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Reactions of applicants with disabilities to technology-enabled recruitment and selection: A research agenda

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Abstract

Technology-enabled recruitment and selection technologies, such as chatbots, assessment games, and asynchronous video interviews, are becoming more widely used. However, their impact on people with disabilities is frequently ignored; this has potentially significant implications for the perceived fairness of hiring decisions. We advance eight theoretical propositions on the positive and negative implications of technology-enabled recruitment and selection technologies for applicant reactions of people with disabilities. Our propositions are based on three key design features of these technologies: separation in time and space, automated administration, and automated evaluation. We provide recommendations for future research and discuss practical implications for the use of advanced technology in recruitment and selection.

KEYWORDS
applicant reactions, disabilities, HR technology, recruiting

Practitioner points

- Organizations are increasingly using technology-enabled recruitment and selection tools such as chatbots, assessment games, and asynchronous video interviews to recruit and select employees, without considering how these technologies can affect people with disabilities.
- We consider the positive and negative impacts of these technologies on the experiences of people with disabilities, with particular attention to applicant reactions.
- We offer guidance to vendors and users of these technologies in terms of how they can be used to provide better and more inclusive experiences for applicants.

1 | INTRODUCTION

Perhaps no area of human resources management (HRM) practice has outpaced research more rapidly than the application of advanced technology to employee recruitment and selection (Behrend & Landers, 2019; Gonzalez et al., 2019). Developers of technology-enabled HRM tools make several assertions about the value of these tools, including that they save recruiters' time by automating high-volume tasks such as resumé screening (Ideal, 2021), significantly reduce the time-to-fill (Oracle, 2019), create stronger connections

with applicants (Goldenberg, n.d.), and allow "companies to interview potential employees without inflicting any bias" (Rassool, 2022). In short, technology promises to revolutionize how HRM is practiced (Black & van Esch, 2020).

While better applicant experiences and unbiased outcomes are worthy goals, it is important to consider the extent to which these claims are realized for all diversity groups, including applicants with disabilities. Indeed, there is an increasing concern that technology-enabled HR tools may create barriers for people with disabilities, as evidenced by recent government initiatives in the United States, Canada, and European Union to evaluate and remediate possible discriminatory consequences stemming from the use of these selection tools, especially those leveraging artificial intelligence (AI).[1] At the same time, technology-enabled HR tools could *reduce* barriers to recruitment and selection for some job applicants with disabilities. Thus, these tools are a possible double-edged sword in that they can either amplify or mitigate the impact of disability on selection processes and outcomes (Guo et al., 2019).

The purpose of this paper is to analyze the impact of technology-enabled recruitment and selection tools on applicants with disabilities[2] (Dattner et al., 2019) and offer an agenda for future research. By focusing on applicant reactions, our work provides an analysis of the impact of AI-enabled advanced recruitment and selection technologies on applicants with disabilities, a topic that has so far been insufficiently addressed in both theory and practice. Indeed, recent papers either do not consider disabilities in their evaluation of advanced HR technologies (e.g., Acikgoz et al., 2020; Köchling & Wehner, 2020; Langer & Landers, 2021) or only mention it briefly (e.g., Hickman et al., 2021; Mirowska & Mesnet, 2021; Raghavan et al., 2020; Tippins et al., 2021).

Unfortunately, this oversight is not surprising. In many areas of organizational inquiry, practice, and policy, people with disabilities are omitted when diversity is considered. For example, many organizations do not specifically include disabilities in their diversity policies and programs (Ball et al., 2005), despite people with disabilities forming one of the largest diversity groups (Hyland & Rutigliano, 2013). Similarly, research on the experiences of people with disabilities lags behind research on other diversity categories in HRM (Beatty et al., 2019).

To this end, we review and critically evaluate existing research in this area, and we propose a theoretically grounded research agenda. In doing so, we contribute to the growing literature on emerging technology applications in HRM (Behrend & Landers, 2019; Gonzalez et al., 2019; Langer & Landers, 2021). Our focus on employees with disabilities also helps extend the literature on applicant reactions to the adoption of advanced technology in HR (Nikolaou, Georgiou, Bauer, et al., 2019). We also encourage more transparency from vendors about *how* advanced technologies can create more positive applicant experiences for applicants across diversity groups. This transparency is important because vendors do not generally explain the mechanism through which the purported positive outcomes are achieved (Bogen, 2019; Dattner et al., 2019) nor do they typically present empirical evidence supporting those claims (Hickman et al., 2021; Tippins et al., 2021).

Below we provide a brief overview of applicant reactions research, followed by a discussion of how technologies are used in recruitment and selection. Because tools used in HR contexts are rapidly developing and changing, we adopt Landers and Marin's (2021) Technology-as-Designed paradigm and identify a set of design features present in these technologies to theorize about the impact of technology-enabled recruitment and selection tools on applicant reactions for applicants with disabilities. Landers and Marin (2021) argue that theorizing at the level of *design features* rather than whole technologies is a more appropriate strategy that helps examine specific processes that underpin the technology use or the outcomes of such use. Moreover, this paradigm makes such theorizing more "future-proof" as technologies change rapidly. For example, rather than theorizing about e-learning technology in general, researchers could examine levels of learner control, practice opportunities offered, and use of video stimuli. This approach sustains the relevance of this research as technology evolves.

