Universität St.Gallen

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October 2011 Discussion Paper no. 2011-41

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Publisher: School of Economics and Political Science
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Electronic Publication: Fax +41 71 224 31 35
http://www.seps.unisg.ch

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[1] To carry out this study, we received support from the Swiss Employers' Association (Schweizerischer Arbeitgeberverband) and the Chamber of Commerce (IHK St.Gallen-Appenzell). Financial support was provided by the Emil Zaugg-Fond. We would like to thank Arie Kapteyn, Michael Lechner, Monika Bütler, Martin Huber and the participants of the Annual Congress of the European Economic Association (Oslo), the Annual Conference of the European Society for Population Economics (Hangzhou), the Annual Meeting of the Swiss Society of Economics and Statistics (Lucerne), and the 10th Workshop on Costs and Assessment in Psychiatry: Mental Health Policy and Economics (Venice) for useful comments. Furthermore, we would like to thank all participants of our pre-tests and of the survey. Lea Buehler provided excellent research assistance. All remaining errors are, of course, ours.

Abstract

The low employment among people with disabilities in general, and mental disorders in particular, generates high costs to the society. This raises the need to develop effective vocational rehabilitation methods. Supported Education/Employment is effective in increasing sustainable employment for people with mental disorders. This vocational rehabilitation method places patients directly in realistic work settings instead of training them in a protected work environment. Supported Education and Employment has not yet been widely implemented. Using a discrete choice experiment, we demonstrate that one of the key problems is to find employers willing to provide training. Non-cognitive dysfunctions are the main deterrents.

Keywords

Supported Vocational Education & Training; vocational rehabilitation; mental disorders; discrete choice experiment.

JEL Classification

J24, M53.

1. Introduction

The number of people with disabilities is high. In 20 countries, for which comparable data is available, on average 14% of the working-age population classify themselves as disabled, about one-third of which are severely disabled (OECD, 2003). The high prevalence of disabilities generates considerable costs to the society. On average 6% of the OECD working-age population was on disability benefits in 2007, a figure of similar magnitude to the average OECD unemployment rate. OECD countries spent 1.2% of the GDP on disability benefits, which is almost 2.5 times as much as what was spent on unemployment benefits. Mental health problems are the key drivers for this development. Unipolar depression, for example, is nowadays the leading cause of the burden of disease in middle- and high-income countries (WHO, 2008). About one-third of all inflows into the disability insurance is attributable to mental health problems (OECD, 2009).

Various studies document the limited employment opportunities of people with disabilities (e.g. Bound, et al., 2002; Jones, et al., 2006; Kreider, et al., 2007). On average across the OECD, the employment rate of people with disabilities is 40%, which is half of the rate for people without a disability (OECD, 2009). People with mental disorders are particularly difficult to integrate into the labor market (Chatterji, et al., 2009; Cornwell, et al., 2009; Ettner, et al., 1997). Despite the insufficiently low labor market integration of people with disabilities in general, and mentally ill persons in particular, there is relatively little research in the economic literature on employment measures for this particular group.

It is well documented in the psychiatric literature that vocational rehabilitation of people with mental disorders works best if patients have the opportunity to learn how to deal with job related handicaps in a realistic environment. Particular focus has been on "Supported Education" and "Supported Employment". Instead of receiving therapeutic services as well as vocational education and training in a protected work or school environment, patients are directly placed in integrated job or education settings and provided with whatever ongoing

support is necessary (Corrigan, et al., 2005; Mowbray, et al., 2005). Various randomized controlled trials document the effectiveness of Supported Education or Employment in increasing sustainable employment (see Crowther, et al. 2001 for a review).

Our study focuses on Supported Vocational Education and Training which is the combination of Supported Employment and Education. In various countries, non-academic vocational education and training (VET) is provided as a dual system of in-firm training and classroom education. Students with disabilities often have the option to complete the on-the-job part of their training in specialized rehabilitation companies, which provide a protected work environment. The goal is to integrate these trainees into the competitive labor market after completing their training. As the protected work environment mimics reality only to a limited extent, adolescents face a double obstacle at the end of their training period: The change from trainee to employee and, at the same time, switching from a protected work environment into the competitive labor market. Supported Vocational Education and Training (S-VET) eases this pathway. Students complete their training at a host company in the competitive labor market (similar to regular VET programs), whilst receiving support from a specialized job coach, who also provides support and advice to the host company. A pilot study conducted in Germany provided evidence for the effectiveness of this rehabilitation strategy (Seyd, et al., 2007).

Even though Supported Employment/Education strategies seem to be highly effective from the patients' point of view and cost-saving from the state's perspective (Cimera, 2007), they have not yet been widely implemented in many countries. One of the problems may be to identify employers who are willing to provide workplaces, even though costs and risks of hiring a person with mental disorders are reduced (wages are often directly paid by a social security institution or in form of subsidies; Supported Employment/Education can be easily stopped in case the patient experiences a relapse). Before Supported Employment/Education programs can be widely extended, we need a better understanding of the overall willingness

of the labor market to participate in this rehabilitation program and of the barriers that prevent companies to do so.

Our paper provides such evidence. We conduct a discrete choice experiment to study the overall acceptance of Supported Vocational Education and Training among companies. Furthermore, we are interested to understand what kind of mentally ill persons can be placed within a company. We present respondents (usually employees who are responsible for vocational training) with a sample of hypothetical profiles. These profiles vary along different medical diagnoses, different illness related (dys-)functions (based on the International Classification of Functioning, Disability and Health), and other characteristics that may be associated with a company's willingness to accept the candidate (such as school performance, motivation, and illness related absences). Respondents are asked whether or not they would train this person.

Overall, more than 20% of the profiles are accepted. However, our results demonstrate that the hypothetical bias - which is the difference between individual saying what they *would* do in a hypothetical setting and what they *will* do when they have the opportunity - is severe. Correcting for this bias using follow-up scales ("Are you sure?") reduces the overall acceptance in our sample to 9%. Keeping in mind that the response rate to our survey is only 35%, overall acceptance may be as low as 3%. Non-cognitive dysfunctions related to mental disorders are the main deterrents.

Our study contributes to the existing literature by providing information to develop Supported Education and Employment programs not only from the patients' but also from the employers' point of view. Our experiment is tailored to the Swiss Vocational Education and Training system. However, since many countries have very similar dual-track training systems, our results may also be relevant in other settings. On the methodological site, we demonstrate that the discrete choice format can not only be used to elicit preferences for market and non-

market goods, but that it is a useful tool to complement standard evaluation methods in labor market research.

