




# Attitudes towards students with disabilities achieving their educational and work-related goals: a factorial survey experiment among higher education institution employees in Norway

Gemma Goodall<sup>1</sup>  · Odd Morten Mjøyen<sup>1</sup> · Aud Elisabeth Witsø<sup>1</sup> · Sissel Horghagen<sup>2</sup> · Stefan Hardonk<sup>3</sup> · Lisbeth Kvam<sup>1</sup>

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## Abstract

Despite the widespread promotion of inclusive environments within higher education, social barriers and a lack of understanding among university staff continue to hinder students with disabilities in their goals of graduating and finding employment. Using ableism as a theoretical framework, this study aimed to explore attitudes among higher education institution employees towards students with disabilities and their feasibility in different types of education and employment positions. “Employees” in this study included teaching staff, student support, and administration. We conducted a factorial survey experiment in which respondents were invited to evaluate vignettes describing fictional students with and without disabilities. Other factors such as age, gender, ethnicity, and motivation were also included in the vignettes. A total of 2157 higher education employees across Norway participated in the survey and answered four questions regarding the likelihood of the student described in the vignette graduating, finding employment, and being suitable for relevant work tasks. Additionally, respondents were asked to rate how likely it was that they could make arrangements for the student during their studies. Results from multilevel regression analyses suggest that higher education employees are generally positive towards making arrangements for students with disabilities. However, despite this, students with disabilities were considered less likely to graduate, find employment, and less suitable in performing relevant work tasks in comparison to students without disabilities. We argue that ableist expectations continue to dominate perceptions of students within academia, and until ableism is addressed at an institutional level, higher education will remain far from inclusive.

**Keywords** Disability · Higher education · Employment · Ableism · Factorial survey experiment

## Introduction

Higher education (HE) is, for many, the gateway to obtaining meaningful employment. It is an arena in which students are encouraged to generate knowledge, develop their skills, and ultimately become ready for the world of work. However, for people with disabilities, participation in both HE and the labour market is often hindered by inaccessible environments, inflexible procedures, and discrimination (Shahin et al., 2020; Shpigelman et al., 2021; Toutain, 2019).

While legislation such as the Convention on the Rights of Persons with Disabilities (CRPD) promotes equal opportunities, inclusion, and reasonable accommodations for all, the responsibility for implementing inclusive measures into practice lays predominantly with individual institutions and the employees within them. Student engagement in HE is, to a large extent, characterized by social dynamics and power relations between students and staff (Bovill et al., 2016; Seale et al., 2015). Professors, supervisors, and administrative staff can all act as gatekeepers of accommodations, enforcers of procedures, and sources of support to individual students with disabilities (Nieminen, 2022; Toutain, 2019). Thus, if university staff are not provided with the necessary resources to understand and support students with disabilities, then decisions and actions regarding facilitation are perhaps poorly informed. Numerous studies have reported how denial of accommodations can lead to students opting out of their programme, failing a course, or being forced to work beyond their capacity (Luckowski, 2014; Nieminen, 2022). Is this denial of accommodations based on discrimination against students with disabilities, a lack of awareness, or rather adherence to institutional policies at the university?

In Norway, evidence suggests that students with disabilities must often spend time and energy negotiating accommodations (Langørgen & Magnus, 2018; Magnus & Tøssebro, 2014). Despite the promotion of equal and inclusive learning environments by the CRPD, Langørgen and Magnus (2018) argue that students with disabilities must “cope in silence” and call for increased awareness of interactional processes between students and people in their social environment. In acknowledging the importance of these interactional processes, we deem it necessary to explore the attitudes of key actors within HE, as well as the factors that shape these attitudes. These actors can—knowingly or unknowingly—create barriers to inclusion through their actions, judgements, and attitudes toward students. Therefore, the aim of this factorial survey experiment is to explore the attitudes of employees in Norwegian HE institutions toward students with disabilities and their feasibility in different types of education and employment positions. By asking participants to evaluate vignettes describing fictional students with and without disabilities, we aim to answer four specific research questions:

1. What are Norwegian HE institution employees' attitudes towards students with different disabilities and their likelihood in a) graduating from HE and b) finding employment?
2. What are Norwegian HE institution employees' attitudes towards students with disabilities and their suitability in performing work tasks?
3. What are Norwegian HE institution employees' attitudes towards making arrangements for students with different disabilities during their studies?
4. What factors are the most influential in the shaping of these attitudes?

The term “employees” is used to refer to all staff who have contact with students at the university, whether this is through teaching or student support. Given this study concerns

both education and employment, we also included staff within leadership, administration, and human resources (HR) to offer an additional perspective. This study was conducted within the scope of the research project *Pathways to the World of Work for Students with Disabilities* funded by the Research Council of Norway.

## Theoretical framework

Informed by the Nordic Relational Model of Disability, we view disability as being created by discrepancies between personal capabilities and a surrounding environment (Tøssebro, 2004). Thus, we acknowledge disability not as a fixed state but rather as something that fluctuates across varying contexts and circumstances. This is in stark contrast to the medical model of disability, which views disability as a biological trait requiring an individualized medical solution (Areheart, 2008). Policy and procedures within HE are often based on this medical understanding of disability through, for instance, requiring medical certification to receive accommodations. Such requirements place accountability on the student, thus making disability an individual “problem” that requires fixing to avoid exclusion (Nieminen, 2022). Hutcheon and Wolbring (2012) argue that policies such as these adopt not only a biomedical understanding of disability, but an ableist one. Given that our study centers around attitudes of individuals who most likely adhere to these policies as a part of their work, we use ableism as the theoretical framework for the study. In doing so, we seek not to criticise the individual attitudes of participants, but rather produce knowledge on whether certain perceptions are the norm within HE environments.

Alongside other recent contributions to this field (Brown & Ramlackhan, 2022; Merchant et al., 2020; Nieminen, 2022), we adopt a critical perspective towards the presence of ableism within HE. While several definitions of ableism exist, we use Campbell’s following definition:

“a network of beliefs, processes and practices that produces a particular kind of self and body (the corporeal standard) that is projected as the perfect, species-typical and therefore essential and fully human. Disability then is cast as a diminished state of being human” (Campbell, 2001, p. 44).

Ableism is useful as a tool for understanding the social and cultural production of ability and ableness (Hutcheon & Wolbring, 2012). In the context of HE, both staff and students are expected to aim for perfection at the expense of their own health and well-being (Brown & Ramlackhan, 2022; Goodley, 2014; Leigh & Brown, 2020). Overwork and high achievement are embraced and, as such, disclosing one’s disability within academia becomes a decision of whether to disclose one’s “weakness” (Brown, 2020). Students often avoid disclosing a disability due to fears of being considered different or less capable (Hong, 2015; Jain, 2020). These concerns of being viewed differently are also pertinent to the transition into employment, with the decision of disclosure being reported as a complex issue in the hiring and retention of people with disabilities (Von Schrader et al., 2014).

Further, it is important to recognize that ableism is not only a disability issue (Campbell, 2009; Goodley, 2014; Wolbring, 2008). In describing ableism as “an umbrella for other isms,” Wolbring (2008, p. 53) reflects on how people can face multiple forms of marginalization through racism, sexism, and ageism. Goodley (2014, p. 26) writes “critical ableism studies engender a reading of what passes as normal, desirable, and progressive”. In understanding what constitutes successful students in HE, our study approaches disability from an intersectional standpoint to investigate the various factors (e.g., age, gender,

and ethnicity in addition to disability) that influence judgment among Norwegian HE employees.

## Literature review and hypotheses

To inform the design of the study and the formulation of the hypotheses, we conducted a rapid systematic literature review in which we aimed to identify key barriers and facilitators in the transition from HE to employment for students with disabilities (Goodall et al., 2022). From a synthesis of 59 studies, we identified seven types of barriers and facilitators: disclosure, attitudinal barriers and facilitators, accommodations, accessibility, institutional and organizational barriers and facilitators, discipline-specific barriers and facilitators, and disability-specific barriers and facilitators. We used the review's main findings to hypothesise how students described in the vignettes would be rated in response to four questions that regarded the likelihood of the student graduating, the likelihood of the student finding employment, the likelihood of the respondent being able to facilitate for the student described in the vignette, and the student's suitability in performing work tasks. The hypotheses presented below pertain to all four research questions presented on page 1.

### Hypothesis 1: disability

Results from the review suggest that students with disabilities frequently encounter discrimination, whether it be through negative attitudes, denial of reasonable accommodations, or social isolation. In some instances, discrimination led to the student dropping out of their chosen study (Cage & Howes, 2020). Based on this, we hypothesized that students with a disability would receive lower ratings compared to students without a disability (hypothesis 1a).

Additionally, results from the review suggest that students with mental health issues feel that they are met with less understanding from peers and staff compared to those with visible disabilities (Grimes et al., 2020; Hamilton et al., 2021). Thus, we hypothesized that students with a mental health issue would receive lower ratings in comparison to students with other types of disabilities (hypothesis 1b).

### Hypothesis 2: disclosure

Uncertainty surrounding the issue of students disclosing a disability was the cause of most issues. Students often needed to disclose a disability to access support services and accommodations (Ali et al., 2020; Cunnah, 2015), but many experienced some form of discrimination due to disclosing (Grimes et al., 2020). However, despite concerns surrounding disclosure, the review suggests that many university employees believe they can only offer necessary help if a student discloses (Cunnah, 2015; Langørgen et al., 2020; Nolan et al., 2015; Palan, 2021). Thus, we hypothesized that students who choose not to disclose a disability would receive lower ratings compared to students who choose to disclose a disability (hypothesis 2).

### **Hypothesis 3: motivation**

While the category from the literature review “Attitudinal barriers and facilitators” dealt mainly on negative attitudes from others, one important finding concerned the attitudes of students themselves. Many students referred to motivation as a resource (Berry & Domene, 2015), and university employees considered motivation and determination as important assets among students (Bettencourt et al., 2018). Thus, we hypothesized that students described as struggling with motivation would receive lower ratings compared to students who are very motivated (hypothesis 3).

### **Hypothesis 4: work experience**

Findings from the review indicated that obtaining work experience was a key facilitator in accessing employment (Cunnah, 2015). We therefore hypothesized that students who have no relevant work experience in relation to the respondents’ field of education would receive lower ratings compared to students who have either completed placement as part of their degree or have paid, relevant work experience (hypothesis 4).

### **Hypothesis 5: discipline**

The literature review indicated that students taking medical or STEM (Science, Technology, Engineering, and Math) subjects experienced greater amounts of discrimination compared to those from other subjects (Bettencourt et al., 2018; Shpigelman et al., 2016). Therefore, we hypothesized that survey respondents from medical and STEM disciplines would be more critical in scoring students with disabilities compared to respondents from other disciplines (hypothesis 5).

## **Methods**

### **Study design**

Given that disability is a complex and sensitive topic, studies within this field are often at risk of being affected by social desirability bias, meaning participants would likely respond in a way that they think will be viewed favourably by others. Furthermore, Lüke and Grosche (2018) argue that research on inclusive education is at a heightened risk of influence from social desirability bias when participants are surveyed by a university, as is the case with the current study.