2 | APPLICANT REACTIONS TO RECRUITMENT AND SELECTION PRACTICES

Applicant reactions play an important role in the selection process. Fairness perceptions are a key theoretical lens used in this literature, with individual perceptions of fairness predicting important consequences such as more positive applicant attitudes toward organizations, the intended and actual acceptance of a job offer, and better performance once hired (McCarthy et al., 2017). This literature focuses on justice and fairness perceptions, finding that when selection procedures are viewed as fair, applicants will have more positive reactions. Four types of justice are generally considered: distributive, procedural, interpersonal, and informational (Colquitt et al., 2013). In the context of recruiting and selection, distributive justice focuses on the outcomes of selection decisions while procedural justice focuses on the process or procedures used to gather information and reach the decision. Informational justice addresses the information that people receive about decisions that are made about them, and interpersonal justice deals with the extent to which the job applicant was treated with respect.

The organizational justice framework described by Gilliland (1993) suggests that selection practices, policies, and decisions influence applicants' perceptions of organizational justice, which in turn affect their perceptions of fairness as well as their pre-hire and post-hire outcomes. As per Gilliland (1993), applicants evaluate several aspects of an employment selection system, including the formal characteristics of the process (e.g., whether the assessments are related to the job, they have had enough opportunity to perform, there is adequate reconsideration opportunity, the process is administered consistently), the explanation of the process (e.g., whether feedback is provided, justifications are provided for decisions, interactions with applicants are honest), and the interpersonal treatment of applicants during the process (e.g., whether the administrator is interpersonally effective,

applicants are treated respectfully, there is two-way communication, the questions are not improper or prejudicial). Meta-analytic evidence has supported the relationships between perceived characteristics and several outcomes of organizational attractiveness, such as intentions to accept a job offer and intentions to recommend the organization to others (Hausknecht et al., 2004). Interpersonal treatment was most strongly related to these outcomes, as well as consistency, job relatedness, and opportunity to perform. Some demographic differences (age, gender, ethnic background) were investigated as moderators of these relationships, but thus far disability has not been examined.

The literature on applicant reactions specifically to recruitment and selection procedures that use various technologies has found similar predictors of applicant fairness perceptions (Blacksmith et al., 2016; Köchling & Wehner, 2020; Langer & Landers, 2021). One key difference is that applicants often perceive a worse opportunity to perform in technology-mediated selection processes because they have less ability to manage impressions (Blacksmith et al., 2016; Langer et al., 2019), resulting in negative reactions and lower perceptions of fairness. Other research has examined applicant perceptions regarding the use of decision-making algorithms, hypothesizing that it could improve procedural justice perceptions due to consistency in decision-making, but findings have been mixed (Acikgoz et al., 2020; Hess et al., 2021; Köchling & Wehner, 2020). Again, it appears that no research to date has empirically tested how applicants with different disabilities react to technology-enabled recruitment and selection tools.

3 | DESIGN FEATURES OF TECHNOLOGY-ENABLED RECRUITMENT AND SELECTION TOOLS

Technology-enabled recruitment and selection tools may be built on a variety of different technology platforms and include a wide range of features. In this paper, we concentrate on three types of recruitment and selection tools that represent recent technological innovations: recruiting chatbots, assessment games, and asynchronous video interviews (AVIs) (Laurim et al., 2021; Lukacik et al., 2022; Weidner & Short, 2019). We selected these tools for our analysis because they are typically found in different phases of the recruitment and selection process. That is, chatbots are used early in the recruiting process, while assessment games are often used as an interim screening tool and are followed by AVIs. Despite these differences, these tools also share many features such as incorporating some form of artificial intelligence. AI in HRM generally consists of machine learning (ML) applications that use algorithms for prediction, classification, or segmentation (Strohmeier, 2022), as well as other applications including natural language processing (NLP) in which a computer detects and processes speech or written language. Recruiting tools may use chatbot technologies or conversational agents to facilitate a dialogue between an applicant and the technology throughout the recruiting process (Laurim et al., 2021). Assessment games may be designed with a series of algorithms that assess performance, present increasingly harder tasks to provide a more accurate understanding of the applicant's overall capacity, or provide judgments on applicant characteristics based on their performance across multiple games. AVIs are conducted with no live interviewer present (Lukacik et al., 2022) and may include both ML algorithms and NLP. Generative AI tools such as ChatGPT and Microsoft Bard that are based on large language models are also starting to be integrated into HR tools, including those for recruiting and selection (Budhwar et al., 2023). Thus, including chatbots, assessment games, and AVIs in our analysis allows us to cover a wide range of functions and technologies (see Table 1 for more detail).

Given this wide variation in present-day technology, we adopt the Technology-as-Designed paradigm (Landers & Marin, 2021). As noted above, this paradigm encourages researchers to identify key design features of technologies of interest and focus on those design features, rather than the individual technology, in their theorizing. Many technologies with the same name are designed differently and therefore have different effects on the people using them. For example, there are different ways to design an AVI with variations in how interview questions are presented, how much practice is offered to interviewees, and how the results are evaluated, among other features. Simply saying that an AVI was used as part of a selection process leaves many of these details open to interpretation, making it difficult to evaluate generalizability of the research (Landers & Marin, 2021). The Technology-as-Designed paradigm also takes into account the changing nature of technology. Technologies used in HRM processes have changed substantially in recent years, and we expect this pace of change to continue. For example, a chatbot 10 years from now will not function in the same way as a chatbot does today as user interfaces and AI capabilities improve further. Thus, while we offer present-day examples of specific technologies such as AVIs and chatbots to enhance clarity for the reader, we focus our theorizing on three design features frequently represented in technology-enabled assessment and selection tools: namely, separation in space and time, automation in administration, and automation in evaluation.