The rest of the paper proceeds as following: Section 2 gives an overview of the institutional setting for Vocational Education and Training. Section 3 describes our experiment with particular focus on how the respective attributes where chosen. We discuss the main threat to internal validity - the hypothetical bias - in section 4. Section 5 describes the data selection process and gives first descriptive statistics. Results are provided in section 6 and section 7 concludes.

2. Institutional setting

Formalized vocational training programs are common in many industrialized countries. In Switzerland for example, about two-thirds of people who graduate from compulsory education enroll in a Vocational Education and Training (VET) program (BBT, 2010). Dual-track VET programs are the most common form of vocational education and training. In the dual-track approach, students attend courses at vocational schools on a part time basis. The remaining time is spent at a host company where the students are taught the practical skills needed for their chosen occupation. The period of training is usually two to four years and is completed by a state examination.

Providing people with disabilities with vocational education and training is one of the key vocational rehabilitation strategies: First of all, people with disabilities, like other people too, have far better labor market prospects if they have a good education. Thus, education serves as a buffer to (at least partly) protect against the negative effects of disabilities (Hollenbeck, et al., 2008). Second, outflow from the disability insurance is rare. In Switzerland for example, less than 1% of disability insurance beneficiaries have left the insurance for reasons other than death or retirement (BSV, 2011). Thus, it is unlikely that young people leave the disability

insurance once they entered it. Great effort to integrate young people into the regular labor market is therefore justified to avoid high follow-up costs.

Vocational Education and Training often takes place in protected work places provided by specialized rehabilitation centers. Young people receive training in practical skills in special vocational training centers, while they join the regular vocational school. These centers provide support and assistance in form of educational and psychological services. The goal of these VET programs is the integration of disabled young people into the competitive labor market by the end of the program.

The key problem of these specialized programs lies in the fact that the protected work environment can only mimic the competitive work environment. It therefore offers preparation to the economic reality only to a limited extent. This generates a double hurdle for young professionals after completing their training. Graduates have not only to find employment on the competitive labor market, but also a path from a protected rehabilitation environment into the competitive economic environment.

Supported Vocational Education and Training (S-VET) programs can ease this pathway. Instead of receiving vocational training within the protected work environment for the full training period, students are placed in companies operating in the competitive labor market (for example in form of long-term internships). The rehabilitation provider offers job coaching services to the student, as well as advice and support to the employer. During the training period, students join the regular vocational school. A replacement into the protected work environment is possible in case the student experiences a relapse. Usually there are no direct costs for the employer because salaries are paid in form of subsidies or directly by a social security institution.[1]

[1] In Switzerland for example, students receive a daily allowance from the disability insurance, the social security contributions are covered by the rehabilitation provider, who receives a fee from the disability insurance for these services.

A pilot project conducted in Germany has shown that this special form of Supported Employment is effective. Graduates of S-VET were more than twice as likely to be in sustainable employment after completing their training compared to students who received their training in a protected work environment (Seyd, et al., 2007). Various mechanisms may explain the effectiveness of the vocational rehabilitation method: Productivity may rise because on-the-job training takes place in a realistic work environment. It may also be the case that this form of vocational rehabilitation reduces stigma of future employers. When applying for a job after completing training, the person does not need to mention the rehabilitation provider in the application since training was provided from an employer in the competitive labor market. Finally, it could be also the case that the early contact with "social" employers increases the chance that the person stays with the training firm after completing formal training.

Costs for S-VET are usually lower than costs for traditional training approaches. The provision of a special work environment and of services are only necessary as long as the student stays with the rehabilitation provider. For periods of training within the host company only job coaching services are necessary. S-VET is therefore likely to be a cost-efficient alternative for vocational rehabilitation of young people with mental disorders. To widely implement S-VET, however, we need better information if and under which circumstances employers are willing to participate in this model.

3. Discrete choice experiment

Evaluating the effectiveness of active labor market programs is usually performed ex-post once the measure is implemented (Card, et al., 2010; Kluve, 2010). Even though, some rehabilitation providers already offer S-VET services, it has not yet been widely applied. To perform an ex-ante evaluation of the potential for this vocational rehabilitation method, we cannot rely on revealed preferences methods. To analyze employers' demand for S-VET

programs, we conduct a discrete choice experiment (DCE) also known as contingent valuation or conjoint analysis - a method to analyze stated preferences. This method was first implemented in marketing (Green, et al., 1971) but is now also used to value non-market goods in other fields (e.g. transport economics (Hensher, 1997), environmental economics (Adamowicz, et al., 2001) and health economics (Ryan, et al., 2003)).

We present respondents, who are responsible for standard VET services within companies, different student profiles one after the other and ask them whether they would train the candidate within a S-VET program. Our DCE is thus of dichotomous choice format. To our knowledge there are only two other papers that use the DCE framework to analyze hiring decisions of companies (Biesma, et al., 2007; Norwood, et al., 2006).[2] Their framework differs from ours, as these authors use a multiple choice model presenting respondents with several alternatives from which one can choose from. We found the dichotomous choice format to be more realistic for our setting. Within S-VET it is usually not the case that companies offer a position and receive several applications. Companies typically receive applications from students who already started the apprenticeship at a vocational rehabilitation provider. Employers can then decide whether they participate in the S-VET program by providing training to this particular student. Thus, the dichotomous choice framework mimics this situation better.

The DCE sequentially confronts respondents with five different candidate profiles. The profiles differ along eleven different attributes; each has three to five different levels. Respective attributes should be chosen to include the key factors driving the hiring decision of people with mental disorders. The application process for S-VET is often backed up by a Job Coach, who gives employers further information on the candidate, particularly on illness related functionality. A survey conducted at Swiss employers revealed that possible limited

[2] Bricout, et al., (2000) use a vignette approach to evaluate the employability of persons with a disability compared to persons without a disability. However, the hypothetical applicants only differ in the disability status, while a DCE allows for a higher dimensionality of characteristics.

functioning is the main deterrent for hiring people with disabilities (Baumgartner, et al., 2004). We are therefore interested to understand which disability related functional deficiencies may hinder the placement of students in a S-VET program and which other factors may compensate for these deficiencies.

