

# Disability at Work: A Look Back and Forward

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**Abstract** *Purpose* This article presents new evidence on employment barriers and workplace disparities facing employees with disabilities, linking the disparities to employee attitudes. *Methods* Analyses use the 2006 General Social Survey to connect disability to workplace disparities and attitudes in a structural equation model. *Results* Compared to employees without disabilities, those with disabilities report: lower pay levels, job security, and flexibility; more negative treatment by management; and, lower job satisfaction but similar organizational commitment and turnover intention. The lower satisfaction is mediated by lower job security, less job flexibility, and more negative views of management and co-worker relations. *Conclusion* Prior research and the present findings show that people with disabilities experience employment disparities that

limit their income, security, and overall quality of work life. Technology plays an increasingly important role in decreasing employment disparities. However, there also should be increased targeted efforts by government, employers, insurers, occupational rehabilitation providers, and disability groups to address workplace barriers faced by employees with disabilities, and by those with disabilities seeking to return to work.

**Keywords** Disability · Job characteristics · Job satisfaction · Organizational commitment · Turnover intention

## Introduction

People with disabilities face a variety of barriers in becoming employed [1–3], and those who are employed receive lower average wages than workers without disabilities. While most studies using data from nationally representative surveys examine disparities in employment rates and earnings between people with and without disabilities, few evaluate and empirically model the impact of workplace experiences and attitudes as mediators of these disparities.

Exploring and mitigating employment barriers and workplace disparities is important given the policy goal of increasing economic inclusion of people with disabilities as shown in the 1990 Americans with Disabilities Act (“ADA”) and the 2006 UN Convention on the Rights of Persons with Disabilities (“CRPD”), and in light of expected labor shortages over the next several decades [4, 5]. This knowledge also may provide insights on workplace dynamics, the effectiveness of anti-discrimination statutes and treaties such as the ADA and the CRPD, and other strategies designed to enhance employment and return-to-work opportunities. For

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companies, the results may provide evidence for the need for workplace policies and practices that dismantle structural and attitudinal barriers to work.

This article reviews our knowledge of employment among people with disabilities. It presents a comprehensive model of disability and workplace disparities using nationally representative data from the U.S. General Social Survey (GSS). One key finding is that people with disabilities have lower job satisfaction on average, due primarily to disparities in perceptions of job security, job flexibility, and views of management. Findings also suggest limited explanatory power for theories such as differential worker preferences and the employer power model of discrimination. Instead, they point toward other discrimination models and unobserved ability differences as more likely explanations. These results, combined with prior evidence, indicate that workers with disabilities face ongoing employment barriers that need to be addressed by governmental and corporate policies. Evidence also suggests the salutary effects of technological advances on employment and return-to-work opportunities for people with disabilities.

## Are There Disability Disparities?

### Employment Levels

People with disabilities have low employment rates both in the U.S. and globally [6–9], which is a major contributor to their low income levels and high poverty rates [10]. Among working-age people with disabilities in the U.S., only 34% were employed in 2015, compared to 75% of those without disabilities [9]. Their lower employment is not simply due to a lack of interest, since the unemployment rate among labor market participants with disabilities (10.7% in 2015, reflecting those working or actively seeking work) was twice that of those without disabilities (5.1%) [11].

### Workplace Disparities

The lower earning power of workers with disabilities has been documented in several studies [12–17]. Gaps exist both before and after controlling for education and other personal characteristics, and they appear in cross-sectional and longitudinal comparisons before and after disability onset among those who become re-employed and seek to return to work [18–21]. Research also finds that people with disabilities face disparities on other important workplace outcomes. Workers with disabilities are more likely than those without disabilities to report low levels of perceived job security [14] and to be laid off [3, 7, 22, 23]. In addition, they are less likely to receive employer-provided benefits such as health insurance, pension plans [24, 25], and employer-provided

training, and they are less likely to participate in workplace decisions, although they report similar access to promotion opportunities [14]. They are more likely to be in part-time, temporary, and other non-standard jobs that often provide low pay and few benefits [3, 6, 26–28], although they are not more likely to work in jobs with flexible hours [3, 29]. Reflecting these disparities in job outcomes, workers with disabilities generally report lower levels of job satisfaction than workers without disabilities [14, 30–32].

## Why the Disparities? Theories and Existing Evidence

### Non-discrimination Theories

The employment levels and workplace disparities facing people with disabilities may be connected and examined using several theories. The lower employment rates of people with disabilities may be viewed through an economic lens as the result of high reservation wages of people with disabilities (i.e., the lowest wage that a person will accept to be employed) on one side and low wages offered by employers on the other side, resulting in a lower chance an offered wage will exceed the reservation wage so that the person will take a job. The availability of disability income, which increases reservation wages, affects employment decisions of people with disabilities [33–35]. When analyses exclude disability income recipients however, working-age people with disabilities still have lower employment rates than those without disabilities.<sup>1</sup> Reservation wages may also be increased by the extra costs of working, such as the expense of modified transportation and adaptive technologies, along with medical and vocational rehabilitation issues and schedules that raise the time and energy costs of employment, particularly for standard work schedules [27].

The lower average wages offered to, and received by, people with disabilities are due in part due to their lower average levels of education [6, 8, 10]. This causes employment rates to decline, and for those who are employed, lower education levels may combine with lower levels of training, functional abilities, and health to lead to lower productivity, wages, and promotion rates. While lower education levels contribute to lower earnings, employees with disabilities are paid less than non-disabled workers even after controlling for education, labor market experience, and other observable productive characteristics [1, 12–17]. They also have higher rates of

<sup>1</sup> Analysis of the 2014 American Community Survey shows that among working-age people who did not receive any disability income in the past 12 months, 49.7% of people with disabilities were employed compared to 76.9% of people without disabilities (calculations available on request).

job loss after controlling for education [3, 14, 22, 23] along with lower opportunities for training and participation in decisions [14, 36]. Therefore, education and skills do not fully explain disability disparities in pay and other outcomes.

