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Dorothea Kübler
Julia Schmid

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Wissenschaftszentrum Berlin für Sozialforschung gGmbH
Reichpietschufer 50
10785 Berlin
Germany
www.wzb.eu

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Affiliation of the authors:

Dorothea Kübler
WZB and Technical University Berlin

Julia Schmid
WZB

Wissenschaftszentrum Berlin für Sozialforschung gGmbH
Reichpietschufer 50
10785 Berlin
Germany
www.wzb.eu

Abstract

Take your time to grow: A field experiment on the hiring of youths in Germany

by Dorothea Kübler and Julia Schmid*

We investigate the effect of spells of no formal employment of young Germans on their chances of entering the labor market. We also study whether the potential negative effects of such spells can be mitigated by publicly provided training measures. In a field experiment, fictitious applications were sent to firms advertising an apprenticeship position for office manager. Our results show that applicants who have been out of school for two years are not less likely to be invited compared to applicants who apply during their last year of schooling. Among the two applicant types who have been out of school for two years, applicants who have taken part in a training course are significantly more likely to pass the first step in the recruitment process than those without supplementary schooling. Our findings can be explained with signaling and human capital theory while there is no evidence of stigma effects.

Keywords: Youth unemployment, hiring decisions, apprenticeships

JEL classification: J64, C93

* E-mail: dorothea.kuebler@wzb.eu, jschmid@wzb.eu.
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1. INTRODUCTION

Entering the labor market is an important stage in people's lives because the first job can have a lasting effect on the entire career. Young adults and youths often feel under pressure to avoid gaps of no formal occupation after finishing school. Addressing the problems of youths without a formal employment is high on the political agenda in many countries. But it is not well understood what causes the difficulties of some youths to find such employment. We focus on the role of employers and ask how they evaluate applicants for apprenticeships with spells of no formal employment in the years right after leaving school. Do applicants who left school some time ago have lower chances of finding an apprenticeship position? We also investigate whether it matters for the chances of employment how applicants spend their time after leaving school.

While it is a common research practice to use data on job placements, this placement is the joint result of the applicants' preferences and their search behavior on the one hand, and employer preferences and hiring behavior on the other. Thus, the outcome-based approach cannot identify the relative importance of the behavior of employers and applicants respectively. Asking employers directly about their recruitment criteria may induce socially desirable answers. This is of particular concern due to various campaigns in Germany to help older applicants find a job.[1] For these reasons, we decided to conduct a field experiment to focus on employer behavior while controlling for the preferences and search behavior of applicants. This will allow us to identify what the real pressures are on adolescents entering the labor market.

The field experiment was conducted in the market for apprenticeships in a large metropolitan area in Germany. This market constitutes the main entry-level labor market for young Germans below the level of tertiary education, and it is also the most important entry-level market overall as more than 60% of all school leavers start an apprenticeship (BMBF 2012). An apprenticeship often leads to a regular job, i.e., more than 60% of apprentices remain employed by the firm that trained them (BIBB 2012). Therefore, hiring procedures for apprentices are similar to those for other employees.

The market is quite competitive, in the sense that many applicants do not find an apprenticeship position. Every year around 300,000 adolescents who did not start an apprenticeship enter the "transition system"consisting of

[1] Youths searching for an apprenticeship position who have been out of school for more than a year ("Altbewerber") have been the focus of a number of policy measures. A subsidy for firms employing such applicants with a lower secondary degree was in place from 2008 to 2010.

various publicly funded training programs that do not lead to a recognized vocational qualification.[2] At the same time, many apprenticeship positions remain unfilled, mainly due to regional and occupational mismatch as well as the perceived quality of the applicants being too low from the point of view of the employers. We investigate whether participation in a pre-vocational training program helps or harms applicants in finding an apprenticeship position.

It emerges from the experiment that applicants who have been out of school for almost two years are not less likely to receive an invitation than applicants who are about to finish school. Thus, there is no evidence of a stigma from not having started any formal employment or apprenticeship right after school. Moreover, we find that pre-vocational training makes the older applicants even more attractive compared to fresh school leavers. Thus, our results indicate that youths can take their time to grow before entering the labor market, especially if they use this time wisely.