Measuring deficiencies resulting from mental illnesses is extremely challenging. Mental illnesses can affect thinking, feeling, socializing, functioning, or self-care. While the functional deficiency of a paraplegic may be more obvious, this is not the case for mental illnesses as these illnesses affect cognitive but mainly non-cognitive skills.

Economic research has demonstrated that non-cognitive skills have substantial impact on education and labor market outcomes, as well as on health and social behavior (e.g. Chiteji, 2010; Heckman, et al., 2001; Heckman, et al., 2006). To measure these skills, this literature generally employs scales developed by psychologists, which are based on a battery of questions aiming at identifying underlying personality traits (such as locus of control or self-efficacy). To generate candidate profiles, however, these measures cannot be used. These scales do not provide a reasonable base for an employer to judge the employability of a person. Our respondents do not have a psychological education, and therefore cannot interpret the meaning of these scales. It would be extremely difficult for them to judge whether they would accept a candidate for S-VET, who has for example a self-efficacy score value of 4.3. We need a far more descriptive measure for illness related (dys)functions.

The *International Classification of Functioning, Disability and Health* (ICF) provides a standard framework for the description of health and health-related states (WHO, 2002). This framework describes changes in (body and mental) functioning, what a person with a health condition is able to do in a standard environment, as well as what they actually do in their usual environment. Thus, the advantage of the ICF is that it does not rely only on a medical model, but also includes external environmental factors (for example social attitudes,

architectural characteristics, legal and social structures, etc.), as well as internal personal factors. The major disadvantage of the ICF is, however, that this framework is very complex and exhaustive because it describes the functional status of a patient with approximately 1'400 items.

For practical use, core sets were developed to reduce the complexity of the ICF. These core sets present a list of ICF categories that are relevant to most patients with a specific health condition. We base our selection of relevant attributes on the Mini-ICF-Rating for Mental Disorders (Linden, et al., 2009). This Mini-ICF-Rating provides 13 different functionalities, such as the adherence to regulations or planning, competency or flexibility.[3] The original description of each attribute is rather long. We therefore shortened the description of these items (provided to the respondent) and rephrased them when necessary.

To select the relevant attributes for our experiment, we conducted qualitative interviews with companies that had already participated in a S-VET program, as well as two quantitative pre-tests.[4] Included attributes are adherence to regulations, competency, flexibility, contact with others, and self-maintenance (all taken from the Mini-ICF-Rating), as well as other characteristics that were found to be relevant for providing training to mentally ill persons within a S-VET program (such as school performance, age, previous work experience, work absence, and motivation). There was no clear consensus whether the provision of exact medical diagnoses would be relevant information for employers or if the diagnosis would be further stigmatizing. To test for a possible stigmatizing effect, we provide one group of respondents with the diagnosis, while we do not show this information to the control group. We selected the four diagnoses (bipolar disorder, schizophrenia, eating disorder, and borderline personality disorder) because they not only have a fairly high prevalence, but also

[3] This Mini-ICF-Rating seems to be particular useful for our purpose since work performance (measured by the Endicott Work Productivity Scale) and ICF items are strongly correlated (Linden, et al., 2010).

[4] The first pre-test was conducted among job coaches from vocational rehabilitation providers. The second pre-test was conducted among company representatives who are responsible for standard vocational education and training services, but which company is not located in our target region.

because these diseases may be known to the employers, even though this information may be incomplete. The included attributes, a short description of each attribute, and the respective levels for each attribute are given in the appendix (TABLE A1) as well as an example of a profile (FIGURE A1). Unlike in common DCEs used to elicit the willingness-to-pay for a good, we do not include a price as an attribute. Employers neither face any direct costs nor receive any financial compensation if taking part in S-VET.

4. Hypothetical bias

The level of each attribute is independently chosen from each other with equal probability. This design allows us to estimate the average impact of these attributes on the individual hiring decision without being confounded by other attributes. Thus, the causal effect of each attribute A on acceptance Y^*could be estimated by comparing average acceptance rates for profiles with a specific attribute equal to j (for example "Rarely") with the average acceptance rates for profiles with the specific attribute equal to k (for example "Almost always"):

$$Pr(Y^* = 1|A = k) - Pr(Y^* = 1|A = j) \qquad (1)$$

However, we have to keep in mind that our experiment describes only a hypothetical situation with no real consequences. Under a hypothetical scenario, responses are usually more positive than under a real scenario. The difference between stated and revealed preferences is referred to as hypothetical bias (Murphy, et al., 2005).

There is a substantial literature showing that the hypothetical bias is relevant, particularly in willingness to pay studies (e.g. Blumenschein, et al., 2008; Özdemir, et al., 2009). In our particular setting, we believe that two factors contribute to the hypothetical bias: (i) The revision of the Swiss disability insurance and the role of employers have been hotly debated in Switzerland. For example, four days before the experiment started, the Social Commission of the National Council called for an employment quota for people with disabilities. Thus,

respondents may have been sensitized to problems regarding the vocational integration of people with disabilities, which may have led to a social desirability bias - the tendency to reply in a manner that will be viewed favorably by others. (ii) The problem of cognitive dissonance arises if respondents are hypothetically willing to train a person with a disability, while other circumstances makes this very unlikely in reality.[5]

False reporting may cause a substantial bias in our estimates. Denote true acceptance with Y^*, which is a binary variable. This true acceptance is not observed. All we observe is the individually reported acceptance Y which may or may not be biased. The probability to accept a particular profile with attribute A at level k is equal to:

$$\begin{aligned}\Pr(Y = 1|A = k) \\ &= \Pr(Y = 1|A = k, Y^* = 1)\Pr(Y^* = 1|A = k) \\ &+ \Pr(Y = 1|A = k, Y^* = 0)\Pr(Y^* = 0|A = k) \qquad (2)\end{aligned}$$

It is very unlikely that with a true interest in the profile, acceptance would be falsely reported $[\Pr(Y = 1|A = k, Y^* = 1) = 1]$. False reporting, however, is likely if the respective profile is not acceptable $[\Pr(Y = 1|A = k, Y^* = 0) \geq 0]$. If this type of symmetric misreporting exists, the estimated average "treatment" effect for attribute A is biased:

$$\begin{aligned}\Pr(Y = 1|A = k) - \Pr(Y = 1|A = j) \\ &= \Pr(Y^* = 1|A = k) - \Pr(Y^* = 1|A = j) \\ &+ \Pr(Y = 1|A = k, Y^* = 0)\Pr(Y^* = 0|A = k) \\ &- \Pr(Y = 1|A = j, Y^* = 0)\Pr(Y^* = 0|A = j) \qquad (3)\end{aligned}$$

