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Unequal? A Field Experiment of Recruitment Practises Towards Wheelchair Users in Denmark

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RESEARCH



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ABSTRACT

To what extent are employers willing to invite applicants in wheelchairs to job interviews when the applicant is comparable to applicants not in wheelchairs and the job can be conducted by a person in a wheelchair? We have conducted the first Danish field experiment with 1,200 fictive applications for real job adverts in four different job functions to measure the independent effect of being a wheelchair user. We find a significant difference in callback rates. Wheelchair users need to send more than twice as many applications to be successful compared to applicants without disabilities. Seventeen percent of the applicants without a disability were invited to a job interview compared to 7.7 percent of the applicants in wheelchairs. Our analysis indicates that the difference in callback rates is related to the negative signal that 'disability' transmits to employers and is a result of discrimination in the labour market.

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Persons with disabilities have significantly lower employment rates, higher inactivity rates and higher unemployment rates than persons without disabilities (Grammenos 2021). The recruitment practises of employers are a major barrier for persons with disabilities (Ameri et al. 2018; Baert 2018; Bellemare et al. 2018; Stone & Wright 2013). Employers make important decisions on how to post vacancies, whom to invite for interviews and which candidates to recruit (Bills, Di Stasio & Gërxfhani 2017). Each of these decisions could either favour or disfavour persons with disabilities. But we know surprisingly little about the inclination of employers to invite persons with disabilities to a job interview (Bredgaard & Salado-Rasmussen 2020; Bruyère 2016; Karpur, VanLooy & Bruyère 2014). In this article, we examine the recruitment practises of Danish employers through a field experiment to detect the difference in the callback rates of applicants with and without a physical disability.

Field experiments eliminate social desirability bias and offer more credible estimates of employers' screening decisions than other methods (Baert 2018; Eriksson & Rooth 2014; Rich & Riach 2004). The method is to submit fictive applications for real job adverts from candidates with and without disabilities who have otherwise similar productivity characteristics (e.g., age, gender, education, work experience). Previous field experiments on disability and recruitment find that applicants with disabilities are significantly less likely to be invited for job interviews compared to persons without disabilities (Ameri et al. 2018; Baert 2018; Bellemare et al. 2018; Bjørnshagen & Ugreninov 2021; Hipes et al. 2016; Stone & Wright 2013).

Field experiments in Canada, Norway, Holland, France and the United States find that applicants with physical and mental disabilities receive fewer invitations to job interviews than persons without a disability (Ameri et al. 2018; Bellemare et al. 2018; Bjørnshagen & Ugreninov 2021; Deuchert & Kauer 2017; Hipes et al. 2016; Stone & Wright 2013). In Norway, Bjørnshagen and Ugreninov (2021) find a difference of 48 percent in invitations to job interviews between wheelchair users and applicants not disclosing a disability. In Canada, Bellemare et al. (2018) find that applicants without a disability receive twice as many invitations to job interviews than wheelchair users, despite similar credentials.

This is the first field experiment on disability and recruitment practises in Denmark. The Danish labour market is an interesting test case of recruitment practises towards applicants with disabilities. The employment gap between persons with and without disabilities is considerable. In 2021, the employment gap was 25 percentage points; 86 percent of adult persons without (self-reported) disabilities or health problems were in employment compared to 61 percent of people with disabilities or health problems. Among persons with major (self-reported) disabilities or health problems, the employment rate was only 39 percent (Larsen, Jakobsen & Mikkelsen 2022). One possible explanation for the low employment rate for persons with disabilities in Denmark is liberal employment protection regulation and limited special job protection for employees with disabilities. This means that Danish employers have a high level of discretion in recruitment and dismissal decisions, which could negatively affect the employment opportunities of jobseekers with disabilities. Direct discrimination is unlawful but difficult to detect and prove in recruitment processes. It is, therefore, interesting to study the actual recruitment decisions of employers when they are confronted with disabled jobseekers.

Previous studies of employers' recruitment preferences indicate that employers are reluctant to hire applicants in wheelchairs and claim that they lack job functions for employees with physical disabilities (Shamshiri-Petersen & Krogh 2020). Jobseekers in wheelchairs are a relevant test case for the recruitment practises of Danish employers. We know that among the quarter of the Danish population that reports having a disability or health problem, around 40 percent report physical disabilities, and half of them report major disabilities. This study includes wheelchair users, which can be considered a major physical disability. Physical disabilities, like being a wheelchair user, cannot be hidden in a recruitment process, and the visibility of a disability is an important barrier in the recruitment process (Gouvier et al. 1991).