The experiment relates to three strands of research. First, our hypotheses and the experimental design build on theoretical work identifying possible reasons for the adverse effects of spells without formal employment on labor market success. Youth unemployment or informal employment can have detrimental effects on later employment because of the loss of human capital (Becker 1964). During spells of unemployment, young people possibly forget what they had learned in school, which makes them less trainable and employable later on. Apart from its negative effects on abilities and competencies, unemployment can also be a sign of low productivity. This can be due to a signaling effect where unemployment signals undesirable characteristics (Spence 1973, Bedard 2001). Finally, from a social learning perspective, employers may interpret spells of unemployment as resulting from the applicant's unsuccessful attempts to find an apprenticeship position earlier on (Gibbons and Katz 1991, Lockwood 1991, Kübler and Weizsäcker 2003, Biewen and Steffes 2010). All three potential mechanisms for scarring effects might render unemployment early in life harmful for the later employment history. Our experiment sheds some light on the relative importance of the three explanations.

Second, there is a literature on scarring effects, that is, the long-lasting adverse effects on pay, employment, and health, due to youth unemployment. Youth unemployment has been shown to be correlated with lower wages

[2]For the proportion of students ending up in the transition system (which includes pre-vocational training programs) see Authoring Group Educational Reporting 2012, p.11. Baethge, Solga, and Wieck (2007) provide a description of the various measures of the transition system.

(Oreopoulos, von Wachter, and Heisz 2014, Gregg and Tominey 2005) and with adult unemployment (Gregg 2001) or both (Mroz and Savage 2006). There is much less evidence on the effects of youth employment in informal jobs, and the evidence regarding its correlation with lower wages in early adulthood is mixed (Cruces, Ham, and Viollaz 2012, Bosch and Maloney 2010). The extensive literature on active labor market programs includes studies on training programs that are comparable to the transition system in Germany. The Job Corps program in the US is a large federally funded training program for disadvantaged youth aged 16 to 24, lasting on average eight months. Based on a randomly selected sample of participants who were followed for data collection, Schochet et al. (2008) demonstrate that program participation leads to better educational outcomes, reduces criminal activities, and increases earnings for several years after the program. Note that none of these papers uses an experimental approach, so that both employer and applicant behavior could be driving the observed outcomes (e.g., unobserved differences between applicants). On the other hand, all of the papers investigate a longer time span than our study and thus differ in focus. The purpose of our experiment is not to evaluate certain elements of the German transition system, but rather to undertake a systematic investigation of the firms' recruitment criteria with respect to the applicants' time spent after finishing school.

Third, we rely on the methodology of audit studies that were conducted to investigate labor market discrimination (e.g., Bertrand and Mullainathan 2004). In Germany, where employers require application packages to include certificates from school, photographs, etc., only a few such studies have been conducted, one recent example being Kaas and Manger (2010) on ethnic discrimination in the market for student internships. Most closely related to our experiment is a field experiment conducted in Switzerland by Oberholzer-Gee (2008) who observes stigma from unemployment for administrative assistants. In contrast to our experiment, he does not investigate the reasons for this stigma by varying the occupation of the applicants while they are unemployed. Moreover, the market for administrative assistants differs substantially from the apprenticeship market in terms of career perspectives and the average age of applicants, which might affect the importance of unemployment spells for later employment.

2. CONTEXT OF THE EXPERIMENT AND RESEARCH QUESTIONS

To ensure a good understanding of the hiring procedure of apprentices, we conducted expert interviews with human resource managers at a number of large firms located in the same metropolitan area as the experiment.

We asked the managers about their recruitment procedures and about what kind of screening is done at which step. The insights from these 10 interviews allowed us to design a field experiment to answer our research questions. Furthermore, we collected a number of applications from applicants in previous years in order to make our fictitious applications as realistic as possible.

2.1. *Recruitment process*

Based on the expert interviews, the typical recruitment process for apprentices in large companies can be described as a sequence of steps. Only those applicants proceed to the next step who have been evaluated positively at the preceeding step. The apprenticeship positions are advertised at online job portals and on the company's website. The advertisements define the target population by stating the desired characteristics of applicants. Then the selection process starts:

Step 1 – A first selection is made based on written applications. Relevant criteria are school degree, school grades, teachers' reports on non-cognitive skills and the overall impression of the applicant based on the CV.

