



Neat Gizmo!/That Looks Scary: Employer Reactions to Assistive Technology

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Abstract

Purpose Accommodations are vital for protecting equal access and increasing the employment of people with disabilities. However, the evidence on whether employers are willing or resistant to provide accommodations is mixed. We explore reactions to accommodations specifically associated with Assistive Technologies (AT). While the presence of such a device should reassure hiring managers about the abilities of the candidate to do the job, they also risk raising new questions and uncertainties.

Methods Hypothetical job candidates with and without disabilities were presented to participants with hiring experience to examine perceptions of employability, risk, and trust. Several conditions included the candidate describing the use of AT (i.e., an exosuit) and requesting accommodations, with and without extra technical or enthusiastic language to explain the specific device.

Results Quantitative and qualitative results show that the request for accommodations, in general, is problematic. And while using the exosuit seems to benefit perceptions of trust, it still seems risky and does not categorically improve employability perceptions. Extra language provided by the candidate to explain the device did not improve outcomes but did (in the case of enthusiastic language) make people more open to seeing the positive aspects of the device.

Conclusion While using an AT is a positive advance for a job candidate with a disability, the perceptual risk and the salience of the disability are both increased. Future work is needed to explore the options for better reassuring hiring managers about such devices.

Keywords Disability · Accommodations · Assistive technologies · Employability

Introduction

Bias exists for people with disabilities. Even when equally qualified, job candidates presenting with disabilities may be denied employment, whether because of problematic stereotypical assumptions or because of legitimate constraints faced by employers [1]. Despite the Americans with Disabilities Act (ADA),¹ employment rates for people with disabilities indicate that getting and staying employed has historically been more challenging for this group [4]. In light of this, vocational rehabilitation and assistive technology efforts have aimed to help close the gap by allowing people with disabilities to fully function on the job.

Assistive Technology as Accommodation

Assistive Technology (AT) is defined as “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities” (Sect. 1401(1) of the Individuals with Disabilities Education Act, 2019), and its presence in the workplace is protected by the Assistive Technology Act of 2004. The value of AT has been recognized for some time as a critical tool in getting people with disabilities to work [2, 5].

AT is one form of workplace accommodation, whether provided by the employer or the employee. Accommodations, more broadly, are described as “modifications in the

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¹ This federal law aims to reduce obstacles, protect productivity and performance, and ensure the skills that workers with disabilities possess are as appreciated as they are among their non-disabled peers, including through the provision of reasonable accommodations [2, 3].

job, work environment, work process, or conditions of work that reduce physical and social barriers so that people with disabilities experience equal opportunity in a competitive work environment” [6]. Examples include modifications of work tasks, accessibility to an office, equipment or software adjustments, or even establishing a flexible work schedule.

From the employer’s standpoint, however, accommodations are a gray territory. Although some employers have reported workplace accommodations to be worthwhile [7], with anecdotes including improved productivity, retention, and culture [8, 9], all while incurring minimal costs [10], others feel apprehension and discomfort [11–13]. The trepidation among cautious employers is typically driven by (1) fears of egregious costs (even if unfounded), (2) a poor understanding of what accommodations are and how they might help, (3) difficulty in setting up proper accommodations, and (4) little support from the outside world to guide these decisions and processes [14, 15].

Concerns about accommodations are perhaps reinforced by employer attitudes toward disability inclusion [16]. According to the taste-based discrimination model [17], non-disabled employers may prefer to work with employees who are similarly non-disabled. Employers may subsequently perceive people with disabilities as less skilled, more dependent, and unfit for the workplace [18–20]. While these beliefs do not necessarily imply outright discrimination, they could subtly and negatively influence an employer’s willingness to provide workplace accommodations, thereby hindering equal employment opportunity [21] and creating a culture of intolerance [22]. This is supported by a study of EEOC charge data, which showed that the predominant issue related to reasonable accommodations [23].