[5] At the end of the questionnaire, participants could make some further comments. Many people used this opportunity to qualify their responses to the DCE. One person for example commented: *"I am very open and interested in this challenge. However, we are only four people in the company and will not continue to train students in dual-track vocational education and training (…) Therefore, there will be no opportunity for a collaboration."* This person, nevertheless, accepted two of the five profiles.

where the last two lines of equation (3) denote the hypothetical bias for the average treatment effect. To correct for this bias, we can rewrite the true acceptance rate:

$$\Pr(Y^* = 1|A = k) = \Pr(Y^* = 1|A = k, Y = 1)\Pr(Y = 1|A = k) \quad (4)$$

Equation (4) shows that the assumption whether false reporting is associated with the attribute level itself is crucial. In case misreporting is not related to the attribute

$$\Pr(Y^* = 1|A = k, Y = 1) = \Pr(Y^* = 1|Y = 1) \quad (5)$$

the absolute treatment effect is biased, while the relative treatment effect is unbiased:

$$\frac{\Pr(Y^* = 1|A = k)}{\Pr(Y^* = 1|A = j)} = \frac{\Pr(Y = 1|A = k)}{\Pr(Y = 1|A = j)} \quad (6)$$

In case misreporting is systematically related to the attribute level, the absolute as well as the relative treatment effect are biased.

A priori, we do not know whether the attribute itself is associated with the hypothetical bias. We therefore need to derive an estimator for the probability that the profile is truly accepted, conditional on reported acceptance [$\Pr(Y^* = 1|A = k, Y = 1)$]. The literature often uses follow-up certainty scales to correct for the hypothetical bias (Blomquist, et al., 2009; Morrison, et al., 2009).[6] Here, respondents are asked how sure they are to perform the questioned action in reality. We employ this method by asking respondents how high they perceive the probability that they would really train a person with the shown profile. This question was answered with a slide control, which ends were labeled with "very unlikely" (value of 1) and "very likely" (value of 100). These values were not shown to the respondents since we found it difficult for respondents to provide an exact number to the question.

We use the follow-up question to correct for the hypothetical bias, assuming this provides an unbiased estimate of the true acceptance in case the person reported to accept the respective profile. The economic literature has previously used experiments with real scenarios to

[6] Alternative methods are cheap talks or dissonance minimization methods (Blomquist, et al., 2009).

validate this assumption (Blomquist, et al., 2009; Morrison, et al., 2009). There, respondents are randomly divided into two groups: one group receives a hypothetic scenario with follow-up questions, while a second group is confronted with a real scenario. The results show that the follow-up question can greatly reduce or even eliminate the hypothetical bias. In our particular setting, we cannot rely on a realistic scenario. Nevertheless, our survey design provides us with some indicator for misreporting that can be used to validate our claim. Section 6.2 will provide empirical evidence for the unbiased follow-up response assumption.

5. Data collection

We conduct a discrete choice experiment (DCE) among all Swiss companies that provide standard dual-track VET for commercial occupations in three cantons (St. Gallen, Thurgau, and Appenzell). We focus on commercial occupations because we want to reduce the variance among our respondents. However, since commercial occupations are among the most popular occupations for dual-track VET programs (BBT, 2010), our results are valid for a large share of potential participants for S-VET.

The DCE is part of an online survey among employees who are responsible for standard VET. The addresses of the companies and the names of all responsible persons for VET were provided by the cantonal offices for professional education. In total, our database included more than 1'800 persons.

A key problem in all company surveys is the low response rate. To increase response, the survey was announced to company members of local commercial associations. To sensitize employers to S-VET, we placed an article in the journal of the Swiss Employers' Association, that also announced our survey. Most importantly, to collect all e-mail addresses from employees who are responsible for standard dual-track VET, we called all companies. This provided us with the opportunity to announce our study and to explain the goals. All in all, we

collected 1'527 e-mail addresses to which we sent a personalized invitation to participate in our survey.

Field work started on November 9, 2010. We sent invitations at staggered intervals over a time period of five days. Two weeks later we sent a reminder to those persons, who had not yet responded to the survey. The survey was closed after four weeks. All in all, 759 persons (50%) participated in the survey, from which 533 persons completed the discrete choice experiment (effective response rate 35%).[7]

Since S-VET has not yet been widely implemented in Switzerland, it is likely that respondents were not aware of the program. We therefore confronted respondents at the beginning of the survey with an explanation of the program that should help them to answer the following questions. A link to a webpage providing further information was given. The questionnaire started with a number of warm-up questions. Respondents were asked which characteristics are important when selecting applicants for standard VET-programs, which kind of support they find helpful to participate in S-VET, which barriers may prevent S-VET, which advantages companies may have from participating in S-VET and which individual motivation the respondent has from participating in S-VET. In the DCE, respondents were confronted with five different profiles. They were asked whether they could imagine to provide training to a person with the shown profile, and if so, how likely that may be. Additionally, we collected data on company and individual background variables.

A detailed description of our sample is given in the appendix (TABLE A2 appendix). Our sample included 59% women. The average age is 40.67 years (SD 10.68). Job tenure as a vocational trainer is fairly evenly distributed, and already 15% had previous experience with training an apprentice with a disability. Nevertheless, S-VET is relatively rare, with only three

[7] Our response rate is considerably higher than the response rate from comparable surveys. A company survey on behalf of the Swiss Ministry for Social Insurance yielded a response rate of only 24% (Baumgartner, et al., 2004). A similar response rate of 25% was achieved in a company survey in the US (Bricout, et al., 2000).

respondents reporting that they had any experience with it. About 95% claimed to have decision making authority (either alone or with somebody else) when hiring apprentices, which made us confident that our survey reached the right decision makers. A surprisingly high share (73%) knows a person with a mental disorder.

The majority of the respondents (47%) work in the service and administration sector, 17% work in public administration, and 14% work for banks or insurances. Company size is usually low; more than 50% work for companies with 50 or less employees. This corresponds with the economic structure of Switzerland in general and our study setting in particular, where most companies are small and medium-sized enterprises (BFS, 2009). About 37% report that their companies have any experience with hiring people with disabilities, 13% report that the company has special hiring policies for people with disabilities and 10% report that the company has Managing Diversity guidelines. Even though, there is no representative data for Switzerland, these relatively high numbers could already indicate a selection problem: Companies who are willing to integrate people with disabilities may be more likely to participate in our survey.