Step 2 – Applicants are invited to take a test of German, maths as well as other subjects taught at school, sometimes also IQ-tests.

Step 3 – Interviews with applicants are conducted in order to assess their personality, their motivation, the vocational interest as well as communication and team-working skills.

After this final step, job offers are made.

The experiment focuses on the employers' choices made in Step 1. Thus, we study the selection criteria when employers screen the written applications and decide which applicants to invite to the test. Of course, we cannot know whether our applicants would have been able to pass further steps. However, it is exactly at Step 1 that the school grades and the CV play the main role for the employers' decisions. Hence, our approach allows us to gauge the relevance of information conveyed by the CV, such as spells of no formal employment, which is our variable of interest.

2.2. *Research questions*

We study the effects of spells of no formal employment of adolescents on future employment opportunities. In particular, we ask whether applicants who have been out of school for two years have a lower chance of reaching

the next step of the recruitment process based on their written application than applicants who have just finished school. Thus, we create applications for "new applicants" who are just finishing school and for "old applicants" who have been out of school for two years without an apprenticeship. We distinguish between two types of old applicants, depending on their activities during their spell of no formal employment or training. This will allow us to study whether potential negative effects can be mitigated by the activities carried out during spells without a formal occupation. In particular, we compare the effect of additional pre-vocational training with working in an informal job in the years after leaving school.

The differentiation between the two types of old applicants allows us to investigate whether the potential negative effects of not starting an apprenticeship right after school can be compensated by a pre-vocational training. In Germany, pre-vocational training is a publicly funded, non-selective one-year course, offered to those who could not find an apprenticeship position. While in the majority of cases pre-vocational training does increase the chances of a regular employment or an apprenticeship (Baethge, Solga, and Wieck 2007), the reasons for this observation are not well-understood. It could simply be a selection effect in that poorer students end up taking pre-vocational training. However, it is also possible that pre-vocational training carries a stigma and therefore leads to unsuccessful applications later on. These negative stigma effects could be stronger than the potential positive human capital effects. On the positive side, the pre-vocational training can increase the human capital of youths and it can enable them to signal desirable traits such as motivation and self-discipline.

3. EXPERIMENTAL PROCEDURES

We sent out applications for apprenticeships of office manager and office clerk. Both professions are similar in that employers do not ask for the Abitur (a prerequisite for entering university), but only for the intermediate secondary degree (MSA) after 10 years of schooling. Moreover, both professions are at an upper intermediate level among apprenticeships in terms of competencies required. Also, both professions are predominantly female, and office clerk is one of the most frequent apprenticeships of women (Statistisches Bundesamt 2013).

For the sample, we restricted our attention to firms with 30 or more employees located in a large metropolitan area in Germany which offered apprenticeship positions for office managers and for office clerks in 2011/2012 and in 2012/2013. For ethical reasons, we chose not to burden smaller firms with the additional work of our fictitious applications. As the applicants are

young people typically living with their parents, the market for apprenticeships is a very local market.

We conducted two waves of the experiment with the same variable of interest but different average grades. Average grades were kept constant for all applicants within one wave. By varying the grade level across the two waves, we can investigate whether the impact of our experimental variables (years after finishing school and occupation after school) is uncorrelated with the effect of grades, assuming that the market conditions remain relatively stable. It turned out that the comparison between waves 1 and 2 is valid because the apprenticeship market in 2012 and 2013 was relatively similar in our metropolitan area. The number of vacant apprenticeship positions per 100 young people interested in taking up an apprenticeship was almost equal (BIBB 2014). Applications were sent out continuously from October 2011 to May 2012 and from October 2012 to May 2013. The job ads appeared in this interval of seven months for positions starting in the summer of 2012 and 2013 respectively.