Another aspect of concern for the employer is the perception of fairness. For example, offering flexibility exclusively to people with disabilities can, in this case, be perceived as distributively [24] and procedurally [25] unfair and unacceptable to coworkers. Similarly, assistive devices based on impressive technologies can spur debate over fairness, as seen in the controversy surrounding whether Oscar Pistorius’s prosthetic legs gave the former Olympian sprinter a competitive edge in racing over non-disabled athletes [26]. In fact, studies have shown that perceptions of fairness are lowest among those without disabilities when their disabled peers receive accommodations and excel in performance [27]. This can create tension and resentment within the workplace and, in extreme cases, may even lead to retaliation, such as workplace bullying [28, 29].

The tremendous evidence demonstrating just how difficult it is for people with disabilities to get the accommodations they need on the job [30] speaks to the hesitance of many employers to do what it takes to bend themselves and their jobs in ways that might be nontraditional but more effective for a specific individual. Given this, we expect to see a

general resistance to job candidates who express any need for accommodations.

H1: Discussion of Accommodations during an Interview Will Limit Employment Outcomes

Reactions to Technology

AT enthusiasts argue that in comparison to other job accommodations, technologies such as remote-working tools, screen readers, accessible websites, dictation software, wearables, and the like level the playing field for people with disabilities without causing as much disruption for employers and peers as other forms of accommodations might, such as physical changes to the workspace or changing aspects of the job itself [31]. In its purest form, AT reduces barriers to employment: “Job Analysis + Assistive Technology/Accommodation = Rehabilitation = Productivity” [2].

While AT can solve technical problems, we know less about the impression that they give. What is the psychological impact of viewing a wearable assistive device to improve mobility, for example, on an otherwise qualified job candidate? Some research has addressed issues surrounding AT, such as maintenance, training, availability, and effectiveness [32], but this question of employer reaction has remained largely unexplored.

For people with disabilities, AT is a means to an end in terms of employment (among other areas). For employers, perceptions of these devices and how they work may be based as much on subjective appraisal and gut reaction as on the reality of what they can make possible for the user. Perceptions of these technologies can be shaded in either a positive or a negative direction.

On the positive side, technology, in general, is often thought of as a savior and a problem solver. Just as eyeglasses solve the problem of visual limitations without causing any further issues for engaging with work (with the possible exception of fighter pilots), assistive devices could potentially neutralize otherwise-concerning disabilities. In support of this perspective, the Machine Heuristics model has established that there can be a default “in technology we trust” mindset in which people are reassured by the presence of technology [33]. In this model, machines may even be considered more reliable, secure, and trustworthy than humans. However, when it comes to assistive devices, the primary intent is to ensure that no gap exists between the user and another who does not require it. Whether the device is inconspicuous and almost invisible (e.g., hearing aids and cochlear implants, screen readers, speech recognition software, etc.) or rather apparent (like the exosuit presented in this study), this

model suggests that the presence of technology should be reassuring as a means to rehabilitate a disability that can otherwise limit human performance.

On the negative side, AT could also be a signal of concern for employers, leading to resistance. For one thing, in direct contrast to the Machine Heuristics model, there also exists the Technology Anxiety model (or, as some have coined it, Robo-Phobia!) in which a generalized fear of technology limits how much people can accept it as a solution to their problems [34]. What if the technology fails? What if it encounters a situation that requires human judgment or adaptation to a changing environment beyond its original intent? Or, what if it works perfectly well but causes disruptions in the workplace or is not accepted by clients and customers? These concerns can lead to hesitating to engage with technology when given a choice. They may also further entrench the stigmatizing attitudes that people may hold about whether those with disabilities make for less productive workers. Thus, it is also possible that AT, combined with institutional biases against people with disabilities, could trigger more of a fear-based reaction than one of reassurance, and the technology may prove to be more of a liability than an asset. Even for the user of the AT who is disabled, feeling that the device is either unreliable or physically or visually obtrusive can lead to lower levels of self-efficacy and self-confidence [35], especially in a workplace environment that is culturally aversive to disability [6].

However, on balance, given the increasingly mainstream nature of AT of all kinds and its subsequent societal acceptance (such as that seen for limb prosthetics—see [36]), we expect that the presence of an assistive device will be more reassuring than harmful for a job candidate.

