Algorithm-driven Hiring Tools:
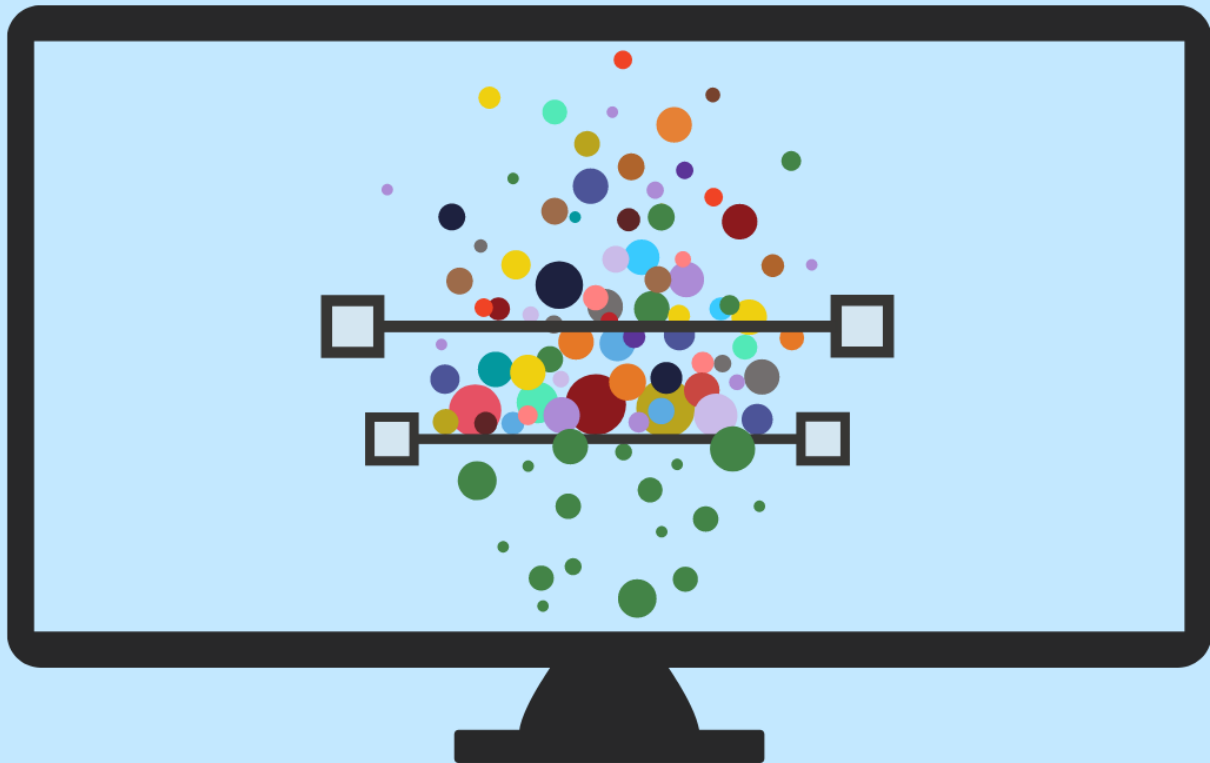
Innovative Recruitment or
Expedited Disability Discrimination?

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1. Executive Summary

Algorithm-driven hiring tools have grown increasingly prevalent in recent years. Thousands of job-seekers across the United States are now asked to record videos that employers mine for facial and vocal cues. They complete online tests or games that purport to evaluate their "personal stability," optimism, or attention span. They submit resumes through online platforms that may reject them because of time gaps in their work histories, such as those resulting from cancer treatment.

Employers using these tools seek a fast and efficient way to process job applications in large numbers. They may also believe that algorithm-driven software will identify characteristics of successful employees that human recruiters would not identify on their own. But as these algorithms have spread in adoption, so, too, has the risk of discrimination written invisibly into their codes. For people with disabilities, those risks can be profound.

The Americans with Disabilities Act (ADA) has explicit prohibitions against the use of hiring processes that discriminate on the basis of disability. First, the ADA requires that employment tests be provided in an accessible format, and if the format is not accessible, that reasonable accommodations be made available without prejudicing the candidate. For example, a test that requires spoken answers is not accessible for an applicant who does not speak because of paralysis or deafness. If an employer uses such a test, they have to evaluate disabled job-seekers in an alternative way that reasonably accommodates their disabilities.[1]

Second, the ADA presumptively disfavors hiring selection criteria that "screen out, or tend to screen out" disabled candidates. For example, a personality test may screen out some candidates with depression or anxiety; a game-based test may screen out a candidate because of their ADHD. If an employer uses selection criteria that screen out disabled candidates, the

criteria must be "job-related" and "consistent with business necessity." This means that employment tests must evaluate candidates on factors that are directly relevant to (and necessary for) the essential functions of the job.