We created three applicant types. First, the *New* applicant is still at school in her last year (10th grade) at the time of the application. There are two old applicants: The $Old_{\text{pre-voc}}$ applicant finished school more than one year ago. She has completed one year of pre-vocational training and currently works at a greengrocer's. Finally, the *Old* applicant finished school more than one year ago. She is currently working at a kiosk. No further information is given about the activities of the old applicants since they finished school. Both $Old_{\text{pre-voc}}$ and *Old* applicants have an intermediate-level degree while the *New* applicants are "most likely to receive an intermediate-level degree,"according to their last school report.[3]

The main variables characterizing the three applicants in the design of wave 1 [wave 2] are depicted in Table I. All have moderate school grades with an average of 2.8 [3.2] and good evaluations of their non-cognitive skills.[4] The job at a greengrocer's and at a kiosk (where newspapers, sweets, etc. are sold) are comparable. Both are non-selective and—if at all—convey less human capital than the pre-vocational training. Also, the signaling value is limited as these are non-selective jobs that mainly serve to procure a small income. No mention is made as to how regularly the applicants work at the kiosk or the greengrocer's. Thus, the potential to signal a positive work

[3]The German school system provides three different degrees for those leaving school. The lower secondary degree after nine years (Hauptschulabschluss), the intermediate secondary degree after 10 years (MSA or Realschulabschluss), and the upper secondary degree (Abitur).

[4]For the relative importance of grades and non-cognitive skills in the application process for apprenticeships see Protsch und Solga (2015).

TABLE I

THREE TYPES OF APPLICANTS

New applicant	$Old_{\text{pre-voc}}$ applicant	*Old* applicant
10th grade student, very likely to receive an intermediate secondary degree in summer 2012 [2013]	Received an intermediate secondary degree in 2010 [2011]	Received an intermediate secondary degree in 2010 [2011]
	Followed a one-year pre-vocational program	
	Currently works at a greengrocer's	Currently works at a kiosk

attitude with these occupations is limited. While there are no obvious gaps in the CV of both old applicants, such gaps are possible due to the vagueness of the information given ("currently works at a kiosk/greengrocer's"). The pre-vocational training that our applicants participated in comprises coursework in German, English, maths, law, business, and some additional topics. Thus, the training is relevant for the profession of office manager or office clerk.

For each wave, we created three full application profiles with three names, addresses, etc. In Germany, an application for an apprenticeship includes a letter of motivation, the curriculum vitae including a photograph of the applicant and copies of the last three school certificates. We chose the profiles to be as comparable as possible. All applicants lived and attended schools in the same district of the metropolitan area. By this, we avoided differences between profiles that are due to different socio-economic characteristics of districts. For every firm that advertised an apprenticeship position, we randomly matched the three profiles to the three applicant types (*New*, $Old_{\text{pre-voc}}$ and *Old*), and sent out applications to the firm for all three applicants. Thus, each employer received three applications from us.

For each applicant profile, we created an email account, a mobile phone number, and a postal address.[5] Responses by firms were usually received via phone (voicemail) or email. Whenever one of our applicants received an invitation to take the test, we immediately declined the offer in order to allow a real applicant to be given the slot.

[5]We used postal addresses in the relevant district by adding nameplates to the mailboxes of colleagues and friends living in this district.

4. RESULTS

4.1. *Responses by firms*

Table II summarizes the main features of the dataset. Note that of the 249 firms we sent applications to, 184 gave a complete response, i.e., a response to all three applicants. In the subsequent analysis we focus on these observations, i.e., responses where firms provided complete feedback. Unless otherwise stated, results based on all responses, including firms with incomplete feedback, yield the same results.[6]

TABLE II

MAIN PROPERTIES OF THE DATASET

	Wave 1 (avg. 2.8)	Wave 2 (avg. 3.2)	Wave 1+2
No. of firms applied to (no. of applications)	115 (345)	134 (402)	249 (747)
No. of firms with complete feedback [proportion]	89 [77.4%]	95 [70.9%]	184 [73.9%]
No. of invitations (of all applications) [proportion]	194 [56.2%]	116 [28.9%]	310 [41.5%]
No. of invitations (of complete feedback) [proportion]	172 [64.4%]	100 [35.1%]	272 [49.3%]

There was an overlap of 43 firms in waves 1 and 2. We employed profiles with different individual characteristics of the three applicants between the waves (name, address, photograph, CV, cover letter, school certificates). Therefore, receiving applications from us twice did not create any suspicion on the part of the firms.