3.1 | Design feature #1: Separation in space and time

One key feature of advanced technology-enabled recruitment and selection tools is that they offer separation from the other actors in the process in both space and time (e.g., Lukacik et al., 2022; SparkHire, n.d.). Internet-enabled technologies permit remote, virtual access to information and to people. Applicants can obtain information about available positions and their requirements as well as participate in assessments and AVIs from any location. Representatives of the hiring organization may similarly participate in recruitment and selection activities from any location. Regarding the time component, technology-enabled recruitment and selection tools allow asynchronous engagement in these processes, such that the applicant and organizational representative may each participate at a

TABLE 1 Key features and examples of selected advanced HR technologies.

Technology	Key features and actions
Chatbots	• Use artificial intelligence (AI) to interpret the written or verbal input of people through natural language processing (NLP) technology and then provide an appropriate response (Araujo, 2018; Cohen, 2018; Laumer & Morana, 2022). • Interface resembles a text-based chat interface. • Display characteristics of human-like social interaction with Conversational AI; can be assigned a pattern of speech to represent a personality or organizational values (Laurim et al., 2021). • Respond to applicant requests for information. • Request information from applicants and determine fit with position requirements (Bogen, 2019). • Scalable to handle large numbers of applicants, can handle multiple applicants simultaneously. • Always available.
Assessment games	• Applicants play one or more online games designed to assess a variety of constructs such as working memory, ability to focus, emotional stability, and risk-taking propensity (Black & van Esch, 2020; Schellmann, 2021). • Algorithms can operate across multiple games to assess characteristics (Salim, 2015). • Open access games available to job seekers for practice or self-assessment.
Asynchronous video interviews	• Asynchronous, technology-mediated employment interview (Lukacik et al., 2022). • On-demand interview platform often hosted by a virtual agent (e.g., an avatar) interacting with the applicant. There is no live interviewer present. • Structured set of interview questions presented in visual/auditory format. • After the virtual agent asks the question, applicants are allowed time to think about their response before recording their video answer; the start of the recording is controlled by the applicant. • Potential to practice or re-record responses. • Responses are assessed by algorithms or asynchronously by human evaluators. • Assessment algorithms vary in what is evaluated (e.g., content of response, facial expressions, voice cues).

time of their own choosing rather than at a designated time. Separation in time and space increases the flexibility and convenience of the recruitment and selection processes, although it is likely to reduce social interaction. It also permits easier consideration of applicants from around the world.

3.2 | Design feature #2: Automation in administration

Another set of the design choices in technology-enabled recruitment and selection tools focuses on how to automate the administration of these processes. Within this category we identify three themes: automation for efficiency, automation for accessibility, and automation for standardization or customization. Automation for efficiency takes processes that were once handled by humans and uses automation to make them more efficient. This process could include the automated scheduling of interviews, the automated presentation of interview questions, or the use of NLP capabilities and generative AI tools such as ChatGPT in chatbots to answer basic applicant questions without human intervention (e.g., Black & van Esch, 2020; Budhwar et al., 2023; Lukacik et al., 2022). Automation for accessibility addresses the needs of applicants with disabilities more specifically, potentially allowing people to participate in recruitment and selection processes without individualized accommodations (e.g., captioning to convert spoken words into written text). Automation for standardization or customization either fixes certain properties of the tools to ensure that all applicants have the same experience (e.g., standardized questions and interviewer in an AVI) or provides applicants with the ability to customize certain features of the testing environment such as color, contrast, or font size as needed. Thus, there may be some overlap between customization and accessibility.

3.3 | Design feature #3: Automation in evaluation

The third design choice we consider is automation in evaluation. This design choice involves using algorithms to evaluate applicant input such as answers to chatbot questions, game performance, or interview responses. Applicants' micro-behaviors such as their facial expressions or tone of voice may also be evaluated in interviews. Depending on the level of automation, these evaluations can be used as input for human decision-makers or autonomously by the tool to include or exclude applicants from further consideration (Langer et al., 2021). Automation in evaluation facilitates evaluation at scale, with the use of algorithms allowing organizations to evaluate more applicants in a short period of time. This type of automation may reduce bias in evaluation (Tippins et al., 2021) because it can remove the biased judgments of individual evaluators.

4 | THEORIZING ABOUT APPLICANTS WITH DISABILITIES' REACTIONS TO TECHNOLOGY-ENABLED RECRUITMENT AND SELECTION TOOLS

Applicant reactions to recruitment and selection have attracted significant research attention, with new developments in this field being focused on applicants' reactions to technology-enabled

recruitment and selection tools (McCarthy et al., 2017). Indeed, it is clear that the technology used in selection processes can affect applicant reactions (e.g., Blacksmith et al., 2016; Köchling & Wehner, 2020; Langer & Landers, 2021; Lukacik et al., 2022). However, there has been little consideration thus far in this literature of individual differences in how and why people react to these technologies differently (Langer & Landers, 2021). The applicant attribute-reaction theory (AART; Ployhart & Harold, 2004) suggests that individual differences such as experience, values, and beliefs will affect how applicants develop attributions, and subsequently fairness perceptions, about selection procedures. We extend this literature by arguing that lived experience with a disability affects an individual's perceptions and beliefs and will therefore affect reactions to these recruitment and selection tools.