6. Results

6.1. Descriptive Statistics

Each respondent received five different profiles. On average, 1.09 (SD 1.2) of the five different profiles were accepted. A large share of respondents (41%) did not accept any profile. We test whether any of the background characteristics (company, work environment, individual) are associated with a different willingness to accept a profile (columns 5 and 6 of TABLE A2, appendix). Non-profit organizations are slightly more willing to accept our profiles than for-profit organizations. Looking more closely at the different branches, the picture is clearer: On the one hand, companies in the service and administration sector accept more profiles compared to companies not in the service and administration sector (1.25 vs. 0.95,

p=0.02). On the other hand, banks and insurances accept significantly less (0.81 vs. 1.13, p=0.08). Companies which are sensitized to the topic of employment of persons with disabilities may be more likely to accept profiles. The sensitivity to the topic is measured by three dummy variables; if the company has experience in hiring people with disabilities, if it has special hiring policies for them and if it has equity policy or Managing Diversity guidelines. However, the difference is only weakly significant for those with experience in hiring people with disabilities. Providing training to people with mental illness may be easier in work environments where the apprentice has no customer contact, no open plan office, and flextime. However, the difference is only significant for one characteristic: For the rare case that the apprentice has no customer contact at his workplace (only 3% of the companies offer that kind of workplace), the number of accepted profiles is almost twice as high (2.06 vs. 1.07, p<0.01). Younger and less experienced trainers are willing to accept a higher number of profiles. Most other differences are not significant.

6.2. Acceptance of profiles correcting for hypothetical bias

To study acceptance of different profiles, we use the respective profiles as the unit of analysis. All together, we have 2,656 evaluated profiles, 22% were accepted.

Do we believe that an application for S-VET has a 22% chance to be accepted? For two reasons, we think that this number provides a biased estimate for the overall acceptance rate: (i) Our sample is self-selected as only 35% responded. We have very little information on those who did not respond (we only know the branch and gender), so that any "selection on observables" strategy is unfeasible. Worst-case bounds assuming that either all people who did not participate would either not accept any profile or would accept all profiles are rather large (8-73%). However, the overall high rate of companies in our sample that already have experience with training people with disabilities makes us to believe that true acceptance may be at the lower end of the worst-case bounds. Consequently, all estimates are unlikely to be

externally valid, and our experiment can only provide internally valid results. (ii) Our main concern for internal validity is the hypothetical bias, which overestimates the overall acceptance rate, and may also bias our estimates for the average "treatment" effects.

We correct for the hypothetical bias using the follow-up question. Here we asked respondents to estimate the probability to hire this person. Almost 70% of the respondents estimated this probability to be less than 0.5, with a relatively high clustering of answers at 0.01 (see FIGURE A2). Thus, it seems to be the case that respondents used the follow-up question to "correct" their initial answer to the DCE. We assume that these answers are an unbiased estimate for the true probability of providing training, conditional on people claiming that they could imagine to do so [$(\Pr(Y^* = 1|A = k, Y = 1)$]. We replace the answers to the DCE for those who said that they could imagine training that person with the self-reported probability in the follow-up question (see equation 4). This results in an overall acceptance rate of 8.6% [worst-case bounds: 3% - 68%], indicating that the hypothetical bias is severe and that the answers to the DCE without correction would yield in a too high estimate for the true willingness to participate in S-VET.

Whether this correction yields an unbiased estimate for the true acceptance rate cannot be judged a-priori. One possibility to test this is to use an indicator for misreporting that is not related to the attribute level or to the true outcome. Our survey included two different experiments to detect a possible hypothetical bias. In our first experiment, we asked a randomly selected group of respondents at the beginning of the questionnaire whether we are allowed to contact them later in case we identify a candidate for S-VET. If respondents answered this question with yes, we asked for their e-mail address. The control group received this question at the end of the questionnaire. Our prior was that this experiment would generate a more realistic scenario which would limit social desirable answers. 41% of respondents of the treatment group and 45% of respondents in the control group answered that we are allowed to contact them. More than 90% of these respondents also provided their e-

mail address. Surprisingly, our data indicates a slightly higher - yet not significant - acceptance rate among those participants who received this question before the DCE (22.43% vs. 21.74%; p= 0.70). It may be the case that people felt more under pressure to accept one of the candidates, particularly if they had earlier stated that they want to be contacted. However, among those who agreed to be contacted, we do not find a significant difference in the acceptance rate between the two groups (27.43% vs. 26.51%; p= 0.75). Yet, we observe differences in response. Respondents from the "early" group were more likely to stop the survey before the DCE (25.87% vs. 20.99%; p=0.16). If non-response is associated with a lower willingness to accept a profile, higher acceptance rates in the "early" group may be driven by non-response. In this meaning, our experiment is broken. We therefore use this experiment only as a further consistency check but focus our analysis on the second experiment.

Our second experiment uses the ordering of profiles. Each respondent sequentially evaluated five different profiles, where each profile was randomly generated and independent from the previous profile. Consequently, in expectation, one profile should be as "employable" as the other profile.[8] With no misreporting, we would therefore expect that average acceptance rates for each profile (first profile to fifth profile) would be the same.[9] Considerable differences in acceptance rates therefore indicate a bias. Our results show that there are sizeable differences in acceptance rates (see FIGURE 1, dark bars). The acceptance rates of the third and fifth DCE are five percentage points higher than the acceptance rates of the first DCE. Thus, it seems that respondents felt particularly in the middle and in the end under pressure to accept a profile. This experiment is likely to be a pure “instrument” for misreporting. Ordering is