To reduce social desirability and the issues it would cause with the validity of our findings, we chose to use a factorial survey experiment (FSE) based on vignettes (Auspurg & Hinz, 2015; Rossi & Anderson, 1982). Opposed to presenting respondents with single-item questions, FSEs require respondents to make decisions in reaction to descriptions of real-world scenarios containing experimentally varied factors presented in the form of vignettes (Auspurg & Hinz, 2015; Taylor & Zeller, 2007). In doing this, respondents must judge scenarios in the context of a whole situation and are thus less aware of the individual, experimental factors at play and how these may be influencing their answers (Alexander & Becker, 1978). Furthermore, these experimental factors can be subtly manipulated and randomized

across the distribution of vignettes, allowing researchers to assess the effect of multiple factors in complex decision-making (Taylor, 2006). In the current study, we used vignettes describing fictional students with and without disabilities who had varying characteristics.

## Vignette construction

To create realistic descriptions of real-world scenarios, the construction of vignettes should not be too simple nor too complex. A simple design with only a few factors could lead to boredom and fatigue effects, whereas vignettes with too much information would likely result in cognitive overload among respondents (Treischl & Wolbring, 2021). To achieve a good balance between the simplicity and complexity of vignettes, Auspurg and Hinz (2015) recommend including 7(+/- 2) dimensions within a vignette design. In the current study, we include eight dimensions (experimental factors).

Basing the choice of vignette factors on a systematic review of research can reduce researcher bias (Taylor, 2006). We therefore used the main barriers and facilitators identified in our literature review (Goodall et al., 2022) as experimental factors in the construction of the vignettes. With the vignettes being constructed of individual variables, it is important to ensure that they make sense when joined together in a piece of text. Therefore, a pilot survey was sent to a small group of colleagues at NTNU, who were asked to critique the vignettes and survey questions on their overall readability and relevance to the issue at hand. Additionally, the study design was discussed at a dialog conference organized by the research project. An overview of final vignette design is shown in Table 1.

An example of a vignette is given below, with experimental dimensions in bold (translated from Norwegian):

**Martin is 36 years old** and is a student in his **final year of study**. He wants to complete his studies and move onto a job that is relevant. He **is very motivated** but has **no relevant work experience**. He **is hard of hearing and needs technical aids**. He **wishes to be open about his need for facilitation** to teachers and employers.

## Survey design and outcome variables

At the beginning of the survey, the respondents were asked for information regarding their gender, age, position at the HE institution, discipline, the level of study they teach/supervise, and number of years employed at the institution. Respondents were then presented with nine vignettes. Each vignette was followed by the following questions (translated from Norwegian):

Imagine that you meet this person as a future or current student in the education you are associated with

- Q1. How likely do you think it is that this student will complete their studies?
- Q2. How likely do you think it is that this student will get a job related to your education?
- Q3. How likely do you think you could make arrangements for this student during their studies?
- Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?

**Table 1** Construction of vignettes (translated from Norwegian to English)

Vignette dimension (factor)	Level
1. Gender—indicated by name	1. Male name 2. Female name
2. Ethnicity—indicated by name	1. Norwegian name 2. Non-Norwegian name
3. Age	1. 20 (+/- 1) years old 2. 27 (+/- 1) years old 3. 37 (+/- 1) years old
4. Study year	1. Applying for the study programme 2. Is a student in their second year of study 3. Is a student in their final year of study
5. Motivation	1. Is very motivated 2. Struggles with motivation
6. Work experience	1. Has no relevant work experience 2. Has experience from relevant, unpaid voluntary work 3. Has completed practice placement as part of their education 4. Has experience from relevant, paid work
7. Disability	1. Has no disability and does not need accommodation 2. Is hard of hearing and needs technical aids 3. Has a visual impairment and needs technical aids 4. Is a wheelchair user and needs a workplace that is physically accessible 5. Has autism and needs individual meetings with a supervisor 6. Has ADHD and needs reduced study progression 7. Has dyslexia and needs extra time on written assignments 8. Has generalized anxiety and needs information about teaching and assignments given well in advance 9. Has depression and needs flexibility when it comes to participating in compulsory supervision and presentations
8. Disclosure	1. Wishes to keep the need for facilitation hidden from teachers and employers 2. Wishes to be open about the need for facilitation to teachers and employers

Answers were given on an 11-point rating scale, running from 0 (very unlikely) to 10 (very likely). Respondents were asked to evaluate the students in relation to their field of education. At the end of the survey, respondents were given the opportunity to leave comments and were asked whether they would be willing to be contacted to take part in a follow-up focus group discussion.

### Ethical considerations and consent

This study received approval from the Norwegian Centre for Research Data (reference number 906240). Given the complexity and size of this study, we collaborated with a

research services company—Sentio Research Norway AS (Sentio). Sentio were responsible for the randomization and generation of vignettes, the distribution of the survey, data collection, and the delivery of data to the research team. Therefore, a data protector agreement was made between NTNU and Sentio. Informed consent was collected electronically at the beginning of the survey, in which participants were made aware of their right to withdraw from the study at any time.

Responses were analyzed anonymously, with each set of responses being connected to an ID number that had been generated by Sentio. Thus, the research team could not see the email address nor institution connected to each set of answers. The only email addresses that researchers had access to belonged to participants who had indicated that they were willing to be contacted for participation in a follow-up focus group discussion. Sentio compiled a separate file containing the email addresses of participants who had indicated their willingness to be contacted and sent this document to the research team. The participants' survey answers were not included in this document. Participants were ensured that neither they nor their institution would be identifiable in any publications.

## Recruitment and participants

The target population for this study was individuals employed at a HE institution in Norway. We first contacted deans, department leaders, or rectors of Norwegian HE institutions, depending on the size of the institution. These institutions included 10 universities, 10 specialized universities, and 25 university colleges.

In this initial contact, we provided information about the study and asked if the dean/department leader/rector would be willing to share the email addresses of their employees so that they may be invited to participate in the survey. We received a total of 3598 email addresses from across two universities, two specialized universities, and five university colleges. Additionally, we received several responses indicating that we could obtain employee email addresses from the institutions' websites. Therefore, after further approval from Norwegian Centre for Research Data, we obtained 14,997 publicly available email addresses. A total of 18,595 email addresses from across 19 institutions was collected.

## Procedure

The 18,595 email addresses collected by the research team were delivered to Sentio, who then generated a unique survey link for each potential respondent. These links contained random vignette combinations unique to that individual. With a total of 3400 combinations in the vignette universe (total number of unique vignettes), we aimed to recruit a minimum of 1889 respondents who would each evaluate nine vignettes. This would ensure that each possible vignette combination was evaluated at least five times.

The survey was sent by mail to a random sample of 10,000 respondents on the 17<sup>th</sup> of November 2021, and a reminder was sent out 1 week later. This yielded 1380 responses. Given that we had not reached our desired number of respondents, Sentio sent the survey by mail to the remaining 8595 employees on the 2<sup>nd</sup> of January 2022. A reminder was sent 1 week later. This resulted in a further 809 responses. The survey was closed on 18<sup>th</sup> of January 2022, and Sentio delivered the dataset to the research team for analysis.



## Analysis

All analyses were conducted on IBM SPSS version 28. Respondents were asked to evaluate nine vignettes, meaning that multiple vignette evaluations were nested within individual respondents. Therefore, multilevel modeling was deemed appropriate, as this takes the hierarchical nature of the data into account (Auspurg & Hinz, 2015; Heck et al., 2013). On the first level were vignette variables, and on the second were respondent characteristics. Prior to running the hierarchical models, we performed Pearson's correlation analyses between the independent variables to ensure that the vignette variables and respondent variables were not significantly correlated. Results showed little to no correlation, and thus, successful randomization of vignettes across the respondents can be assumed (see Appendix Table 5).

We first estimated random intercept-only ("null") models with no predictor variables to examine the variance in ratings attributed to respondent-level variation, as indicated by intraclass correlation coefficients. We then estimated two models for each of the four outcome variables. Model 1 included the vignette variables (level 1 variables) only, whereas model 2 included both the vignette variables and respondent level variables (level 2 variables). To assess model fit, likelihood ratio tests were conducted to compare the  $-2 \log$  likelihood values of each model.

## Results

### Respondent demographics

A total of 18,595 employees were invited to participate in the survey, and 2189 answered, thus yielding a response rate of 21%. However, while respondents were asked to evaluate nine vignettes, not all did. There was a total of 67,608 ratings out of a potential 78,804. Rather than running a multiple imputation to fill in these missing ratings, we decided to exclude incomplete evaluations of vignettes. We defined a complete evaluation of a vignette as the respondent having answered all four questions for that specific vignette.

Furthermore, 32 of the 2189 respondents had not returned a complete evaluation of at least one vignette (i.e., they had not answered all four questions to any one of the vignettes they were presented with). After excluding these respondents, as well as any incomplete evaluations, the final analytic sample included 16,784 vignettes nested in 2157 respondents. Demographics of both the total sample ( $n=2189$ ) and the analytic sample ( $n=2157$ ) are shown in Table 2.

### Null models

Results from the null models for each question (no predictor variables) are shown in Table 3. The intraclass correlation coefficients computed from the null models indicate that the percent of total variation accounted for by respondent-level variation (occurring at level 2) is 26%, 34%, 34%, and 35% for questions 1–4, respectively.

### Multilevel regression analyses

Results from the multilevel regression analyses for questions 1–4 are presented in Table 4. All vignette variables, except ethnicity, had a significant effect on the respondents' ratings.

**Table 2** Demographics of the total sample and the analytic sample

Variable	Total sample %	Total sample <i>n</i>	Analytic sample %	Analytic sample <i>n</i>
<b>Age</b>				
21–35 years	9	197	9	194
36–55 years	46.6	1020	46.6	1005
56+ years	30.7	671	30.8	665
Did not answer	13.7	299	13.6	293
<b>Gender</b>				
Female	53.6	1172	53.5	1154
Male	44.5	973	44.6	962
Other	.5	11	.5	11
Did not answer	1.5	33	1.3	28
<b>Job position</b>				
Professor/docent	29.8	651	29.7	640
Associate professor/associate lecturer	34.1	745	34.0	734
University lecturer/teacher or HE lecturer/teacher	20	437	20.1	433
Study consultant/advisor/supervisor	5	110	5.1	110
PhD/Postdoc/researcher	5.9	129	5.9	127
Management/administration/HR	4.9	107	4.9	105
Did not answer	.5	10	.4	8
<b>Discipline</b>				
Art and humanities	16.5	360	16.5	355
Educational and social sciences	31.3	684	31.1	670
Health	11.4	249	11.5	247
STEM	13.3	290	13.4	288
Life sciences	13.1	287	13.2	285
Medicine	7.4	162	7.3	158
Business, law and economy	5.7	124	5.7	124
Student services	.9	20	.9	19
Did not answer	.6	13	.5	11
<b>Supervision/teaching level</b>				
Bachelor	66.2	1447	66.2	1429
Master	70.5	1541	70.4	1519
Further education	31.4	687	31.6	682
<b>Number of years employed at institution</b>				
0–2 years	15.1	330	15.1	326
3–10 years	34.6	755	34.6	647
More than 10 years	50.3	1100	50.2	1082
Did not answer	.2	4	.1	3

As hypothesized (H1a), students with a disability received significantly lower ratings compared to students without a disability for Q1, Q2, and Q4. However, responses for Q3—regarding how likely the respondent could make arrangements for the student—were mixed.