4.1 | Separation in space and time

Technology-enabled recruitment and selection tools offer many opportunities for separation in space and time between the applicant and the hiring organization. This separation can create flexibility in where and when recruiting and selection activities are conducted and are often described by vendors as an important advantage of these tools. Research has demonstrated positive effects of flexibility perceptions on applicant reactions regarding general attractiveness of a potential employer (Basch & Melchers, 2019), with flexibility viewed as making the tools easier to use for applicants. Moreover, these authors found that flexibility and fairness perceptions were positively correlated.

4.1.1 | Separation in physical space

Perhaps the main advantage of technology-enabled recruitment and selection tools is the possibility of interacting with the hiring organization remotely. This opportunity may be particularly welcome for applicants with mobility-related (e.g., using a wheelchair) or sensory (e.g., blindness) disabilities, but it could also be perceived positively by applicants whose disabilities prevent them from driving (e.g., applicants with epilepsy), or whose disabilities make some forms of public transit more challenging (e.g., applicants with agoraphobia, or who take medications that cause dizziness or vertigo). For these applicants, interacting with chatbots, engaging in virtually administered assessment games, and remote video interviews all provide the advantage of reducing or eliminating the need to travel to an organization's physical location or career fair (Lukacik et al., 2022). For some applicants with disabilities, traveling to an organization's offices for recruitment and selection purposes can be burdensome because it may involve arranging for adapted transportation (which is often unreliable; Bjerkan et al., 2013) or navigating the physical features of an unfamiliar location (e.g., finding accessible parking). Indeed, for many applicants with mobility-related disabilities, in-person assessments (especially if there are many assessments over different days) may be experienced as a barrier, and these applicants may unwillingly decide to not pursue certain job openings because of those barriers. This self-selection out of the applicant pool would lead to reduced employment opportunities for these applicants.

To the extent that applicants with disabilities interpret the flexibility inherent in remote assessment as akin to an accommodation received without necessitating the disclosure of a disability, they may assess the treatment they receive as positive. Indeed, many people are reluctant to ask for accommodations in the early phases of the selection process, given the real possibility of discrimination (Jans et al., 2012). Thus, any technology feature that would facilitate engaging with a recruitment or selection tool remotely could lead to more positive reactions, perhaps because these features could be interpreted as positive interpersonal treatment, which is an important determinant of applicants' perceptions of interpersonal justice. Moreover, technology-enabled recruitment and assessment could lead to a broader pool of employment opportunities for applicants with disabilities.

> **Proposition 1.** *Applicants with disabilities for whom traveling to the hiring company is experienced as a barrier will react more positively to the separation in physical space provided by technology-enabled recruitment and selection tools than applicants who do not experience travel as a barrier.*

It should be acknowledged that in-person assessments offer certain advantages for in-person jobs. For example, a technology-enabled pre-employment process that culminates in an onsite interview may allow candidates with disabilities more opportunities to gauge the organizations' disability-inclusive culture and practices or work environment. Candidates for in-person jobs might need an in-person visit to discover problems (e.g., an otherwise accessible office that has stairs to the bathroom; an unacceptably loud or chaotic working environment) that allow an informed decision to be made about that employer or job offer. Applicants with disabilities can also easily scan the workplace for cues that employees with disabilities are welcome (e.g., the presence of employees with visible disabilities, Braille signage).

For *remote* jobs, a technology-enabled assessment and selection offers similar opportunities, given that the technology present in the pre-employment process would possess some degree of fidelity to a remote work environment. Thus, applicants could use their pre-employment remote experience to gauge the hiring organization's culture and practices. For example, if the technology in the selection process is highly accessible and applicants are provided with accommodations easily, then they could infer that the technology used in the remote work itself would also be accessible. This is an important benefit given that the increased availability of remote work in recent years has provided increased work opportunities for people with disabilities (Ozimek, 2022).

However, the separation in space afforded by technology may lead to more negative applicant reactions when the job is in-person, but the assessment process is entirely technology-enabled. Many job

applicants will appreciate an opportunity to assess their potential work environment (Morelli & Illingworth, 2019), but this need may be more acute for applicants with disabilities. For applicants for whom evaluating the physical and social context of an organization matters, the reduced opportunities offered by remote interactions could lead to more negative reactions.

Proposition 2. *Applicants with disabilities who would normally use the onsite selection process to gauge the hiring organization's disability-inclusive culture and practices will react more negatively to the separation in physical space provided by technology-enabled recruitment and selection tools than applicants without these particular needs.*

4.1.2 | Separation in time

In addition to separation in space, many technology-enabled recruitment and selection tools provide separation in time, reducing or eliminating the need for synchronous interaction with the hiring organization. The flexibility of when to engage with the recruitment or selection tool may be of particular importance to applicants with episodic disabilities (e.g., multiple sclerosis, chronic pain, depression, migraine). For example, applicants who have vocal impairments could plan on recording their AVI answers at the time of day during which their vocal strain is minimized (e.g., in the morning, when their voices are most rested). Similarly, chatbots are available to answer questions at any time. This allows people with episodic disabilities to choose the best time for the interaction, rather than waiting to interact with a human recruiter. Indeed, these applicants may value this flexibility because it provides increased opportunity to perform, such that they can engage with the selection tool when they feel healthiest. Given the cycles of recruitment and selection, we frame our arguments of temporal flexibility to occur over the span of a day or a couple of days. Waiting weeks to respond to an AVI invitation, even if optimal for the candidate from a health perspective, would likely not lead to a successful continuation of the selection process.