Many algorithm-driven hiring tools fall far short of these standards. Algorithm-driven hiring tools typically assess candidates based on how they perform on a given test compared to a model set of successful employees. Employers may be tempted to use these tools without stopping to consider *what* exactly they are testing for, or *why* – specifically, what traits are really being measured by an online game, and whether what is being measured is actually necessary to perform the essential functions of the job.
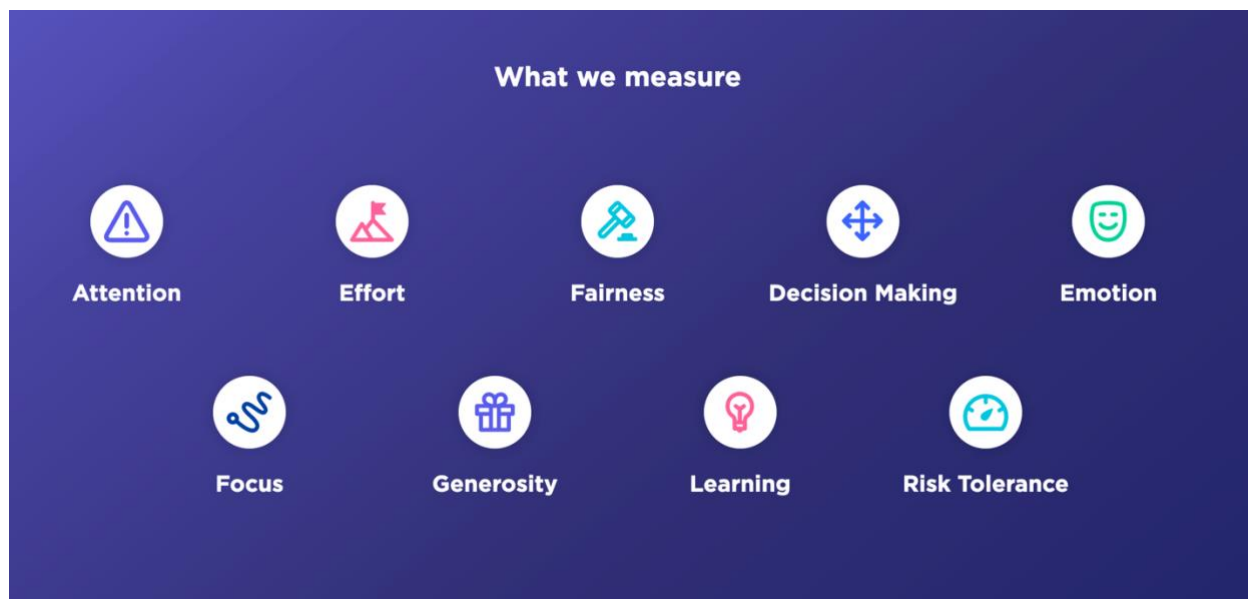
Figure 1: Screen capture of factors measured through gamified testing, measuring cognitive and emotional attributes, November 24, 2020

Employers, vendors who create these hiring tools, regulators, job-seekers, and advocates need to better understand the risks of using algorithm-driven tools in hiring, and consider concrete steps to avoid these harms. This paper seeks to highlight how hiring tools may affect people with disabilities, the legal liability employers may face for using such tools, and concrete steps for employers and vendors to mitigate some of the most significant areas of concern. We hope it will serve as a resource for advocates, for regulators, and – above all – for those deciding

whether to develop or use these tools to consider the risks of discrimination, and ultimately to ask if the tools are appropriate for use at all.

2. What are Algorithms and How are They Used in Hiring?

An algorithm is a process or series of steps designed to answer a question, make a decision, or carry out a task, often in domains that traditionally have been handled by humans. Proponents say that, by relying on rules instead of humans, algorithms avoid the bias that is inherent in human decision-making. The catch is that humans decide how algorithms are designed and typically "train" them using data from the real world, meaning they reflect the real world's existing biases. For example, an algorithm may be trained to look for particular characteristics that have been identified in a company's current employees, replicating the existing lack of diversity in the company.

Because algorithms learn by identifying patterns and replicating them, algorithm-driven tools can reinforce existing inequalities in our society. Algorithmic bias can also be harder to detect than human bias, because many people think of technology as "neutral." Managers know to review the hiring history of a human recruiting manager for bias: they may not think to do so for a computer program. Additionally, when algorithmic systems are sold as commercial products, they have a far wider impact than a single human reviewer. While algorithm-driven systems may bring more consistency to hiring decisions, they also risk perpetuating discrimination at scale.

How Algorithm-driven Hiring Tools are Used

Algorithm-driven hiring tools are becoming more popular as a way to evaluate job candidates. Researchers have found that 76% of companies with more than 100 employees use personality tests, and employers are turning to algorithms to administer and analyze the tests at a larger scale.[2] An estimated 33% of businesses use some form of artificial intelligence in hiring and other HR practices.[3] A single vendor's facial recognition tool is being used by over 100 employers, and has analyzed more than a million job applicants, and more every day.[4]

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This paper focuses on the use of algorithms in employee selection processes, rather than other aspects of employment.[5]

Algorithm-driven hiring tools can take several forms, such as:

- **Resume screening.** The tool screens applicants' resumes for certain terms or patterns.

- **Face and voice recognition.** The tool analyzes applicants' facial movements, word choices, and voices from recorded video interviews.

- **Gamified testing.** The tool gathers data, such as right and wrong answers and reaction time, as applicants play a simple video game.

- **Trait testing.** The tool grades applicants on an online test that purportedly measures certain personality traits or cognitive abilities.

Different tools purport to measure different metrics. For example:

- **Personality traits,** such as openness, conscientiousness, extroversion, emotional stability, adaptability, assertiveness, responsiveness, intensity, optimism, or sociability.

- **Aptitudes or cognitive abilities,** such as reaction time, attention span, ability to focus under pressure, problem-solving, or vocabulary.

- **Cultural fit,** based on motivations, ideal work environment, or life priorities.

Vendors typically develop the hiring tool by training it on employees who have been identified as successful.[7] For example, a vendor will ask current employees to take the same test that will be given to applicants, and gather data about those current employees' job performance, such as their success at hitting sales quotas. The algorithm will identify correlations between the test results and the employees' job performance – for example, successful employees may test as

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more "optimistic." The hiring tool will then score job applicants on the presence of those characteristics, essentially judging a candidate's similarity to successful candidates in the training pool.

3. The Risk of Discrimination

People with disabilities face a chasm of economic inequality. Though reliable statistics are hard to come by, some assessments estimate that people with disabilities make up about 12% of the U.S. working-age population, but account for more than half the people living in long-term poverty. The employment rate for people with disabilities is about 37%, compared to 79% for people without disabilities.[8] The employment rate for people with mental-health-related disabilities may be as low as 20-25%.[9] These disparities persist despite legal protections against disability discrimination, a full 30 years after the passage of the ADA and nearly 50 years after its predecessor, the Rehabilitation Act of 1973.