In the following, we present the method and findings of the field experiment and discuss the implications of our study.

METHOD

We use the correspondence field experiment to investigate employers' recruitment practises. In this design, résumés and CVs from persons with and without disabilities are sent by e-mail or other digitalised application system, and the employer and applicant do not meet each other in person. If the study is well designed, then differences in callback rates are in fact caused by the varying factor: in our case, whether or not the applicant uses a wheelchair (Hipes et al. 2016). We apply the matched within-subject design (Larsen 2020) in which each employer receives two résumés and CVs: one disclosing being a wheelchair user and one not mentioning any disability. The applicants using a wheelchair act as the treatment group, and the applicants without a disability act as the control group. We then register the employer's response to each applicant, and the statistics show the differences in the callback rates between applicants with and without disabilities in comparable contexts. The matched within-subject design involves half the number of job adverts as the unmatched between-subject design in which the researcher sent only one application to each employer (Larsen 2020). In the unmatched between-subject design, half of the employers receive an application from a wheelchair user, and the other half receive an application from an applicant without a disability. Submitting two applications to the same employer increases the probability of employers revealing the experiment, but the design also ensures that each employer is exposed to applicants with and without a disability, creating a comparable context. Only positions advertised online are included in this study.

We included four applicants with similar résumés and CVs in the field experiment: a male and a female wheelchair user and a male and a female without a disability. The applicants were similar in gender, age, ethnicity, education, work experience, volunteer work and personal interests. The four most popular first and last names in Denmark were randomly matched and given to the applicants to signal ethnicity and to hide within the large pool of other applicants with the same name. As the fictitious applicants do not have a digital footprint, employers might be suspicious if they cannot find information about the applicants online, but an online search of a typical Danish name involves many hits among which the fictitious applicants can hide.

The disability disclosed in the résumé and CV was a congenital spinal cord injury that caused the applicant to be a wheelchair user. In the résumé, the disability is disclosed together with other personal characteristics and states, "Due to a congenital spinal cord injury, I am a wheelchair user. It is important for me to make clear that it has no impact on my ability to work. As a wheelchair user, I have become creative and solution-orientated." In the CV, the disability is revealed in a description of volunteer work: "As a wheelchair user it is important for me to help others in the same situation as myself. I therefore volunteer in the Danish Association of Youth with Disability." By mentioning the disability in both the résumé and CV, we make sure the employer discovers the disability. Using the spinal cord injury as a disability enables a comparison with field experiments in Canada and Norway (Bellemare et al. 2018; Bjørnshagen & Ugreninov 2021).

To make the applications and CVs realistic, we tested the formulations on job consultants from three different labour unions. To avoid revealing the experiment to employers, the applications differed in wording and design, including two different types of applications; the second application was sent with a two-day delay. In a field experiment, it is important to avoid lurking factors. Lurking factors are factors other than disability that might affect the callback rate. Randomisation minimises the number of lurking factors by removing the systematic effect. Conducting experiments in society (outside laboratories) includes various lurking factors, such as accessibility, geography or workplace climate. To minimise lurking factors, we randomised three factors: gender, time of application submission and type of application (Hinkelmann 2015; Lawson 2014).

This type of field experiment without informed consent of participants (employers) involves ethical considerations (Podschuweit 2021; Rich & Riach 2004). Upon completion of the experiment, all employers who invited one or both applicants to a job interview received an information letter explaining the aim and scientific value of the experiment. The general response from employers was mainly positive, and no employers asked to opt out of the study. Moreover, the field experiment did not inflict any harm on employers beyond the time spent

reading a résumé and CV. We use the same research practises as similar international field experiments, and the project design abides by the principles and standards of the Danish Code of Conduct for Research Integrity. When we conducted the field experiment, there was no ethical committee in Denmark or Aalborg University that could approve the research design. The research project was, however, approved and financed by the Independent Research Fund Denmark, which is one of the most prestigious research funding bodies in Denmark, and the research design underwent anonymous review by external reviewers. Finally, discrimination in employment is unlawful, which makes pleas for privacy in recruitment decisions unjustified (Rich & Riach 2004).