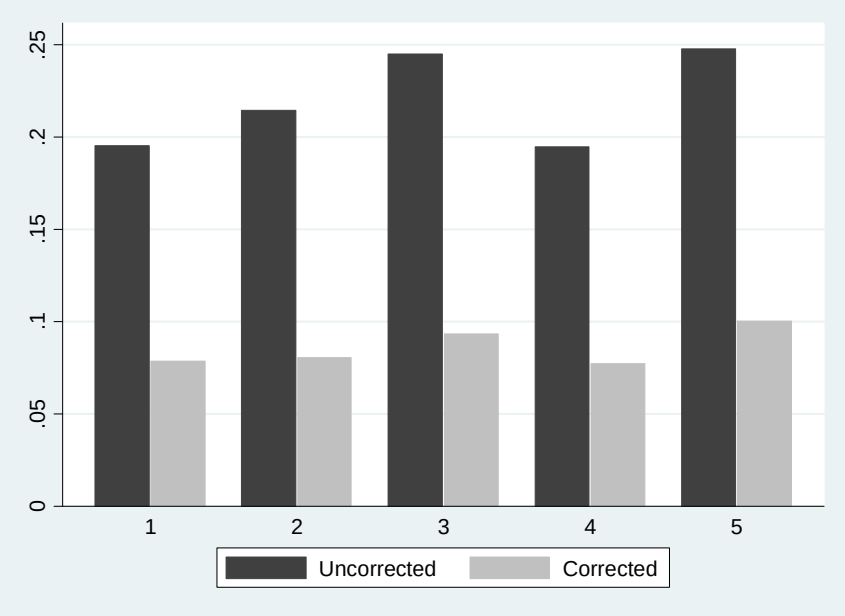
[8] We checked whether the different attribute levels are associated with the DCE order. In most cases, they are not. Significant differences can be found only for the diagnosis, age, school performance, and motivation, but the differences are small and significance levels do not go below the 5%-level. Results in detail are available from the authors upon request.

[9] Attrition is not a major issue for this experiment. Only eight persons stopped the survey during the DCE. The majority of attrition either occurred before the DCE took place, or afterwards.

random. Neither do we provide more information on S-VET programs, nor do we include further information on candidate profiles.

The order profile can now be used to test if the correction yields an unbiased estimate. If that is the case, the order profile should vanish after correcting with the follow-up question. FIGURE 1 demonstrates that our correction method reduces the difference in acceptance rates. We also test whether there are significant differences in acceptance rates by DCE order using a standard t-test. We find significant differences when using the uncorrected results [$F(4, 2671) = 2.08$; $p=0.08$], but no significant differences when using the corrected answers [$F(4, 2671) = 1.48$; $p=0.20$].[10]

FIGURE 1: Uncorrected and corrected results by DCE order



Additionally, the indicator helps us to identify whether the hypothetical bias is related to the "treatment" (i.e. different attribute levels). If this is the case, we would expect that the

[10] This correction method also reduced the difference in acceptance rate within our first experiment (contact question before/after the DCE): 8.6% vs. 8.2%, p= 0.68.

"treatment" effect would vary with the DCE order. We test this hypothesis by estimating two different linear probability models: The first model assumes that the probability to accept a candidate is a linear function of the respective attribute level (for example different levels for the attribute "Diagnosis") and the DCE order. The second model additionally includes interaction terms between the different levels and the DCE order. Using a likelihood-ratio test, we test whether the first model is nested within the second model. The results are presented in the appendix (TABLE A3). Using the uncorrected responses as outcome variable, adding the interaction terms results in a statistically significant improvement in model fit for the attributes "Age" and "Flexibility". This demonstrates that the hypothetical bias is likely to be related to certain attributes, but given the relatively low test statistics, the overall effects may be small. Using the corrected acceptance rates, however, interaction terms do not yield in a significant improvement for any attribute.

Taken together, our results indicate a severe hypothetical bias. Controlling for it reduces the estimate for the acceptance rate from 22% (uncorrected) to 9% (corrected). Keeping in mind that the overall response to our survey was 35%, the worst case bounds indicate that the acceptance rates in the total population could be as low as 3%.

6.3. Deterrents to participate in S-VET

To test whether certain attributes are associated with a greater likelihood to accept a profile, we employ a standard linear probability model.[11] Table 1 presents the results for the model that uses the uncorrected responses to the DCE as dependent variable in columns 1-3, and the results using the corrected responses in columns 4-6. The regression coefficients can be interpreted as the absolute treatment effects, while the numbers in the brackets denote the

[11] The results for the uncorrected outcome variable do not differ qualitatively when estimated by a probit or logit model. As the corrected outcome is no longer binary, however, standard probit and logit models are not applicable.

relative treatment effects to the reference group (i.e., the respective regression coefficient divided by the constant).

Comparing absolute treatment effects for both models indicate that the hypothetical bias is indeed severe. The coefficients are up to four times larger in the uncorrected model compared to the corrected model. The relative treatment effects for corrected and uncorrected outcome variable, however, are fairly similar. Major differences are only observed for the diagnosis and age. This confirms our previous findings: False responses seem to be only weakly associated with different attribute levels.

The most relevant attribute is the adherence to regulations. A referent student has a 20% lower chance to be accepted for S-VET if she is not reliable in terms of punctuality, agreements, and regulations. Other important aspects are competency (ability to perform work in a reliable and fast way), as well as contacts with others.

Regarding health related variables, we find that a poor self-maintenance as well as a high number of absence days reduces the willingness to accept a profile. The overall effect, however, is considerably smaller than the effects of most non-cognitive dysfunctions. This result is in line with the medical literature, which shows that a large part of costs of mental illnesses for an employer comes from presenteeism, i.e. when the person is at work (Goetzel, et al., 2004).

Our results provide no clear answer to the question whether a diagnosis should be disclosed in an application or not. We briefed all respondents that S-VET is primarily targeted at students with mental problems. To test for a possible stigmatizing effect, we provided one group of respondents with the additional information of a diagnosis, while we did not show this information to the control group. Our results show that the effect of disclosing the diagnosis varies with the diagnosis. Psychotic disorders clearly act as a deterrent. The diagnosis "Schizophrenia" for example reduces the individual willingness to accept a profile by 12%