Some employers may decline to hire people with disabilities, or may offer them lower wages, due to the perceived costs of workplace accommodations [37], although this is prohibited by the ADA. Because the ADA requires that employers absorb the reasonable costs of accommodations, some critiques of the law blamed it for a decline in the employment rate of people with disabilities at the time the law was either ratified or took effect [38, 39]. However, subsequent studies find no decline when other measures and techniques were considered [2, 40–44], and demonstrate that any potential ADA-related decline in employment was temporary [45]. Recent studies of disability antidiscrimination state laws also find either no, or positive, effects on employment of people with disabilities [46–48].

Another non-discrimination theory applicable to workplace disparities is that employees with disabilities may have systematically different job preferences than employees without disabilities—for example, due to medical concerns they may have a greater need and desire for flexible work arrangements and part-time work [26, 27]. One consequence may be that many people with disabilities accept some disparities as a compensating differential for other desired job characteristics, such as lower pay in exchange for greater flexibility. Evidence from surveys of non-employed people shows no average differences in expressed job preferences between those with and without disabilities [49], although such differences may exist among employed people—a hypothesis this article examines. In addition, the compensating differentials theory implies that job satisfaction should remain constant after making such trade-offs, but as noted above the data do not bear this out.

### Discrimination Theories

Discrimination may result in lower wages offered to workers with disabilities, and in other forms of unfair treatment, which may lead some of them to drop out of the labor market. Becker's model of taste-based discrimination may apply, given the well-documented history of stigma and prejudice against people with disabilities [50–53]. Under this model, prejudiced employers refuse to hire applicants with disabilities (or with particular disabilities such as mental health conditions), and deny training and promotions to employees with disabilities, to avoid personal, co-worker, and customer interaction with them.

A second discrimination model that may apply to disability and employment decisions is statistical discrimination. In this model, employers may believe that disability is associated with lower productivity on average, and apply

this belief in making negative employment decisions about individuals, particularly when there is a lack of good information at the individual level. This type of discrimination is made more likely by the uncertainty that many employers express about employing people with disabilities.

Taste-based and statistical discrimination models may be more fully understood through the lens of social cognition theory, which analyzes how people process and apply socially-acquired information to social situations. If an employer, as representative of members of able-bodied society, is taught to believe people with disabilities are inferior, it is likely that mixed interactions will be avoided [8, 54–56]. However, there is a distinction between acquiring knowledge of a stereotype and accepting it [57]. Employers may not want to validate the stereotypes that accompany disability if they do not resonate with their beliefs, and may repress them [58]. The level of attention employers must invest in deliberately evaluating people with disabilities may cause a lapse in cognition where the repressed stereotypes return [59, 60]. The context can influence whether employers accept or deny stereotypes associated with disability; for example, they may be more open to hiring people with disabilities in stereotype-congruent low-skill jobs [58, 60].

Support for the prejudice and statistical discrimination theories comes from field experiments showing that employers are less likely to respond positively to job applicants with disabilities than to those without disabilities who have identical qualifications [46, 61]. Additional support for the prejudice theory comes from studies finding lower wages for those who have disabilities with lower social acceptability rankings [12], and for those whose disabilities should not interfere with job demands [15–17].

In addition, for those people with disabilities who do become employed, studies find that supervisor and co-worker attitudes can have a profound impact on their employment experiences [62–66]. For example, participants acting as mock employers have lower performance expectations and more negative views of employment prospects and job growth for individuals with disabilities [64, 66]. Among actual employers in a 2008 U.S. national survey, the potential role of prejudice, discrimination, and unwelcome corporate cultures was indicated by the 34% who cited “attitudes of customers,” 32% who cited “discomfort or unfamiliarity,” 29% who cited “attitudes of co-workers,” and 20% who cited “attitudes of supervisors” as challenges in hiring people with disabilities [67: 13].

Another survey found almost half (47%) of employers said attitudes of co-workers are a reason that employers do not hire people with disabilities [68]. These results are consistent with earlier surveys: one-fifth (20%) of employers reported the greatest barrier to people with disabilities finding employment is discrimination, prejudice, and employer reluctance to hire them [69], while 22% of employers

reported attitudes and stereotypes are a barrier to employment of people with disabilities in their own firms [70].<sup>2</sup> The importance of stereotypes is indicated by interviews with corporate executives revealing that “most employers hold stereotypical beliefs not consistent with research evidence” [56: 255], and by the finding that prior positive experiences with co-workers with disabilities are linked to more positive expectancies and affective reactions toward people with disabilities [72, 73].

The idea that negative attitudes are an important barrier for employees with disabilities fits with scholarship suggesting that the workplace experiences of employees with disabilities are shaped by corporate cultures—i.e., the values, attitudes, and norms embedded in a company [55, 62, 74, 75]. This is supported by a study finding that disability gaps in attitudes differ by worksite: there were no disability gaps in attitudes and turnover intention in worksites rated highly by all employees for fairness and responsiveness, but substantial disability gaps in worksites with lower ratings [14]. Similar results have been found in UK workplaces [32].

Corporate culture and climate also affects whether workplace accommodations and adjustments are granted and their impacts on employees. An intensive look at over 5000 employees in six companies found that over one-fourth (28%) of employees without disabilities had requested accommodations to meet their personal needs, as compared to 62% of employees with disabilities [76]. The majority of workers who requested accommodations reported positive reactions from coworkers and, most interestingly, multilevel models indicated that granting accommodations had positive spillover effects on the attitudes of coworkers.

Another model of discrimination is based on employer power, or monopsony, in which employers pay certain groups less due to their limited job mobility. For example, once employed, people with disabilities may face higher costs in switching jobs because of transportation problems and difficulties attaining accommodations with a new employer, which would allow their current employers to underpay them without a high risk of turnover. While there is some support for the importance of monopsony in labor markets [77], there is no existing evidence on the role of monopsony in explaining the employment experiences of people with disabilities. Analyses in this article shed some initial light on this model.

<sup>2</sup> It is likely these figures understate the problem due to “social desirability” bias, and the frequent discrepancy found between the attitudes employers express towards people with disabilities on surveys and their actual hiring practices [71].

