminations should not be correlated with the apprentices' personalities. We use these exogenous contract terminations for falsification or anti-test, as in Galiani et al. (2005). If unobserved factors would cause the correlation between competitiveness and non-exogenous contract terminations, we could expect the association to also be observable for those exogenously caused contract terminations and vice versa.

Table 9 in Appendix E shows the results. All the coefficients of the non-cognitive skills are not significantly different from zero, not even at the 10% level. Moreover, the

[7] Interacting competitiveness and the share male also suggests that the effect size is stronger with an increasing share of male apprentices. However, due to the rather small sample, the point estimates are not different from zero in such a model.

coefficients of competitiveness in both task groups, overconfidence, and locus of control are virtually zero. Only the point estimate of competitive women assigned to the letters group is slightly different from zero but still statistically insignificant and, contrary to the effects on non-exogenous contract termination, negative. Overall, these zero-effects suggest that it is unlikely that an unobserved exogenous variable drives our main results. The zero effects are reassuring in that they suggest that there is not simply a general correlation between contract termination and competitiveness but that these correlations are limited to those cases of contract terminations where the apprentice's personality is very likely to play a role. Furthermore, the opposite effects for men and women for the non-exogenous contract terminations also suggest that personality traits are the main drivers of our results.

# 5 Discussion

This study makes three contributions to the literature. First, the study provides additional evidence that differences in the propensity to behave competitively in laboratory situations have concrete implications for real-life outcomes and educational and labour market success. The effect sizes can be large and economically significant. Second, we show that being competitive does not necessarily have the same labour market consequences for men and women; moreover, the same characteristic can have positive consequences for one gender and negative consequences for the other. Third, we show that the effect of competitiveness on labour market outcomes differs depending on how this competitiveness has been measured. This observation leads us to conclude that there are not simply competitive and non-competitive people but that, depending on the context and situation, people may or may not behave competitively and that it does matter in which situation one behaves competitively.

While these results show that competitiveness is an important trait for labour market success, they also raise important questions for future research that we cannot conclusively answer with our data. First, the different effects for men and women show that competitiveness can be rewarding for some while creating adverse consequences for others. This can also mean that being competitive is not a positive quality in general. Therefore, one would have to know exactly in which situation and for whom competitiveness pays off before one can interpret a gender gap in competitiveness as something negative or positive. Therefore, more research is needed on different life and labour market situations to know in which cases competitiveness has positive or negative consequences and for whom. Our observation in the present study also raises the question of whether the observed gender gap in competitiveness is partly due to rational behaviour on the part of women. If young girls are already confronted with the negative consequences of competitiveness, it would be rational for women to act less competitively.

Moreover, the adverse effects of a propensity to behave competitively as a female appears mainly due to a higher likelihood of being involved in conflicts and not due to insufficient performance. Considering that women are generally perceived as more agreeable, this result is surprising but consistent with an interpretation that employers or peers in vocational schools perceive acting competitively as violations of social gender norms for women but not for men. However, our data cannot conclusively substantiate such an interpretation, and further research on both the cause and consequence of competitiveness is thus necessary.

Second, the results—showing that the propensity to compete can differ not only by gender but also by the test situation in which competitiveness is assessed and that these differences in turn exhibit different correlations with labour market outcomes—suggest that we need to know more about what exactly the concept of competitiveness measures. We have tried to directly capture and include in the analysis other common concepts of personality traits that may be correlated with competitiveness itself, such as risk aversion, overconfidence, or locus of control. However, as is the case with most research of this type, it is impossible to measure all imaginable personality traits, and it could well be that different degrees and forms of competitiveness correlate with different concepts of non-cognitive skills, and that these correlations would give us further information about which characteristics competitiveness truly stands for.

Third, we included important aspects of the specific occupations in our analysis but unfortunately, no information about the employers themselves. We do not know whether competitive or non-competitive apprentices are more likely to be found in large or small companies or whether the company culture influences the selection as to whether more competitive or less competitive people are hired, which influences the dropout rates. We also do not know whether, for example, the gender of the supervisor plays a role. However, such interactions are conceivable, and it would be interesting to replicate this form of study in a setting where detailed information on employers is available.

This leads to the fourth important point regarding a causal interpretation of the results. We are far from interpreting the results as strictly causal, even though the measurement of competitiveness took place years before the results observed here; we can at least rule out reverse causality. We were also able to show that, in contrast to the stated dropout reasons, the apprentices themselves can influence contract terminations due to exogenous shocks, such as the bankruptcy of the training company. These do not correlate with non-cognitive skills, including competitiveness. However, to make a causal interpretation possible, one would have to vary competitiveness exogenously, which might be possible but is not necessarily advisable, considering that competitiveness has not always had a positive effect on labour market outcomes.