Importantly, we did not find any significant differences between the likelihood of our three applicant profiles receiving an invitation in each of the two waves. Thus, our choice of names, addresses, photographs etc. for the three profiles was successful in that the employers considered them to be similar. We have relegated this analysis to Appendix A.1.

4.2. *Experimental results*

The proportion of applicants who passed the first step of the hiring procedure and were invited to the test are indicated in Table III. It emerges that

[6]Throughout, non-responses by firms are treated as missing values.

in both waves, the percentages of applicants who received an invitation are ordered as follows: Old applicants with pre-vocational training ($Old_{\text{pre-voc}}$) are more likely to receive an invitation than new applicants (New) who are more likely to receive an invitation than old applicants without the training (Old).

TABLE III
INVITATION RATES OF THE THREE APPLICANTS

Applicant		Wave 1	Wave 2	Wave 1+2
New	Mean	0.640	0.326	0.478
	[SEM]	[0.051]	[0.048]	[0.037]
	n	89	95	184
$Old_{\text{pre-voc}}$	Mean	0.685	0.411	0.543
	[SEM]	[0.050]	[0.051]	[0.037]
	n	89	95	184
Old	Mean	0.607	0.316	0.457
	[SEM]	[0.052]	[0.048]	[0.037]
	n	89	95	184

Note: Figures based on all responses where firms provided complete feedback. Values in square brackets represent standard errors of the mean [SEM].

We start with a comparison of the average invitation rate per type of applicant by means of non-parametric tests. The difference between $Old_{\text{pre-voc}}$ and Old is significant at the 10 percent level in wave 1 and at the 1 percent level in wave 2 as well as in both waves together (McNemar's test yields $p = 0.0522$ for wave 1, $p = 0.0067$ for wave 2, and $p = 0.0011$ for both waves). The difference between $Old_{\text{pre-voc}}$ and New is significant at the 10 percent level in wave 2 and at the 5 percent level in wave 1 and 2 together (wave 1: $p = 0.2850$, wave 2: $p = 0.0736$, waves 1 and 2: $p = 0.0396$). Finally, the difference between New and Old is not significant (wave 1: $p = 0.3657$, wave 2: $p = 0.7815$, waves 1 and 2: $p = 0.4142$).[7] Note that the difference between $Old_{\text{pre-voc}}$ and New is not significant in wave 1, but is marginally significant in wave 2 where grades are worse. It is thus possible that pre-vocational training helps school leavers with relatively bad grades more than those with good grades. For the old applicants with the bad grades, participating in pre-vocational training increases their chances

[7] McNemar's tests based on all responses (including firms with incomplete feedback) yield qualitatively the same results in that all comparisons exhibit the same levels of statistical significance as above.

of an invitation by 30 percent.

We also employ probit regressions to assess the effect of application type on the invitation rates.[8] For these regressions, we pool the data from both waves and introduce a dummy for wave 2 that is set equal to 0 for wave 1. $Old_{\text{pre-voc}}$ is the base category. Table IV displays the results of the probit regressions for the probability of receiving an invitation.

TABLE IV

PROBIT REGRESSION FOR INVITATIONS OF APPLICANTS.

	(1)	(2)	(3)
I_{New}	-0.164^{**}	-0.176^{**}	-0.123
	(0.079)	(0.085)	(0.115)
I_{Old}	-0.218^{***}	-0.234^{***}	-0.212^{**}
	(0.065)	(0.070)	(0.107)
$I_{wave\ 2}$		-0.756^{***}	-0.709^{***}
		(0.150)	(0.172)
$I_{New} \times I_{wave\ 2}$			-0.101
			(0.170)
$I_{Old} \times I_{wave\ 2}$			-0.041
			(0.140)
Constant	0.109	0.508^{***}	0.483^{***}
	(0.100)	(0.133)	(0.139)
N	552	552	552
$logL$	-381.05	-356.84	-356.76
$\chi^2_{(k-1)}$	11.24	33.98	34.37

