



# Seeing is Disliking: Evidence of Bias Against Individuals with Autism Spectrum Disorder in Traditional Job Interviews

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## Abstract

Job interviews are an integral component of the hiring process in most fields. Our research examines job interview performance of those with autism spectrum disorder (ASD) compared to neurotypical (NT) individuals. ASD and NT individuals were taped engaging in mock job interviews. Candidates were rated on a variety of dimensions by respondents who either watched the interview videos or read the interview transcripts and were naïve to the neurodiversity of the interviewees. NT candidates outperformed ASD candidates in the video condition, but in the absence of visual and social cues (transcript condition), individuals with ASD outperformed NT candidates. Our findings suggest that social style significantly influences hiring decisions in traditional job interviews and may bias evaluators against otherwise qualified candidates.

**Keywords** Autism spectrum disorder (ASD) · Employment · First impressions · Stigma

Job interviews are the most common method of employment selection, and it is rare for individuals to be hired for a position without an interview at some point during the hiring process (Huffcutt et al., 2013). Consequently, an inability to perform well in an interview in comparison with other candidates reduces one's chances for employment significantly, even for candidates with strong credentials who might otherwise excel in a position. Success in a job interview depends in part on a candidate's ability to convey his or her qualifications, and on the ability to appear likeable, agreeable, and collegial (Rivera, 2012). These social demands of a traditional job interview may significantly disadvantage

individuals who are less adept in social settings, especially individuals with autism spectrum disorder (ASD), leading to fewer job offers and lower employment rates.

ASD is a developmental disorder marked by deficits in social communication and interaction, and can include repetitive or restricted patterns of behavior, difficulty in understanding and maintaining relationships, poor nonverbal communication, and lower levels of social-emotional reciprocity (APA, 2013). Many aspects of social interaction are atypical for people with ASD, including their vocal prosody, facial expressions, eye contact, gestures, movement, and sense of personal space (de Marchena & Eigsti, 2010; Edey et al., 2016; Faso et al., 2015; Grossman et al., 2010; Kennedy & Adolphs, 2014; Szatmari et al., 1989). These differences lead unfamiliar observers to judge people with ASD as odd or awkward (Faso et al., 2015; Grossman, 2015; Grossman et al., 2019). For example, in a series of studies by Sasson et al. (2017) naïve raters who viewed video clips of people with and without ASD judged individuals with ASD to be significantly more awkward, less approachable, less likeable, and less attractive than neurotypical (NT) individuals. These raters also indicated that they were less inclined to sit next to, talk to, or form a friendship with a person with ASD relative to a NT person. Notably, these assessments were made after just a few seconds, and remained consistently negative even when raters had only visual or only audio information.

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These initial negative impressions may endure and contribute to a host of challenges for people with ASD, as first impressions are persistent and unlikely to change (De Keersmaecker & Roets, 2017; Ross et al., 1975). Indeed, research shows that differences in social skills for people with ASD affect their quality of life in many ways, including high rates of loneliness, small social networks, and fewer friendships (Bauminger & Kasari, 2000; Billstedt et al., 2011; Tobin et al., 2014). Differences in social skills and style may also affect perceptions of people with ASD in the job acquisition process. In a recent study by McMahon et al. (2021), participants read vignettes about interactions between employers and prospective employees in a job interview. In some vignettes, the job candidate was described as engaging in behaviors commonly associated with ASD, including poor eye contact, awkward nonverbal communication, and sensory sensitivity. When descriptions included these behaviors, participants' ratings of the candidates were adversely affected, particularly when participants knew little about ASD. Although this study focused on vignettes of fictional interviews, the data suggest that behaviors associated with ASD are likely to have an adverse effect on job interview performance. We posit that the differences in social interaction associated with ASD result in negative job interview outcomes, and contribute to difficulty in securing employment (Austin & Pisano, 2017; Morgan et al., 2014; Shattuck et al., 2012).