To determine the number of necessary observations, we conducted a power analysis (Cohen 2013; Vuolo, Uggen & Lageson 2016). A power analysis calculates the necessary number of observations in an experiment and is part of error control, along with randomisation (Lawson 2014). The number of observations depends on the expected effect of included variables (Vuolo, Uggen & Lageson 2016). The power analysis demonstrated a need for 1,200 observations in our experiment. In the period from May 2020 to May 2021, we sent applications for 600 job adverts in both the public and private sectors in Denmark. We applied for positions as secretary, IT consultant, human resources consultant and accountant. These are jobs available in both the public and private sectors where a wheelchair user should be able to perform the job tasks. Further, only job adverts not including multiple workplaces were included in the experiment. With multiple workplaces, it became difficult to sort out workplaces with inaccessible entrances.

The field experiment was conducted during the COVID-19 pandemic. Due to the pandemic and the ensuing national lockdowns and reopening of the labour market, the employment rate fluctuated during the data collection period. While the fluctuations on the labour market impact the absolute callback rates for applicants with and without disabilities, we do not assume that fluctuations impact the relative differences between applicants with and without disabilities. Our results do not differ significantly from similar field experiments in Norway and Canada, indicating that the results of field experiments on disability and recruitment practises are not notably influenced by labour market fluctuations.

When studying the recruitment of persons with physical disabilities, accessibility becomes an important factor. In Denmark, half of all employers state that their workplace is (to a large or certain extent) inaccessible to wheelchair users, and they therefore find it difficult to employ a person using a wheelchair (Shamshiri-Petersen & Krogh 2020). We want to minimise the accessibility factor as much as possible in our experiment. To control for accessibility, all workplaces were visited with Google Street View before applying. We de-selected workplaces with entrances inaccessible to wheelchair users. This practice led to the exclusion of 101 job adverts. We assume that workplaces with accessible entrances can find a suitable place for a potential job interview with a wheelchair user. Visiting workplaces on Google Street View does not remove all the effects of accessibility, but it sorts out the most obvious effect. The issue of accessibility is treated further in the discussion.

DATA

Geographically, the jobs were located in the five largest municipalities of Denmark: Copenhagen, Aarhus, Odense, Aalborg, and Esbjerg. We applied for jobs within a radius of 45 minutes by car or public transport from the applicants' addresses in each city. Applicants with and without disabilities were provided with an address in each city. The address was not traceable online, and the area was not associated with either low or high social status or income. Most job adverts were in the Danish capital of Copenhagen. According to Statistic Denmark, there are nearly 80,000 workplaces located in the five largest municipals in Denmark. Half of these workplaces are in Copenhagen; 20 percent in Aarhus; 14 and 12 percent in Odense and Aalborg, respectively; and 8 percent in Esbjerg. The distribution of job adverts applied to in this study therefore seems geographically representative of the larger Danish municipalities (see Table 1 below).

	PERCENT	OBSERVATIONS
Municipalities		
Copenhagen (including Frederiksberg)	51.7	310
Aarhus	24.5	147
Odense	9.7	58
Aalborg	9.3	56
Esbjerg	4.8	29
Job functions		
Accountant	57.5	345
IT consultant	24.8	149
Secretary	9.8	59
HR consultant	7.8	47
Sector		
Private	82.8	497
Public	17.2	103
Gender		
Female	49.5	297
Male	50.5	303

Table 1 The 600 job adverts applied to, grouped by geography, sector, job function and gender, percent and observations.

Table 1 also shows the distribution of applications by job function. Most job adverts were found within accounting (57.5%) and IT consulting (24.8%), and fewer jobs were found for secretaries (9.8%) and HR consultants (7.8%).

The sectoral distribution of the applications is also shown in Table 1. Of the job adverts applied to, 82.8 percent were in the private sector and 17.2 percent in the public sector. The share of public workplaces in Denmark is only 7 percent of total workplaces, and the public sector accounts for 30 percent of total employment. Denmark is characterised by many small and medium-sized private firms; the share of private workplaces is therefore high and might explain the high number of job adverts in the private sector compared to the public sector.