**Table 3** Null regression models for questions 1–4 ( $N = 16784$  vignettes nested in 2157 respondents)

	Q1	Q2	Q3	Q4
Estimates of fixed effects				
Intercept (grand mean)	6.299** (.34)	6.351** (.036)	6.610** (.041)	6.860** (.037)
Estimates of covariance parameters				
Residual (respondent level)	5.179** (.06)	4.257** (.5)	5.503** (.064)	4.305** (.05)
Intercept (vignette level)	1.799** (.077)	2.156** (.84)	2.777** (.109)	2.299** (.089)
Intraclass coefficient	.26	.34	.34	.35
– 2 log likelihood	77,972.925966	75,281.859738	79,585.612138	75,557.156660

Q1: how likely do you think it is that this student will complete their studies? Q2: how likely do you think it is that this student will get a job related to your education? Q3: how likely do you think you could make arrangements for this student during their studies? Q4: how suitable do you think this student would be in performing work tasks in relevant jobs? Note: standard deviations are indicated in parentheses

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

Responses were significantly positive for students with ADHD, dyslexia, generalized anxiety, students described as hard of hearing, and wheelchair users. However, results indicate that respondents felt that they were less likely to be able to make arrangements for students with autism during their studies ( $b = -.56, p < .001$ ). Autism proved to be perceived as the most problematic of disabilities, with students with autism scoring the worst on average across all four questions. While students with depression and anxiety received lower ratings on average compared to other disabilities, our hypothesis that vignettes describing students with mental health difficulties would receive lower ratings (H1b) was not supported.

Our second hypothesis (H2) was that students who choose not to disclose a disability would receive lower ratings. The results support this hypothesis, with students who do not disclose a disability being scored worse on average compared to students who do disclose across all four questions. Our third hypothesis (H3) regarding motivation was also supported. Students who were described as struggling with motivation received significantly lower ratings across all four questions compared to students who were described as very motivated.

We had also hypothesised that students who have no relevant work experience would be judged more critically compared to students who have either completed placement as part of their degree or have paid, relevant work experience (H4). As anticipated, this hypothesis was supported.

Finally, we predicted that respondents from STEM and medical disciplines would be more critical in their judgements (H5). Discipline only had a significant effect on the likelihood of the student completing their studies (Q1), where respondents from a medical discipline gave significantly lower ratings ( $b = -.874, p < .05$ ). While it is interesting to note that respondents from STEM disciplines were more positive in their ratings, these findings were not of statistical significance. In any case, hypothesis H5 was not supported.

With relation to other respondent characteristics (level 2 variables), the results showed that female respondents scored significantly more positively in comparison to males for questions 1, 2, and 4. Respondents who identified as “Other” were also more positive in comparison to males for questions 1 and 4. In addition, younger employees (respondents aged 21–35 years) were significantly more positive in their answers for questions 1, 2 and 4 in comparison to older employees. Job position and the number of years working at the institution had no significant effect on any of the responses, with the exception of question 4, where professors/docents and

**Table 4** Multilevel regression estimates of responses for questions 1–4 ( $N=16784$  vignettes nested in 2157 respondents)

	Q1. How likely do you think it is that this student will complete their studies?		Q2. How likely do you think it is that this student will get a job related to your education?		Q3. How likely do you think it is that you could make arrangements for this student during their studies?		Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
<b>Level-1: vignette variables</b>								
<i>Gender (reference: female)</i>								
male	-.73* (.031)	-.073*** (.031)	-.98*** (.030)	-.097*** (.030)	-.015 (.035)	-.017 (.035)	-.056 (.030)	.056 (.030)
<i>Ethnicity (reference: Norwegian)</i>								
Non-Norwegian	-.026 (.039)	-.027 (.039)	-.069 (.037)	-.070 (.037)	.012 (.043)	.012 (.043)	-.005 (.038)	-.005 (.037)
<i>Age (reference: 20 +/- 1 years)</i>								
27 (+/- 1) years	-.090 (.057)	-.090 (.057)	-.167** (.054)	-.165** (.054)	.016 (.259)	.018 (.064)	-.137* (.055)	-.135* (.055)
37 (+/- 1) years	-.196*** (.057)	-.197** (.057)	-.267*** (.054)	-.266** (.054)	-.112 (.064)	-.111 (.064)	-.221*** (.055)	-.221*** (.055)
<i>Study year (reference: final year of study)</i>								
Applying for the course	-.608*** (.043)	-.608*** (.043)	-.269*** (.041)	-.268*** (.041)	-.168*** (.048)	-.166*** (.048)	-.234*** (.042)	-.234*** (.042)
Second year of study	-.389*** (.039)	-.389*** (.039)	-.150*** (.037)	-.151*** (.037)	-.162*** (.043)	-.161*** (.043)	-.120** (.038)	-.119** (.038)
<i>Motivation (reference: is very motivated)</i>								
Struggles with motivation	-1.666*** (.031)	-1.665*** (.031)	-1.055*** (.030)	-1.054*** (.030)	-.744*** (.035)	-.744*** (.035)	-1.000*** (.030)	-.999*** (.030)
<i>Work experience (reference: has experience from relevant, paid work)</i>								

Table 4 (continued)

	Q1. How likely do you think it is that this student will complete their studies?		Q2. How likely do you think it is that this student will get a job related to your education?		Q3. How likely do you think it is that you could make arrangements for this student during their studies?		Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Has no relevant work experience	-.503*** (.042)	-.499*** (.042)	-.502*** (.039)	-.499*** (.039)	-.197*** (.046)	-.194*** (.046)	-.389*** (.040)	-.386*** (.040)
Has experience from relevant, unpaid voluntary work	-.111** (.042)	-.110** (.042)	-.140*** (.040)	-.139*** (.040)	-.055 (.046)	-.054 (.046)	-.080* (.040)	-.079* (.040)
Has completed work placement as part of education	.026 (.051)	.029 (.051)	.009 (.048)	.012 (.048)	.101 (.057)	.103 (.057)	.071 (.049)	.074 (.049)
<i>Disability type (reference: has no disability)</i>								
Hard of hearing	.002 (.068)	.008 (.068)	-.405*** (.039)	-.398*** (.064)	.722*** (.075)	.725*** (.075)	-.074 (.065)	-.068 (.065)
Visual impairment	-.628*** (.068)	-.624*** (.068)	-.1294*** (.065)	-.1290*** (.065)	.026 (.076)	.028 (.076)	-.923*** (.066)	-.920*** (.066)
Wheelchair user	-.131 (.068)	-.129 (.068)	-.801*** (.064)	-.797*** (.064)	.695*** (.075)	.695*** (.075)	-.181** (.065)	-.177** (.065)
Autism	-.1279*** (.068)	-.1277*** (.068)	-.2054*** (.065)	-.2051*** (.065)	-.559*** (.076)	-.557*** (.076)	-.1791*** (.066)	-.1787*** (.066)
ADHD	-.427*** (.067)	-.426*** (.067)	-.574*** (.064)	-.572*** (.065)	.557*** (.075)	.558*** (.076)	-.423*** (.065)	-.421*** (.065)
Dyslexia	-.042 (.068)	-.037 (.068)	-.168* (.065)	-.164* (.064)	.756*** (.076)	.758*** (.076)	-.016 (.066)	-.021*** (.066)
Generalized anxiety	-.761*** (.068)	-.756*** (.068)	-.1076*** (.065)	-.1070*** (.065)	.317*** (.076)	.320*** (.076)	-.1006*** (.066)	-.999*** (.066)
Depression	-.1130*** (.068)	-.1127*** (.068)	-.1033*** (.065)	-.1029*** (.065)	-.125 (.076)	-.124 (.076)	-.932*** (.066)	-.929*** (.066)
<i>Disclosure (reference: wishes to disclose disability)</i>								
Does not wish to disclose disability	-.1283*** (.033)	-.1283*** (.033)	-.904*** (.031)	-.905*** (.031)	-.1686*** (.037)	-.1686*** (.037)	-.935*** (.032)	-.935*** (.032)

Table 4 (continued)

	Q1. How likely do you think it is that this student will complete their studies?		Q2. How likely do you think it is that this student will get a job related to your education?		Q3. How likely do you think it is that you could make arrangements for this student during their studies?		Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Level-2: respondent variables								
Age (reference: 30-35 years)	-	-	-	-	-	-	-	-
21-35 years		.416** (.133)		.526*** (.140)		.060 (.162)		.421** (.144)
56+ years		-.072 (.081)		-.267** (.086)		-.105 (.100)		-.133 (.088)
Did not answer		.016 (.103)		-.043 (.109)		-.117 (.126)		.064 (.112)
Gender (reference: male)								
Female		.159* (.072)		.226** (.076)		.089 (.088)		.292*** (.079)
Other		1.237** (.464)		.647 (.491)		.513 (.567)		2.014*** (.504)
Did not answer		-.708* (.289)		-.067 (.305)		-.519 (.353)		.112 (.314)
Job position (reference: management/administration/HR)								
Professor/docent		-.261 (.167)		-.051 (.177)		-.137 (.204)		-.357* (.181)
Associate professor/associate lecturer		-.208 (.164)		-.065 (.172)		-.167 (.199)		-.274 (.177)
Lecturer/teacher (university or higher education)		-.277 (.170)		-.188 (.180)		-.227 (.208)		-.454* (.185)
Study consultant/advisor/supervisor		-.277 (.210)		-.028 (.222)		-.325 (.256)		-.245 (.228)
PhD/Postdoc/researcher		-.354 (.210)		-.416 (.221)		-.412 (.256)		-.200 (.227)
Did not answer		.883 (.629)		.506 (.657)		-.180 (.236)		-.474 (.675)