## New Evidence

This article presents new evidence on disparities within the workplace using data from the 2006 U.S. General Social Survey (GSS). The GSS is a long-standing nationally-representative survey of Americans age 18 or older, conducted every year or two since 1972 by the National Opinion Research Center at the University of Chicago. The 2006 GSS had seven questions added to identify people with disabilities (presented in “Appendix 1” in this article), which were drawn from the 2001–2002 National Comorbidity Survey.

These disability-related questions allow identification of four major categories of impairment: visual, hearing, mobility, and mental/cognitive. Among the 1,490 employees in the 2006 GSS, 186 were classified with a disability (11.8%) (using GSS weights). All employees were split randomly into two subsamples by the GSS, and each subsample was given a separate set of work-related questions. The questions addressed similar topics in each module, but few questions were identical. While the overall sample size of 1490 is similar to that used in many nationally representative surveys, statistical power is limited in the smaller sample sizes, so that our tests should be seen as conservative ones (i.e., we will detect the larger relationships but may not detect some true smaller relationships when the samples are reduced).

This article examines differences between respondents with and without disabilities related to employment experiences, job preferences, and employment outcomes. Following some basic descriptive statistics and simple comparisons, we present summary results from regressions (full results are available on request), followed by a structural equation model using a subsample. All variables are described in “Appendix 1”.

## Descriptive Statistics and Simple Comparisons

Table 1 shows good representation of people with each of the four major impairments (visual, hearing, mobility, and mental). Consistent with prior research, people with disabilities are slightly older on average, less likely to have high school or Bachelor’s degrees, and more likely to be in service and blue-collar occupations. These results show that people with disabilities would likely face disparities in the labor market even apart from disability per se.

Table 2 presents simple comparisons of our key variables by disability status. There it can be seen that there are significant disparities in reported earnings, job security, flexible hours, participation in decisions, skill use and development, perceptions of employee-management relations and treatment by management, and job satisfaction. Rather than discuss these differences here, we wait until we use regressions to examine whether these differences remain after controlling for the basic demographic and job characteristics from

**Table 1** Basic demographic and job characteristics

	Disability	No disability
<i>Type of disability</i>		
Visual impairment	23.5%	0.0%
Hearing impairment	37.6%	0.0%
Mobility impairment	41.9%	0.0%
Mental impairment	35.8%	0.0%
<i>Demographic characteristics</i>		
Female	47.7%	51.3%
Age—mean	44.2**	40.8
(SD)	(12.4)	(12.4)
<i>Race/ethnicity</i>		
White non-Hispanic	73.0%	73.0%
Black	14.4%	13.7%
Hispanic	8.1%	8.6%
Other	4.5%	4.9%
<i>Education</i>		
No high school degree	13.6%**	5.3%
High school degree	58.6%	54.1%
AA/junior college degree	10.8%	10.5%
BA degree	10.1%**	20.4%
Graduate degree	6.8%	9.6%
<i>Basic job characteristics</i>		
<i>Occupation</i>		
Management	6.7%*	11.3%
Mgt-related	5.3%	5.7%
Professional	11.0%**	17.9%
Technical	3.4%	4.7%
Sales	11.6%	8.9%
Clerical	12.4%	14.8%
Service	18.5%**	15.2%
Blue-collar/agricultural	31.0%**	21.5%
Part-time employment	14.8%	13.2%
n	186	1304

\*Significant difference at  $p < .10$ ; \*\* $p < .05$

Table 1, and examine how they may be connected in the structural equation model.

### Regression Summaries

As seen in Table 3, employees with disabilities have significantly lower pay and job security before and after controlling for occupation, which is consistent with past research. We also find they are less likely to have flexible hours, which is contrary to past research [3, 29]. This may be due to different conceptions of flexibility (the latter study was focused on nonstandard and rotating shifts which may not be under the control of the employee). Employees with disabilities report less participation in work-related decisions and fewer opportunities for job skill development, but only before

**Table 2** Simple comparisons by disability status

	Disability		No disability	
	Mean	(SD)	Mean	(SD)
<i>Pay and work organization</i>				
Yearly earnings (natural log)	10.09	(0.93)**	10.28	(0.92)
Job security is good	2.98	(1.05)***	3.40	(0.77)
Flexible hours	1.97	(1.09)***	2.43	(1.25)
Promotion opportunities	2.54	(0.95)	2.59	(1.02)
Work-family balance	2.86	(0.76)	2.87	(0.86)
Participation in decisions	2.89	(0.66)**	3.08	(0.73)
Skill use and development	3.11	(0.56)**	3.26	(0.66)
<i>Company treatment</i>				
Employee-management relations	3.66	(1.10)***	3.93	(0.98)
Treatment by management	2.56	(0.54)***	2.75	(0.61)
Co-worker relations	3.08	(0.83)	3.24	(0.84)
<i>Employee responses</i>				
Organizational commitment	3.52	(0.86)	3.62	(0.79)
Job satisfaction	2.00	(0.84)***	2.33	(0.74)
Likely turnover	1.63	(0.77)	1.54	(0.74)
<i>Outside opportunities</i>				
Ease of finding other job	1.83	(0.72)	1.99	(0.78)
<i>Preferences over job characteristics</i>				
High income is important	3.95	(0.98)	3.97	(0.81)
Job security is important	4.46	(0.80)	4.54	(0.71)
Promotion opps. is important	4.13	(1.00)	4.20	(0.80)
Flexible hours is important	3.36	(1.20)	3.43	(1.03)
Interesting job is important	1.53	(0.74)	1.49	(0.64)
Work independently is important	4.19	(0.86)	4.07	(0.84)
Helping others in job is important	4.35	(0.65)	4.35	(0.71)
Useful to society is important	4.29	(0.78)	4.39	(0.72)
Job just way of earnings money	2.52	(1.21)	2.39	(1.11)
Would enjoy job even if not paid	3.67	(1.01)	3.53	(1.10)
Prefer employee to self-employed	0.34	(0.48)*	0.43	(0.50)
Prefer small to big firm	0.71	(0.45)	0.69	(0.46)
Prefer private to govt. job	0.71	(0.45)	0.70	(0.46)

See variable descriptions and scales in “Appendix 1”

Difference by disability status is significant at \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$

controlling for occupation, indicating they are more likely to be in occupations that limit these opportunities. There were no significant differences between respondents in perceived promotion opportunities and work-family balance.