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# Appendices

## A Variables

### A.1 Non-cognitive skills

**Competitiveness** Whether respondents are willing to compete (1) or not (0). Analogue to Niederle and Vesterlund (2007), the incentivized experiment comprised three rounds, of which one was randomly selected for the payment. In each round, respondents had 3 minutes to solve as many tasks as possible, either numerical or alphabetical. In the first round, the respondents could receive 25 cents for each correct answer, whereas in the second round only the winner of four randomly grouped respondents could receive CHF 1. In the third round, the respondents could choose between piece-wise payment (0) or competition (1), and this choice is used as measure of competitiveness.

**Overconfidence** Difference between self-assessment of own math skills (in quartiles) and the actual rank (in quartiles) of the math grade within the class. High values indicated that the respondents overestimate their math skills.

**Risk-taking** Binary variable whether the respondent is risk-linking (1) or risk-averse (0). The variable is constructed using two items: First, we asked participants to choose among a certain payment of CHF 2 or 50/50 lotteries of increasing variance and expected payoff: 3.50 or 1.50, 4 or 1, 5 or 0.50, 6 or 0. Second, the "bomb risk elicitation task" (BRET), where respondents collect a number of boxes and get paid for each box. However, one box contains the bomb, and if selected, the payment is zero. We assess a person as risk-liking if the number of collected boxes is above the mean number and the lottery choice is not the certain return.

**Locus of control** Standardized variable indication the locus of control based on seven questions with a seven-item Likert scale (Jaik & Wolter, 2019). A higher value indicates that the individual sees life events as dependent on his own actions rather than on external factors.

### A.2 Control variables

**Lower ability track** indicates that the respondent was assigned to the lower ability track (*Realschule*). In the canton of Bern, most students on lower secondary level are assigned to either a lower or higher ability track, depending on their cognitive skills.

**GPA** Average grade in Mathematics and languages (German, English, and French). Swiss grades range between 3 (lowest grade) and 6 (highest grade).

**Foreigner** Respondents without Swiss citizenship.

**Urban** indicates that the students attend a school in an urban region (1) or rural region (0).

**Share male** indicates the share of male apprentices in the occupation of the respondent. These shares were calculated using the administrative data.

**VET requirements** indicates how demanding the respondent's VET program is. For each occupation, a group of experts rated the skills requirements in the areas mathematics, sciences, mother-tongue language, and foreign languages.

**Math mismatch VET-choice** is the difference between the VET requirements (mathematics only) of the respondent's program and his math score. Positive values indicate that the respondent chose an occupation where the math requirements tend to be more demanding compared to his skill level.

# B Matching both datasets

Share male, Foreigner, VET requirements and Mismatch VET-choice are calculated using the administrative data, and thus cannot be included in these regressions which use the whole survey sample.

Table 6: Matching balance test

| | (1) | (2) |
|---|---|---|
| Male | -0.004 | -0.006 |
| | (0.028) | (0.028) |
| Competitiveness | 0.015 | 0.022 |
| | (0.028) | (0.027) |
| Overconfidence | -0.014 | -0.010 |
| | (0.015) | (0.015) |
| Risk-taking | 0.035 | 0.028 |
| | (0.029) | (0.029) |
| Locus of control | -0.006 | -0.007 |
| | (0.014) | (0.014) |
| Lower ability track | -0.016 | 0.007 |
| | (0.029) | (0.029) |
| GPA | 0.022 | 0.010 |
| | (0.035) | (0.034) |
| Age (in months) | | -0.010*** |
| | | (0.002) |
| Pupil Swissborn | 0.139** | 0.101 |
| | (0.063) | (0.062) |
| Mother Swissborn | -0.046 | -0.043 |
| | (0.043) | (0.042) |
| Father Swissborn | -0.012 | -0.005 |
| | (0.045) | (0.044) |
| Urbanity | -0.013 | -0.003 |
| | (0.030) | (0.030) |
| Observations | 808 | 808 |

Probit regressions (Average marginal effects, AME) of the binary variable indicating that the observation was matched. * p <0.1, ** p <0.05, *** p <0.01.

# C Occupation fixed effects

Table 7: Effects on contract termination with occupational fixed effects

| | All | | Males | | Females | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Male | 0.045 | -0.013 | | | | |
| | (0.036) | (0.043) | | | | |
| Competitiveness | -0.007 | 0.014 | -0.071* | -0.041 | 0.084* | 0.091** |
| | (0.029) | (0.029) | (0.036) | (0.037) | (0.047) | (0.042) |
| Overconfidence | | 0.012 | | 0.030 | | -0.014 |
| | | (0.017) | | (0.021) | | (0.024) |
| Risk-taking | | 0.002 | | -0.007 | | 0.015 |
| | | (0.025) | | (0.035) | | (0.043) |
| Locus of control | | -0.004 | | 0.019 | | -0.037 |
| | | (0.016) | | (0.019) | | (0.024) |
| Share male | | 0.079 | | -0.019 | | 0.220* |
| | | (0.099) | | (0.118) | | (0.131) |
| Lower ability track | | 0.114*** | | 0.114*** | | 0.114*** |
| | | (0.035) | | (0.035) | | (0.035) |
| GPA | | -0.114* | | -0.114* | | -0.114* |
| | | (0.067) | | (0.067) | | (0.067) |
| Foreigner | | 0.049 | | -0.055 | | 0.198** |
| | | (0.059) | | (0.091) | | (0.092) |
| Urbanity | | 0.070** | | 0.117*** | | 0.004 |
| | | (0.028) | | (0.040) | | (0.039) |
| VET requirements | | 0.085 | | 0.085 | | 0.085 |
| | | (0.370) | | (0.370) | | (0.370) |
| Mismatch VET-choice | | -0.003 | | -0.003 | | -0.003 |
| | | (0.027) | | (0.027) | | (0.027) |
| Observations | 634 | 634 | 634 | 634 | 634 | 634 |
| Occupational dummy | Yes | Yes | Yes | Yes | Yes | Yes |