Reasons for these disparities include incorrect and ableist assumptions that people with disabilities cannot handle work, or that the reasonable disability accommodations required by law are burdensome, costly, or amount to special treatment.[10] People with disabilities can be disproportionately excluded when employers disfavor applicants with gaps in employment or other so-called "red flags" for hiring.[11] Other jobs simply include physical, technological, or other barriers to people with disabilities.[12] The above statistics do not capture the whole picture: many people do not disclose their disabilities due to fear or stigma, and disabled people who have multiple marginalized identities face employment barriers at different levels.

4. Algorithm-driven Hiring Tools and Liability Under the ADA

The Americans with Disabilities Act prohibits disability discrimination in employment, including hiring.[13] It applies to private employers with 15 or more employees, state and local governments, employment agencies, and others.[14] The ADA broadly defines disability as "a physical or mental impairment that substantially limits one or more major life activities."[15]

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Therefore, most medical conditions that affect anything from walking, lifting, seeing, communicating, or concentrating are covered by the law.[16]

> The ADA has specific language regarding the discriminatory effects of employee selection tests. It prohibits:

- **Inaccessible test formats,** which are administered in a way that prevents people with certain impairments from being able to complete the tests;[17] and

- **Selection criteria that screen out people with disabilities,** either individually or in groups, unless the criteria are job-related and justified by business necessity.[18]

A separate provision of the ADA prohibits pre-employment medical exams, which may apply to hiring tests that use methodologies designed for clinical diagnosis, or are conducted by medical professionals.[19]

Accessibility and Reasonable Accommodations

The ADA bans inaccessible test formats if employers fail to provide reasonable accommodations. Under the ADA, employers have to make sure all applicants, regardless of their disability status, can take their hiring tests. Otherwise, employers have to provide an alternative method to evaluate applicants with disabilities.

A number of test formats used on the market today may be inaccessible. For example, in one vendor's personality test, applicants are shown images on a screen and required to select "Me" or "Not Me" depending on whether they identify with the image – answers which the tool then analyzes to measure perceived "emotional stability," "openness," "conscientiousness," "extroversion," and other factors.[20] Another vendor offers a video game test that shows red and green dots, with applicants asked to click only when the red dot is displayed.[21] The data gathered while applicants play this game supposedly measures "impulsivity," "attention span," and "ability to learn from mistakes."[22] One facial recognition tool requires applicants to

respond verbally to interview questions on a recorded video, with the aim of measuring facial expression, eye contact, vocal enthusiasm, and vocabulary.[23]

Setting aside the merits of what these tests purport to measure, the very formats of these tests may be inaccessible to people with disabilities involving sensory or physical impairments. Some people with physical disabilities cannot move a mouse to select "Me" or "Not Me," or red versus green dots. Other peoples' visual disabilities prevent them from seeing and reacting to visual images, or distinguishing between dots of certain colors. If a candidate does not speak, they cannot access the facial recognition tool's intended function of capturing their responses.

Employers using these hiring tools must provide reasonable accommodations to applicants with disabilities.[24] If an alternative version of the algorithm-driven test is not available, employers are required to accommodate the applicant with some other way of measuring their fitness for the job. This could be as simple as conducting a live interview, accepting written statements or answers, reading aloud a written employment test, or allowing or providing an interpreter or similar assistance.[25] Employers must be aware of these requirements, make clear to candidates that alternative testing is available, and treat candidates who request accommodations equally.

Figure 2: Screen capture of test that measures the Big Five traits against the Holland Interest models, November 24, 2020

Notice and the Candidate Experience

The companies that design and market algorithm-based hiring tests generally fail to provide accessible alternatives as part of an integrated test system. Most vendors' websites do not contemplate that their test may be inaccessible to some users, or mention the legal requirement that an employer develop and offer reasonable accommodations for individuals who cannot take the test. The few vendors that do mention this requirement do not seem to consider all the different kinds of accommodations that may be needed.[26] Vendors and employers must recognize this legal responsibility and, if they still decide to use the test, take proactive steps to offer accommodations.

Vendors and employers must also give candidates effective notice about how a hiring tool works, so that candidates can understand when they may need a reasonable accommodation. A color-blind person will likely know that they need an accommodation when a test asks them to count color-coded dots. But an autistic person may not expect that their video-recorded interview will be analyzed by an algorithmic tool that bases some of its assessment on eye contact with the camera. Vendors and employers must provide detailed explanations about how their hiring tools work, so that candidates can make an informed decision about whether to seek an accommodation.

Of course, offering accommodations to disabled candidates is not enough. Employers must give candidates equal consideration even if they do not take the same test as other candidates because that test is inaccessible. Employers should also understand the extreme reluctance many disabled people feel about requesting an accommodation because doing so will reveal, or draw attention to, their disability. It is highly preferable for employers and vendors to develop universally accessible testing practices that do not put applicants in this position.

One key way to develop inclusive hiring is through accessible, universal design of any hiring tool (as explained below, this must include not only the format of the test, but what it is measuring). Another is to make the automated test optional, permitting all candidates to choose between the test or an alternative hiring process, without having to disclose the reason

for their choice. Employers could commit to put a certain percentage of applicants into the traditional hiring channel as a control measure, to ensure that candidates who opt into that channel are not marginalized because of their choice. Whether employers do this or not, they must ensure that candidates who seek an accommodation are treated equally.

"Screening out" People with Disabilities

Under the ADA, employers cannot use selection criteria that disqualify an applicant due to their disability absent special justifications. If a hiring tool is screening out people based on their disability, the employer must be able to demonstrate that the selection criteria are (i) job-related and (ii) consistent with business necessity, and they must also consider whether reasonable accommodations would help the applicant perform the job.

Some of the selection criteria used in common algorithm-driven hiring tools may well fail this standard. For example, resume mining tools consider common extracurriculars, work experiences, or key words in the resumes of an employer's past hires as indicators of success, but an applicant's disability, especially in tandem with their other marginalized identities, may have excluded them from those activities or experiences. The candidate's resume may describe how they developed the same skills in different ways, but the resume mining tool may miss this, screening the applicant out without accurately measuring the applicant's skills.