Table 3 also shows that employees with disabilities perceive worse employee-management relations and worse treatment by management, although they report similar co-worker relations as employees without disabilities. While these disparities may lead to higher turnover intention, the results show no disability gaps in turnover intention and organizational commitment, although employees with

**Table 3** Disability disparities in workplace outcomes

Workplace outcomes	Type of regression	Regression 1 with demographic controls <sup>a</sup>			Regression 2 also Including occupation controls <sup>a</sup>		
		Coeff.	(t-stat.)	n	Coeff.	(t-stat.)	n
<i>Pay and work organization</i>							
Earnings (ln)	(Interval regression)	-0.162**	(-2.290)	1245	-0.147**	(-2.125)	1245
Job security	(Ordered probit)	-0.471***	(-2.839)	696	-0.416**	(-2.452)	691
Flexible hours	(Ordered probit)	-0.402***	(-2.865)	699	-0.341**	(-2.408)	694
Promotion opportunities	(Ordered probit)	-0.0181	(-0.138)	693	-0.00889	(-0.0654)	688
Work-family balance	(OLS)	-0.0721	(-0.635)	699	-0.0576	(-0.496)	694
Participation in decisions	(OLS)	-0.184*	(-1.929)	700	-0.110	(-1.212)	695
Skill use and development	(OLS)	-0.167*	(-1.938)	700	-0.135	(-1.609)	695
<i>Company treatment</i>							
Employee-management relations	(Ordered probit)	-0.291***	(-2.863)	1465	-0.258**	(-2.522)	1454
Treatment by management	(OLS)	-0.269***	(-2.743)	700	-0.233**	(-2.425)	695
Co-worker relations	(OLS)	-0.134	(-1.104)	700	-0.116	(-0.953)	695
<i>Employee responses</i>							
Organizational commitment	(OLS)	-0.123	(-1.232)	770	-0.101	(-0.988)	764
Job satisfaction	(Ordered probit)	-0.537***	(-3.531)	701	-0.447***	(-3.008)	696
Turnover intention	(Ordered probit)	0.0828	(0.560)	690	0.00498	(0.0334)	685
Ease of finding other job	(Ordered probit)	-0.160	(-1.129)	689	-0.170	(-1.170)	684

Figures represent disability coefficients (t-statistics) from regressions with dependent variable at left. Each row represents separate regressions \*p < .10; \*\*p < .05; \*\*\*p < .01

<sup>a</sup>All regressions control for gender, age, race, Hispanic, education, and part-time status

**Table 4** Disability and Job preferences

Job preference	Type of regression	Disability coefficient <sup>a</sup>		
		Coeff.	(t-stat.)	n
High income is important	Ordered probit	-0.0655	(-0.466)	779
Job security is important	Ordered probit	-0.211	(-1.465)	779
Promotion opps. is important	Ordered probit	-0.0657	(-0.475)	779
Flexible hours is important	Ordered probit	-0.0960	(-0.718)	778
Interesting job is important	Ordered probit	0.0471	(0.336)	779
Work independently is important	Ordered probit	0.147	(1.059)	778
Helping others in job is important	Ordered probit	-0.0122	(-0.0990)	779
Useful to society is important	Ordered probit	-0.123	(-0.904)	779
Job just way of earning money	Ordered probit	0.0464	(0.349)	779
Would enjoy job even if not paid	Ordered probit	0.206*	(1.682)	779
Prefer employee to self-employed	Probit	-0.112*	(-1.914)	775
Prefer small to big firm	Probit	0.0186	(0.334)	760
Prefer private to govt. job	Probit	0.00297	(0.0566)	752

Figures represent disability coefficients (t-statistics) from regressions with dependent variable at left. Each row represents a separate regression

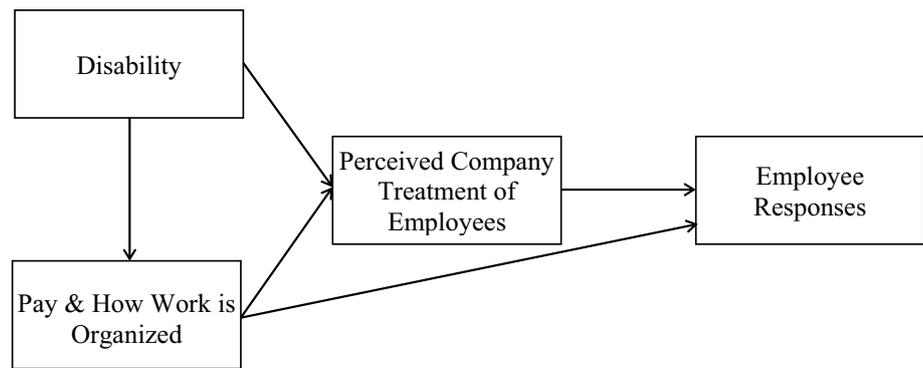
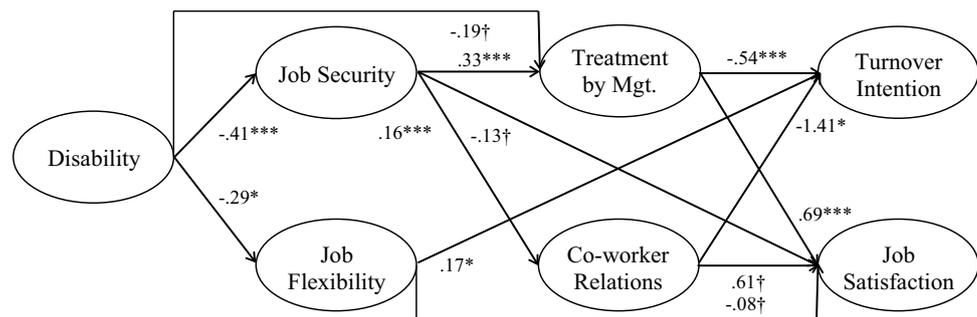
\*p < .10; \*\* p < .05; \*\*\* p < .01

<sup>a</sup>All regressions control for gender, age, race, Hispanic, education, and part-time status

disabilities express lower job satisfaction which is consistent with past research.