**Table 4** (continued)

	Q1. How likely do you think it is that this student will complete their studies?		Q2. How likely do you think it is that this student will get a job related to your education?		Q3. How likely do you think it is that you could make arrangements for this student during their studies?		Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
<i>Discipline (reference: student services)</i>								
Art and humanities	-	-.205 (.372)	-	-.441 (.391)	-	.083 (.452)	-	-.163 (.402)
Educational and social sciences	-	-.263 (.367)	-	-.206 (.386)	-	-.077 (.447)	-	-.245 (.397)
Health	-	-.649 (.375)	-	-.224 (.395)	-	-.726 (.457)	-	-.482 (.406)
STEM	-	.052 (.375)	-	.279 (.395)	-	.196 (.457)	-	.317 (.406)
Life sciences	-	-.344 (.374)	-	-.334 (.393)	-	-.117 (.455)	-	-.098 (.404)
Medicine	-	-.874* (.383)	-	-.349 (.403)	-	-.859 (.466)	-	-.547 (.414)
Business and economy	-	.005 (.388)	-	-.103 (.408)	-	-.024 (.472)	-	.076 (.419)
Did not answer	-	.577 (.605)	-	.846 (.637)	-	.992 (.736)	-	.668 (.654)
Number of years working at institution (Ref: more than 10)	-	.151 (.113)	-	.115 (.119)	-	.163 (.138)	-	.141 (.122)
0–2 years	-	.127 (.079)	-	.050 (.083)	-	.068 (.096)	-	-.026 (.085)
3–10 years	-	-1.112 (1.063)	-	-.806 (.464)	-	.283 (1.276)	-	-.795 (1.130)
Did not answer	8.878*** (.088)	9.224*** (.382)	8.682*** (.085)	8.812*** (.400)	7.681*** (.100)	7.954*** (.463)	8.797*** (.087)	9.082*** (.411)
<b>Variance components</b>								
Residual	3.663*** (.043)	3.664*** (.043)	3.282*** (.038)	3.282*** (.038)	4.498*** (.053)	4.499*** (.053)	3.401*** (.040)	3.402*** (.040)
Intercept	1.849*** (.073)	1.739*** (.069)	2.164*** (.081)	2.051*** (.077)	2.860*** (.107)	2.726*** (.103)	2.314*** (.086)	2.177*** (.082)
-2 log likelihood	72,752.883371	72,655.853113	71,367.555138	71,279.690681	76,591.928284	76,513.661720	72,020.438798	71,914.301540

Table 4 (continued)

	Q1. How likely do you think it is that this student will complete their studies?		Q2. How likely do you think it is that this student will get a job related to your education?		Q3. How likely do you think it is that you could make arrangements for this student during their studies?		Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Pseudo $R^2$ marginal	.215	.230	.152	.170	.119	.134	.136	.157
Pseudo $R^2$ conditional	.478	.478	.489	.489	.461	.461	.486	.486

Standard deviations are indicated in parentheses

\*\*\* $p < .001$  (two-tailed)

\*\* $p < .01$  (two-tailed)

\* $p < .05$  (two-tailed)



lecturers/teachers were significantly more critical towards the suitability of students in performing work tasks in relevant jobs compared to respondents in other job positions.

## Interaction effects

Given that this study is guided by the theoretical lens of ableism, we deemed it appropriate to further investigate the interaction of disability with other characteristics such as gender, age, ethnicity, and motivation. Results are given in Appendix Tables 6, 7, 8, and 9, and a summary is given below.

### Disability and motivation

When compared to students without a disability who are described as struggling with motivation, motivated students with autism were considered less likely to find a job ( $b = -1.183$ ,  $p < .001$ ) and less likely to be suitable in performing work tasks ( $b = -.877$ ,  $p < .05$ ). Motivated students with generalized anxiety were also considered less likely to find a job in comparison to students without disabilities who struggle with motivation ( $b = -.199$ ,  $p < .05$ ), as were motivated students with visual impairments ( $b = -.384$ ,  $p < .001$ ). However, motivated students with disabilities were rated significantly more positively (except for autism) than students who struggled with motivation in relation to the likelihood of graduating.

### Disability and age

Results from the main analyses showed that students aged 37 (+/- 1) years received significantly lower ratings on average compared to younger students, suggesting that younger students are considered more likely to be successful in their goals. However, interaction effects show that younger students with a disability received significantly lower ratings regarding completing their studies and getting a job compared to older students without a disability.

### Disability and ethnicity

While findings regarding the effect of ethnicity on ratings were not significant in the main analyses, non-Norwegian students received lower ratings compared to Norwegian students. However, interaction effects show that Norwegian students with any type of disability received significantly lower ratings regarding completing their studies, getting a job, and being suitable in performing work tasks compared to non-Norwegian students without a disability.

### Disability and gender

In main analyses, male students were considered significantly less likely to complete their studies (question 1) and get a job relevant to the respondents' area of education (question 2) compared to female students. However, analysis of interaction effects suggests that female students with disabilities received significantly lower ratings for these two questions compared to male students without disabilities. Overall, both male and female students with disabilities were rated significantly lower than students without a disability.

## Robustness and goodness of fit

While it is common to treat ordinal values as quasi-metric in FSEs, it can be argued that the assumption of linearity is not met when performing linear regressions with this type of outcome variable. Therefore, we conducted multilevel binary logistic regression analyses to assess the robustness of our linear models. To perform the logistic regression analyses, each outcome variable was dichotomised through a median split. Results from these analyses are given in Appendix Tables 10, 11, 12, and 13. Overall, results from the logistic regression analyses were similar to the linear regression analyses, thus suggesting that the results from the linear models are robust.

Likelihood ratio tests between the null models and models with level 1 variables were significant for each of the four questions (question 1:  $X^2[19] = 5220.042595$ ,  $p < .001$ ; question 2:  $X^2[19] = 3914.3046$ ,  $p < .001$ , question 3:  $X^2[19] = 2993.683854$ ,  $p < .001$ ; question 4:  $X^2[19] = 3536.717862$ ,  $p < .001$ ), which confirms that computing the models with vignette level variables as fixed effects had a better fit. Adding respondent level variables to the model, as seen in model 2, indicated a significant improvement in model fit compared to model 1 for all four questions (question 1:  $X^2[23] = 97.030258$ ,  $p < .001$ ; question 2:  $X^2[23] = 94.864457$ ,  $p < .001$ ; question 3:  $X^2[23] = 78,266564$ ,  $p < .001$ ; and question 4:  $X^2[23] = 106,137258$ ,  $p < .001$ ). However, the pseudo  $R^2$  conditional values were the same for both models across each of the four questions. The pseudo  $R^2$  values computed for questions 1–4 were .48, .49, .46, and .49, respectively, indicating a good fit.

## Discussion

The findings of this study suggest that students with disabilities are perceived as less likely to graduate, less likely to find employment, and less suitable in performing relevant work tasks compared to students without a disability. However, despite these perceptions, the findings indicated that respondents generally held positive thoughts in being able to make arrangements for students with disabilities—except for autism. Given the nature of quantitative data, we do not know if this finding is due to a lack of knowledge on autism, or an unwillingness to work with students with autism. Students with autism received the lowest ratings on average across all four questions in the survey, which raises the question of why students with autism are met with lower expectations compared to students with other types of disability. While beyond the scope of the current study, this is something that certainly warrants further investigation.

Other studies have found that attitudes among faculty staff towards the inclusion of students with disabilities in HE are generally positive, but knowledge on how to effectively implement this inclusion is still lacking (Hansen & Dawson, 2020; Martins et al., 2018; Sandoval et al., 2021; Sniatecki et al., 2015). This may be a contributing factor to the reason for why students with disabilities were rated as less likely to be successful in their educational and work goals. Rather than being a reflection on the ability of students with disabilities, the low ratings could instead reflect concerns surrounding HE on an organisational level.

## Ableist ideals and the “successful” student

In the context of academia, ableist ideals dominate expectations of both staff and students. Many have commented on academia’s culture of high-productivity and how it creates

expectations for over-achievement and perfection (Brown & Ramlackhan, 2022; Goodley, 2014; Leigh & Brown, 2020). According to the findings of the present study, the “successful” student could be described as without disability, motivated, and young. However, even in cases where a student with a disability was described as young or motivated, these students were sometimes rated more negatively in comparison to students without disabilities who were older or struggled with motivation. Thus, the results suggest that students—regardless of desirable attributes—may still be perceived solely based on their disability. These findings are in line with recent articles that report that HE remains an arena predominantly designed for individuals without disabilities (Merchant et al., 2020; Nieminen, 2022; Wolbring & Lillywhite, 2021). A recent study of assessment and accommodations in Finland found that students had to continuously disclose their disabilities to receive accommodations, thus being framed as “the other” (Nieminen, 2022). In arguing for the development of anti-ableist pedagogies, Nieminen and Pesonen write that people with disabilities cannot fit the image as “ideal students” in HE and are thus excluded as “unfit” and “unproductive” (2022, p. 3).

The value of student productivity in the current study can be recognized from the significant effect that the motivation variable had on the respondents’ ratings. Motivation presents itself in different forms and fluctuates in given contexts and situations (Ryan & Deci, 2000). For instance, a student with social anxiety is less likely to speak out in class, and thus, teachers may mistake anxiety for poor attitude or a lack of motivation (Gregersen, 2003). A teacher’s assessment of motivation being predominantly based on external appearance and behaviour indicates the subtle ways in which ableism operates within the social interactions that take place in HE. While requiring further investigation, the norm of equating students who *appear* as motivated with success may help to explain the gap between generally positive attitudes among employees and successful inclusive practices within HE.

One must also question the extent to which the respondents’ own experiences of HE impacted their perceptions on whether a student is likely to be successful. Literature on ableism in HE concerns not only students, but staff too. Leigh and Brown argue that “academics’ moral commitment to the academy leads to their internalisation of academia’s values of performance and productivity” (2020, p. 174). As individuals who have completed HE themselves, the respondents perhaps rated the vignettes based on their experience and understanding of how academia functions. In having observed the ableist nature of academia throughout their own education, the lower ratings towards students with disabilities may reflect the nature of academia, rather than the perceived abilities of students. However, it is interesting to note that both female and younger employees were significantly more positive in their answers compared to male, older employees. Young people and women working in academia have traditionally been othered within academia, and thus perhaps hold more empathy compared to older and male employees (Archer, 2008; Bleijenbergh et al., 2012).

Finally, it is important to note that while reporting individuals’ perceptions of disability, this study should not be a critique towards the attitudes of individual respondents. It is rather an inquiry into how students with disabilities are perceived by key actors within a larger, institutional system. This study addresses perceptions of disability on the micro-level (individual employees), whereas more ought to be done on the macro-level (institutional policy and practice). Gilberg (2020) writes that ableism cannot be resolved at an individual level, although “it is at the individual level that the implications and consequences of ableism are felt most keenly” (p. 19). Further, studying the relationship between the individual and organisational levels could help determine areas for further action. This

suggestion is in line with a very recent study from Sánchez-Díaz and Morgado (2023) who argue that changes are needed at “classroom,” “institutional,” and “political” levels (p. 16).

## Limitations

This study has some limitations. First, not all 2189 respondents evaluated nine vignettes. This suggests that nine vignettes were perhaps too many for respondents to evaluate in one survey, and a shorter survey may have yielded more responses. Comments left at the end of survey revealed that some respondents felt the vignettes were too repetitive, which may have led to boredom. Others also commented on the vignettes being too simple. Finding the right balance between simplicity and complexity within FSEs is a common issue, with the prior leading to boredom effects and the latter leading to cognitive overload (Treischl & Wolbring, 2021). While including additional factors within the design of the vignettes may have increased the realism of the scenarios, providing too much information would have made completing the survey a more strenuous, time-consuming task.