A slightly less obvious, but similarly harmful, example is a test that asks applicants to match images of faces to emotions. Autistic people, in general, do not perform as well as non-autistic people on this type of test. If being able to identify specific emotions is not necessary to the job position and does not affect job performance, this is an illegal selection criterion.[27] Even if responding to customers' emotions *is* a necessary function of the job, an autistic candidate may use other tactics to interpret people's emotions – so a test that relies on analyzing static photos of faces does not reliably measure their ability to perform the job.
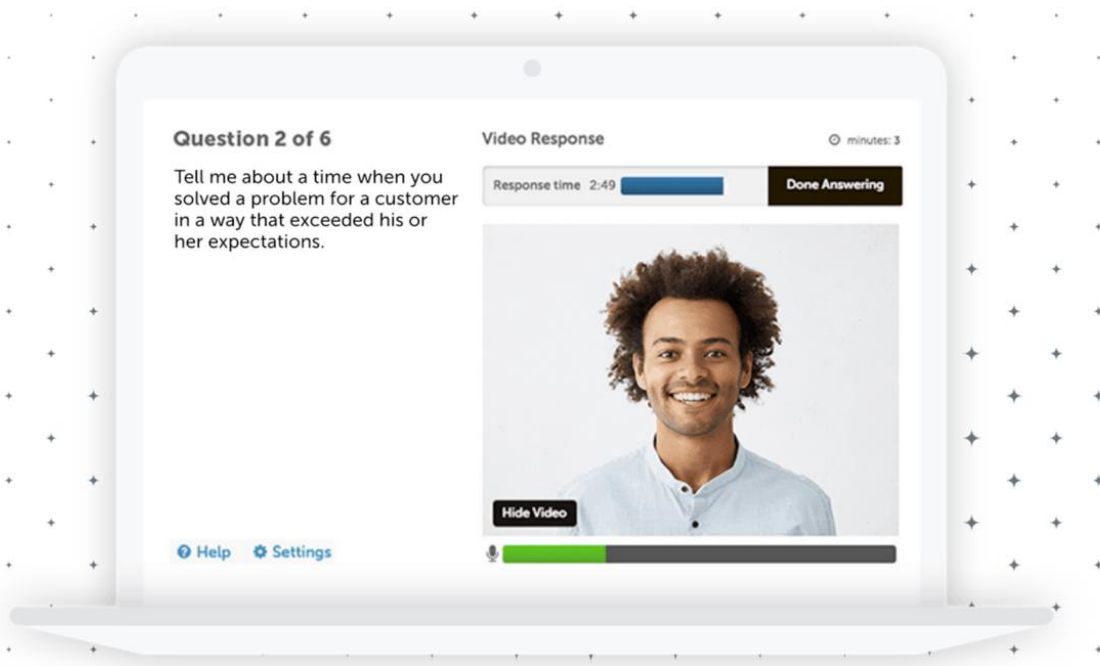
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Figure 3: Screen capture of recorded interview that measures applicant "fit", November 24, 2020

Employers should be especially careful when using criteria that are more subjective, thinking critically about whether the test measures traits accurately and whether the criteria align with job requirements. For example, employers should seriously examine whether a candidate's perceived "self-esteem" as revealed by a short interactive test is a valuable – or even valid – indicator of future job performance. Researchers caution that performance on personality tests cannot reliably predict performance on the job.[28] The ADA requires that the traits considered in an employment assessment be "job-related" and, furthermore, *necessary* for the job in question. Employers have an obligation to reject pseudo-science, focus on what specific skills are required for the position, and think critically about how they can fairly and accurately assess those skills.

Even if a trait or ability *is* job-related and consistent with business necessity, an employer cannot screen out an applicant if they could perform the essential functions of the job with reasonable accommodations. For example, gamified tests may test cognitive abilities, including memory span, focus, information processing, and the ability to recognize 2-dimensional and 3-dimensional figures. These abilities may be more relevant to the requirements of a particular job, but a candidate may be able to make up for lacking these skills by using outside tools such as a calculator or assistive device.

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Under the ADA, a candidate must be evaluated on how they could perform the essential functions of the job *with* reasonable accommodations. In other words, employers risk legal exposure if they simply take the scores from an algorithmic assessment at face value. They need to go one level deeper, asking if the test results actually reflect a candidate's ability to perform the job *if* the candidate is given the supports to which they are legally entitled. This individualized assessment is directly in tension with the standardized, mass-scale approach of algorithm-driven testing. Vendors typically do not consider this nuance when developing algorithmic assessment tools, but employers ignore these legal obligations at their peril.

5. Detecting Disability Discrimination

Applying the ADA's requirements shows just how difficult it is to mitigate the risks of disability discrimination by algorithm-driven hiring tools. The tools can be illegal if they only provide inaccessible test formats and no reasonable accommodations are provided. They may use illegal selection criteria that are not job-related and consistent with business necessity. They can also violate the ADA if the criteria are otherwise appropriate for the job, but they screen out an applicant because of their disability when they could perform that job with a reasonable accommodation.

Without careful forethought, the tools can reject applicants simply because of a disability – unbeknownst to the applicants and even to the employer. To meet the ADA's standard for job-relatedness and business necessity, it is not enough that the tools create cost savings and efficiencies. The risk of harmful effects from some tools may run so deep that mitigation is not possible. In those cases, the tools may not be appropriate to be used at all.

Auditing for Bias

Hiring discrimination can feel like an invisible injustice because it is one of the hardest types of employment discrimination to detect. Reasons for this may include information asymmetry and lack of a continuing relationship between job-seekers and employers,[29] which can become worse when algorithm-driven hiring tools are involved.