TABLE 1: OLS regression results

	Uncorrected			Corrected		
	Coefficient	t	%	Coefficient	t	%
Diagnosis (omitted category: not mentioned)						
Bipolar disorder	-0.02	-0.60	[-2%]	-0.02	-1.19	[-5%]
Schizophrenia	-0.07***	-2.73	[-9%]	-0.04***	-2.95	[-12%]
Borderline Personality Disorder	-0.05**	-2.07	[-7%]	-0.02*	-1.73	[-8%]
Eating Disorder	0.05*	1.87	[7%]	0.04**	2.47	[13%]
Work experience (omitted category: start of S-VET)						
First year	-0.03	-1.45	[-4%]	-0.02*	-1.70	[-5%]
Second year	-0.05**	-2.29	[-6%]	-0.01	-1.17	[-4%]
Third year	-0.00	-0.14	[-0%]	0.00	0.10	[0%]
Age (omitted category: 16-18)						
19-21	-0.05**	-2.35	[-7%]	-0.03***	-2.89	[-11%]
22-24	-0.06***	-2.89	[-8%]	-0.03***	-2.58	[-9%]
25+	-0.09***	-4.27	[-12%]	-0.04***	-4.29	[-15%]
School performance (omitted category: 5.5 good-very good)						
4 (marginal)	-0.08***	-3.82	[-11%]	-0.02*	-1.91	[-7%]
4.5 (satisfactory)	-0.05**	-2.50	[-7%]	-0.02	-1.62	[-5%]
5 (good)	-0.01	-0.49	[-2%]	0.01	0.53	[2%]
Absence (omitted category: none)						
1-2	-0.00	-0.14	[0%]	-0.01	-0.64	[-2%]
3-4	-0.04**	-1.98	[-6%]	-0.02**	-2.33	[-8%]
5 and more	-0.06***	-2.87	[-8%]	-0.03***	-3.42	[-11%]
Motivation (omitted category: almost always)						
Sometimes	-0.07***	-3.43	[-9%]	-0.03***	-3.37	[-10%]
Rarely	-0.13***	-6.54	[-17%]	-0.05***	-5.59	[-17%]
Adherence to regulations (omitted category: almost always)						
Sometimes	-0.12***	-5.89	[-16%]	-0.04***	-4.54	[-14%]
Rarely	-0.17***	-9.09	[-22%]	-0.06***	-7.23	[-20%]
Competency (omitted category: almost always)						
Sometimes	-0.10***	-5.17	[-13%]	-0.04***	-4.40	[-13%]
Rarely	-0.14***	-7.01	[-19%]	-0.05***	-5.83	[-18%]
Flexibility (omitted category: almost always)						
Sometimes	-0.06***	-3.01	[-8%]	-0.02**	-2.06	[-6%]
Rarely	-0.07***	-3.65	[-10%]	-0.04***	-4.07	[-12%]
Contact with others (omitted category: almost always)						
Sometimes	-0.06***	-3.16	[-8%]	-0.02***	-2.74	[-8%]
Rarely	-0.14***	-7.29	[-19%]	-0.06***	-6.07	[-19%]
Self-maintenance (omitted category: almost always)						
Sometimes	-0.02	-1.07	[-3%]	-0.01	-0.96	[-3%]
Rarely	-0.07***	-3.44	[-9%]	-0.03***	-3.58	[-11%]
_cons	0.75***	15.75		0.30***	12.82	
N		2656			2656	
R^2		0.11			0.09	

Notes: ***, **, and * indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively. Standard errors are clustered by individual respondents.

(conditional on all other chosen attributes). Patients may therefore not only be burdened with their disease itself, but also with social stigma, which may be enforced by movies and the popular literature ("Dr. Jekyll and Mr. Hyde"). In contrast, acceptance of "eating disorders" is 13% higher if the diagnosis is disclosed. However, since mostly young women are affected, this could also be a gender effect.

Regarding non-disability related characteristics, we find that school performance increases the probability to be accepted for S-VET. Compared to non-cognitive dysfunctions, however, the effect is rather small. Furthermore, it seems to be the case that the age of an applicant is inversely related with the willingness to accept a profile. This demonstrates that a relatively fast integration into the labor market (providing that the individual health allows for this) is not only in the interest of the patient but also in the interest of a potential employer. Finally, our results indicate a u-shaped relationship between work experience and acceptance: Employers are more willing to take over the complete training, or to accept students in their last year of training when they already have some work experience. The overall magnitude of this effect, however, is relatively small compared to the importance of non-cognitive dysfunctions.

The previous analysis documents average “treatment” effects. To analyze effect heterogeneity, we stratify our sample by different firm level and respondents' characteristics (results are not presented but are available from the authors upon request). The treatment effects are fairly stable and do not vary much. One notable exception is the treatment effects for school performance. Publicly owned companies have a strong preference for good school grades, while privately owned companies do not seem to care as much about school grades.

7. Conclusion

Supported Vocational Education and Training seems to be a cost-effective alternative to standard (mainly institutionalized) vocational training for young people with mental illnesses. Yet, this vocational rehabilitation method is not widely implemented.

Our results indicate that very few employers are willing to train apprentices with special needs although there are no direct costs for the employer under S-VET. Even though, more than 20% of our profiles were accepted and about 60% of our respondents accepted at least one profile, we believe that these numbers are grossly inflated and that the true acceptance rate is far lower. Our best estimate for the acceptance rate within our sample is 9%. However, we have to keep in mind that response rate was only 35%, and that it is very likely that companies, who are in principle willing to participate in Supported Vocational Education and Training, are also more likely to respond. The overall acceptance rate could thus be as low as 3%. A wide implementation of this vocational rehabilitation method may therefore fail on the unwillingness of companies to participate in this measure. Providing additional incentives to employers, for example in form of subsidies or legal requirements, may therefore be needed.

Our results indicate that non-cognitive dysfunctions related to psychological disorders are the main deterrents. These results are in line with the medical literature arguing that a substantial part of the costs of mental illnesses for an employer is driven by presenteeism (i.e., when the person is at work).

On the methodological side, we have shown that a discrete choice experiment may not only be a useful tool to elicit consumers' preferences for non-market goods, but could also be useful to give first guidance on the effectiveness before policies are widely implemented. The often claimed disadvantage that the results are not valid due the hypothetical bias, can be mitigated by relatively simple and easy to implement methods.

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Appendix

TABLE A1: DCE attributes and levels

Attribute	Description	Levels
Diagnosis	Diagnosis	Not mentioned Bipolar disorder Schizophrenia Eating disorder Borderline personality disorder
Work experience	Current year of Supported Vocational Education and Training	Start of VET First year Second year Third year
Age	Age category	16-18 19-21 22-24 25+
School performance	Average grade in school (previous year of school)	4 (marginal) 4.5 (satisfactory) 5 (good) 5.5 (good - very good)
Absence	Average days of absence due to the illness in the past month	0 1-2 3-4 5 and more
Motivation	Student is self-motivated and willing to learn	Rarely Sometimes Almost always
Adherence to regulations	Student is reliable in terms of punctuality, agreements, and regulations	Rarely[a] Sometimes Almost always
Competency	Student carries out work quickly and reliably	Rarely Sometimes Almost always
Flexibility	Student is flexible to new tasks or to changes in the environment	Rarely Sometimes Almost always
Contact with others	Student becomes part of the work team and acts appropriately in social contacts	Rarely Sometimes Almost always
Self-maintenance	Student pays attention to his/her own health, knows his/her limits and gets help when needed	Rarely Sometimes Almost always

[a] Originally, the ICF-Mini Rating has a 5-digit scale, ranging from "no" to "complete". We found this difficult to interpret for our purposes and therefore changed it to a time-perspective. The two most extreme levels (in the sense of "Very rarely" and "Never") were not included because we thought a person with those levels is not employable.