H2: The Presence of AT Will Increase Employment Outcomes for Job Candidates with Disabilities

The last question is whether there is room for a job candidate with an assistive device to guide the interview in ways that would be reassuring to the potential employer, whether by talking openly about the device or by describing its capabilities in more detail. Research has shown that contrary to the popular advice stating that people with disabilities should refrain from talking about their disability during a job interview at all, there are benefits to be had from open disclosure and discussion, including coming across as more genuine, likable, and even more competent [36–38]. We expect that speaking candidly about an assistive device may be similarly beneficial.

Table 1 Demographic characteristics

	Range	%
Age	18–24	8
	25–34	36
	35–44	25
	45–54	15
	55–64	10
	65 +	6
Gender	Male	54
	Female	44
	Other	2
Education	High School	8
	Some College	22
	2-Year College	10
	4-Year College	38
	Professional Degree	18
	Doctorate	4
Employment	Full Time	63
	Part Time	14
	Unemployed (Looking for Work)	6
	Unemployed (Not Looking for Work)	8
	Retired	3
	Student	
Management Experience	1–3 years	39
	4–10 years	27
	10 + years	20
	None	14
ADA Familiarity	Not at all	8
	Slightly	25
	Moderately	31
	Very	23
	Extremely	13

H3: Extra Explanation (Either Technical or Enthusiastic) Will Result in Improved Employment Outcomes

Methods

Participants

The Prolific Academic platform was used to recruit only US citizens with experience in a hiring role. Initially, 1,023 people participated in the survey, but after removing those who did not complete the task or failed an attention check, 1,008 remained in the sample for analysis. Seventy-six percent of the sample was between 25 and 54 years old, 44% female, 60% with a college degree or higher, 77% full or part time employed, 86% with at least some management experience (47% with more than four years), and 67% at least moderately familiar with the ADA. Please see Table 1 for the complete demographic characteristics of this sample.

Table 2 Manipulation by condition

Condition	Disability	Accommodation request	Device	Extra language describing device
1	No	No	No	No
2	Yes	No	No	No
3	Yes	Yes	No	No
4	Yes	No	Yes	No
5	Yes	Yes	Yes	No
6	Yes	Yes	Yes	Enthusiastic
7	Yes	Yes	Yes	Technical

Experimental Design and Materials

Participants were first shown a job description for a position as a pharmacy stock clerk, which included qualifications such as being able to lift objects overhead as well as tasks like assisting pharmacy personnel, rotating inventory, checking in vendors, and a variety of other tasks. The precise language was based on a current job posting for an actual position with a national pharmacy chain. After reviewing the job description, the participants then viewed a section of the fictitious job applicant's resume, which included three years of background experience working in a grocery store as a cashier and stocker and having had volunteer experience in a local food bank. (See Appendix A for the job posting and resume.)

Participants were randomly sorted into one of seven conditions (see Tables 2 and 3 for a complete layout of the manipulations in each condition) and then viewed a written transcript of a fictitious interview between the employer and the candidate (based on those used in prior research; see [16, 39].

After a brief introduction expressing interest and describing their prior experience, the candidate then informed the potential employer that they are now returning to work following a two-year gap in employment due to an injury. By condition, the job candidate explained some combination of their disability, accommodation request, and the assistive device (see Table 3 for sample language used in each condition). In every condition, the candidate then referred the employer to two photos of the device (see Appendix B for the two photos).

Quantitative Measures

We asked participants to evaluate how an employer would feel about the candidate. Employment outcomes were measured in three ways. The first three questions pertained to employability [16]: whether they should offer the position to this candidate (0 to 100 scale, later converted to 1–7); think the candidate would do a good job (1–7 scale); and would

have any concerns about hiring this candidate (1–7 scale, reverse coded) ($\alpha=0.85$). Participants then responded to a one-item measure of risk: thinking as the employer, how risky do you think it would be to hire this candidate, ranging from 0 (not at all) to 100 (extremely risky)?² Finally, participants rated how trustworthy the candidate seemed on six items [40], asking how much this candidate seemed like someone who would: be trustworthy, tell the truth, meet obligations, be reliable, keep their word, and not mislead others ($\alpha=0.87$).