Further, we recognise that a study of this design oversimplifies phenomena such as motivation and disability. Given the complexity of motivation, as discussed above, we recognise the wording of the motivation variable could have been improved. Instead describing the student as “*very motivated*” we would now opt to use the phrase “*appears to be motivated*” or “*appears to be unmotivated*,” emphasizing the fact that assessment of motivation is often judged on external appearance and behaviours. Furthermore, we did not include severity of the disability, nor the possibility of a student having multiple disabilities. The reasoning for this was to not overcomplicate the construction of the vignettes. Had we included both severity and combinations of disabilities, the total number of possible vignette combinations would have been much higher, thus requiring a greater number of participants.

Finally, we do not know the respondents’ level of interaction or experience with students with disabilities. This information could have shed more light on the findings. Additionally, knowing whether the respondents themselves identify as disabled would have provided important insights for how this effected their answers. However, given that we wanted to reduce the risk of social desirability bias, we avoided asking explicit questions about disability.

## Implications

These findings imply that ableist ideals continue to shape perceptions of “successful” students. While HE employees seem positive towards making arrangements for students with disabilities (except for autism), their expectations of these students are not matched to those without disabilities. This points to a clear need for HE institutions to develop expertise in revisiting and rethinking widely accepted beliefs and practices which may be harmful to the inclusion of students with disabilities and their transition into working life. Continuing investigation into this issue, the findings of this study will be further explored through focus group discussions with survey respondents. Of the 2189 respondents who answered the survey, 511 indicated that they were willing to be contacted for participation in a follow-up focus group interview.

Additionally, further knowledge ought to be given to employees regarding the ways in which they can engage with and promote inclusive measures for students with

disabilities—especially for those with autism. One solution would be to provide training in the implementation of universal design procedures. Universal design for learning (UDL) challenges the “one-size-fits-all” approach to education by appreciating learner variability and diversity and making curricula more expansive and flexible (Rose et al., 2014). Thus, rather than students having to request accommodations to be able to fully participate in education, universal design approaches would ensure educational practices are accessible to all. Furthermore, universal design procedures would reduce the need for students to disclose a disability. Brown and Ramlackhan (2022) argue:

“A ubiquitous universal design that truly focuses on inclusion and equality rather than reasonable adjustments would benefit everyone working, studying, living and breathing the academy” (p. 1236)

While these findings illuminate ableism within a Norwegian context, the study has valuable implications for HE on an international level. First, all employees within HE institutions should receive training on disability and inclusion. Training faculty members on inclusive education can promote knowledge and more positive views on disability, as well as raise awareness of disability as a social problem (Carballo et al., 2021).

Second, if accommodation procedures are to continue to be governed by the medical model of disability, universities must develop strategies in helping students with disabilities disclose. The findings from this study indicate that disclosure is important to employees in being able to make arrangements for the student, yet evidence from this field reports students’ fear and unwillingness to disclose (Grimes et al., 2020). Thus, if HE institutions expect students to disclose a disability, environments must be created in which they feel safe doing so.

The final implication is to promote student diversity within universities. Goodley (2014) raises the question of whether ableism is a problem when it stops being a debate and instead becomes a fixed ideal. Taken together with recent evidence in this field, the results of this study suggest that ableism is the fixed ideal within academia. To abandon the idea of the ideal student, universities should work towards promoting positive discourse around disability.

## Conclusions

This study is, to our knowledge, the first FSE conducted on attitudes towards students with disabilities in higher education. It thus offers a novel contribution by presenting results on this topic that are less influenced by social desirability bias compared to traditional methods used in this field. Students with disabilities continue to be perceived as less likely in achieving their education- and work-related goals. It is clear that the “ideal student” remains to be motivated and without disability, thus appearing more independent compared to those who may require accommodations. However, the positive attitudes among respondents towards making arrangements for students with disabilities indicate a willingness to make HE inclusive.

One could argue that we need to go beyond aiming for inclusion; we instead must challenge and dismantle the ableist structures that continue to exist today. Ensuring the widespread implementation of universal design in teaching, educating staff on disability, and rethinking assessments and accommodations would all be worthwhile starting points. This would not only benefit students with disabilities, but it would—more frankly—ensure that their right to equal education is realized.

## Appendix

Table 5 Correlation matrix

	Vignette variables							Respondent variables						
	Gender	Ethnicity	Age	Study year	Motivation	Work experience	Disability type	Disclosure	Age	Gender	Job position	Discipline	Number of years working at institution	
Vignette variables														
Gender	1	-.003	.006	.004	.022**	-.001	.013	.003	.012	.009	-.003	.011	-.001	
Ethnicity	-.003	1	-.008	-.002	-.003	.001	.005	-.003	.003	-.004	.008	.001	.007	
Age	.006	-.008	1	-.318**	-.008	-.029*	.015	.000	-.014	-.007	-.007	.002	.003	
Study year	.004	-.002	.318**	1	.014	.065**	-.015	-.001	.014	-.011	-.002	-.004	-.012	
Motivation	.022**	-.003	-.008	.014	1	.002	-.012	-.002	-.001	-.004	.007	.002	-.010	
Work experience	-.001	.001	-.029**	.065**	.002	1	.011	.011	-.002	-.006	.009	-.006	-.003	
Disability type	.013	.005	.015	-.015	-.012	.011	1	.388**	.001	-.004	.006	.001	-.011	
Disclosure	.003	-.003	.000	-.001	-.002	.011	.388**	1	-.005	-.005	.007	-.006	-.027**	
Respondent variables														
Age	.012	.003	-.014	.014	-.001	-.002	.001	-.005	1	-.072**	-.026**	-.018*	-.031**	
Gender	.009	-.004	-.007	-.011	-.004	-.006	-.004	-.005	-.072**	1	-.157**	.136**	.175**	
Job position	-.003	.008	-.007	-.002	.007	.009	.006	.007	-.026**	-.157**	1	.012	-.301**	
Discipline	.011	.001	.002	-.004	.002	-.006	.001	-.006	-.018*	.136*	.012	1	.072**	

**Table 5** (continued)

	Vignette variables					Respondent variables							
	Gender	Ethnicity	Age	Study year	Motivation	Work experience	Disability type	Disclosure	Age	Gender	Job position	Discipline	Number of years working at institution
Number of years working at institution	-.001	.007	.003	-.012	-.010	-.003	-.011	-.027**	-.031***	.175**	-.301***	.072**	1

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

**Table 6** Interaction effects between disability and motivation

Interaction (Ref: <i>struggles with motivation*no disability</i> )	Q1. How likely do you think it is that this student will complete their studies?	Q2. How likely do you think it is that this student will get a job related to your education?	Q3. How likely do you think it is that you could make arrangements for this student during their studies?	Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?
Is very motivated*hard of hearing	1.611*** (.097)	.598*** (.09)	1.054*** (.109)	.926*** (.092)
Is very motivated*visual impairment	.903*** (.099)	-.384*** (.092)	.350** (.110)	.010 (.093)
Is very motivated*wheelchair user	1.628*** (.097)	.252* (.09)	1.222*** (.109)	.935*** (.091)
Is very motivated*autism	.169 (.099)	-.1183*** (.092)	-.115 (.111)	-.877*** (.093)
Is very motivated*ADHD	1.090*** (.098)	.412*** (.091)	.997*** (.110)	.565*** (.092)
Is very motivated*dyslexia	1.498*** (.099)	.839*** (.092)	1.198*** (.111)	1.058*** (.093)
Is very motivated*generalized anxiety	.607*** (.096)	-.199* (.091)	.653*** (.110)	-.075 (.093)
Is very motivated*depression	.336*** (.099)	-.036 (.092)	.423*** (.111)	.105 (.093)
Is very motivated*no disability	2.849*** (.099)	1.899*** (.092)	1.959*** (.111)	2.083*** (.093)
Struggles with motivation*hard of hearing	-.062 (.098)	-.447*** (.091)	.640*** (.109)	.046 (.092)
Struggles with motivation*visual impairment	-.567*** (.098)	-.1194** (.091)	.009 (.110)	-.697*** (.093)
Struggles with motivation*wheelchair user	-.388*** (.097)	-.905*** (.090)	.397*** (.109)	-.197* (.092)
Struggles with motivation*autism	-.1179*** (.098)	-.1959*** (.091)	-.743*** (.110)	-.1587*** (.092)
Struggles with motivation*ADHD	-.422*** (.096)	-.588*** (.089)	.362*** (.108)	-.294*** (.091)
Struggles with motivation*dyslexia	-.095 (.098)	-.232** (.091)	.505*** (.110)	.066 (.092)
Struggles with motivation*generalized anxiety	-.578*** (.098)	-.963*** (.091)	.240* (.110)	-.801*** (.093)



**Table 6** (continued)

Interaction (Ref: <i>struggles with motivation*no disability</i> )	Q1. How likely do you think it is that this student will complete their studies?	Q2. How likely do you think it is that this student will get a job related to your education?	Q3. How likely do you think it is that you could make arrange- ments for this student during their studies?	Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?
Struggles with motivation*depression	- 1.067*** (.097)	- 1.056*** (.090)	- .411*** (.109)	- .846*** (.091)
Constant	5.954*** (.075)	6.639*** (.071)	6.126*** (.085)	6.838*** (.073)
Variance components				
Residual	4.094*** (.049)	3.499*** (.041)	5.116*** (.060)	3.599*** (.042)
Intercept	1.829*** (.074)	2.170*** (.082)	2.754*** (.107)	2.308*** (.087)
Pseudo R <sup>2</sup> marginal	.154	.118	.048	.107
Pseudo R <sup>2</sup> conditional	.415	.455	.381	.456

Standard deviations are indicated in parentheses

\*\*\*Correlation is significant at the .001 level (2-tailed)