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Regardless of whether they can do what they promise, algorithms can be harmful because they are capable of simply masking discrimination. Algorithms can discover and screen out candidates with disabilities by finding subtle correlations and flagging issues common to people with protected characteristics, such as employment gaps among people with disabilities. This is true even when protected characteristics are omitted as the algorithm is built.

Additionally, efforts to audit algorithms for bias often fall far short. A number of vendors now test their hiring tools to evaluate whether they discriminate against women, people of color, or other marginalized groups, but these audits likely do not work for disability.[30] One common auditing measure is the "four-fifths rule": if a hiring test selects a certain protected group at a rate that is less than 80% of the rate at which the majority group is selected, the disparity is too large.[31] If an audit reveals that an algorithm is failing the four-fifths rule, the vendor will tweak it for better parity. But this formula-based approach is poorly suited for disability.

A vendor cannot simply test to see how people who identify as "disabled" are faring on their test: the vast diversity of disabilities means that some people's disability may not affect their test performance, while the test *is* improperly screening out other candidates. Even if the vendor audits for a specific type of disability (for example, how people who identify as autistic perform on the test), people's experiences vastly differ, including, for some, how their disability presents in particular circumstances on a particular day. Compounding these challenges is the fact that many candidates – understandably – do not want to disclose their disability to employers, meaning that vendors or employers lack data to assess the potential disparate impact of their tools.

These challenges mean that employers cannot rest on assurances that a hiring tool has been audited for bias. Especially in the context of disability, employers must do a deeper analysis to consider what the tool is measuring and how, and what assumptions are built into that test that may illegally screen out candidates without considering their individual ability to perform the functions of the job.
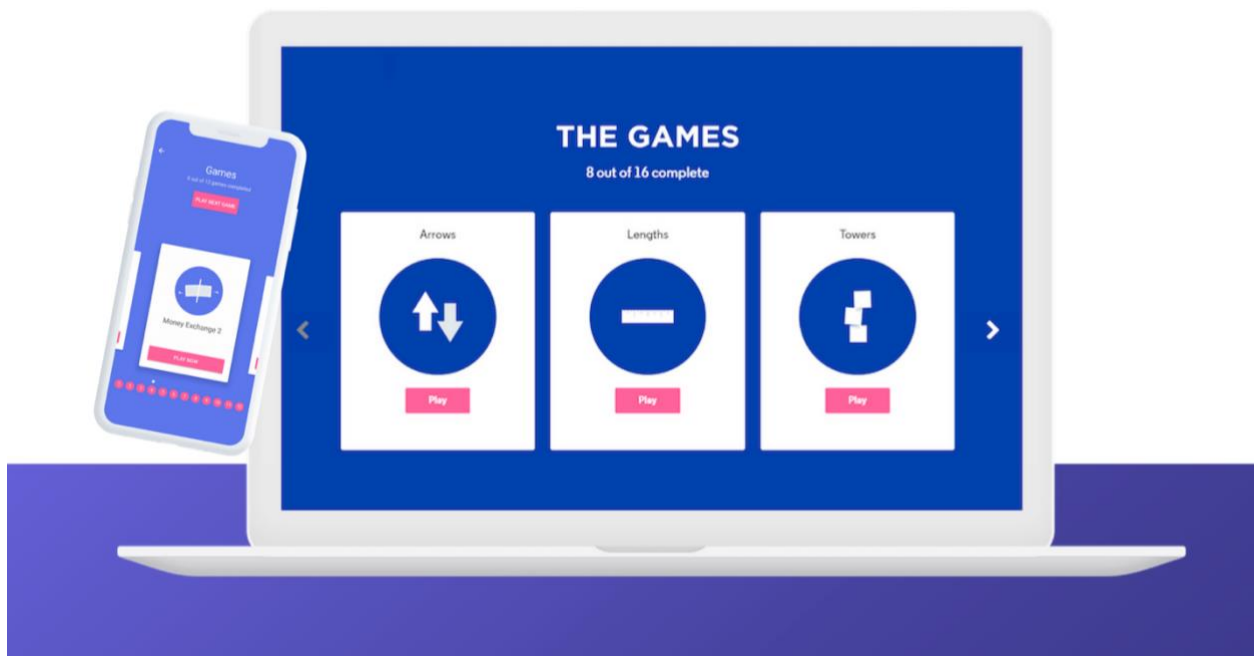
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Figure 4: Screen capture of gamified test options to measure cognitive and emotional traits, November 24, 2020

In the end, the individualized analysis to which candidates are legally entitled under the ADA may be fundamentally in tension with the mass-scale approach to hiring embodied in many algorithm-based tools. Employers must think seriously about not only the legal risks they may face from deploying such a tool, but the ethical, moral, and reputational risks that their use of poorly-conceived hiring tools will compound exclusion in the workforce and in broader society.

6. Recommendations

In 2020, the Leadership Conference on Civil & Human Rights, CDT, and other advocacy groups released *Civil Rights Principles for Hiring Assessment Technologies*.[32] These principles offer a critical framework for preventing or reducing the inequitable impact of algorithm-driven hiring tools. Stakeholders who wish to join in this effort may consider the following starting points, with particular annotations added to address exclusion based on disability.

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Employers and Vendors

- **Nondiscrimination.** Employers and vendors must engage in a meaningful and robust analysis of how algorithm-driven tests or screening tools can discriminate, and how that discrimination can be eliminated. Look for existing discriminatory hiring patterns to correct, including patterns that may be unknown or unintended. Include people with lived experiences in the team that designs and tests the algorithm. Understand that removing demographic data from the algorithm-building process will not likely be sufficient to root out discrimination.

  - **Disability considerations:**

    - When building the hiring tool's algorithm, recognize that the data used to train an algorithm cannot truly represent all disabled applicants, and the tool may well have been designed without disabled people in mind. How will disabled candidates experience the tool? What are the risks of exclusion or bias?

    - Make sure the team of developers includes people with disabilities, keeping in mind the numerous forms of disability.

    - Plan ahead, and create alternative testing and screening tools to accommodate applicants with disabilities in a way that does not restrict their ability to prove their skills.