Consistent with this suggestion is the finding that the vast majority of individuals with ASD are unemployed or underemployed, with employment outcomes that are disproportionately bad, even when considering only individuals with disabilities (Burgess & Cimera, 2014; Howlin, 2013; Howlin & Moss, 2012; Neary et al., 2015; Roux et al., 2013; Taylor et al., 2015). Even when employment is found, it tends to be lower in terms of hours worked and wages earned (Burgess & Cimera, 2014). Unfortunately, poor outcomes for individuals with ASD exist even after controlling for intelligence and educational attainment (Howlin & Moss, 2012). Importantly, research suggests that some components of employment outcomes are worse for higher functioning individuals as these individuals may not be eligible for government services intended to help with the employment process (e.g., Morgan et al., 2014; Taylor & Seltzer, 2011; Wehman et al., 2012).

There have been calls from a variety of literatures (Wehman et al., 2016) to examine the barriers to employment for autistic individuals through an organizational lens (Johnson & Joshi, 2016; Neely & Hunter, 2014; Vogus & Taylor, 2018). Our research examines one of these barriers, that of the job interview. Job interviews pose a significant employment hurdle for individuals with ASD, as the traditional job interview places a heavy emphasis on social interaction and employers may mistakenly focus

on interview skills, appearance, and social interactions rather than on the skills needed for a given position (Austin & Pisano, 2017; Bjorklund et al., 2012; DeGroot & Gooty, 2009; Lowman et al., 2019). Autistic candidates may exhibit marked differences in their social interactive style and their ability to relate to others, making them less desirable to recruiters and therefore less likely to be selected for employment (Hedley et al., 2018). In line with the social model of disability (Hutchinson et al., 2018; Levitt, 2017; Oliver, 2013), we recognize that the social challenges that arise for individuals with ASD may derive not only from their atypical behaviors and social impairments, but also from a lack of understanding on the part of NT individuals. Indeed, research suggests that NT individuals have difficulty understanding the mental states and behavior of those with ASD (Edey et al., 2016; Sasson et al., 2017; Sheppard et al., 2016), especially when NT individuals are unaware that a person has ASD (Sasson & Morrison, 2019).

To explore whether a traditional job interview disadvantages people with ASD, we conducted mock job interviews of individuals with and without ASD. We then had raters who were naïve to the sample's neurodiversity view video clips of these interviews and evaluate the interviewees on different social dimensions. We also asked raters to indicate how qualified each candidate was, and whether or not they would hire the candidate. Concomitantly, we asked a second, independent group of evaluators to read the transcripts from the interviews, without ever seeing (or hearing) the candidates. They evaluated each interview on the same dimensions used by our first group of evaluators but based their ratings solely on the content of the transcript. By comparing evaluations across these groups, we assessed whether evaluations of people with ASD reflect differences in style (e.g., body language, eye contact, vocal prosody) or in the meaningful content of the interview.

In line with findings from Sasson et al. (2017), we hypothesized that evaluators whose ratings were based on the video tapes (style + content) would rate people with ASD less favorably than those without ASD on most social dimensions. Also in line with Sasson et al., we predicted that impressions of ASD versus NT individuals would not differ for traits associated with competence (e.g., qualifications). However, we predicted that despite perceiving individuals with ASD as qualified, evaluators would be less likely to hire them. Finally, we predicted the difference in ratings for people with and without ASD would be significantly reduced (or eliminated) for evaluators whose ratings were based on the transcripts (content only), as related research suggests that the social interaction, but not the substance of the response, differentiates people with and without ASD (Sasson & Morrison, 2019; Sasson et al., 2017).

## Methods

### Participants

#### Interviewees

Thirty college students (15 ASD/15 NT) were videotaped performing a mock job interview. All interviewees were degree-seeking undergraduates (ages 18–25 years) who matriculated through the regular admissions process at one of two universities on the east coast of the United States. The students with ASD were recruited from the Disability Services Office at their respective universities and were offered modest compensation. There was no specific community organization involved in this study. All interviewees with ASD had a confirmed diagnosis of autism on record with the Disability Services Office at their institution. Consistent with similar studies examining impressions of adults with ASD (e.g., Sasson & Morrison, 2019; Sasson et al., 2017), none of the interviewees with ASD had dual diagnosis of intellectual disability. The ASD cohort included 9 individuals who identified as female, and 6 as male. Eleven were Caucasian, two Latinex, and two African American.