Can some of these disparities be explained by different preferences among employees with disabilities, such that

they trade off desired job attributes for lower pay? The answer appears to be no. Analysis of several GSS measures in Table 4 shows that preferences over job attributes and types of employers are similar between employees with and

**Fig. 1** A theoretical framework**Fig. 2** Results of structural equation model

Standardized LISREL coefficients are reported.  
 $\dagger p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

without disabilities. Two differences found are that employees with disabilities are more likely to express a preference for being self-employed and report they would enjoy working even if they were not paid.

Can these disparities alternatively be explained by employers taking advantage of workers with low job mobility who would have a difficult time finding another job, as described in the employer power/monopsony model? Using a measure of perceived ease in finding a similar job (see “Appendix 1”), regressions show that employees with disabilities do not report greater anticipated difficulty in finding a similar job with another employer.<sup>3</sup> This finding contradicts the employer power/monopsony model as a general explanation for the disparities, although it remains possible that this applies in some situations.

### Structural Equation Model

A structural equation model, controlling for demographic and occupation variables, examines the interrelations amongst the workplace experiences, perceptions, and outcomes of respondents with and without disabilities. A description of the model testing, with descriptive statistics and correlations, is provided in “Appendix 2” and “Table 5 in Appendix 3”. The theoretical model is shown in Fig. 1, and the preferred estimated model is represented in Fig. 2.

The findings demonstrate that perceptions of job security and job flexibility are key constructs among the pay and work organization variables that link disability to perceived treatment by management, and coworkers and employee responses. Specifically, higher perceived job security predicts more positive perceived treatment by management and coworkers, although we should note that the causality is open to interpretation since it may be that perceived poor treatment from management lowers one’s perceptions of job security. Separate from job security, however, disability has a remaining negative direct effect on perceived treatment by management.

As expected, perceptions of better treatment by management and coworkers predict lower turnover intention and higher job satisfaction. Job flexibility does not affect perceived treatment by management and coworkers, but

<sup>3</sup> Ordered probits predicting the ease of finding another job found the disability coefficients of  $-0.160$  ( $T = -1.129$ ) before controlling for occupation, and  $-0.170$  ( $T = -1.170$ ) after controlling for occupation. Both regressions control for gender, race, age, Hispanic, and education. The sample sizes were 689 and 684 respectively. Full results are available on request.

has a positive relation with turnover intention and a weak negative relation with job satisfaction. Overall, the structural equation model indicates the workplace disparities experienced by respondents with disabilities are fully mediated by perceptions regarding job security, job flexibility, company treatment, and coworker relations, resulting in no direct effect of disability on turnover intention and job satisfaction.

Similarly, the results show lower pay for people with disabilities relative to their non-disabled coworkers in the full sample, but the gap is no longer significant in the structural equation model with a smaller sample and lower statistical power. Nonetheless, pay is a strong negative predictor of turnover intention and a positive predictor of job satisfaction (i.e., found in the underlying estimates of the SEM model). It is possible that examination of a larger sample may show that disability in general, or particular disabilities, affect turnover intention and job satisfaction, at least partly through lower pay levels.

## Discussion

Prior research and new evidence presented in this investigation demonstrate that people with disabilities experience lower employment rates, and more negative perceived job experiences once they are employed. Workplace disparities include lower average pay and job security, along with more negative views of management and lower job satisfaction. The structural equation model shows these disparities are related: lower perceived job security predicts lower job satisfaction, directly as well as indirectly through worse perceived treatment by management.

What accounts for these disparities? The general disability gaps in employment rates do not simply reflect differences in employee qualifications, as shown by the persistence of gaps in field experiments that hold qualifications constant. The disability gaps in workplace outcomes do not appear to reflect differences in employee preferences that lead to a different set of trade-offs among job characteristics, given our new evidence that employees with disabilities overall have the same preferences for job characteristics as do employees without disabilities, which comports with prior results from non-employed people [49].

The lower job satisfaction of employees with disabilities also does not fit the theory of compensating differentials because if employees were trading off job characteristics against each other, their satisfaction should remain roughly constant. The disability gaps in workplace outcomes further are not explained by the employer power and monopsony model of discrimination, since the new evidence presented

herein shows that employees with disabilities perceive no greater difficulty in finding a similar job than do employees without disabilities.

Therefore, the disability gaps in employment rates and workplace outcomes may reflect differences in unobserved skills, or the taste-based and statistical models of discrimination. Regarding skills, although the comparisons control for education levels, some skills and other productivity differences apart from education help account for the disparities identified herein. Regarding the prejudice and statistical discrimination models, the evidence that employees with disabilities have on average more negative views of management treatment, and that this plays a strong role in explaining their lower average job satisfaction, supports the idea that managers may consciously or unconsciously treat employees with disabilities differently based on personal discomfort and negative assumptions about their abilities or motivations [75]. However, we cannot conclude from this evidence alone that employees with disabilities are objectively treated worse by management. It may be that they are frustrated by the limitations their disability creates and blame management for disparities they face. Their views are consistent, however, with the acknowledgment by many employers that “discomfort or unfamiliarity” and the “attitudes of supervisors” are challenges in employing people with disabilities generally or with particular types of impairments [67: 13].

Existing research, including the new evidence presented here, does not distinguish between the prejudice and statistical discrimination models. If either model is at work generally among employers, employees with disabilities may have low job satisfaction without greater turnover intention because they believe they would face the same treatment elsewhere. Whatever the source, the finding that employees with disabilities tend to have more negative views of management suggests a need for companies to examine their policies and practices to help ensure employees with an array of disabilities do not face disparities that create negative attitudes [14, 32].

Clearly, disability makes a difference in hiring decisions and in supervisor and co-worker attitudes, as shown by controlled field and lab experiments. One important finding, however, from the new evidence presented here is that there does not appear to be anything inherent in disability that leads to lower job satisfaction and organizational commitment, or higher turnover. The structural equation model shows there is no direct effect of disability on job satisfaction and turnover intention, so that any negative effects appear to derive from lower perceived job security and treatment by management.