Note: Regressions based on all responses where firms provided complete feedback (pooled data of waves 1 and 2). Values in parentheses represent standard errors corrected for clusters on the firm level. Asterisks represent p-values: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

The regressions corroborate the results based on non-parametric tests. We find a significantly negative and large effect of the grade as indicated by the coefficient of I_{wave2}. Over both waves, New and Old applicants have

[8] Probit regressions are also used since non-parametric tests are strictly speaking not applicable for both waves together due to the overlap of 43 firms in wave 1 and 2, yielding pairs of observations that are not independent. McNemar's tests applied to the data of both waves but excluding overlapping firms in wave 2 [wave 1] yield $p = 0.0011$ [$p = 0.0010$] for the comparison of $Old_{\text{pre-voc}}$ and Old, $p = 0.0411$ [$p = 0.0947$] for the comparison of Old and New, and no significant differences for the comparison of $Old_{\text{pre-voc}}$ and New.

a significantly lower chance of being invited compared to applicants of the base category $Old_{\text{pre-voc}}$ (columns 1 and 2). Considering each wave separately (column 3) yields a significant difference between $Old_{\text{pre-voc}}$ and Old applicants in wave 1 ($p = 0.0486$) as well as wave 2 ($p = 0.005$), and a marginally significant difference between $Old_{\text{pre-voc}}$ and New in wave 2 ($p = 0.071$). Thus, the previous findings based on non-parametric tests are strengthened by the results of the probit regressions, especially for the comparison of $Old_{\text{pre-voc}}$ and Old applicants in wave 1.[9,10] Finally, we find a significantly negative and large effect of the grade as indicated by the coefficient of I_{wave2} in column 2.

For our applicants there is no support for the theory of employer herding and for stigma effects that would make it more difficult for older applicants to be successful. Rather, we observe that pre-vocational training makes older applicants at least as desirable as applicants who are fresh school leavers. But a positive effect of age alone cannot explain the results, because we observe that old applicants without pre-vocational training are no more attractive than young applicants.

5. DISCUSSION AND CONCLUSION

We report on a field experiment to study the effect of spells of no formal employment on the chances of finding an apprenticeship position. With the help of expert interviews, we have identified the recruitment process as a multi-stage procedure. The field experiment focused on the stage where employers screen applications to determine who is invited to the next step of the recruitment process. We sent out three fictitious applications to each firm. The results indicate that applicants who finished school two years before the apprenticeship and who participated in a one-year pre-vocational training program are more likely to pass the first step of the hiring process than their peers who had not been part of the training measure or recent school leavers. There is no significant difference between new applicants and old applicants without pre-vocational training.

[9]The p-values in wave 2 are obtained by Wald tests of the sum of the coefficients on the dummy of the applicant type and the corresponding interaction with wave 2 against zero.

[10]Compared to the non-parameteric tests, regressions based on all responses—including firms with incomplete feedback—also yield a significant difference between $Old_{\text{pre-voc}}$ and Old applicants in wave 1 but slightly weaker results with respect to the comparison of $Old_{\text{pre-voc}}$ and New applicants: The difference over both waves is only marginally significant ($p = 0.0964$) and the difference in wave 2 does not remain significant at the 10% level. See Table VI in the Appendix for more details.

What matters in the first screening of applicants by the employers? There are two main findings. First, we observe that pre-vocational training has a significant positive effect. Old applicants with one year of training are more attractive than new applicants and old applicants without the training. The advantage of older applicants who received pre-vocational training is consistent with signaling or human capital theory. The participation in the training program can signal desirable traits such as diligence and self-discipline, but the training might also convey human capital that is valued by the employers. Second, new applicants are not more likely to receive an invitation compared to applicants who have been out of school for two years. Thus, at this early stage of life there is no indication of stigma attached to not starting an apprenticeship right after school. On the contrary, employers value older applicants who have used their time well by getting additional training.

Our results do not contradict the studies demonstrating the scarring effects of early unemployment. Rather, we are able to demonstrate that in the apprenticeship market such negative effects are not caused by employers within the first two years after finishing school. This does not preclude adverse effects after longer spells of no formal employment nor negative effects on the behavior of applicants, but we show that scarring due to employer decisions does not set in immediately.