The NT interviewees were recruited from introductory courses in psychology, and were offered the same compensation provided to ASD interviewees. None of the NT candidates had a diagnosis of ASD. Eleven of the NT candidates identified as female and 4 as male. The NT candidates included 11 Caucasian interviewees, three Latinex, and one African American. All participation was voluntary, and interviewees were informed that they could withdraw from the process at any time.

#### Raters

A power analysis was performed to understand what sample size would be necessary to detect differences in the effect sizes that we expected to see. Based on the work of Sasson et al. (2017) and Faso et al. (2015), we used an alpha level of 0.05, a power level of 0.8 and effect size of 0.3. Using GPower 3.1, we calculated a required sample size of 148 for each modality (video and transcript; Faul et al., 2009). Given that our materials included 30 interview videos and the fact that we wanted each rater to evaluate 10 of those interviews, we settled on a target of 150 raters (50 for each set of 10 interviews) for each of the video and transcript conditions.

Three hundred and fourteen college students (ages 18–25 years) were recruited from a Southeastern university to rate the interviews. The majority of our sample

(79%) identified as female, and 21% identified as male. Two individuals identified as non-binary. Specific data on race/ethnicity were not recorded. Roughly half (153) of all raters evaluated the videos of the interviews, and the remaining 161 raters evaluated the transcripts of the interviews. These raters participated as one way of fulfilling a course requirement for an introductory psychology course. Raters were blind to the manipulation in the study and thus unaware of the neurodiversity in the sample of interviewees. All raters were informed that participation was voluntary and that they could withdraw from the experiment at any time.

### Materials

#### Interview Task

For the interview task, each interviewee was asked to answer a single question using the following instructions:

We would like you to imagine that you are about to be interviewed for your dream job. We would like you to prepare a 5-minute speech concerning why you would be qualified for the job. You will be given 5 minutes to prepare your response. Your response will be videotaped and evaluated across a number of dimensions. When preparing your response, remember that this is a job that you really want. To prepare, just think about what you want to say and how you would like to say it. Your response should include why you want this job and what strengths you have that may help you succeed. Please do NOT state your name in the interview; focus instead on your qualifications for the job. These taped interviews will be used only for the purposes of this study, and will not be shared publicly. If you do not wish for us to use your videotape in the study, you can tell us now or at any point during the study. There is no penalty if you opt out, and your decision to do so will not affect your standing at the [university name] or within the Center for Disability Services. Again your response should be approximately 5 minutes long, and you have 5 minutes to prepare. Do you have any questions? I will be back in 5 minutes for your response.

#### Video Rating Task and Measures

For the video-rating task, a total of 30 interview videos (15 from NT candidates, 15 from candidates with ASD) were used. Video duration ranged from 175 to 300 s, with an average time of 265 s. The average interview time was 271 s for NT candidates and 265 s for candidates with ASD. The 30 videos were divided into three groups of 10, with five videos from NT candidates and five videos from candidates with ASD in each

group. Each rater watched and evaluated a single group of 10 videos, so that each video was evaluated by at least 50 independent raters. In line with research by Cuddy et al. (2015) and Sasson et al. (2017), videos were evaluated on nine measures: likability, trustworthiness, straightforwardness, job qualifications, attractiveness, awkwardness, confidence, enthusiasm, and captivation. For each measure, participants read a statement such as, “This candidate is TRUSTWORTHY” and rated their agreement with the statement on a 7-point Likert scale, with 1 = strongly agree and 7 = strongly disagree. In addition, one “foil” question was included to ensure that participants read each question carefully. The foil question read, “Please respond ‘strongly agree’ so that we know you are paying attention.” Items of this sort have been noted as a straightforward method of identifying respondents who are paying attention and complying with instructions (DeSimone & Harms, 2018). All items appeared in random order across participants to avoid any ordering bias.