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

**Table 7** Interaction effects between disability and age

Interaction (Ref: 37 (+/- 1) years*no disability)	Q1. How likely do you think it is that this student will complete their studies?	Q2. How likely do you think it is that this student will get a job related to your education?	Q3. How likely do you think it is that you could make arrangements for this student during their studies?	Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?
20 (+/- 1) years*hard of hearing	-.906*** (.184)	-.770*** (.164)	-.139 (.194)	-.672*** (.166)
20 (+/- 1) years*visual impairment	-1.123*** (.176)	-1.428*** (.157)	-.667*** (.185)	-1.114*** (.158)
20 (+/- 1) years*wheelchair user	-.737*** (.166)	-1.068*** (.148)	-.091 (.174)	-.663*** (.150)
20 (+/- 1) years*autism	-2.538*** (.178)	-2.689*** (.159)	-1.763*** (.187)	-2.524*** (.160)
20 (+/- 1) years*ADHD	-1.208*** (.171)	-.988*** (.152)	-.157 (.180)	-.874*** (.154)
20 (+/- 1) years*dyslexia	-.705*** (.166)	-.415* (.148)	.145 (.174)	-.255 (.149)
20 (+/- 1) years*generalized anxiety	-1.451*** (.172)	-1.380*** (.153)	-.456* (.180)	-1.419*** (.155)
20 (+/- 1) years*depression	-2.073*** (.171)	-1.436*** (.152)	-1.018*** (.180)	-1.342*** (.154)
20 (+/- 1) years*no disability	-.287 (.175)	.153 (.156)	-.028 (.184)	-.192 (.158)
27 (+/- 1) years*hard of hearing	-.455*** (.113)	-.660** (.101)	.084 (.119)	-.393*** (.102)
27 (+/- 1) years*visual impairment	-1.199*** (.113)	-1.664*** (.101)	-.731*** (.119)	-1.440*** (.102)
27 (+/- 1) years*wheelchair user	-.697*** (.113)	-1.152*** (.101)	.023 (.119)	-.612*** (.102)
27 (+/- 1) years*autism	-1.832*** (.114)	-2.390*** (.102)	-1.223*** (.120)	-2.185*** (.103)
27 (+/- 1) years*ADHD	-.953*** (.112)	-.844*** (.100)	-.235* (.118)	-.834*** (.101)
27 (+/- 1) years*dyslexia	-.548*** (.114)	-.452*** (.102)	.032 (.120)	-.406*** (.103)
27 (+/- 1) years*generalized anxiety	-1.247*** (.115)	-1.362*** (.103)	-.311** (.121)	-1.394*** (.104)
27 (+/- 1) years*depression	-1.615*** (.115)	-1.332*** (.103)	-.712*** (.121)	-1.340*** (.104)
27 (+/- 1) years*no disability	.165 (.114)	.186 (.101)	.213 (.119)	.082 (.103)

**Table 7** (continued)

Interaction (Ref: 37 (+/- 1) years*no disability)	Q1. How likely do you think it is that this student will complete their studies?	Q2. How likely do you think it is that this student will get a job related to your education?	Q3. How likely do you think it is that you could make arrangements for this student during their studies?	Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?
37 (+/- 1) years*hard of hearing	-.620*** (.113)	-.830*** (.103)	-.087 (.119)	-.599*** (.102)
37 (+/- 1) years*visual impairment	-1.179*** (.115)	-1.612*** (.103)	-.637*** (.121)	-1.309*** (.104)
37 (+/- 1) years*wheelchair user	-.753*** (.114)	-1.174*** (.101)	-.115 (.120)	-.641*** (.103)
37 (+/- 1) years*autism	-1.719*** (.115)	-2.337*** (.102)	-1.247*** (.120)	-2.217*** (.103)
37 (+/- 1) years*ADHD	-1.120*** (.114)	-1.024*** (.102)	-.175 (.120)	-.950*** (.103)
37 (+/- 1) years*dyslexia	-.788*** (.115)	-.663*** (.102)	-.134 (.120)	-.570*** (.103)
37 (+/- 1) years*generalized anxiety	-1.401*** (.114)	-1.465*** (.101)	-.515*** (.119)	-1.500*** (.102)
37 (+/- 1) years*depression	-1.787*** (.114)	-1.445*** (.102)	-.999*** (.120)	-1.466*** (.103)
Constant	7.307*** (.086)	7.466*** (.078)	6.990*** (.092)	7.842*** (.080)
Variance components				
Residual	4.843*** (.057)	3.805*** (.044)	5.297*** (.062)	3.891*** (.045)
Intercept	1.787*** (.075)	2.148*** (.083)	2.761*** (.108)	2.278*** (.087)
Pseudo R <sup>2</sup> marginal	.048	.071	.025	.063
Pseudo R <sup>2</sup> conditional	.305	.406	.359	.409

Standard deviations are indicated in parentheses

\*\*\*Correlation is significant at the .001 level (2-tailed)

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

**Table 8** Interaction effects between disability and ethnicity

Interaction (Ref: no disability*non-Norwegian)	Q1. How likely do you think it is that this student will complete their studies?	Q2. How likely do you think it is that this student will get a job related to your education?	Q3. How likely do you think it is that you could make arrangements for this student during their studies?	Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?
Hard of hearing *Norwegian	-.776*** (.133)	-.831*** (.118)	-.212 (.140)	-.683*** (.120)
Hard of hearing*non-Norwegian	-.934*** (.165)	-.987*** (.147)	-.268 (.173)	-.694*** (.149)
Visual impairment* Norwegian	-1.367*** (.133)	-1.666*** (.119)	-.847*** (.140)	-1.463*** (.120)
Visual impairment* non-Norwegian	-1.614*** (.170)	-1.985*** (.151)	-1.066*** (.178)	-1.721*** (.153)
Wheelchair user* Norwegian	-.933*** (.133)	-1.241*** (.118)	-.260 (.139)	-.777*** (.119)
Wheelchair user* non-Norwegian	-1.081*** (.168)	-1.376*** (.149)	-.261 (.176)	-.903*** (.151)
Autism* Norwegian	-2.136*** (.133)	-2.564*** (.119)	-1.535*** (.140)	-2.425*** (.120)
Autism* non-Norwegian	-1.951*** (.169)	-2.336*** (.150)	-1.384*** (.177)	-2.340*** (.152)
ADHD* Norwegian	-1.288*** (.133)	-1.049*** (.118)	-.420** (.139)	-1.072*** (.119)
ADHD* non-Norwegian	-1.301*** (.168)	-1.075*** (.149)	-.364* (.176)	-1.006*** (.151)
Dyslexia* Norwegian	-.855*** (.133)	-.600*** (.118)	-.208 (.140)	-.576*** (.120)
Dyslexia* non-Norwegian	-1.124*** (.170)	-.875*** (.151)	-.333 (.178)	-.831*** (.153)
Generalized anxiety* Norwegian	-1.587*** (.133)	-1.519*** (.119)	-.646*** (.140)	-1.622*** (.120)
Generalized anxiety* non-Norwegian	-1.545*** (.170)	-1.561*** (.151)	-.562*** (.178)	-1.590*** (.153)
Depression* Norwegian	-2.008*** (.133)	-1.527*** (.119)	-1.104*** (.140)	-1.610*** (.120)
Depression* non-Norwegian	-1.894*** (.168)	-1.449*** (.150)	-1.014*** (.177)	-1.393*** (.152)
No disability*Norwegian	-.245 (.133)	-.020 (.118)	-.146 (.140)	-.195 (.120)
Constant	7.543*** (.122)	7.582*** (.110)	7.199*** (.130)	8.012*** (.112)
Variance components				
Residual	4.856*** (.057)	3.807*** (.044)	5.305*** (.062)	3.894*** (.045)
Intercept	1.782*** (.075)	2.147*** (.082)	2.763*** (.108)	2.275*** (.087)
Pseudo R <sup>2</sup> marginal	.047	.070	.024	.063

**Table 8** (continued)

Interaction (Ref: no disability*non-Norwegian)	Q1. How likely do you think it is that this student will complete their studies?	Q2. How likely do you think it is that this student will get a job related to your education?	Q3. How likely do you think it is that you could make arrangements for this student during their studies?	Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?
Pseudo $R^2$ conditional	.303	.406	.358	.408

Standard deviations are indicated in parentheses

\*\*\*Correlation is significant at the .001 level (2-tailed)

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

**Table 9** Interaction effects between disability and gender

Interaction (Ref: no disability*female)	Q1. How likely do you think it is that this student will complete their studies?	Q2. How likely do you think it is that this student will get a job related to your education?	Q3. How likely do you think it is that you could make arrangements for this student during their studies?	Q4. How suitable do you think this student would be in performing work tasks in relevant jobs?
Hard of hearing*male	-.646*** (.105)	-.884*** (.094)	-.116 (.110)	-.590*** (.095)
Visual impairment*male	-1.300*** (.108)	-1.724*** (.096)	-.772*** (.114)	-1.383*** (.097)
Wheelchair user*male	-.829*** (.106)	-1.295*** (.094)	-.165 (.111)	-.696*** (.095)
Autism*male	-1.946*** (.108)	-2.537*** (.096)	-1.325*** (.113)	-2.280*** (.097)
ADHD*male	-1.239*** (.107)	-1.150*** (.095)	-.419*** (.112)	-1.004*** (.096)
Dyslexia*male	-.785*** (.107)	-.721*** (.095)	-.177 (.113)	-.541*** (.097)
Generalized anxiety*male	-1.529*** (.108)	-1.607*** (.096)	-.534*** (.113)	-1.501*** (.097)
Depression*male	-1.872*** (.107)	-1.620*** (.096)	-1.007*** (.113)	-1.500*** (.097)
No disability*male	-.040 (.107)	.005 (.096)	-.010 (.113)	-.030 (.097)
Hard of hearing*female	-.620*** (.108)	-.803*** (.096)	-.107 (.114)	-.491*** (.098)
Visual impairment*female	-1.184*** (.108)	-1.699*** (.096)	-.788*** (.113)	-1.365*** (.097)
Wheelchair user*female	-.745*** (.107)	-1.202*** (.096)	-.134 (.113)	-.625*** (.097)
Autism*female	-1.901*** (.107)	-2.462*** (.096)	-1.461*** (.113)	-2.256*** (.097)
ADHD*female	-.995*** (.106)	-.926*** (.094)	-.178 (.111)	-.835*** (.096)
Dyslexia*female	-.680*** (.108)	-.549*** (.096)	-.065 (.113)	-.429*** (.097)
Generalized anxiety*female	-1.280*** (.107)	-1.413*** (.095)	-.502*** (.113)	-1.450*** (.097)
Depression*female	-1.746*** (.108)	-1.364*** (.096)	-.942*** (.113)	-1.349*** (.097)
Constant	7.368*** (.081)	7.564*** (.075)	7.088*** (.087)	7.872*** (.076)
Variance components				
Residual	4.856*** (.057)	3.806*** (.044)	5.305*** (.062)	3.896*** (.045)
Intercept	1.784*** (.075)	2.148*** (.083)	2.762*** (.108)	2.275*** (.087)
Pseudo R <sup>2</sup> marginal	.047	.070	.024	.063
Pseudo R <sup>2</sup> conditional	.303	.406	.358	.408

Standard deviations are indicated in parentheses

\*\*\*Correlation is significant at the .001 level (2-tailed)