Qualitative Measures

In spite of not being hypothesized, we also asked our participants to provide their thoughts and reactions after viewing the images of the device. Those participants ($n=571$) who were in one of the device conditions (with the visual images) were asked open-ended questions about their reaction to the device, their potential concerns about an employee using this device, and their opinion about whether or not it was wise for the candidate to introduce and show pictures of the assistive device during this preliminary phase of the job search (as opposed to waiting until later in the process, such as once the job offer has been made).

Coding. The device reaction responses were coded at the highest level based on whether the tone of the response was primarily positive or negative, with a third category labeled “other.” Concerns were sorted first into either “yes” or “no” (did the respondent report having any concerns or not). Then, the “yes” responses were further coded into one of eight categories: cost, need for assistance, liability potential, distraction potential, functionality, appearance/form, unfamiliarity, and bias against the applicant or the device as an unreasonable accommodation. The disclosure question was sorted into “good idea,” “bad idea,” “mixed,” and “other.” Two coders coded a subset of the data (100 responses) and achieved a 94% agreement rate. One coder proceeded to code the rest of the data, but difficult responses were discussed until a consensus was reached.

Results

Quantitative Measures

See Table 4 for all means and standard deviations for the three dependent variables by condition.

² Note that this single-item measure was exploratory in nature, and validity cannot be assured. Future research can aim to build this construct into a more reliable and valid full measure.

Table 3 Language included by manipulation

Manipulation	Language
Disability (conditions 2, 3)	“...some upper-body mobility limitations and problems with dexterity, such that reaching or lifting can sometimes result in fatigue and pain.”
No accommodations, no device (condition 2)	“I would not need any accommodations on the job.”
Accommodations (conditions 3, 5, 6, 7)	“...but given extra time to complete certain tasks as well as occasional flexibility in scheduling...”
Additional accommodations with device (conditions 5, 6, 7)	“I may need assistance in putting on and taking off the device while at work, as well as time to change the batteries every 90 min or so.”
Device (conditions 4, 5, 6, 7)	“I now have a device that compensates for these limitations.”
Enthusiastic language (condition 6)	“This wearable device is outstanding—it changed everything I do. I use it around the house for chores or when I’m shopping, and it takes so much stress off my joints...I jokingly refer to this as my superhero suit!”
Technical language (condition 7)	“This wearable device is a tethered soft exosuit with pneumatic actuation that improves my range of motion by between 30 and 50 degrees, depending on the gesture. It improves my joint kinematics for picking up objects by relieving stress.”

Table 4 Quantitative descriptive statistics

	Condition	N	Mean	SD	95% CI for Mean	
					Lower	Upper
Employability	1	142	5.02	1.22	4.82	5.22
	2	148	4.27	1.30	4.06	4.48
	3	144	3.88	1.34	3.66	4.10
	4	146	4.25	1.40	4.02	4.48
	5	144	4.03	1.49	3.78	4.27
	6	145	3.92	1.34	3.70	4.14
	7	146	3.85	1.49	3.61	4.09
Risk	1	141	33.50	24.42	29.44	37.57
	2	148	46.08	26.63	41.76	50.41
	3	144	53.90	26.89	49.47	58.33
	4	146	52.14	28.50	47.48	56.81
	5	144	55.26	29.38	50.42	60.10
	6	145	58.52	27.61	53.99	63.05
	7	146	60.78	29.05	56.03	65.53
Trust	1	142	5.64	0.91	5.49	5.80
	2	148	5.70	0.86	5.56	5.84
	3	144	5.73	0.94	5.58	5.89
	4	146	5.91	0.88	5.77	6.05
	5	144	5.89	0.98	5.73	6.06
	6	145	5.86	0.88	5.72	6.01
	7	146	5.93	0.82	5.80	6.07

Disability Versus No Disability

In spite of not being hypothesized, we initially explored the long-standing effect of having a disability on the job candidate’s employment outcomes. Consistent with previous work [4], the candidate with no disability was rated as higher on employability and lower on risk than the candidate with the disability. Surprisingly, this candidate was also rated as

lower on trust. A one-way ANOVA was used to compare the effect of the manipulations on each employability, risk, and trust. This revealed that there were statistically significant differences between at least two groups in each employability, risk, and trust (see Table 5 for ANOVA results).