Two additional questions were asked after those nine key measures. First, raters responded to the statement, “The overall performance of this individual was good” by rating the candidate on a Likert scale where 1 = strongly agree and 7 = strongly disagree. Second, in line with Cable and Judge (1997), raters responded to the statement, “I would hire this individual for the job they described” using a Likert-scale where 1 = strongly agree and 7 = strongly disagree.

### Transcript Rating Task and Measures

For the transcript rating task, each mock interview video was transcribed verbatim. Transcripts averaged 647 words for NT interviewees and 599 words for candidates with ASD. The transcripts were grouped into sets of 10 (5 NT, 5 ASD) that were identical to those used in the video rating task, and were presented to participants using a Qualtrics survey. As with the video rating task, each rater evaluated one set of 10 transcripts that were presented in random order, and each transcript was evaluated by at least 50 raters. After reading each transcript, raters were asked to report the name of the interviewee’s ideal job, to ensure they carefully reviewed each transcript. Then raters evaluated the transcript using the same nine measures (with identical Likert scales) that were used in the video rating condition, along with the foil question. Items were presented in random order across participants. After these items, participants responded to the two follow-up questions about overall performance of the candidate and the likelihood of hiring the candidate.

## Procedure

### Interview Preparation and Videotaping

Each mock interviewee engaged in an informed consent process and was aware that the interviews would be videotaped and later evaluated by other students. We worked with Disability Services to ensure that our consent materials were composed in plain language (Plain Writing Act, 2010) and were clear and appropriate for use with individuals with ASD. To avoid any performance bias among interviewees, our interviewees were not informed during the consent process about the purpose of the study, but instead were told that we were seeking to understand more about the job interview process in general.

When the consent process was complete, interviewees were given instructions about the interview task (see above) and had five min to prepare for the interview. Participants were informed that their interview would be videotaped, and that independent raters would evaluate the videotapes at a later time. Interviewees were reminded not to give their names during the interview, but instead to describe their qualifications for their dream job, and to discuss why they would be strong candidates. The experimenter left the room for the 5-min preparation period. After the preparation period, the experimenter returned, turned on the camera, and gave the following instructions:

You will now have 5 minutes to sit in front of the camera and respond to the question of why you should be hired for your dream job. As a reminder, you will be evaluated based on several different criteria. The camera is recording and you may begin when you are ready. Please begin by stating your ideal job.

Throughout the entire session, the experimenter displayed a flat affect, and did not smile or give encouraging nonverbal feedback. Furthermore, the experimenter did not verbally encourage the interviewees in any way and avoided prompting or asking questions during the speeches because the use of prompts or follow-up questions can bias the process (Campion et al., 1997). However, if an interviewee stopped before the full 5 min elapsed, the experimenter requested, “please continue.”

After the completion of their responses, the participants were thanked for their time, debriefed, and escorted out.

### Video Evaluation

Video raters were tested in small groups of 4–10 students and completed a consent form before starting the experiment. Each rater sat at an individual computer station with headphones to watch and evaluate the interviews. For each rater, videos were presented in a random order. Raters were

told that they would see a series of mock job interviews and would evaluate each one individually. Raters were given the metrics for evaluation in advance. Raters watched each interview one at a time, and after each video rated the candidate on the computer. After completing the full evaluation for a given interview, participants viewed the next video, until all 10 were complete.