Proposition 3. *Applicants with disabilities who require temporal flexibility to perform optimally will react more positively to the separation in time provided by technology-enabled recruitment and selection tools than applicants without these particular needs.*

4.1.3 | Social interaction

One result of the separation in physical space and time enabled by many technology-enabled recruitment and selection tools is a reduction in opportunities for social interaction between the applicant and representatives of the hiring firm. Applicants tend to react negatively to assessments that lack social interaction (though research is mixed; see Gilliland & Steiner, 2012). For example, most applicants perceive a worse opportunity to perform in technology-mediated selection processes because they have less ability to manage impressions through direct social interaction (Blacksmith et al., 2016; Langer et al., 2019), resulting in negative reactions and lower perceptions of fairness.

However, for some applicants with disabilities, the reduced social interaction afforded by separation in space and time will be welcome in part because it could increase the opportunity to perform, leading to increased perceptions of procedural justice. For example, applicants with anxiety may appreciate the reduced social interaction resulting from engaging with a chatbot, and indeed experience less stress when responding to screening inquiries (Patton, 2019; Sarrett, 2017). Similarly, Whelpley et al. (2021) noted that autistic applicants reported finding face-to-face interviews (especially group interviews) challenging. Indeed, the social pressure related to a live interaction with another person, especially one that would be in a position to judge the applicant's performance, can trigger social anxiety. These social-evaluative concerns are particularly salient in a selection context, and indeed fear of negative evaluation is correlated with interview anxiety (Zhang, Powell, & Bonaccio, 2022).

The AVI transforms what is traditionally a selection tool requiring some unstructured social interaction into an individual experience with more structure. These features are likely to result in more positive reactions from applicants with some disabilities (e.g., anxiety, Autism) because the reduction in social interaction enhances their opportunity to perform. This said, if active social interaction and two-way communication are requirements of a job, the evaluation of these capabilities through in-person assessments may not necessarily be perceived as unfair by applicants with disabilities if the job-related nature of this assessment is apparent at the time of selection. Thus, applicants are likely to perceive higher levels of procedural justice due to job relatedness.

Assessment games present similar opportunities and challenges. For example, autistic applicants may react positively to assessment games because they do not require synchronous verbal and non-verbal communication with an organizational representative. Moreover, some games help reduce applicants' assessment-related anxiety because the game features distract applicants from awareness of the assessment (Nikolaou, Georgiou, & Kotsasarlidou, 2019). This would benefit all applicants but it would be especially beneficial for applicants with anxiety-related disabilities.

Many technology-enabled recruitment and selection tools, and AVIs in particular, provide opportunities to practice before answering a question or take breaks between questions, which may further reduce the social pressure and anxiety for autistic individuals and applicants with anxiety disorders (Sarrett, 2017). Similarly, the opportunity to re-record answers to the scripted questions is provided by many AVIs but is not possible in synchronous interviews with an organizational representative. Therefore, applicants with anxiety may perceive enhanced procedural justice perceptions and more positive reactions to AVIs compared to traditional face-to-face interviews due to reduced social interaction requirements and increased opportunities to practice and, hence, perform on these tools.

Proposition 4. *Applicants with disabilities who prefer reduced social interactions will react more positively to the separation in time and space provided by technology-enabled recruitment and selection tools than applicants without these particular needs.*

4.2 | Automation in administration

Another important advantage of technology-enabled recruitment and selection tools, from the perspective of the hiring organization, is the automation of its administration, making it more efficient (Tippins et al., 2021). Essentially, automation of administration refers to features of the technology that enable the recruitment or selection process to unfold without intervention by an HR administrator. Automation of administration has been examined through a fairness lens, with findings suggesting that applicants react positively to the increased standardization offered through tools such as video interviews (Basch & Melchers, 2019). For applicants with disabilities, automated administration can be both a concern and a relief, leading to the possibility of both negative and positive applicant reactions, as discussed next.

4.2.1 | Automation and accessibility

The use of any advanced technology presents the possibility that it may not be accessible to applicants with disabilities. Many people with disabilities use adaptive tools (e.g., screen readers for applicants with vision impairments and eye tracking devices for applicants with motor impairments) that enable them to succeed in a broader range of jobs. In some instances, adaptive devices can enable applicants to use the same interfaces as other applicants; for example, a screen reader can convert text to speech, and captions can convert speech to text. However, "[a]ccommodation becomes much more difficult, expensive, and potentially impossible when using many of the more technologically advanced simulation interfaces" (Adler et al., 2019, p. 219). For example, a screen reader used by an applicant who has a visual impairment may not be able to accurately convert an organization's videos or images to text. In these cases, the recruitment and selection tools are inaccessible to applicants with disabilities, despite the availability of adaptive tools.

Indeed, the use of technology-enabled recruitment and selection tools based on rich media (e.g., chatbots, assessment games) can cause problems for applicants with certain disabilities (Bureau of Internet Accessibility, 2020). For example, applicants who are blind may experience obstacles when interacting with chatbots while using them with screen readers, as many chatbot plugins or widgets are not designed in conformance with accessibility standards. Similarly, applicants who are Deaf or hard of hearing may have difficulty playing games that rely on audio-based signals. Even when captioning is available, many assessment games use different sounds such as chimes or beeps to provide immediate gameplay feedback to applicants, and some of these cues may not be adequately represented in captions.[3] In these instances, applicants might perceive lower procedural justice because they have less opportunity to fully engage with the recruitment and selection tool (e.g., provide information to the chatbot, play the assessment game to the best of their abilities), and thus, lowered opportunity to perform.