Probit regressions (Average marginal effects, AME) of the binary variable indicating at least one (non-exogenous) contract termination. Standard errors are clustered at class level. Columns (3)-(6) are subgroup effects for males and females, respectively, where competitiveness, overconfidence, risk-taking, locus of control, share male, foreigner and urbanity is interacted with the gender. * p <0.1, ** p <0.05, *** p <0.01.

# D Reorientations by females

Multinominal probit regression on non-exogenous contract termination due to a change of occupation or employer, for females. Column (1) corresponds to Column 3 of Table 5 (lower panel).

Table 8: Effects of females on contract termination due to reorientations

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Competitive, numbers | 0.031 | 0.035 | 0.028 | 0.028 | 0.049 | 0.027 |
| | (0.038) | (0.040) | (0.035) | (0.037) | (0.041) | (0.039) |
| Competitive, letters | 0.047 | 0.051 | 0.041 | 0.048 | 0.052* | 0.037 |
| | (0.032) | (0.032) | (0.034) | (0.034) | (0.030) | (0.029) |
| Overconfidence | -0.006 | | -0.007 | -0.007 | -0.006 | -0.010 |
| | (0.011) | | (0.011) | (0.012) | (0.012) | (0.011) |
| Risk-taking | -0.015 | -0.016 | | -0.020 | -0.029 | -0.015 |
| | (0.022) | (0.023) | | (0.022) | (0.021) | (0.024) |
| Locus of control | -0.015 | -0.016 | -0.015 | | -0.014 | -0.017 |
| | (0.011) | (0.011) | (0.011) | | (0.011) | (0.013) |
| Share male | 0.178*** | 0.191*** | 0.183*** | 0.169** | | |
| | (0.066) | (0.066) | (0.066) | (0.068) | | |
| Observations | 634 | 634 | 634 | 634 | 634 | 634 |
| Occupational dummy | No | No | No | No | No | Yes |

Multinominal probit regression (Average marginal effects, AME) of contract termination due to a change of occupation or employer. Standard errors are clustered at class level. All models are subgroup effects for females, where competitiveness, overconfidence, risk-taking, locus of control, share male, foreigner and urbanity is interacted with the gender. * p <0.1, ** p <0.05, *** p <0.01.

# E Falsification test

Since there are no male foreigners with an exogenous contract termination in the sample, we didn't interact the variable "Foreigner" with the gender, as we do in Table 3. All coefficients of the further control variables are not significantly different from zero.

Table 9: Effects on exogenous contract termination

| | All | | Males | | Females | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Male | -0.015 | -0.055* | | | | |
| | (0.016) | (0.029) | | | | |
| Competitive, numbers | 0.007 | 0.003 | 0.002 | 0.001 | 0.014 | 0.005 |
| | (0.019) | (0.020) | (0.023) | (0.023) | (0.035) | (0.031) |
| Competitive, letters | -0.009 | -0.009 | 0.004 | 0.006 | -0.028 | -0.029 |
| | (0.015) | (0.015) | (0.023) | (0.021) | (0.028) | (0.028) |
| Overconfidence | | -0.002 | | -0.008 | | 0.006 |
| | | (0.009) | | (0.010) | | (0.012) |
| Risk-taking | | 0.023 | | 0.025 | | 0.021 |
| | | (0.016) | | (0.018) | | (0.027) |
| Locus of control | | -0.003 | | -0.005 | | -0.001 |
| | | (0.006) | | (0.008) | | (0.009) |
| Share male | | 0.124** | | 0.159* | | 0.074 |
| | | (0.059) | | (0.084) | | (0.058) |
| Observations | 570 | 570 | 570 | 570 | 570 | 570 |
| Further controls | No | Yes | No | Yes | No | Yes |

Probit regressions (Average marginal effects, AME) of the binary variable indicating at least one exogenous contract termination, i.e. due to health reasons, economic problems of the firms or private reasons. Standard errors are clustered at class level. Columns (3)-(6) are subgroup effects for males and females, respectively, where competitiveness, overconfidence, risk-taking, locus of control, share male, foreigner and urbanity is interacted with the gender. * p <0.1, ** p <0.05, *** p <0.01.