Importantly, there are no disability gaps for several workplace outcomes. Our findings indicate that employees with disabilities do not report differences in promotion

opportunities, consistent with prior study [14]. Employees with disabilities also do not report significantly worse levels of work-family balance, and have similar levels of organizational commitment and turnover intention as employees without disabilities, even while perceiving more negative company treatment and having lower average job satisfaction. This suggests they are reliable employees who value their companies and jobs. In addition, they are likely to be even more reliable and productive when treated well and receive job opportunities and workplace accommodations. The disability gaps in participation in decisions, and skill use and training, are significant only before controlling for occupation. These latter results indicate that employees with disabilities are more likely to be in occupations that provide fewer participation and training opportunities, which could limit their career prospects.

One caveat regarding the present findings is that our sample includes only current employees with disabilities, and not former employees who may have experienced negative outcomes and left the workplace to become self-employed or dropped out of the labor force altogether, or who seek to return to work. One study found that self-employed people with disabilities were more likely than other employed and non-employed people with disabilities to report having experienced job discrimination in the past 5 years [27]. This suggests that including those who stopped working as employees and became self-employed may increase the estimated disparities, although people without disabilities who became self-employed also may report negative workplace experiences.

## Conclusion

People with disabilities not only have low employment levels, but also face workplace disparities once employed. The most well-established workplace disparities are in pay, job security, and job satisfaction. The present findings suggest that lower job security and more negative perceived treatment by management explain the lower average job satisfaction.

The present analyses also shed light on, but do not fully untangle, the roles of skills, preferences, and discrimination in explaining the disparities linked to disability in general, and to particular impairments. The evidence casts doubt on the contention that the disparities are due to differences in employee preferences and discrimination based on employer power, pointing towards generalized employer prejudice, statistical discrimination, and unmeasured skill differences as possible sources of the disparities.

Relevant to organizational employment policy and practice, employees with disabilities show similar levels of

commitment and turnover intention as employees without disabilities, despite the disparities they face. This suggests the value of efforts by leading companies to decrease barriers and increase opportunities for people with disabilities, such as by creating centralized workplace accommodations funds, targeted recruiting and mentoring, disability-specific employment information centers and return-to-work programs, and manager and co-worker education and training. Indeed, evidence from the UK indicates that such changes in employers' human resource practices have a significant positive impact on employment of people with disabilities following the enactment of that country's anti-discrimination legislation in 1995 and 2003 [78].

Future study may examine organizations and employment outcomes where there do not appear to be disability employment gaps. While most field experiments show lower employer interest in applicants with disabilities, recent experiments show that people with disabilities are as likely as those without disabilities to receive expressions of employer interest in software development and data entry jobs [79]. Since these jobs often are done remotely with minimal travel and face-to-face interaction, the results suggest a leveling effect that technology-related work has on job opportunities for people with disabilities [80]. Technology itself may help many people with disabilities manage their limitations without inhibiting work productivity as well as aid in return-to-work strategies [80, 81]. It may enable people with disabilities to participate on an equal basis with their able-bodied counterparts. Furthermore, technology has the potential to ease stereotypes toward people with disabilities by offering more flexibility in employment engagement [57, 81]. It must be recognized, however, that technology is unlikely to be a panacea for all workers with disabilities—it may have great benefit in opening opportunities for people with certain disabilities (such as those on the autism spectrum and those with sensory and mobility disabilities) but possibly little effect on job opportunities for others. Furthermore, technology may allow employers to cater to customer and co-worker discrimination by putting employees with disabilities in jobs without face-to-face interaction, which can further marginalize these workers.

Additionally, systematic study of innovative employer mentoring and training programs may demonstrate that it is possible to mitigate attitudes that employees with disabilities are less productive on average [8, 55, 56]. Such negative attitudes perpetuate a learned relationship that almost ensures the unemployment or underemployment, and return-to-work, of people with disabilities [81, 82]. Advancements in technology may further combat stereotypes of poor work productivity by reforming the meaning of work itself, and with more opportunities for virtually-based employment [81, 82].

For researchers, the present evidence casts doubt on previous undocumented contentions about workplace disparities. Nonetheless, further research is needed on the impact of job skills, preferences, and discrimination faced by persons across the spectrum of disability. Future studies may focus on whether people with disabilities who possess required job skills still face workplace disparities, possibly by using experiments that have identified disability gaps in hiring behavior after controlling for worker qualifications. In this regard, the moderating role of technology is worthy of further study, given recent findings of no disability gaps in hiring behavior in technology-based jobs. Along with further quantitative study, qualitative research is valuable to help determine how employers', supervisors', and coworkers' perceptions of workers with disabilities affect the hiring, promotion, retention and overall treatment of employees with disabilities.

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#### Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Informed Consent** For this type of study formal consent is not required. This paper includes results from analysis of secondary data which were not collected by the authors. The data come from the long-running General Social Survey, which is conducted by the National Opinion Research Center of the University of Chicago where all data collection is approved by an Institutional Review Board.

## Appendix 1: Variable Definitions

### Disability

*Any disability* Yes to hearing or visual impairment, or to two or more of the other five disability questions below (Yes 1/No 0) (mean = .118).

*Visual impairment* “Do you have a vision problem that prevents you from reading a newspaper even when wearing glasses or contacts?” (Yes 1/No 0) (mean = .028).

*Hearing impairment* “Do you have a hearing problem that prevents you from hearing what is said in normal conversation even with a hearing aid?” (Yes 1/No 0) (mean = .044).

*Mobility impairment* Yes to “Any Disability” and “Do you have any condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?” (Yes 1/No 0) (mean = .049).

*Mental impairment* Yes to “Any Disability,” and to “Do you have any emotional or mental disability?” (Yes 1/No 0) or “Because of a physical, mental, or emotional condition lasting 3 months or longer, do you have difficulty doing any of the following... Learning, remembering or concentrating?” (Yes 1/No 0) (mean = .042).

### Other Disability Questions

“Do you have any other physical disability?” (Yes 1/No 0) (mean = .043).

“Because of a physical, mental, or emotional condition lasting 3 months or longer, do you have difficulty doing any of the following... Participating fully in school, housework, or other daily activities?” (Yes 1/No 0) (mean = .049).