TABLE A2: Descriptive statistics (background variables)

Variable	Obs	Mean	Std. Dev.	# of accepted profiles (difference to complement)	p-value of difference
Company background					
Branch					
Service & Administration	568	0.47	0.50	1.25 (-0.30)	0.016**
Public Administration	568	0.17	0.37	1.01 (0.10)	0.830
Trust / Real estate trust	568	0.06	0.24	1.00 (0.10)	0.441
Bank / Insurance	568	0.14	0.34	0.81 (0.32)	0.079*
Mechanical, Electrical & Metal	568	0.08	0.27	0.98 (0.13)	0.582
Other	568	0.09	0.29	1.00 (0.10)	0.499
Non-profit organization	568	0.11	0.31	1.34 (-0.28)	0.100*
Public or semi-public ownership	568	0.24	0.43	1.13 (-0.04)	0.383
Number of employees					
<10	561	0.18	0.39	1.04 (0.08)	0.498
10-50	561	0.41	0.49	1.13 (-0.04)	0.464
51-100	561	0.12	0.33	1.39 (-0.33)	0.092*
101-500	561	0.19	0.39	1.05 (0.07)	0.662
>500	561	0.10	0.30	0.84 (0.29)	0.097*
Experience with hiring people with disabilities	562	0.37	0.48	1.22 (-0.18)	0.078*
Special hiring policies for people with disabilities	563	0.13	0.34	1.29 (-0.22)	0.349
Managing Diversity or equity policies	563	0.10	0.30	1.16 (-0.07)	0.895
Number of apprentices in commercial occupations					
0	562	0.08	0.27	1.26 (-0.17)	0.281
1	562	0.33	0.47	1.25 (-0.22)	0.061*
2	562	0.17	0.38	1.14 (-0.05)	0.947
3-5	562	0.25	0.43	0.95 (0.21)	0.107
6-10	562	0.11	0.31	0.96 (0.16)	0.447
>10	562	0.06	0.25	0.91 (0.21)	0.390
Work environment					
Apprentice has customer contact	562	0.97	0.17	1.07 (0.99)	0.007***
Open plan office	561	0.64	0.48	1.09 (0.05)	0.530
Flextime	562	0.52	0.50	1.13 (-0.04)	0.755
Individual information					
Age	553	40.67	10.68	1.02 (0.23)	0.035**
Female	562	0.59	0.49	1.07 (0.09)	0.691
Years of job experience as VET trainer					
0-2	561	0.17	0.37	1.40 (-0.35)	0.098*
3-5	561	0.26	0.44	1.07 (0.05)	0.991
6-10	561	0.25	0.44	1.22 (-0.15)	0.127
11-20	561	0.20	0.40	0.86 (0.31)	0.012**
>20	561	0.12	0.33	0.98 (0.14)	0.444
Experience to train persons with disabilities	562	0.15	0.36	1.15 (-0.05)	0.593
Previous experience with S-VET	562	0.01	0.07	0.67 (0.44)	0.644

TABLE A2 *continued*

Variable	Obs	Mean	Std. Dev.	# of accepted profiles (difference to complement)	p-value of difference
Decision-making authority for selecting apprentices					
No	560	0.05	0.21	1.19 (-0.08)	0.518
Joint with others	560	0.84	0.37	1.11 (-0.03)	0.846
Person only	560	0.11	0.32	1.03 (0.08)	0.822
Knows person with mental disorder	560	0.73	0.45	1.12 (-0.03)	0.799

Notes: Column 5 reports the number of accepted profiles for companies/individuals with the particular characteristic compared to its complement (i.e. those without this characteristic). The difference to its complement is given in parentheses. Column 6 reports the p-value of a Wilcoxon-Mann-Whitney test for significance of this difference. Age was transformed into a dummy variable equal to 1 if the person is 40 or older. ***, **, and * indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

TABLE A3: Likelihood-ratio test for the assumption that A1 nested in A0

	χ^2 Uncorrected		χ^2 Corrected
Diagnosis	5.80		6.90
Work experience	16.20		14.80
Age	19.10	*	13.32
School performance	7.29		4.61
Absence	16.77		11.62
Motivation	7.92		4.46
Adherence to regulations	10.61		7.05
Competency	5.69		3.11
Flexibility	14.34	*	7.68
Contact with others	9.49		10.61
Self-maintenance	8.27		11.14

Notes:
A0: $Y_i = \beta 0 \quad + \boldsymbol{\beta_1 T_i} + \boldsymbol{\beta_2 DCE\_Nr_i} + \boldsymbol{\beta_3 T_i} \times \boldsymbol{DCE\_Nr_i}$
A1: $Y_i = \beta_0 + \boldsymbol{\beta_1 T_i} + \boldsymbol{\beta_2 DCE\_Nr_i}$
with T being respective attribute (vector), and DCE_Nr (vector) is the DCE order
* indicate statistical significance at the 10-percent level.

FIGURE A1: Example of a profile (Discrete choice experiment)

Could you imagine to train a person with the following attributes within Supported Vocational Education Training?

3rd candidate

Diagnosis	Bipolar disorder
Current year of S-VET	First year
Age category	19-21 years
Average grade in previous school year	4.5
Average days of absence due to the illness in the past month	1-2
Is reliable in terms of punctuality, agreements, and regulations	Almost always
Carries out work quickly and reliably	Sometimes
Is on his/her own initiative motivated and willing to learn	Rarely
Is flexible to new tasks or to changes in the environment	Almost always
Becomes part of the work team and acts appropriately in social contacts	Almost always
Pays attention to his/her own health, knows his/her limits and gets help when needed	Sometimes

Yes ❍
No ❍

FIGURE A2: Answers to the follow-up question