Finally, 49.5 percent of the applicants were female, and 50.5 percent were male. As Excel randomly chose gender for each job advert, there is a slight difference in the number of jobs applied for by males and females. Both males and females applied for all types of jobs.

The analysis was conducted in RStudio using the `lm` function to detect differences in callback rates. The analysis includes a linear regression which tests the mean differences in callbacks between the two groups (Agresti & Finlay 2014; Lawson 2014). The secondary factors (gender, sector and job function) were included in interaction with disability. The interaction of disability and the secondary factors investigates whether the combination of disability and the included factor affects the callback rate. We are hereby investigating whether the callback rates of men and women, for example, are affected differently by disability. The same goes for sector and job functions.

RESULTS

Throughout the experiment, responses from employers were registered, and four different categories were used: (1) the applicant was invited to a job interview; (2) the employer showed interest, including asking for recommendations or a screening interview or requesting the applicant to perform an IQ test or personal test; (3) the applicant was rejected; and (4) there was no response from the employer. The results are shown in Table 2.

Table 2 Response from employers, percent (observations).

	INVITATION TO JOB INTERVIEW	EMPLOYER SHOWED INTEREST	REJECTION	NO RESPONSE FROM EMPLOYER	TOTAL
Total response	11.3% (136)	1.1% (13)	66.3% (795)	21.4% (256)	100% (1.200)
Responses to wheelchair user	7.2% (43)	0.5% (3)	70.5% (423)	21.8% (131)	100% (600)
Responses to applicant without disability	15.5% (93)	1.7% (10)	62% (372)	20.8% (125)	100% (600)

In 11.3 percent of the cases (136 applications), the employer invited the applicant to a job interview. In 1.1 percent of the cases (13 applications), the employer showed interest in the applicant. In most of the cases, the employer rejected the application (66.3 percent or 795 applications). In the remaining cases, the employer did not respond to the application (21.4 percent or 256 applications).

In the following, applicants invited to a job interview and applicants in which employers showed an interest are merged into the category ‘callback rate’, and applicants receiving a rejection or no response from the employer are referred to as ‘no invitation to a job interview’. The merging of categories divides the applicants into one group that employers found relevant in the recruitment process (callback rate) and one group the employers did not find relevant (no invitation to a job interview). When we combine the categories into a callback rate and split the data on the disability factor, we find a significant difference (see Table 3).

	APPLICANTS WITHOUT DISABILITY	APPLICANTS USING A WHEELCHAIR	TOTAL	CALLBACK DIFFERENCE IN PERCENTAGE POINTS
Total callback rate	17% (102)	7.7% (46)	12.3% (148)	9.3
Public workplaces	13.6% (14)	9.7% (10)	11.7% (24)	3.8
Private workplaces	17.7% (88)	7.2% (36)	12.5% (124)	10.5
Accountant	20.6% (71)	9% (31)	14.8% (102)	11.6
IT consultant	14.8% (22)	6% (9)	10.4% (31)	8.8
Secretary	1.7% (1)	3.4% (2)	2.5% (3)	-1.7
HR consultant	17% (8)	8.5% (4)	12.8% (12)	8.5
Male	14.8% (45)	8.3% (25)	11.5% (70)	6.5
Female	19.3% (57)	7.1% (21)	13.2% (78)	12.2

Table 3 Callback rates for applicants, percent (observations).

The callback rate of wheelchair users was 7.7 percent, whereas the callback rate of applicants not disclosing a disability was 17.0 percent. Applicants without a disability received more than twice as many invitations to job interviews than wheelchair users. The difference in callback rate for applicants with and without a disability is 54.7 percent, and a linear regression model showed a highly significant result (see Table 4, Model 1). Adding the wheelchair to an application significantly decreases the number of invitations to job interviews, with a difference of 9.3 percentage points. According to the statistics, applicants with a disability should apply for approximately twice as many jobs as applicants without a disability before they receive an invitation to a job interview. This result corresponds to findings in previous field experiments including a wheelchair user (Bellemare et al. 2018; Bjørnshagen & Ugreninov 2021).