A planned contrast comparing the no-disability candidate (condition 1) with all of the disability candidates combined (conditions 2, 3, 4, 5, 6, 7) showed that

Table 5 ANOVA results

DV	<i>F</i>	df	<i>p</i>
Employability	12.74	6,1008	<0.001
Risk	15.95	6, 1007	<0.001
Trust	11.50	6, 1008	=0.027

the no-disability candidate was rated as more employable and less risky than all candidates with a disability (Employability: Contrast = 5.91, $t = 7.94$, $p < 0.001$, 95% CI [4.45, 7.38]; Risk: Contrast = - 125.67, $t = - 8.38$, $p < 0.001$, 95% CI [- 155.11, - 96.23]), but also as less trusted (Trust: Contrast = - 1.17, $t = - 2.4$, $p = 0.017$, 95% CI [- 2.13, - 0.213]).³

Effects of Device

Those candidates with the device (conditions 4, 5, 6, 7) were rated as more trustworthy, but also riskier, than those candidates with the disability but without the device (conditions 2 and 3) (Contrast = - 0.73, $t = - 2.82$, $p = 0.005$, 95% CI [- 1.23, - 0.22] for Trust and Contrast = - 26.74, $t = - 3.38$, $p < 0.001$, 95% CI [- 42.25, - 11.22] on Risk). These groups did not differ on ratings of employability (Contrast = 0.25, $t = 0.65$, $p = 0.52$, *ns*). This pattern of results suggests that the device seems to inspire trust in the candidate but also raises concerns about risk—perhaps these competing reactions neutralize each other, and thus, employability remains the same. This does not support Hypothesis 2, as the central employability rating was not improved by the addition of the device, with trust increasing (in support of Hypothesis 2) but risk also increasing (contrary to Hypothesis 2).

To assess exactly how much risk the device itself adds, we compared the single condition with the disability but no device and no accommodations (condition 2) with the single condition with the disability and the device but no accommodations (condition 4) and found that the device alone does add a marginally significant amount of extra risk ($t = - 1.89$, $p = 0.06$ marginally significant, 95% CI [- 12.39, 0.27]). This finding counters Hypothesis 2.

Effects of Accommodations

Ratings did seem to change based on whether the candidate mentioned accommodations. All candidates that mentioned accommodations (conditions 3, 5, 6, 7) were rated as less employable than were those with a disability but without accommodations (conditions 2 and 4) (Contrast = 1.36, $t = 3.47$, $p < 0.001$, 95% CI [0.59, 2.14]). These accommodation-requesting candidates were also seen as much riskier (Contrast = - 32.01, $t = - 4.06$, $p < 0.001$, 95% CI [- 47.50, - 16.53]), but were not seen as different overall for trust (Contrast = - 0.19, $t = - 0.76$, *ns*). This supports Hypothesis 1.

For the subset of conditions in which the device was presented, we then compared the one condition without an accommodation request (condition 4) with all the conditions that included an accommodation request (conditions 5, 6, 7). Again here, it seems that accommodation requests hurt both perceptions of employability and risk while leaving trust unaffected (Contrast = 0.95, $t = 2.42$, $p = 0.016$, 95% CI [0.18, 1.72] for Employability; Contrast = - 18.13, $t = - 2.29$, $p = 0.022$, 95% CI [- 33.64, - 2.62] for Risk; Contrast = 0.04, $t = 0.16$, $p = 0.87$ for Trust, *ns*). This highlights the potential backlash associated with requesting accommodations and again supports Hypothesis 1.

Effects of Extra Language, Enthusiastic/Technical

When comparing the candidate who used enthusiastic language to describe the device (condition 6) to the candidate who used technical language instead (condition 7), there were no differences in any of the dependent variables (all $p > 0.48$, *ns*). However, using either type of language (conditions 6 and 7) seems to make the participant lower on employability and higher on risk than those who had the device but did not spend extra time explaining it in any way (conditions 4 and 5) (Contrast = 1.01, $t = 2.22$, $p = 0.26$, 95% CI [0.12, 1.91] for Employability and Contrast = - 23.78, $t = - 2.60$, $p = 0.009$, 95% CI [- 41.73, - 5.84] for Risk). The levels of trust remained the same (Contrast = 0.02, $t = - 0.07$, $p = 0.95$, *ns*). Adding more language to discuss the device may work against the candidate's best interests, which is in direct contrast to the prediction made in Hypothesis 3.