    - Ensure that tests taken with reasonable accommodations are given equal weight. One way to ensure this may be to divert a certain percentage of all job candidates into the alternative, non-algorithmic hiring track, to ensure that disabled candidates in that track are not improperly stigmatized.

- **Job-Relatedness.** Algorithm-driven hiring tools look for data points that correlate to perceived successful job performance. But employers and vendors must ask whether the tool is actually measuring a person's ability to perform the essential functions of the job. Employers must be able to explain what a tool measures and why. They should select traits that can be assessed objectively – mere correlation between some traits and job success does not justify a disparate impact on disadvantaged groups.

  - **Disability considerations:**

    - Identify the skills required to perform each function of the job position and make sure the tool assesses only these skills, not traits that may be proxies for disability.

    - Ask experts about any ways that applicants' disabilities may prevent the tool from accurately evaluating their ability to perform the job's functions. If the tool cannot be corrected, provide an alternative method to test job-related skills.

    - Design the tool so that it does not screen out applicants based on more subjective traits, like "optimism" or "intensity," that can look different in people with disabilities.

    - Use metrics that are specifically related to tasks that applicants would need to be able to perform. For example, assess the applicant's approach to driving sales, rather than how hopeful they feel about sales prospects.

- **Notice and Explanation:** Explain to candidates how hiring tests work and how their performance will inform the hiring decision. Applicants should understand how decisions will be made so they can seek redress or accommodations. This includes information before someone takes the assessment as well as feedback on any decisions that are made about them.

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- ○ **Disability considerations:**

  - ■ Explain to applicants in simple language how the tool may interpret traits related to disability, so they can understand when they may need to request an accommodation from the test. Develop alternative testing methods for people with disabilities and explain these options to applicants.

  - ■ Provide reasonable accommodations for different types of disabilities. Explain to applicants the steps they should take to request these accommodations.

  - ■ If the tool's results show that an applicant's disability prevents them from being able to do the job, be prepared to explain to the applicant how the tool produced these results, and invite an explanation about whether they could do the job with reasonable accommodations.

- ● **Auditing:** Employers and vendors must thoroughly and regularly audit hiring tools, before and after they are put to use. This means they must examine their tools for errors and risk of bias in the way the tools are trained, designed, and implemented, and use their findings to reduce these flaws. Best auditing practices include using an independent third-party auditor and publicly disclosing methods and results. Plan to identify, and retain, data necessary to complete audits,[33] such as training data, designs, applicant information, assessment criteria and outputs, and ultimate hiring decisions.

  - ○ **Disability considerations:**

    - ■ Instead of relying on statistical audits, consider the tool's different effects on different kinds of disabilities. Evaluate how the tool could misrepresent or may have misrepresented applicants' skills. Because people's disabilities are so diverse, statistical auditing is unlikely to reveal how a hiring tool will impact every person based on their particular disability. Qualitative analysis is required as well.

- Work with experts in algorithms and employment discrimination who have disabilities and who know how to ensure the tool's accuracy in assessing job-related traits.

- Have a procedure for applicants to anonymously provide feedback on the hiring process. Regularly record and review the feedback, and publicize areas of concern that have been expressed. Use all retained data to inform next steps to correct or compensate for the tool's effects on people with disabilities.

Lawmakers and Policymakers

● **Oversight and Accountability:** Governments must be proactive in rooting out discrimination in hiring tools.

- ○ *Government agencies should use their own authorities more aggressively.*
  - The Equal Employment Opportunity Commission (EEOC) should initiate its own proactive investigations into the use of algorithm-driven hiring tools,[34] while conducting outreach to employers and other stakeholders about the significant risks of discrimination posed by algorithm-driven hiring tools.

  - The EEOC should update its guidance[35] to employers and vendors regarding the use of hiring assessment tools, making explicit reference to the risks of disability discrimination and the requirements of the ADA.

  - The Office of Federal Contractor Compliance Programs (OFCCP) should update its Section 503 regulations[36] to extend contractors' recordkeeping obligations to disabled applicants applying through algorithm-driven hiring tools. While this change will not capture all disability data, it can help shape industry compliance.

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- *Governments should make smart purchasing decisions of their own.*
    - Governments should meet EEOC standards in their own use of algorithm-driven hiring tools. Algorithmic tools embed values and policy priorities within their designs, so agencies should make sure those designs – and their decisions to use such tools at all – match the government's policy objectives and legal obligations.

    - Government contractors must comply with OFCCP's Section 503 regulation that requires them to meet the ADA's requirements to use accessible test formats and job-related selection criteria and to provide reasonable accommodations.[37]

- *Lawmakers at all levels of government should advocate for employers to meet their legal obligations against discrimination, to perform self-audits and disclose their use of algorithm-driven hiring tools.[38]*

Job-Seekers with Disabilities

- **Self-Advocacy:** Disabled individuals should know that the ADA applies to all hiring processes, including those using algorithm-driven hiring tools.

    - *During the hiring process, make note of the tests that an employer requires applicants to complete, the features that make the tests difficult or impossible to complete due to a disability, the kinds of assistance that would reduce this barrier, and whether this assistance was clearly made available or provided upon request.*

    - *If you are rejected from a position, ask the employer for an explanation for the rejection. If they refuse to provide a clear response, reach out to legal aid organizations, who can contact the employer or do their own research to help get answers.*

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o *You may have grounds to file a complaint with the Equal Employment Opportunity Commission if:*

- An employer requires you to use a hiring tool that you cannot use because of impairments caused by a disability, without providing a reasonable accommodation.

- The hiring tool or test seemed to be testing factors that are unrelated to the job description, and which caused you to be screened out on the basis of your disability.

- The hiring tool or test did not consider whether you could have performed the functions of the job with reasonable accommodations.

- If one of these circumstances arises, a legal aid organization or employment lawyer may be able to provide support.