As demonstrated in the last column of Table 3, the differences in callback rates of applicants using a wheelchair and applicants without a disability is 3.8 percentage points in the public sector and 10.5 percentage points in the private sector. The differences indicate an effect of sector, where public employers are more willing to invite wheelchair users to a job interview than private employers. Public employers are often said to be more inclusive of minorities (Llorens, Wenger & Kellough 2007), but the effect may also be related to organisational size and location (Villadsen & Wulff 2018). Further, applicants with disabilities can insist on a job interview at public workplaces. This is not an option at private workplaces and might contribute to a more inclusive public workplace, but the fictitious applicants did not insist on a job interview in this field experiment. Table 4 illustrates that the difference between the public and private sectors is not statistically significant. We have only 103 observations in the public sector (Table 1), and it is therefore unclear whether the result is caused by the low number of observations in the public sector or the fact that there is no difference between sectors.

We also identified a gender difference. The difference in the callback rate for males is 6.5 percentage points, while it is 12.2 percentage points for females (Table 3), indicating that the callback rate is affected more by the combination of being a woman and using a wheelchair than of being a man and using a wheelchair. Previous research also demonstrates that men with disabilities are more likely to be in employment compared to women with disabilities (Boman et al. 2015). Being a wheelchair user decreases the likelihood of being invited to a job interview for both men and women, although the results in Table 3 indicate that being a wheelchair user is more disadvantageous for women than for men. If that is the case, female

wheelchair users might experience more exclusion from the labour market than men. However, the gender differences are insignificant (cf. Table 4).

The differences in callback rates are rather similar for the job types (accountants, IT consultants and HR consultants), ranging from 8.5 to 11.6 percentage points. The difference for secretary is only 1.7 percentage points and in favour of the wheelchair user. Only three applicants were invited to a job interview for the position of secretary; the difference is most likely random.

Table 4 shows the results from four models testing the differences in callback rates. Model 1 only includes the wheelchair factor and shows a highly significant result. Model 2 tests the interaction of disability and sector but does not find that callbacks rates in either the private or public sector are affected more by the wheelchair factor. Model 3 also includes an interaction and demonstrates that none of the four included job types are affected more by the wheelchair factor. The last model, Model 4, tests whether the callback rate of men or women is affected differently by the wheelchair factor. Model 4 shows no significant result.

	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Wheelchair	-0.093***	0.027	-0.085	-0.009
Sector				
Private (public, ref.)		-		
Wheelchair* Private sector		-0.056		
Job function				
HR (ref.)			-	
IT consultant			-0.020	
Accountant			0.066	
Secretary			-0.255	
Wheelchair* IT consultant			-0.002	
Wheelchair* accountant			-0.030	
Wheelchair* secretary			0.102	
Gender				
Female (male, ref.)				-
Wheelchair* gender				-0.056

Table 4 Test for differences in callback rate, including interactions.

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

Although we find differences in callback rates in the descriptive statistics, our data do not demonstrate any significant effects when we test the interaction of gender, sector and job function with disability (Table 4). Whether the applicant with or without a disability is male or female, applies for a job in the public or private sector or applies to different types of jobs does not affect the callback rate significantly. The only statistically significant result is the difference in the total callback rate shown in Model 1 (Table 4). The field experiment was designed to show a difference in the total callback rate. The insignificant results might be due to few observations when splitting the data on more variables than being a wheelchair user.

DISCUSSION

The field experiment was designed to test differences in callback rates between applicants using a wheelchair and those not mentioning any disability. The validity of the field experiment depends on a solid research design, which ensures that the effect on callbacks is caused by the disability (Lahey & Beasley 2018; Lawson 2014) The results show a significant negative effect of using a wheelchair on the callback rate.

The results of the field experiments only include invitations to a job interview, not the actual hiring of the applicants. The study is also limited to jobs advertised online. Finally, the field experiment only includes wheelchair users and no other physical or mental disability. The results must be interpreted with these limitations in mind.

The results of the field experiment indicate that Danish employers do not differ notably from Norwegian or Canadian employers regarding callback rates to applicants using a wheelchair despite the different contexts. Denmark and Norway differ from the Canadian context, as they are both universal welfare regimes known for high equality and social security (Esping-Andersen 1991). The Norwegian labour market is more strictly regulated (Bjørnshagen & Ugreninov 2021) than the Danish labour market. Danish employers are relatively autonomous regarding personnel and recruitment. Despite the different regulations of the labour market and welfare regimes, the results from field experiments including wheelchair users are rather similar. The word 'wheelchair' in an application seems to transmit a negative signal to the employers in different contexts and implies an underlying structure or system causing a similar recruitment practise among employers.