Qualitative Coding

See Tables 6 and 7 for descriptive statistics for the qualitative measures.

³ Note that each comparison between the no-disability and each separate condition with disability were all individually significant at the $p < 0.001$ level for both employability and risk. We chose to present the single contrast for simplicity, as we do throughout. The individual comparisons for trust are less consistent, and show instead that all candidates without the device were equivalent in trust, and all less trusted, than candidates with the device (Contrast = 2.47, $t = 3.62$, $p < 0.001$, 95% CI [1.13, 3.82]).

Table 6 Qualitative descriptive statistics

	Condition	N	Mean	SD	95% CI for Mean	
					Lower	Upper
Positive reactions to device	4	146	0.53	0.50	0.45	0.61
	5	144	0.28	0.45	0.21	0.36
	6	141	0.55	0.50	0.47	0.64
	7	145	0.33	0.47	0.25	0.41
Negative reactions to device	4	146	0.33	0.47	0.25	0.41
	5	144	0.63	0.48	0.55	0.71
	6	141	0.29	0.46	0.21	0.37
	7	145	0.61	0.49	0.53	0.69
Presence of concerns*	4	140	0.83	0.38	0.77	0.89
	5	139	0.81	0.40	0.74	0.87
	6	134	0.87	0.34	0.81	0.92
	7	143	0.83	0.38	0.76	0.89
Positive reaction to disclosure	4	146	0.81	0.40	0.74	0.87
	5	144	0.81	0.39	0.75	0.88
	6	141	0.90	0.30	0.85	0.95
	7	145	0.86	0.35	0.81	0.92

*See Table 6 for specific concerns

Table 7 Specific concerns, collapsed across condition*

Specific concern	Percent
Functionality	53
Liability	24
Form/appearance	17
Distraction	12
Cost	1
Need for Assistance	4
Unfamiliarity	1
Bias Against Applicant/Device	5

*Note that these add to more than 100% since participants' free-response comments sometimes contained more than one concern and all were coded

Positive/Negative Reactions

Participants were first asked what they thought of the device in general. The coding scheme sorted these responses into positive and negative comments.⁴ Sample responses include:

- *Positive:*

- o "I was impressed that they have devices to help with issues related to mobility and/or dexterity injuries."
- o "That thing is f***** cool as hell."
- o "My eyes welled up with tears of compassion."
- o "Neat gizmo."

- *Negative:*

- o "OH MY GOD!!! Was my general reaction. It looks very uncomfortable, obstructive, obtrusive and I don't know how this person would be able to work in a small pharmacy area without turning and knocking things off the shelves."
- o "A little 'put off', and I think customers might stare."
- o "Good God, is this a real question? The person needs to get a sit in a chair job and hit some computer keys."
- o "The device was far more extensive than I thought it would be—it almost looked scary."

However, the reaction types were not equally seen across conditions. When compared to those who saw the device and also requested accommodations (condition 5), those who saw the device without the addition of accommodation requests (and without extra language, condition 4) had significantly more positive reactions and significantly fewer negative reactions to the pictures of the device itself ($t=4.33$; $p<0.001$; $MD=0.24$; 95% CI 0.13 to 0.35 for positive reactions, and $t=-5.40$; $p<0.001$; $MD=-0.30$;

⁴ While we explored using a more nuanced and extensive coding scheme, we found that the higher-order coding of general positivity and negativity in responses did the best job of describing the pattern of reactions without bogging the paper down with a needless level of detail. We also note the fact that biases and assumptions can be seen in the responses in many places; direct coding of the language at this level was not within the scope of this paper.

95% *CI* – 0.41 to – 0.19 for negative reactions).⁵ This provides some additional support for Hypothesis 1.

Those requesting accommodations but with the addition of enthusiastic language (condition 6) had more positive reactions and fewer negative reactions than those who used technical language (condition 7) instead ($t = 3.87$; $p = < 0.001$; $MD = 0.22$; 95% *CI* 0.11 to 0.33 for positive reactions, and $t = -5.78$; $p = < 0.001$; $MD = -0.32$; 95% *CI* – 0.43 to – 0.21 for negative reactions). This suggests that the type of explanation matters and thus allows for a more specific understanding of the role of extra language than provided by Hypothesis 3.