Similarly, applicants who use adaptive devices or functions such as captioning may be at a disadvantage in interacting with selection technologies. AI-generated captions are not currently as reliable as professional live captioning (Kafle et al., 2020). These authors note that the AI-based systems fail in unpredictable ways, and it is difficult for users to determine if the information provided is accurate. This uncertainty could be particularly problematic in high-stakes interviews. For example, deaf or hard of hearing applicants relying on AI-generated captions during an AVI may respond incorrectly to interview questions that are incorrectly captioned. Errors are especially likely for technical words or acronyms, both of which are often used in professional contexts. Applicants may be uncertain about how much to trust AI-generated captions if they detect an error, thus reducing their ability to respond with confidence.

Proposition 5. *Applicants with disabilities for whom the automation in administration results in reduced accessibility will react more negatively to technology-enabled recruitment and selection tools than applicants for whom the automation does not result in reduced accessibility.*

4.2.2 | Automation and disclosure

Some technology-based selection systems are not designed for use by people with certain disabilities (Landers, 2020) and the only alternative for these applicants is to disclose their disability and request an accommodation. Disclosure is often conceptualized as a process (Chaudoir & Fisher, 2010) during which the person disclosing must decide to whom they should disclose, as well as what information and the level of detail to provide (Brohan et al., 2012). It can be experienced as a dilemma in terms of when and how to disclose (Kulkarni, 2021) because the applicant must reveal personal information about themselves to obtain the benefits of an accommodation. Having to disclose a disability before one is ready can be related to lower fairness perceptions in two ways. First, applicants are likely to perceive that they are not being treated with respect if they are required to disclose their disability before they would like to. Second, the selection procedures are likely to be perceived as less job relevant if the applicant needs to ask for an accommodation (e.g., an assessment game for which a screen reader is incompatible) to complete a selection procedure even though they would not require an accommodation to perform the job.

Proposition 6. *Applicants with disabilities for whom automation in administration forces them to disclose a disability prematurely will react more negatively to technology-enabled recruitment and selection tools than applicants for whom the automation does not affect disability disclosure.*

4.2.3 | Standardization

Applicants with disabilities often are on the receiving end of hiring managers' stereotype-driven behaviors, leading to discriminatory practices (Darcy et al., 2016). Interactions with managers who are genuinely committed to inclusion can lead to positive individualized approaches to recruitment and selection and generate positive applicant reactions. The accommodation process can be facilitated when managers and applicants with disabilities work together to find creative and useful approaches to meeting needs rather than managers engaging in the accommodation process solely for legal compliance (Bonaccio et al., 2020).

However, in practice, applicants with disabilities are likely to be treated differently than other applicants. They are more likely to be asked probing questions that directly or indirectly address a visible disability (Jans et al., 2012). Similarly, research shows that interviewers spend significant time looking at candidates' signs of visible disabilities (e.g., a facial stigma; Madera & Hebl, 2019). This behavior contributes to establishing less personable rapport between the interviewer and job applicant, reducing perceptions of interpersonal fairness. Consequently, HR tools such as chatbots, assessment games, and AVIs may also be useful because they provide standardization in the recruitment and selection process. For example, AVIs can be programmed to ensure that all applicants receive the same questions and have a uniform experience. Such consistency has been viewed as a key advantage of the technology (e.g., Köchling & Wehner, 2020). Some research has shown that standardized assessments such as games have positive effects on fairness perceptions (Ellison et al., 2020). We suggest that the standardization in tools like chatbots, AVIs, and assessment games removes the opportunity for disability-specific inappropriate questions or applicant discomfort in the assessment process due to interviewer gaze, thus improving applicant reactions.

Proposition 7. *Applicants with disabilities will react more positively to technology-enabled recruitment and selection tools than to in-person, synchronous processes, to the extent that standardization reduces the incidence of improper disability-related questions or interactions.*

4.3 | Automation in evaluation

Vendors often stress that automation in evaluation is an advantage of technology-enabled selection tools. Research examining applicant reactions regarding use of decision-making algorithms has hypothesized that it could improve procedural justice perceptions due to increased consistency in decision-making processes, but findings have been mixed (Acikgoz et al., 2020; Hess et al., 2021; Köchling & Wehner, 2020). For example, Acikgoz et al. (2020) found positive effects for consistency in one of their vignette studies comparing reactions to selection decisions made by human managers compared to digital tools, but not in the other. Similarly, Hess et al. (2021) found positive effects for stability on fairness perceptions in a vignette experiment about reactions to AI decision-making in selection. However, they also found that the negative effects from reduced locus of control outweighed the positive effects, leading to more negative applicant reactions for the AI-based evaluation tool compared to a human decision-maker. Acikgoz et al. (2020) rightly note that this is an area where more research is needed. The use of evaluation and decision-making algorithms may result in more favorable reactions from applicants with disabilities. Removing the human factor from the evaluation process could signal that all applicants are treated equally and the evaluation is therefore unbiased. Applicants with disabilities often encounter overt and covert discriminatory treatment from individuals in employment contexts (Baldridge et al., 2018). For example, interviewers who are distracted by facial stigma are less likely to accurately recall job applicants' interview answers (Madera & Hebl, 2012). If the technology is perceived as unbiased its use could be reassuring to applicants with disabilities. This perceived objectivity could lead applicants to have more positive reactions, fueled by an increased sense of procedural or interpersonal justice.