\*\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

**Table 10** Robustness check by linear/binary logistic modeling for question 1 (how likely do you think it is that this student will complete their studies?)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
<b>Level-1: vignette variables</b>				
<i>Gender (reference: female)</i>				
Male	-.73* (.031)	-.080* (.034)	-.073*** (.031)	-.80* (.040)
<i>Ethnicity (reference: Norwegian)</i>				
Non-Norwegian	-.026 (.039)	.007 (.049)	-.027 (.039)	.006 (.050)
<i>Age (reference: 20 +/- 1 years)</i>				
27 (+/- 1) years	-.090 (.057)	-.141 (.072)	-.090 (.057)	-.141 (.073)
37 (+/- 1) years	-.196*** (.057)	-.274*** (.072)	-.197** (.057)	-.273*** (.073)
<i>Study year (reference: final year of study)</i>				
Applying for the course	-.608*** (.043)	-.602*** (.055)	-.608*** (.043)	-.604*** (.056)
Second year of study	-.389*** (.039)	-.426*** (.050)	-.389*** (.039)	-.429*** (.05)
<i>Motivation (reference: is very motivated)</i>				
Struggles with motivation	-.1.666*** (.031)	-.1.679*** (.041)	-.1.665*** (.031)	-.1.685*** (.041)
<i>Work experience (reference: has experience from relevant, paid work)</i>				
Has no relevant work experience	-.503*** (.042)	-.441*** (.053)	-.499*** (.042)	-.438*** (.053)
Has experience from relevant, unpaid voluntary work	-.111** (.042)	-.029 (.053)	-.110** (.042)	-.028 (.053)
Has completed work placement as part of education	.026 (.051)	.047 (.065)	.029 (.051)	-.051 (.065)
<i>Disability type (reference: has no disability)</i>				
Hard of hearing				
Visual impairment	.002 (.068)	.104 (.088)	.008 (.068)	.112 (.088)
Wheelchair user	-.628*** (.068)	-.398*** (.088)	-.624*** (.068)	-.394*** (.088)
Autism				
ADHD	-.131 (.068)	.077 (.88)	-.129 (.068)	.082 (.088)
Dyslexia	-.1.279*** (.068)	-.1.043*** (.088)	-.1.277*** (.068)	-.1.044*** (.088)
Generalized anxiety	-.427*** (.067)	-.356*** (.086)	-.426*** (.067)	-.353*** (.087)
Depression	-.042 (.068)	.020 (.088)	-.037 (.068)	.029 (.088)
<i>Disclosure (reference: wishes to disclose disability)</i>				
	-.761*** (.068)	-.741*** (.087)	-.756*** (.068)	-.736*** (.087)
	-.1.130*** (.068)	-.1.074*** (.088)	-.1.127*** (.068)	-.1.071*** (.088)

Table 10 (continued)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
Does not wish to disclose disability	- 1.283*** (.033)	- 1.247*** (.088)	- 1.283*** (.033)	- 1.252*** (.043)
Level-2: respondent variables				
<i>Age (reference: 36–55 years)</i>				
21–35 years	-	-	.416** (.133)	.376** (.140)
56+ years	-	-	-.072 (.081)	.009 (.085)
Did not answer	-	-	.016 (.103)	.034 (.107)
<i>Gender (reference: male)</i>				
Female	-	-	.159* (.072)	.106 (.075)
Other	-	-	1.237*** (.464)	1.51** (.522)
Did not answer	-	-	-.708* (.289)	-.632* (.303)
<i>Job position (reference: management/administration/HR)</i>				
Professor/docent	-	-	-.261 (.167)	-.241 (.176)
Associate professor/associate lecturer	-	-	-.208 (.164)	-.185 (.173)
Lecturer/teacher (university or higher education)	-	-	-.277 (.170)	-.169 (.180)
Study consultant/advisor/supervisor	-	-	-.277 (.210)	-.350 (.221)
PhD/Postdoc/researcher	-	-	-.354 (.210)	-.375 (.221)
Did not answer	-	-	.883 (.629)	.826 (.678)
<i>Discipline (reference: student services)</i>				
Art and humanities	-	-	-.205 (.372)	.064 (.393)
Educational and social sciences	-	-	-.263 (.367)	-.032 (.389)
Health	-	-	-.649 (.375)	-.234 (.397)
STEM	-	-	.052 (.375)	.200 (.397)
Life sciences	-	-	-.344 (.374)	-.079 (.395)
Medicine	-	-	-.874* (.383)	-.335 (.405)
Business and economy	-	-	.005 (.388)	.133 (.410)
Did not answer	-	-	.577 (.605)	.729 (.635)



Table 10 (continued)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
Number of years working at institution ( <i>Ref. more than 10</i> )				
0–2 years	-	-	.151 (.113)	.132 (.119)
3–10 years	-	-	.127 (.079)	.144 (.082)
Did not answer	-	-	- 1.112 (1.063)	-.932
Constant	8.878*** (.088)	2.604*** (.11)	9.224*** (.382)	2.676*** (.408)
Variance components				
Residual	3.663*** (.043)	1.000	3.664*** (.043)	1.000
Intercept	1.849*** (.073)	1.640***	1.739*** (.069)	1.61*** (.084)
- 2 log likelihood	72,752.883371	78,496.274	72,655.853113	78,655.565

Standard deviations are indicated in parentheses

\*\*\*  $p < .001$  (two-tailed)

\*\*  $p < .01$  (two-tailed)

\*  $p < .05$  (two-tailed)

**Table 11** Robustness check by linear/binary logistic modeling for question 2 (how likely do you think it is that this student will get a job related to your education?)

	M1 Linear	M1 binary logistic	M2 linear	M2 binary logistic
Level-1: vignette variables				
<i>Gender (reference: female)</i>				
Male	-.98*** (.030)	-.116** (.040)	-.097*** (.030)	-.113** (.040)
<i>Ethnicity (reference: Norwegian)</i>				
Non-Norwegian	-.069 (.037)	-.047 (.050)	-.070 (.037)	-.048 (.050)
<i>Age (reference: 20 +/- 1 years)</i>				
27 (+/- 1) years	-.167** (.054)	-.219** (.073)	-.165** (.054)	-.217** (.074)
37 (+/- 1) years	-.267*** (.054)	-.333*** (.074)	-.266** (.054)	-.330*** (.074)
<i>Study year (reference: final year of study)</i>				
Applying for the course	-.269*** (.041)	-.252*** (.056)	-.268*** (.041)	-.252*** (.056)
Second year of study	-.150*** (.037)	-.200*** (.050)	-.151*** (.037)	-.203*** (.050)
<i>Motivation (reference: is very motivated)</i>				
Struggles with motivation	-.1.055*** (.030)	-.1.135*** (.041)	-.1.054*** (.030)	-.1.14*** (.041)
<i>Work experience (reference: has experience from relevant, paid work)</i>				
Has no relevant work experience	-.502*** (.039)	-.577*** (.053)	-.499*** (.039)	-.575*** (.053)
Has experience from relevant, unpaid voluntary work	-.140*** (.040)	-.092 (.053)	-.139*** (.040)	-.091 (.054)
Has completed work placement as part of education	.009 (.048)	.038 (.654)	.012 (.048)	-.041 (.066)
<i>Disability type (reference: has no disability)</i>				
Hard of hearing	-.405*** (.039)	-.398*** (.090)	-.398*** (.064)	-.390*** (.090)
Visual impairment	-.1.294*** (.065)	-.1.240*** (.090)	-.1.290*** (.065)	-.1.239*** (.090)
Wheelchair user	-.801*** (.064)	-.642*** (.090)	-.797*** (.064)	-.638*** (.090)
Autism	-.2.054*** (.065)	-.2.06*** (.093)	-.2.051*** (.065)	-.2.066*** (.093)
ADHD	-.574*** (.064)	-.605*** (.089)	-.572*** (.065)	-.604*** (.089)
Dyslexia	-.168* (.065)	-.157 (.091)	-.164* (.064)	-.151 (.091)
Generalized anxiety	-.1.076*** (.065)	-.1.202*** (.090)	-.1.070*** (.065)	-.1.197*** (.090)
Depression	-.1.033*** (.065)	-.1.093*** (.090)	-.1.029*** (.065)	-.1.090*** (.090)

Table 11 (continued)

	M1 Linear	M1 binary logistic	M2 linear	M2 binary logistic
<i>Disclosure (reference: wishes to disclose disability)</i>				
Does not wish to disclose disability	-.904*** (.031)	-.914*** (.042)	-.905*** (.031)	-.918*** (.042)
Level-2: respondent variables				
<i>Age (reference: 36–55 years)</i>				
21–35 years	-	-	.526*** (.140)	.452** (.152)
56+ years	-	-	-.267** (.086)	-.239** (.092)
Did not answer	-	-	-.043 (.109)	-.056 (.117)
<i>Gender (reference: male)</i>				
Female	-	-	.226** (.076)	.154 (.082)
Other	-	-	.647 (.491)	.469 (.533)
Did not answer	-	-	-.067 (.305)	-.089 (.328)
<i>Job position (reference: management/administration/HR)</i>				
Professor/docent	-	-	-.051 (.177)	-.013 (.192)
Associate professor/associate lecturer	-	-	-.065 (.172)	-.119 (.186)
Lecturer/teacher (university or higher education)	-	-	-.188 (.180)	-.125 (.195)
Study consultant/advisor/supervisor	-	-	-.028 (.222)	-.120 (.240)
PhD/Postdoc/researcher	-	-	-.416 (.221)	-.337 (.241)
Did not answer	-	-	.506 (.657)	.112 (.713)
<i>Discipline (reference: student services)</i>				
Art and humanities	-	-	-.441 (.391)	-.320 (.422)
Educational and social sciences	-	-	-.206 (.386)	-.042 (.417)
Health	-	-	-.224 (.395)	.032 (.426)
STEM	-	-	.279 (.395)	.350 (.427)
Life sciences	-	-	-.334 (.393)	-.165 (.425)
Medicine	-	-	-.349 (.403)	-.146 (.435)
Business and economy	-	-	-.103 (.408)	-.138 (.441)
Did not answer	-	-	.846 (.637)	-.985 (.692)

Table 11 (continued)

	M1 Linear	M1 binary logistic	M2 linear	M2 binary logistic
Number of years working at institution ( <i>Ref: more than 10</i> )				
0–2 years	-	-	.115 (.119)	.185 (.128)
3–10 years	-	-	.050 (.083)	.108 (.089)
Did not answer			-.806 (.464)	-1.096 (1.22)
Constant	8.682*** (.085)	2.598*** (.116)	8.812*** (.400)	2.558*** (.437)
Variance components				
Residual	3.282*** (.038)	1.000	3.282*** (.038)	1.000
Intercept	2.164*** (.081)	2.078*** (.100)	2.051*** (.077)	2.041*** (.100)
- 2 log likelihood	71,367.555138	78,829.572	71,272.690681	78,990.575

Standard deviations are indicated in parentheses

\*\*\*  $p < .001$  (two-tailed)

\*\*  $p < .01$  (two-tailed)

\*  $p < .05$  (two-tailed)