Based on the experimental approach we have evidence that the relatively low rate of students taking up an apprenticeship after the pre-vocational training (around 40%, see Baethge, Solga, and Wieck 2007) is not due to the training measure, but to the behavior of those participating in the training. To support these applicants in finding a position, it might be necessary to improve their written applications, test-taking skills, search behavior and skills in job interviews.

On a more general note, the German transition system with pre-vocational training measures allows youths to acquire human capital and/or send positive signals about their type. This is important for applicants who have been unsuccessful in previous years. Moreover, given the high rate of premature terminations of apprenticeship contracts at 20 to 25 percent of all contracts over the past decade (BIBB 2014), pre-vocational training can give youths time to mature and to postpone a definite choice for a profession, at an age where young people do not have many other good options.

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APPENDIX

A.1. *Applicant profiles and randomization test*

We created six profiles of applicants, three for wave 1 and three for wave 2. The cover letter and CV we sent out for the six applications differed slightly in style and layout. We chose six common female first names in the birth cohorts of 1993 to 1996 and combined them with six frequent last names resulting in Anna Schmidt, Laura Krüger, and Carolin Lehmann in wave 1, Alina Hoffmann, Jana Schröder, and Sara Weber in wave 2. All applicants have similar family backgrounds, hobbies, attend(ed) similar schools, live in the same large district of the metropolitan area, and are equally attractive according to their photographs. For the new applicants we submitted the two school reports from grade 9, and the final grade 8 report (for early applications before February) or the mid-year report of grade 10 (for late applications). For old applicants we submitted the two school reports from grade 10 as well as the final report from grade 9.

TABLE V

INVITATION RATES BY APPLICATION PROFILE AND WAVE.

Profile		Wave 1	Wave 2
1	Mean	0.640	0.368
	[SEM]	[0.051]	[0.050]
	n	89	95
2	Mean	0.640	0.326
	[SEM]	[0.051]	[0.048]
	n	89	95
3	Mean	0.652	0.358
	[SEM]	[0.051]	[0.049]
	n	89	95
		McNemar's test (p-values)	
1 vs. 2		1.0000	0.3173
1 vs. 3		0.7815	0.7963
2 vs. 3		0.7815	0.4054

Note: Figures based on all responses where firms provided complete feedback. Values in square brackets represent standard errors of the mean [SEM].

A.2. *Regressions based on all responses by firms*

TABLE VI

PROBIT REGRESSION FOR INVITATIONS OF APPLICANTS

	(1)	(2)	(3)
I_{New}	-0.128^{*}	-0.140^{*}	-0.134
	(0.077)	(0.082)	(0.116)
I_{Old}	-0.209^{***}	-0.241^{***}	-0.205^{**}
	(0.065)	(0.070)	(0.103)
$I_{wave\ 2}$		-0.774^{***}	-0.748^{***}
		(0.141)	(0.166)
$I_{New} \times I_{wave\ 2}$			-0.010
			(0.162)
$I_{Old} \times I_{wave\ 2}$			-0.068
			(0.141)
Constant	0.122	0.542^{***}	0.527^{***}
	(0.093)	(0.126)	(0.134)
N	615	615	615
$logL$	-424.83	-396.70	-396.66
$\chi^2_{(k-1)}$	10.26	39.57	39.87

Note: Regressions based on all responses by firms, including firms with incomplete feedback (non-responses treated as missing values, pooled data of waves 1 and 2). Values in parentheses represent standard errors corrected for clusters on the firm level. Asterisks represent p-values: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Over both waves (column 1), $Old_{\text{pre-voc}}$ applicants are more likely to receive an invitation than Old applicants ($p = 0.0014$) and New applicants (marginally significant, $p = 0.0964$). Considering each wave separately (column 3) shows that $Old_{\text{pre-voc}}$ applicants have a significantly higher chance of being invited than Old applicants in wave 1 ($p = 0.0469$) and wave 2 ($p = 0.004$), while no significant differences are found between $Old_{\text{pre-voc}}$ and New as well as between New and Old applicants.

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