### Pay and How Work Is Organized

*Earnings* Natural logarithm of total annual work earnings from primary job, coded in one of 25 categories (using mid-points of ranges: mean = 10.27, SD = .92) (standardized for SEM).

*Job security* “The job security is good” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1) (mean = 3.35, SD = .81) (standardized for SEM).

*Flexible hours* “How often are you allowed to change your starting and quitting times on a daily basis?” (Often 4/Sometimes 3/Rarely 1/Never 1) (mean = 2.38, SD = 1.24) (standardized for SEM).

*Promotion opportunities* “The chances for promotion are good” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1) (mean = 2.59, SD = 1.01) (standardized for SEM).

*Work-family balance* index of the two following standardized items ( $\alpha = 0.61$ ).

“How often do the demands of your job interfere with your family life?” (Often 1/Sometimes 2/Rarely 3/Never 4).

“How often do the demands of your family interfere with your work on the job?” (Often 1/Sometimes 2/Rarely 3/ Never 4).

*Participation in decisions* index of the four following standardized items ( $\alpha=0.74$ ).

“In your job, how often do you take part with others in making decisions that affect you?” (Often 4/Sometimes 3/ Rarely 1/Never 1).

“How often do you participate with others in helping set the way things are done on your job?” (Often 4/Sometimes 3/Rarely 1/Never 1).

“I have a lot of say about what happens on my job” (Strongly agree 4/Agree 3/Disagree 2/Strongly disagree 1).

“I am given a lot of freedom to decide how to do my own work” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1).

*Skill use and development* index of following five standardized items ( $\alpha=0.71$ ).

“My job lets me use my skills and abilities” (Strongly agree 4/Agree 3/Disagree 2/Strongly disagree 1).

“I have an opportunity to develop my own special abilities” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1).

“I have the training opportunities I need to perform my job safely and competently” (Very true 4/Somewhat true 3/ Not too true 2/Not at all true 1).

“My job requires that I keep learning new things” (Strongly agree 4/Agree 3/Disagree 2/Strongly disagree 1).

“I get to do a number of different things on my job” (Strongly agree 4/Agree 3/Disagree 2/Strongly disagree 1).

### Preferences over Job Characteristics

The following questions were prefaced by the statement “For each of the following, please tell me how important *you personally* think it is in a job” (1 = not important at all, 2 = not important, 3 = neither important nor unimportant, 4 = important, 5 = very important).

*High income* “How important is ... high income?”

*Job security* “How important is ... job security?”

*Promotion opportunities* “How important is ... good opportunities for advancement?”

*Flexible hours* “How important is ... a job that allows someone to decide their times or days of work?”

*Interesting job* “How important is ... an interesting job?”

*Work independently* “How important is ... a job that allows someone to work independently?”

*Helping others* “How important is ... a job that allows someone to help other people?”

*Useful to society* “How important is ... a job that is useful to society?”

The following questions were prefaced by the statement “Thinking of work in general, please circle one number for each statement below to show how much you agree or disagree with each” (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree).

*Job just way of earning money* “A job is just a way of earning money—no more”.

*Would enjoy job even if not paid* “I would enjoy having a paying job even if I did not need that money.”

The following questions were prefaced by the statement “Suppose you were working and could choose between different kinds of jobs. Which of the following would you personally choose? I would advise...”

*Prefer employee to self-employed* “Being an employee or being self-employed?” (1 = employee, 0 = self-employed).

*Prefer small to big firm* “Working in a small firm or working in a large firm?” (1 = small firm, 0 = small firm).

*Prefer private to government job* “Working in a private business or working in the government or civil service?” (1 = private, 0 = government).

### Company Treatment of Employees

*Employee-management relations* “In general, how would you describe relations in your work place between management and employees?” (Very good 5/Quite good 4/Neither good nor bad 3/Quite bad 2/Very bad 1) (mean = 3.90, SD = 1.00) (standardized for SEM).

*Treatment by management* index of following 7 standardized items and the “employee-management relations” item ( $\alpha=0.86$ ).

“At the place where I work, I am treated with respect” (Strongly agree 4/Agree 3/Disagree 2/Strongly disagree 1).

“I trust the management at the place where I work” (Strongly agree 4/Agree 3/Disagree 2/Strongly disagree 1).

“Promotions are handled fairly” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1).

“The safety of workers is a high priority with management where I work” (Strongly agree 4/Agree 3/Disagree 2/ Strongly disagree 1).

“There are no significant compromises or shortcuts taken when worker safety is at stake” (Strongly agree 4/Agree 3/ Disagree 2/Strongly disagree 1).

“My supervisor cares about employees” (Very true 4/ Somewhat true 3/Not too true 2/Not at all true 1).

“My supervisor is helpful to me in getting the job done” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1).

*Co-worker relations* index of following two standardized items ( $\alpha=0.58$ ).

“The people I work with take a personal interest in me” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1).

“The people I work with can be relied on when I need help” (Very true 4/Somewhat true 3/Not too true 2/Not at all true 1).

## Employee Responses

*Organizational commitment* index of following three standardized items ( $\alpha=0.72$ ).

“I am willing to work harder than I have to in order to help the firm or organization I work for succeed” (Strongly agree 5/Agree 4/Neither agree nor disagree 3/Disagree 2/Strongly disagree 1).

“I would turn down another job that offered quite a bit more pay in order to stay with this organization” (Strongly agree 5/Agree 4/Neither agree nor disagree 3/Disagree 2/Strongly disagree 1).

“I am proud to be working for my firm or organization” (Strongly agree 5/Agree 4/Neither agree nor disagree 3/Disagree 2/Strongly disagree 1).

*Job satisfaction* “All in all, how satisfied would you say you are with your job?” (Very satisfied 4/Somewhat satisfied 3/Not too satisfied 2/Not at all satisfied 1) (mean = 2.29, SD = .76) (standardized for SEM).

*Turnover intention* “Taking everything into consideration, how likely is it you will make a genuine effort to find a new job with another employer within the next year?” (Very likely 3/Somewhat likely 2/Not at all likely 1) (mean = 1.55, SD = .75) (standardized for SEM).