Concerns. Most respondents (83%) expressed concerns about the device after seeing it. These did not vary by condition (overall ANOVA, $F(3,552) = 0.603$, *ns*). The expressed concerns were predominantly displayed in four categories:

1. *Functionality* (53%):

- “My concerns would be that the device makes the employee much slower at their job than would someone without the device”
- “Mechanical issues, to be sure.”

2. *Liability* (24%):

- “Heck yeah! That’s a liability suit just waiting to happen”
- “I would be concerned about the applicant re-injuring himself and the liability of that.”
- “I think that he would hurt himself, other customers, and fellow co-workers with the strange device. In general it’s a lawsuit waiting to happen.”

3. *Appearance/Form* (17%):

- “Only concern I would have is him taking up too much space so people couldn’t get through the aisles while he was working so I would probably have him working third shift stocking”
- “Yes. It looks ridiculous. It was a lot bigger and bulkier than I had anticipated. I could see him being very clumsy in tight aisles.”

4. *Distraction* (12%):

- “I think it would distract both the person wearing it as well as other employees”
- “I think it could be a distraction to customers and co-workers.”

The remaining responses were scattered among the other four categories, with 4% or fewer in each. We note with interest that cost did not arise as a significant factor; presumably, because the candidate described already owning the device, this did not arise as a major source of concern in these data.

⁵ Note that some reactions were coded as neutral, so it would be possible for these patterns to differ.

Disclosure

On the question of whether it was wise for the candidate to disclose the disability and the device so early in the discussion with the potential employer, most participants (85%) felt positively about that choice. The participants who had seen the candidate use enthusiastic language (condition 6) were the most positive about this question (90%) as opposed to the other three conditions (conditions 4, 5, 7) (83%), (overall $F(3,573) = 2.14$, $p = 0.094$, *marginally significant*; Contrast = 0.22, $t = 2.09$, $p = 0.038$, 95% *CI* 0.01, 0.42). Sample statements from participants on this item include:

- “It shows confidence and transparency. I wouldn’t not hire someone if they kept it a secret, but I would absolutely prefer this applicant.”
- “I think this is smart and says a lot about this individual’s character, they are clearly open and forward with their situation and therefore, I would trust them quite a bit if we decide to hire.”
- “I applaud his attitude.”

Discussion

First and foremost, bias against people with disabilities is apparent. Consistent with taste-based discrimination, regardless of whether the candidate mentioned needing accommodations on the job or whether they had a device to help compensate for their limitations, participants were more likely to want to hire the non-disabled candidate and considered that person less risky as well. It does seem that candidates with disabilities continue to face obstacles in the hiring process attributed to bias.

Presenting an assistive device seemed to help the fictitious job candidate become more trusted but was also associated with higher risk ratings. Overall, the device’s presence alone did not encourage higher ratings of employability, perhaps because concerns about it were too great. This is consistent with the 83% of respondents who reported having concerns about the device in the qualitative data. The fears they described primarily centered around what the device looked like, how it might further limit the employee’s work, and the potential liability of having a person wearing it on the job.

This provides mixed evidence for the machine heuristic model in which people’s reaction to technology is tied to common stereotypes about it, including the fact that it is reliable. This reaction may be tempered by a potential fear of the technology itself, perhaps because (unlike the computer programs primarily studied in the machine heuristic literature) this particular piece of technology could come

across as bulky and intimidating, especially in a customer-facing job.

On the other hand, accommodations seem to be a universal pain point. Whether or not the candidate described having the AT, mentioning the need for accommodations lowered ratings of employability while raising ratings of risk. From the employer's perspective, the issue of "reasonable accommodations" is a very muddy area. Previous research has noted that employers often do not understand exactly how the accommodation will fold into their everyday operations and thus fear the change. They are left to wonder whether the accommodation will be "reasonable" based on the benefits and potential drawbacks to the employee, the employer, and the business as a whole. What's more, employers have been known to be resistant to accommodations because they are resistant to disability in the workplace. Stereotypic beliefs that people with disabilities are just not as capable as their non-disabled counterparts likely preclude any consideration of the value that accommodations can bring. Thus, employers' decision-making in this realm is idiosyncratic and often driven by emotion tied to lingering prejudice [24, 41].