Endnotes

1. An employer is not required to accommodate if it can prove that doing so would be an "undue hardship." 42 U.S.C. § 12111(10), 12112(b)(5)(A) (2018); 29 C.F.R. § 1630.2(p) (2019).

2. Wendy F. Hensel, *People with Autism Spectrum Disorder in the Workplace: An Expanding Legal Frontier*, 52 HARV. C.R.-C.L. L. REV. 73, 91 n.136 (2017), available at https://harvardcrcl.org/wp-content/uploads/sites/10/2017/02/Hensel.pdf (citing Tomas Chamorro-Premuzic, *Ace the Assessment*, Harvard Business Review (Jul. 2015)).

3. DELOITTE, REWRITING THE RULES FOR THE DIGITAL AGE: 2017 DELOITTE GLOBAL HUMAN CAPITAL TRENDS 87 (2017), https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2017/predictive-hiring-talent-acquisition.html.

4. *See* Drew Harwell, *A Face-scanning Algorithm Increasingly Decides Whether You Deserve the Job*, WASH. POST (Nov. 6, 2019, 12:21 pm), https://www.washingtonpost.com/technology/2019/10/22/ai-hiring-face-scanning-algorithm-increasingly-decides-whether-you-deserve-job/.

5. For an excellent analysis of the use of algorithms in other aspects of the hiring process, including sourcing, *see* MIRANDA BOGEN & AARON RIEKE, UPTURN, HELP WANTED: AN EXAMINATION OF HIRING ALGORITHMS, EQUITY, AND BIAS 29-36 (2018), https://www.upturn.org/static/reports/2018/hiring-algorithms/files/Upturn%20--%20Help%20Wanted%20-%20%20An%20Exploration%20of%20Hiring%20Algorithms,%20Equity%20and%20Bias.pdf.

6. CDT's investigation for this report included researching vendors of algorithm-driven hiring tools such as Berke, Cappfinity, Harver, Humantelligence, Modern Hire, Plum, Prevue, pymetrics, and Traitify.

7. *See e.g.*, pymetrics, *Let the Perfect Talent Fall Into Place: Talent Acquisition*, https://www.pymetrics.ai/solutions#talent-acquisition (explaining that its "algorithms are based on unique differentiators of your high performing employees"); Traitify, *Big Five Assessment Personality Manual*, at 26, https://cdn.traitify.com/creative/downloads/Traitify_BigFive_Manual.pdf (explaining how Traitify determines the predictive value of personality traits based on correlations with customer satisfaction, manager ratings of overall performance, customer engagement, work quality, and reliability).

8. WILLIAM ERICKSON ET AL., CORNELL U. YANG-TAN INST. ON EMP. & DISABILITY, 2017 DISABILITY STATUS REPORT: UNITED STATES 31 (2019), https://www.disabilitystatistics.org/StatusReports/2017-PDF/2017-StatusReport_US.pdf.

9. ALEXIS D. HENRY ET AL., U. MASS. MED. SCH., POLICY OPPORTUNITIES FOR PROMOTING EMPLOYMENT FOR PEOPLE WITH PSYCHIATRIC DISABILITIES 2(2016), available at https://secureservercdn.net/198.71.233.254/d25.2ac.myftpupload.com/wp-content/uploads/2017/04/UMASS_Document_PolicyOppForPromEmployPPD_CHPR_2016_v5.pdf.

10. *See id.* at 5. *See also* Hensel, *supra* n. 3, at 90; JIM FRUCHTERMAN AND JOAN MELLEA, BENETECH, EXPANDING EMPLOYMENT SUCCESS FOR PEOPLE WITH DISABILITIES 10 (2018), https://benetech.org/wp-content/uploads/2018/11/Tech-and-Disability-Employment-Report-November-2018.pdf; JOB ACCOMMODATION NETWORK, ACCOMMODATION AND COMPLIANCE: LOW COST, HIGH IMPACT, https://askjan.org/topics/costs.cfm; SITA DIEHL ET AL., NAT'L ALLIANCE ON MENTAL HEALTH, ROAD TO RECOVERY: EMPLOYMENT AND MENTAL ILLNESS 3 (2014), https://www.nami.org/Support-Education/Publications-Reports/Public-Policy-Reports/RoadtoRecovery.

11. *See* FRUCHTERMAN, *supra* n.11, at 3.

12. *See, e.g*., AMERICAN ASSOCIATION OF PEOPLE WITH DISABILITIES AND DISABILITY:IN, DISABILITY EQUALITY INDEX 2020 13 (2020), https://disabilityin-bulk.s3.amazonaws.com/2020/2020+DEI+Report.pdf.pdf.

13. 42 U.S.C. § 12112(a)-(b) (2018).

14. 42 U.S.C. § 12111(2) (2018). The Rehabilitation Act of 1973 contains similar prohibitions for recipients of federal funding, federal contractors, and the federal government. 29 U.S.C. §§ 793-94 (2018). Many state and local civil rights laws also prohibit disability discrimination, including in employment. These laws, and the agencies that enforce them, can be a valuable vehicle to vindicate rights. However, this paper focuses on the ADA, as it is the law most often used to challenge disability discrimination in employment, and the Rehabilitation Act and many state and local laws work similarly.

15. 42 U.S.C. § 12102(1) (2018).

16. 42 U.S.C. § 12102(2)(A) (2018); 29 C.F.R. § 1630.2(i)(1)(i), -(j)(3)(iii) (2019).

17. 42 U.S.C. § 12112(b)(7) (2018); 29 C.F.R. § 1630.11 (2019). The language of this provision requires employers to "select and administer tests . . . in the most effective manner," which is arguably a higher standard than the general rule that accommodations need only be "reasonable."

18. 42 U.S.C. § 12112(b)(6) (2018); 29 C.F.R. § 1630.10(a) (2019). Three other ADA provisions similarly prohibit disparate impact of people with disabilities. These prohibit (1) limiting, segregating, and classifying an applicant or employee in a way that adversely affects their opportunities or status because of their disability; (2) contractual or other relationships that have the effect of disability discrimination (a simple agency theory of liability); and (3) utilizing standards, criteria, or methods of administration that have the effect of disability discrimination. 42 U.S.C. § 12112(b)(1)-(3) (2018), 29 C.F.R. § 1630.5-.7 (2019).