## Outside Opportunities

*Ease of finding other job* “How easy would it be for you to find a job with another employer with approximately the same income and fringe benefits as you have now?” (Very easy 3/Somewhat easy 2/Not easy at all 1)(mean = 1.97, SD = .78).

## Appendix 2: Testing of Structural Equation Model

To test the model in Fig. 1 and evaluate how the disparities are related, we employ a structural equation model using the random sample that answered questions in the QWL module. The model is restricted to respondents with valid observations on every measure, and uses all of the measures except for organizational commitment, since the QWL module did not contain an adequate measure of this. The analysis is performed with Lisrel

8.7 statistical software [83]. Structural equation models are typically based on multi-item measures of latent variables. As our measures have several single indicators, we correct for the reliability of the single-item indicators of latent variables following Anderson and Gerbing’s method, which assigns a unique variance of 0.95 to these variables and sets the residual error variance for these variables to the product of variance of the indicators multiplied by 0.1 [84].

Variable means and correlations, excluding the control variables, are presented in “Table 5 (Appendix 3)”. To evaluate the factor structures of the data, we employ a two-step approach to the structural equation model [54]. Absolute fit indexes show that the measurement model provides an acceptable fit to the data ( $\chi^2=1097.26$ ,  $df=397$ ,  $p<.0001$ , TLI=0.94, GFI=0.92, CFI=0.96, NFI=0.94, RMSEA = 0.050). Our hypothesized model presented in Fig. 1 provides an acceptable fit to the data ( $\chi^2=1963.63$ ,  $df=527$ ,  $p<.0001$ , TLI=0.88, GFI=0.88, CFI=0.93, NFI=0.91, RMSEA = 0.063). To confirm whether our model has the best fit to the data, we conduct the chi-squares difference procedure [85].

In this procedure, we develop seven alternative models according to the extant literature, and then compare the chi-squares and degrees of freedom between our hypothesized model and each of seven alternative models. As seen in “Table 6 (Appendix 3)”, the goodness of fit index of each alternative model is acceptable except for alternative model 5, which has an unacceptable Root Mean Square Error of Approximation (RMSEA) of 0.081. Thus, six alternative models (i.e., alternative models 1, 2, 3, 4, 6, and 7) are employed for chi-squares comparison.

The results show that the chi-squares differences between our hypothesized model and each of the alternative models 2 to 7 are significant. The model that has more parameters and fewer degrees of freedom is favored when the chi-squares difference is significant [85]. Our hypothesized model is therefore preferred to alternative models 2–7, which have higher chi-squares with fewer parameters and more degrees of freedom than our hypothesized model. In the chi-squares comparison with alternative model 1 that has a smaller Chi square and fewer degrees of freedom than our hypothesized model, the result shows that there is no significant difference in the chi-squares between the two models ( $\Delta\chi^2=3.11$ ,  $\Delta df=3$ ). In this case, the model that has fewer parameters is favored [85]. Hence, our hypothesized model, which is more parsimonious than alternative model 1, is preferred.

## Appendix 3

See Tables 5, 6

**Table 5** Descriptive statistics and correlations for SEM model

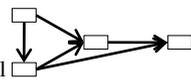
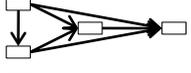
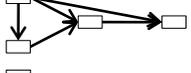
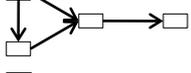
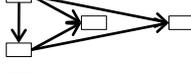
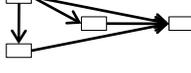
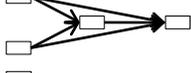
Variables <sup>a</sup>	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Disability	0.110	0.312											
2. Pay	-0.012	1.021	-0.055										
3. Job security	0.026	0.964	-0.126*	0.053									
4. Job flexibility	-0.025	1.002	-0.090*	0.015	0.007								
5. Work family balance	-0.006	0.852	-0.024	-0.061	0.142*	-0.122*							
6. Participation	0.015	0.809	-0.034	0.157*	0.171*	0.205*	-0.190*						
7. Skills	0.023	0.669	-0.061	0.065	0.313*	0.151*	-0.077*	0.522*					
8. Promotion	-0.017	0.998	-0.012	0.070	0.221*	0.090*	-0.053	0.240*	0.418*				
9. Treatment by management	0.018	0.718	-0.116*	-0.111*	0.437*	0.134*	0.076*	0.351*	0.554*	0.357*			
10. Co-worker relations	0.007	0.850	-0.044	-0.070	0.313*	0.105	0.016	0.307*	0.415*	0.259*	0.551*		
11. Turnover intention	0.037	0.989	0.021	-0.165*	-0.240*	0.073	-0.027	-0.032	-0.163*	-0.156*	-0.204*	-0.156*	
12. Job satisfaction	0.044	0.983	-0.119*	0.012	0.338*	0.032	0.162*	0.233*	0.492*	0.282*	0.570*	0.360	0.329*

Numbers 1–11 in the top row correspond to the variables in the respective sections of the table

\* $p < .05$

<sup>a</sup>Partial correlations controlling for age, gender, race, education, and occupation variables

**Table 6** Fit indices for structural equation models

Models	$\chi^2$ (df)	Stand alone fit indices					Chi square comparison <sup>a</sup>
		TLI	CFI	NFI	GFI	RMSEA	
 Hypothesized model	1963.63 (527)	0.88	0.93	0.91	0.88	0.063	N/A
 Alternative model 1	1960.52 (524)	0.88	0.93	0.91	0.88	0.063	3.11 (3) n.s
 Alternative model 2	2073.06 (539)	0.87	0.92	0.90	0.88	0.064	109.43 (12)***
 Alternative model 3	2075.10 (541)	0.87	0.92	0.90	0.88	0.064	111.47 (14)***
 Alternative model 4	1987.38 (529)	0.88	0.93	0.90	0.88	0.063	23.75 (2)***
 Alternative model 5	2981.41 (539)	0.83	0.90	0.88	0.83	0.081	1017.78 (12)***
 Alternative model 6	1985.90 (532)	0.88	0.93	0.91	0.88	0.063	22.27 (5)***
 Alternative model 7	1972.36 (529)	0.88	0.93	0.91	0.88	0.063	8.73 (2)*

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

<sup>a</sup>Chi-square of hypothesized model is compared to those of all alternative models

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