The next question is whether there is anything the candidate can do by introducing the AT and the need for accommodations to allay fears and provide psychological reassurance. Contrary to our expectations, using additional language to explain the device with enthusiasm or technical precision did not help the candidate. Instead, it promoted lower ratings of employability and higher ratings of risk. Perhaps participants felt the extended conversation and additional language on the device were meant to disguise concerns about it. So, the extra explanation may have backfired along the "the [candidate] doth protest too much" lines. Or, perhaps additional language merely highlighted the device and brought it more front-of-mind than it would have otherwise been, thus, unintentionally raising greater concerns. As noted by previous research, AT can inspire the thoughts that although the person is now rehabilitated, they may also be helpless without the device [35].

However, there were some qualitative upsides to using enthusiastic language. It made the candidate seem honest and slanted the reactions of the device itself and the decision to discuss it in a more positive direction. While not enough to increase ratings of employability, it is noteworthy that the candidate's enthusiasm about it softened participants' reactions to the images of the device. Perhaps there is a better way to describe the device and its benefits that future research should examine, which would do a better job of simultaneously placating fears and building positivity around it. For example, might it be the case that a recommendation from a previous employer is more important for candidates with disabilities in the hiring process? Is it wise to offer or request an on-the-job probationary period as an

effective way to build trust, reduce the perception of risk, and demonstrate competence? Or is it the case that there is no way to effectively reassure potential employers in this context? If so, withholding all discussion of disability and accommodation needs until after the job is secured is the best answer, as is commonly advised [39].

There are, of course, limitations to what we can conclude from a single experiment. Of central importance is the artificial nature of the task. Our job candidates were created for this experiment, and despite having hiring experience, our participants were not truly hiring a person they would need to work with. This makes it difficult to assess the external validity of the findings. Perhaps in a real setting, the device would seem even more intimidating. Furthermore, even within our experimental design, participants were only exposed to the most limited amount of information about this candidate, with no opportunity to ask follow-up questions. Future research can hopefully explore this area more fully in a natural setting. Within the experiment, there were also limitations, including the fact that the measure of risk was only a single item. Individual respondents may have also reacted differently based on their own experiences, including their own disability status or familiarity with disability challenges and laws. The images we provided of the device contained a single individual (a young man) who may have unintentionally colored participants' perceptions. The presence of the photos themselves also seemed to have a large impact on many participants. It would be interesting to test whether the addition of this visual element (in specific or in general) was a significant factor in altering perceptions. Future work can explore nuance such as this, as well as the addition of other forms of reassurance by the job candidate (a letter of reference from a prior employer familiar with the device, or an offer to work for a risk-free trial period before the employer would need to commit to an offer) to see if the potentially intimidating nature of the assistive device can be lessened.

In addition, this experiment occurred at a single time and within a single country. People now have a certain comfort level with assistive devices like a wearable exosuit. While there may be less resistance than in the past, there is still room for greater acceptance. As wearable devices become more commonplace, they may stop being noteworthy. Engineering advances make the technology smaller and more subtle over time, allowing the focus to return to the employee, not the device. And in fact, a device that helps ease joint and muscle strain while lifting could be beneficial for anyone with a job that requires it. Indeed, many accommodations end up being useful for all of society (take the example of remote work options, which were long offered only to those in need and are now a more mainstream work option—see [42]).

Nevertheless, the pattern of results suggests some main effects, including the fact that the AT is helpful for job candidates in terms of inspiring trust (although not without hesitance on the part of the employer in terms of risk) but that requests for accommodations need to be handled with extreme care.

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Data Availability The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Conflict of Interest The authors have no relevant financial or non-financial interests to disclose.

Ethical Approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Institutional Review Board of Rutgers University on September 2, 2021, Study ID Pro2021001434.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Consent to Publication The author affirms that human research participants provided informed consent for publication.

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