Proposition 8. *Applicants with disabilities who interpret the automation in evaluation as a signal of inclusive decision-making will react more positively to technology-enabled recruitment and selection tools than applicants who do not.*

5 | DISCUSSION

Technology-enabled recruitment and selection tools such as chatbots, assessment games, and AVIs are becoming increasingly popular (Behrend & Landers, 2019; Lukacik et al., 2022; Tippins et al., 2021), but most of the research on these tools does not address the unique experiences of applicants with disabilities. We theorize and develop a series of research propositions about how applicants with disabilities may react to these technologies. In establishing our propositions, we draw upon research in the disability literature to suggest that applicants with certain disabilities might react more positively than applicants with other (or no) disabilities to various features of the technology, underscoring the importance of appreciating the heterogeneity in the experiences of people with disabilities (Dwertmann, 2016). This approach is consistent with focusing to a greater extent on the influence of individual differences on applicant reactions taken by theories such as AART (Ployhart & Harold, 2004). For example, the greater scheduling flexibility provided by assessment tools that are separated in time may be particularly appreciated by applicants with episodic disabilities. Similarly, the remote administration of assessments reduces the physical barriers involved in attending recruitment and selection activities in person, which may be especially appealing for applicants with mobility-related disabilities. Other features, such as the automation of administration, may lead to negative applicant reactions, particularly when they lead to the recruitment and selection process being less accessible (e.g., tools that are incompatible with assistive devices).

5.1 | Future research

In addition to the directions for future research suggested by the propositions we elaborated above, we urge scholars interested in exploring the influence of technology-enabled recruitment and selection tools on the experience of applicants with disabilities to consider the aspects of disabilities that may interact with technological features rather than treating disability as a unidimensional identity. In this paper we discussed several broad categories of disabilities such as vision-, developmental-, or mobility-related disabilities. However, when conducting empirical work, researchers should consider type, severity, and the co-occurrence of multiple disabilities when developing participant sampling and recruitment plans. Moreover, when seeking to understand applicant reactions to, and experiences with, technology, it may also be important to consider the intersectionality between disability status and other individual characteristics given the known impact of AI on many diversity groups (Bogen, 2019; Kafle et al., 2020). A partnered research approach (Bonaccio et al., 2018; Fisher et al., 2022), involving a variety of perspectives including people with lived experience of disabilities, can help researchers develop more interesting research questions, create more rigorous and inclusive research designs, and improve participant recruitment.

When applicants encounter barriers or difficulties in interacting with recruitment and selection technology, they might either self-select out of the applicant pool, which contributes to employers' underestimation of the prevalence of disabilities in working-age adults (Bonaccio et al., 2020), or appraise the employer and its practices as being less inclusive even though accommodations may be offered. Future research can use signaling theory (Connelly et al., 2011) to test the latter idea, investigating the extent to which applicants interpret these inaccessible practices as signals of whether the employer considers people with disabilities in their diversity, equity, and inclusion practices (Ball et al., 2005). In turn, negative applicant reactions to recruitment and selection procedures may influence their overall impression of the employer and desire to pursue job opportunities (McCarthy et al., 2017).

It would also be useful to examine other moderators of applicants' reactions, such as their job experience or their experience with technology (e.g., through work or hobbies such as online gaming) or the amount of time that was spent applying for the job. As per AART (Ployhart & Harold, 2004), applicant attributes such as these are likely to affect reactions to various aspects of recruitment. For example, because applicants with disabilities may have to make extra effort to participate in technologically enabled assessments, that time investment may translate into greater commitment to the process, resulting in a greater sense of injustice if an offer is not received. Thus, disability status may interact with other attributes in predictions of applicant reactions. Future research can explore this hypothesis.

More research is also needed on whether the features of the technology in selection tools influence the measurement of applicants' abilities. A question is whether these tools produce a reliable and valid assessment of the predictor construct domain for applicants, considering the interaction between the applicants' disability qualities and the tool itself (Bonaccio et al., 2023). For example, would the use of a screen reader or an adaptive mouse change the measurement accuracy such that the predictor scores obtained for an applicant using these adaptive supports are different than they would have been obtained by the same person had they not needed these supports to complete the assessment? Trewin (2018) notes that applicants with disabilities using tools such as magnifiers or screen readers may take longer to complete computerized assessments. Algorithms built into the tools to automatically score applicants' performance may determine that applicants with longer response times are less qualified. This situation would be problematic if response time is not related to future job performance. Here, both the opportunity to accurately assess applicants' abilities and the prediction of future job performance would be negatively affected. Relatedly, future research should focus on whether group differences on a given technology-enabled assessment (e.g., assessment games) emerge as a function of disability status or as a function of different disability qualities (e.g., tremors, Deafness, low vision). The exploration of differential prediction requires attention to the many diverse ways in which applicants with disabilities interact with the technology (on the predictor side). Moreover, this exploration must take into consideration whether measurement of the criterion (e.g., supervisor assessment of job performance) is also affected by disability status (Ren et al., 2008).

5.2 | Implications for practice

In addition to the nuanced approach required to understand the impact of technology-enabled recruitment and selection tools on applicants with disabilities, we also encourage tool developers to keep the principles of universal design at the forefront of their design choices. Our analysis points to implications for the companies that develop advanced recruiting and selection technologies, most notably the importance of using universal design principles. The United Nations Convention on the Rights of Persons with Disabilities defines universal design as "design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (United Nations, 2006, p. 4). Universal design has been notably applied in urban contexts (e.g., curb cuts are helpful for wheelchair users as well as pedestrians with trolleys or strollers).