Theories of status, stigma, prejudice, discrimination and ableism may explain why individuals with certain characteristics are excluded from different activities such as work (Allport 1954; Becker 1971; Becker 1973; Campbell 2009; Deal 2007; Goffman 1990; Hughes 1945; Lippert-Rasmussen 2013). The theories offer different approaches to the social organisation of society, often including expectations to one another based on personal characteristics. Becker (1973) suggests that people tend to have predefined expectations of each other based on the individual's position in society and personal characteristics (354). The predefined expectations affect how people interact and organise in society. Goffman (1990) presents a rather similar analysis of social organisation, arguing that people exposing a deviation such as disability might be labelled with a stigma. The stigma includes a set of negative expectations towards the stigmatised individual (Goffman 1990). When wheelchair users in our study are not invited to a job interview, it might be due to negative status or a stigma. Employers might have negative expectations towards the wheelchair user compared to the applicants not disclosing a disability. If we apply Goffman's theory of stigma, the wheelchair user exposes a disability in the application, and that might produce a stigma. The employer might have negative expectations to the wheelchair user and therefore does not invite the applicant to a job interview.

Campbell (2019) offers a related theoretical approach and argues that the society is embedded within an ableist structure that enables individuals to classify and rank each other (Mik-Meyer 2017). Ableism produces systems and processes that exclude persons with disabilities from, for example, the labour market (Campbell 2019; Schur, Kruse & Blanck 2005), although the exclusion is seldom openly acknowledged by actors such as public authorities, employers or potential colleagues. As Campbell notes, the process of recruitment contains processes or systems that exclude applicants using a wheelchair. The behaviour of employers is consistent with a societal norm caused by ableist systems and shows how employers might have different expectations associated with certain individual characteristics like a disability.

The fictitious wheelchair users in this study experienced a significantly lower callback rate than the applicants without a disability, which proves the strong effect of disability on employers' recruitment practises. The employers are gatekeepers in the labour market, as they decide which applicants to invite to a job interview and which to reject. But as this study shows, the gatekeepers tend to reject the applicant in a wheelchair and therefore maintain an ableist structure in the labour market.

Previous field experiments also detect this type of discrimination against applicants with disabilities (Ameri et al. 2018; Baert 2018; Bellemare et al. 2018; Bjørnshagen & Ugreninov 2021; Gaddis 2018; Vuolo, Uggen & Lageson 2016). Our results are comparable to these studies and indicate that discriminatory recruitment practises also occur in the Danish labour market. Danish employers are obligated to treat applicants with and without disabilities equally in recruitment processes (Beskæftigelsesministeriet 2008). Nevertheless, the field experiment demonstrates that mentioning a spinal cord injury that has caused the applicant to be a wheelchair user significantly decreases the chances of the applicant being invited to a job interview.

In the next phases of the research project, we will apply these theories and explanations to examine the mechanisms of the recruitment process.

CONCLUSION

Field experiments are a credible method of detecting employers' discriminatory behaviour, and previous field experiments have found evidence of disability discrimination. We have tested the recruitment practises of Danish employers by a field experiment with fictive applicants signalling

either a spinal cord injury or no disability. The applications were sent to 600 job adverts in which the use of a wheelchair should not impact the ability to perform the job (accountants, IT consultants, secretaries and HR consultants). The callback rate was 17 percent for applicants not disclosing a disability and 7.7 percent for wheelchair users. This means that applicants in wheelchairs must send more than twice as many applications as applicants without disabilities to have the same chance of being invited to a job interview. Employer's lack of information and ableist norms are plausible explanations for this type of discrimination of applicants with disabilities.

This study contributes to the international literature on recruitment of wheelchair users. As we can now compare several countries using the same research design, the comparison implies a systematic structure across geographical borders. Being a wheelchair user seems to negatively affect recruitment opportunities across different contexts, and the wheelchair might transmit negative expectations resulting in a rejection of the applicant. To further test the hypothesis of a discriminatory disability practice, we welcome more studies using similar research design in other contexts.

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COMPETING INTERESTS

The authors have no competing interests to declare.

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