19. *See* Karraker v. Rent-A-Center, Inc., 411 F.3d 831 (7th Cir. 2005); Press Release, U.S. Equal Emp't Opportunity Comm'n, Target Corporation to Pay $2.8 Million to Resolve EEOC Discrimination Finding, https://www.eeoc.gov/newsroom/target-corporation-pay-28-million-resolve-eeoc-discrimination-finding.

20. Traitify, *Big Five Assessment Personality Manual*, supra n. 8.

21. pymetrics, *A New Standard for Understanding Talent*, https://www.pymetrics.ai/assessments#core-games.

22. Microsoft for Startups, *pymetrics Demo Day Pitch*, YOUTUBE, https://www.youtube.com/watch?v=hzSlmZZQZgQ.

23. Business Insider, *We Tried the AI Software Companies Like Goldman Sachs and Unilever Use to Analyze Job Applicants*, YOUTUBE, https://www.youtube.com/watch?v=QfuGRCmXmCs.

24. 42 U.S.C. § 12112(b)(5) (2018); 29 C.F.R. §§ 1630.2(o)(4),1630.9 (2019); *see generally* U.S. EQUAL EMP. OPPORTUNITY COMM'N, ENFORCEMENT GUIDANCE: REASONABLE ACCOMMODATION AND UNDUE HARDSHIP UNDER THE AMERICANS WITH DISABILITIES ACT (Oct. 17, 2002), https://www.eeoc.gov/policy/docs/accommodation.html.

25. 42 U.S.C. § 12111(9)(B) (2018); 29 C.F.R. §§ 1630.2(o)(2019); *see generally* ENFORCEMENT GUIDANCE: REASONABLE ACCOMMODATION AND UNDUE HARDSHIP UNDER THE AMERICANS WITH DISABILITIES ACT, *supra* n.24.

26. For example, pymetrics offers an alternative ADHD, dyslexia, and colorblindness configuration for its gamified test, but it does not address disabilities that would prevent candidates from taking the test at

all. *See* Elizabeth Burkly, *What Gameplay Accommodations Do You Provide?*, pymetrics, https://pymetrics.zendesk.com/hc/en-us/articles/360028437591-What-gameplay-accommodations-do-you-provide-.

27. The ADA's other disparate-impact provisions would create similar liability. 42 U.S.C. § 12112(b)(1)-(3) (2018), 29 CFR §§ 1630.5-.7 (2019).

28. *See* Terri Williams, *Personality Tests: Should Your Company Use Them?*, THE ECONOMIST (last accessed Nov. 11, 2020), https://execed.economist.com/blog/industry-trends/personality-tests-should-your-company-use-them.

29. *See, e.g.*, Michael J. Yelnosky, *Filling an Enforcement Void: Using Testers To Uncover And Remedy Discrimination In Hiring For Lower-skilled, Entry-level Jobs*, 26 U. MICH. J.L. REFORM 403, 411-13 (1993), https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1703&context=mjlr.

30. *See* Alexandra Givens, *How Algorithmic Bias Hurts People With Disabilities*, SLATE, Feb. 6, 2020, available at https://slate.com/technology/2020/02/algorithmic-bias-people-with-disabilities.html.

31. *See*, e.g., Pymetrics' AuditAI, https://github.com/pymetrics/audit-ai (last accessed Nov. 20, 2020) ("a tool to measure and mitigate the effects of discriminatory patterns in training data and the predictions made by machine learning algorithms trained for the purposes of socially sensitive decision processes").

32. *See* LEADERSHIP CONFERENCE ON CIVIL & HUMAN RIGHTS, CIVIL RIGHTS PRINCIPLES FOR HIRING ASSESSMENT TECHNOLOGIES (Jul. 2020), https://civilrights.org/resource/civil-rights-principles-for-hiring-assessment-technologies/.

33. This aligns with employers' existing record-keeping duties under the ADA and other federal employment law.

34. U.S. EQUAL EMPLOYMENT OPPORTUNITY COMMISSION, COMMISSIONER CHARGES AND DIRECTED INVESTIGATIONS, https://www.eeoc.gov/commissioner-charges-and-directed-investigations. Importantly, investigation into algorithm-driven hiring tools aligns with the EEOC's current enforcement priorities, including eliminating barriers in recruiting and hiring, and addressing emerging issues involving qualification standards that discriminate on the basis of disability. U.S. Equal Employment Opportunity Commission, Strategic Enforcement Plan Fiscal Years 2017-2021,

35. U.S. EQUAL EMPLOYMENT OPPORTUNITY COMMISSION, ENFORCEMENT GUIDANCES AND RELATED DOCUMENTS, https://www.eeoc.gov/enforcement-guidances-and-related-documents.

36. 41 U.S.C. §60-741.80. The OFCCP made a similar change with the Internet Applicant Rule. Executive Order 11246 established nondiscrimination requirements for contractors. The Internet Applicant Rule extended the recordkeeping requirements under Executive Order 11246 to race and gender data of job-seekers applying through the Internet. 41 U.S.C. §60-1.3, -1.12.

37. *See* 41 U.S.C. §60-741.21(7)-(8).

38. For example, Illinois passed a law in January 2020 requiring employers to notify applicants when the employers will use artificial intelligence to screen the applicants. *See* Abdel Jimenez, *Whether You're Hired May Depend on How an Algorithm Rates Your Video Job Interview. A New State Law on AI Screening Gives You Rights*, CHI. TRIB. (Jan. 27, 2020, 7:55 AM), https://www.chicagotribune.com/business/ct-biz-illinois-law-limits-online-video-job-interviews-20200124-y2fuvlfzxzftnatx7olabgrule-story.html.