In a recruitment and selection context, a universal design approach means that a process is created that is accessible to all applicants. Therefore, applicants do not need to request accommodations, or changes to the recruitment and selection process. The implementation of universal design would increase fairness to applicants living with disabilities and have the practical benefit of reducing (although most likely not eliminating) the need for HR staff to reactively develop specific accommodations.

Many universal design features provide benefits for a wide range of applicants. For example, having the questions in an AVI presented

in both auditory and visual formats will be appreciated by many applicants. The text presentation would facilitate the interview process for applicants who are deaf or hard of hearing (Lukacik et al., 2022) while the auditory presentation would facilitate the process for applicants who are blind or have low vision. Keeping the interview question on the screen could help all applicants, regardless of disability status, understand and fully answer long, multi-part, or technical questions. Similarly, all applicants are likely to appreciate the opportunity to re-do an AVI or assessment game. This feature would be valued by applicants with anxiety, with voice concerns, or who encounter problems with the compatibility of their assistive technology with the recruitment interface, as well as any applicant (regardless of disability status) who is conscientious or highly motivated. Consistent with universal design principles, hiring organizations should make information about the assessments available to all applicants (e.g., on a Careers website or via an interview invitation). Technology requirements should be clearly stated and, when appropriate, opportunities for practicing the game or interview interface should be provided. This contextual information will allow all applicants to prepare for the assessments.

A best practice with the use of HR tools, and assessment games in particular, is to provide applicants with an advance list of system requirements to ensure the optimal functioning of the assessment. This information enables applicants to verify compatibility with required adaptive technology (e.g., screen readers or magnifiers) to ensure that the HR tool functions well when used in conjunction with these technologies. Some applicants might feel comfortable contacting an organization to ask for clarifications about system compatibility and, if required, request an alternative form of assessment. On the other hand, many applicants prefer not to disclose a disability to the organization at this stage of the job application process, given the history of discriminatory treatment towards people with disabilities (Whelpley et al., 2021).

Our analysis also supports the movement toward conducting audits of advanced recruiting and selection technologies, especially those that rely on ML algorithms. Auditing can be performed by testing the software directly, reviewing code, or examining documentation to evaluate how effectively the algorithm was developed, how well it protects privacy, how explainable it is to users, and the fairness of the decisions made (Koshiyama et al., 2021; Landers & Behrend, 2023). Auditing can also assess the presence of discrimination against protected classes, such as people with disabilities, and the accessibility of the assessments. Two providers, pymetrics and HireVue, have recently had cooperative audits conducted by external experts to evaluate their algorithmic HR tools for fairness (Landers, 2020; Wilson et al., 2021). Results for both companies demonstrated that the algorithms produced non-discriminatory results in terms of adverse impact for gender and race. However, both audits were lacking in information regarding how the algorithms or other technology features might affect applicants with disabilities. The pymetrics games were described as having "built-in accommodations for players with color-blindness and/or dyslexia" (Wilson et al., 2021, p. 4) and for ADHD.[4] The audit of HireVue's products noted that many of the company's clients rely on accommodations for applicants with disabilities, and as such, "HireVue avoids making claims as to the validity of its assessment for those with disabilities" (Landers, 2020, p. 11). These cooperative audits would further benefit from direct evaluation of the assessment process from the applicant perspective for accessibility and perceived fairness.

5.3 | Conclusion

The existing literature on employees with disabilities has focused on understanding the sources of employment disparities between people with and without disabilities, with a particular focus on the barriers to employment (Bonaccio et al., 2020). Given that entrance into the workforce is a necessary step to later career advancement, identifying the barriers and their solutions is an important endeavor. In this paper, we focus on an emerging and rapidly changing barrier: the use of advanced technologies in recruitment and selection. Throughout our review, we theorize that each of these technologies may lead to both positive *and* negative applicant reactions, depending on specific features of the technology and applicants' disabilities. There may be unintended consequences with technology-enabled recruitment and selection tools because the decision-making is embedded in the tool itself, rather than in a person or a person-led process. We, therefore, call on hiring organizations, policymakers, and vendors to work with researchers and the disability community to address the challenges we have identified while leveraging the possible benefits of these tools. Organizations that fail to take such actions may overlook an important source of qualified labor.

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DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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ENDNOTES

[1] https://fedmanager.com/news/doj-eeoc-launch-initiative-to-combat-ai-discrimination-during-hiring-process; https://ised-isde.canada.ca/site/innovation-better-canada/en/canadas-digital-charter/bill-summary-digital-charter-implementation-act-2020; https://fra.europa.eu/sites/default/files/fra_uploads/fra-2022-bias-in-algorithms_en.pdf

[2] The language that we use in this paper reflects the current preferred language of the disability community in our networks. We recognize that language evolves, and the language we use in this paper may become outdated in the future. We adopt the World Health

Organization (WHO) definition of disability as "an umbrella term for impairments, activity limitations, and participation restrictions, referring to the negative aspects of the interaction between an individual (with a health condition, e.g., cerebral palsy, Down syndrome, depression) and that individual's contextual factors (environmental and personal factors, e.g., negative attitudes, inaccessible transportation, and public buildings)" (World Health Organization, 2011, p. 4).

[3] https://gameaccessibilityguidelines.com/ensure-no-essential-information-is-conveyed-by-sounds-alone/

[4] Applicants can select certain configurations as an accommodation, but it is not clear what these configurations entail. The website also notes that the games include flashing images, which can be a problem for some applicants with post-concussion syndrome and photosensitive epilepsy (https://pymetrics.zendesk.com/hc/en-us/articles/360028437591-What-gameplay-accommodations-do-you-provide).

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