**Table 12** Robustness check by linear/binary logistic modeling for question 3 (how likely do you think it is that you could make arrangements for this student during their studies?)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
<b>Level-1: vignette variables</b>				
<i>Gender (reference: female)</i>				
Male	-.015 (.035)	-.009 (.040)	-.017 (.035)	-.011 (.405)
<i>Ethnicity (reference: Norwegian)</i>				
Non-Norwegian	.012 (.043)	.046 (.050)	.012 (.043)	.046 (.051)
<i>Age (reference: 20 +/- 1 years)</i>				
27 (+/- 1) years	.016 (.259)	-.047 (.074)	.018 (.064)	-.047 (.074)
37 (+/- 1) years	-.112 (.064)	-.206** (.074)	-.111 (.064)	-.207** (.074)
<i>Study year (reference: final year of study)</i>				
Applying for the course	-.168*** (.048)	-.204*** (.056)	-.166*** (.048)	-.203*** (.056)
Second year of study	-.162*** (.043)	-.226*** (.051)	-.161*** (.043)	-.226*** (.051)
<i>Motivation (reference: is very motivated)</i>				
Struggles with motivation	-.744*** (.035)	-.741*** (.041)	-.744*** (.035)	-.745*** (.041)
<i>Work experience (reference: has experience from relevant, paid work)</i>				
Has no relevant work experience	-.197*** (.046)	-.166** (.054)	-.194*** (.046)	-.164** (.054)
Has experience from relevant, unpaid voluntary work	-.055 (.046)	-.018 (.054)	-.054 (.046)	-.018 (.054)
Has completed work placement as part of education	.101 (.057)	-.139 (.066)	.103 (.057)	-.143* (.066)
<i>Disability type (reference: has no disability)</i>				
Hard of hearing	.722*** (.075)	.872*** (.222)	.725*** (.075)	.880*** (.089)
Visual impairment	.026 (.076)	.222* (.087)	.028 (.076)	.225* (.087)
Wheelchair user	.695*** (.075)	.952*** (.090)	.695*** (.075)	.955*** (.090)
Autism	-.559*** (.076)	-.393*** (.087)	-.557*** (.076)	-.392*** (.087)
ADHD	.557*** (.075)	.696*** (.089)	.558*** (.076)	.703*** (.086)
Dyslexia	.756*** (.076)	.847*** (.089)	.758*** (.076)	.855*** (.089)
Generalized anxiety	.317*** (.076)	.484*** (.087)	.320*** (.076)	.490*** (.088)
Depression	-.125 (.076)	.059 (.087)	-.124 (.076)	.060 (.087)

Table 12 (continued)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
<i>Disclosure (reference: wishes to disclose disability)</i>				
Does not wish to disclose disability	-1.686*** (.037)	1.568*** (.044)	-1.686*** (.037)	-1.575*** (.044)
<i>Level-2: respondent variables</i>				
<i>Age (reference: 36–55 years)</i>				
21–35 years	-	-	.060 (.162)	-.032 (.155)
56+ years	-	-	-.105 (.100)	-.028 (.095)
Did not answer	-	-	-.117 (.126)	-.041 (.12)
<i>Gender (reference: male)</i>				
Female	-	-	.089 (.088)	.122 (.085)
Other	-	-	.513 (.567)	.601 (.558)
Did not answer	-	-	-.519 (.353)	-.728* (.333)
<i>Job position (reference: management/administration/HR)</i>				
Professor/docent	-	-	-.137 (.204)	-.135 (.198)
Associate professor/associate lecturer	-	-	-.167 (.199)	-.201 (.193)
Lecturer/teacher (university or higher education)	-	-	-.227 (.208)	-.203 (.201)
Study consultant/advisor/supervisor	-	-	-.325 (.256)	-.416 (.246)
PhD/Postdoc/researcher	-	-	-.412 (.256)	-.213 (.248)
Did not answer	-	-	-.180 (.236)	.424 (.756)
<i>Discipline (reference: student services)</i>				
Art and humanities	-	-	.083 (.452)	-.018 (.442)
Educational and social sciences	-	-	-.077 (.447)	-.164 (.437)
Health	-	-	-.726 (.457)	-.663 (.446)
STEM	-	-	.196 (.457)	.023 (.446)
Life sciences	-	-	-.117 (.455)	-.142 (.444)
Medicine	-	-	-.859 (.466)	-.884 (.454)

Table 12 (continued)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
Business and economy				
Did not answer	-	-	-.024 (.472)	-.223 (.462)
Number of years working at institution ( <i>Ref: more than 10</i> )				
0–2 years	-	-	.992 (.736)	.987 (.746)
3–10 years	-	-	.163 (.138)	.107 (.132)
Did not answer	-	-	.068 (.096)	.089 (.092)
Constant	7.681*** (.100)	1.486*** (.113)	7.954*** (.463)	1.219 (.156)
Variance components				
Residual	4.498*** (.053)	1.000	4.499*** (.053)	1.000
Intercept	2.860*** (.107)	2.225*** (.107)	2.726*** (.103)	2.181*** (.106)
– 2 log likelihood	76,591.928284	79,146.412	76,513.661720	79,308.428

Standard deviations are indicated in parentheses

\*\*\*  $p < .001$  (two-tailed)

\*\*  $p < .01$  (two-tailed)

\*  $p < .05$  (two-tailed)

**Table 13** Robustness check by linear/binary logistic modelling for question 4 (how suitable do you think this student would be in performing work tasks in relevant jobs?)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
<b>Level-1: vignette variables</b>				
<i>Gender (reference: female)</i>				
Male	-.056 (.030)	-.040 (.040)	-.056 (.030)	-.039 (.040)
<i>Ethnicity (reference: Norwegian)</i>				
Non-Norwegian	-.005 (.038)	-.020 (.050)	-.005 (.037)	-.021 (.050)
<i>Age (reference: 20 +/- 1 years)</i>				
27 (+/- 1) years	-.137* (.055)	-.068 (.074)	-.135* (.055)	-.065 (.074)
37 (+/- 1) years	-.221*** (.055)	-.250*** (.074)	-.221*** (.055)	-.250*** (.074)
<i>Study year (reference: final year of study)</i>				
Applying for the course	-.234*** (.042)	-.164** (.056)	-.234*** (.042)	-.163** (.056)
Second year of study	-.120** (.038)	-.127* (.051)	-.119** (.038)	-.127* (.051)
<i>Motivation (reference: is very motivated)</i>				
Struggles with motivation	-1.000*** (.030)	-1.172*** (.041)	-.999*** (.030)	-1.178*** (.0412)
<i>Work experience (reference: has experience from relevant, paid work)</i>				
Has no relevant work experience	-.389*** (.040)	-.438*** (.054)	-.386*** (.040)	-.435*** (.054)
Has experience from relevant, unpaid voluntary work	-.080* (.040)	-.110* (.054)	-.079* (.040)	-.108* (.054)
Has completed work placement as part of education	.071 (.049)	.066 (.066)	.074 (.049)	.069 (.066)
<i>Disability type (reference: has no disability)</i>				
<i>Hard of hearing</i>				
Visual impairment	-.074 (.065)	-.085 (.087)	-.068 (.065)	-.078 (.087)
Wheelchair user	-.923*** (.066)	-.814*** (.087)	-.920*** (.066)	-.814*** (.087)
<i>Autism</i>				
ADHD	-.181** (.065)	.078 (.088)	-.177** (.065)	-.085 (.088)
Dyslexia	-.1791*** (.066)	-1.703*** (.091)	-1.787*** (.066)	-1.706*** (.091)
Generalized anxiety	-.423*** (.065)	-.519*** (.087)	-.421*** (.065)	-.519*** (.0867)
Depression	-.016 (.066)	-.019 (.088)	-.021*** (.066)	-.011 (.088)
	-1.006*** (.066)	-1.263*** (.089)	-.999*** (.066)	-1.260*** (.088)
	-.932*** (.066)	-1.043*** (.088)	-.929*** (.066)	-1.040*** (.088)



Table 13 (continued)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
<i>Disclosure (reference: wishes to disclose disability)</i>				
Does not wish to disclose disability	-.935*** (.032)	-.960*** (.043)	-.935*** (.032)	-.964*** (.043)
<i>Level-2: respondent variables</i>				
<i>Age (reference: 36–55 years)</i>				
21–35 years	-	-	.421** (.144)	.301 (.157)
56+ years	-	-	-.133 (.088)	-.081 (.096)
Did not answer	-	-	.064 (.112)	.015 (.12)
<i>Gender (reference: male)</i>				
Female	-	-	.292*** (.079)	.334*** (.085)
Other	-	-	2.014*** (.504)	2.760*** (.640)
Did not answer	-	-	.112 (.314)	.263 (.340)
<i>Job position (reference: management/administration/HR)</i>				
Professor/docent	-	-	-.357* (.181)	-.334 (.120)
Associate professor/associate lecturer	-	-	-.274 (.177)	-.198 (.195)
Lecturer/teacher (university or higher education)	-	-	-.454* (.185)	-.230 (.203)
Study consultant/advisor/supervisor	-	-	-.245 (.228)	-.330 (.250)
PhD/Postdoc/researcher	-	-	-.200 (.227)	-.184 (.250)
Did not answer	-	-	.474 (.675)	.330 (.732)
<i>Discipline (reference: student services)</i>				
Art and humanities	-	-	-.163 (.402)	.225 (.443)
Educational and social sciences	-	-	-.245 (.397)	.179 (.439)
Health	-	-	-.482 (.406)	.128 (.448)
STEM	-	-	.317 (.406)	.647 (.480)
Life sciences	-	-	-.098 (.404)	.308 (.446)
Medicine	-	-	-.547 (.414)	.009 (.457)
Business and economy	-	-	.076 (.419)	.335 (.462)

Table 13 (continued)

	M1 linear	M1 binary logistic	M2 linear	M2 binary logistic
Did not answer	-	-	.668 (.654)	.772 (.717)
Number of years working at institution ( <i>Ref: more than 10</i> )				
0–2 years	-	-	.141 (.122)	.132 (.139)
3–10 years	-	-	-.026 (.085)	-.017 (.093)
Did not answer	-	-	-.795 (1.130)	-.717 (1.25)
Constant	8.797*** (.087)	1.921*** (.114)	9.082*** (.411)	1.689*** (.459)
Variance components				
Residual	3.401*** (.040)	1.000	3.402*** (.040)	1.000
Intercept	2.314*** (.086)	2.288*** (.109)	2.177*** (.082)	2.244*** (.104)
- 2 log likelihood	72020.438798	79083.284	71914.301540	72936.980

Standard deviations are indicated in parentheses

\*\*\* $p < .001$  (two-tailed)

\*\* $p < .01$  (two-tailed)

\* $p < .05$  (two-tailed)

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## Declarations

**Competing interests** The authors have no competing interests to declare that are relevant to the content of this article.

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## Authors and Affiliations

**Gemma Goodall<sup>1</sup>**  · **Odd Morten Mjøyen<sup>1</sup>** · **Aud Elisabeth Witsø<sup>1</sup>** · **Sissel Horghagen<sup>2</sup>** · **Stefan Hardonk<sup>3</sup>** · **Lisbeth Kvam<sup>1</sup>**

✉ Gemma Goodall  
gemma.goodall@ntnu.no

<sup>1</sup> Department of Mental Health, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

<sup>2</sup> Department of Neuromedicine and Movement Science, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

<sup>3</sup> Faculty of Sociology, Anthropology and Folkloristics, University of Iceland, Reykjavík, Iceland