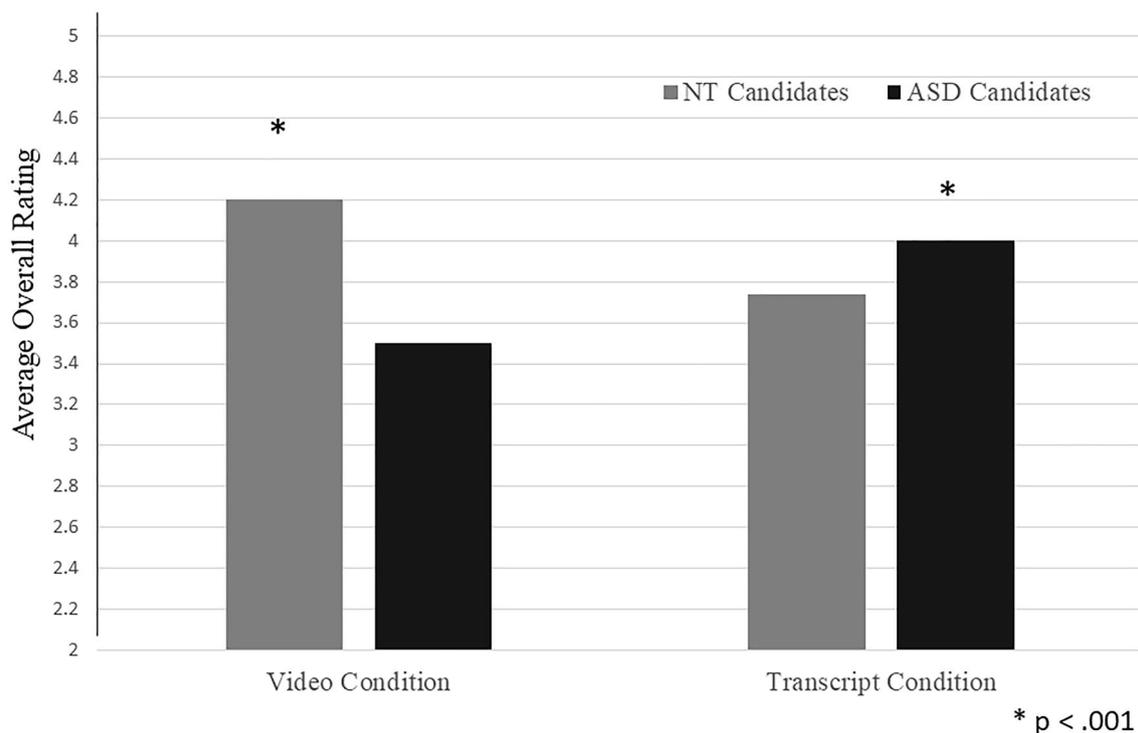
### Transcript Evaluation

Transcript raters accessed the Qualtrics survey using an online link. Raters first completed an online consent form and were instructed that they would read a series of transcripts from mock job interviews. They were told that they would evaluate each job interview and were given the metrics for evaluation in advance. After reading these instructions, raters advanced to the first transcript. Immediately after reading each transcript, raters evaluated the interviewee using the same metrics that were employed in the video rating condition. As with the video condition, transcripts were presented in a random order across participants.

## Results

Prior to performing any analyses, we examined our data for outliers, including participants who gave the same score for all interviewees and measures (e.g., repeatedly pressing the “1” key). We also identified individuals who failed to respond appropriately to our foil question. Data from five participants (two in the video condition and three in the transcript condition) were excluded from analyses as a result. Our findings are thus based on data from 151 raters in the video condition and 158 raters in the transcript condition. Ratings were reverse scored so that for all measures (excluding awkwardness), higher scores reflected more favorable ratings (e.g., more trustworthy, more attractive, more qualified). For awkwardness, lower scores reflect less awkwardness.

We conducted a 2 (Interview Group: NT vs. ASD) X 2 (Modality: video vs. transcript) X 11 (rating) mixed-model ANOVA. Results indicated a significant main effect of Interview Group,  $F(1, 307) = 30.3, p < 0.001, \eta^2 = 0.09$ , with significantly more favorable scores for NT interviewees ( $M = 3.95; SD 0.73$ ) than ASD interviewees ( $M = 3.7; SD 0.64$ ). This main effect was qualified, however, by significant interactions between Interview Group and Modality,  $F(1, 307) = 148.3, p < 0.001, \eta^2 = 0.33$ , Interview Group and Rating,  $F(10, 3070) = 37.4, p < 0.001, \eta^2 = 0.11$ , Modality



**Fig. 1** Average overall ratings for NT candidates and candidates with ASD in the video and transcript conditions

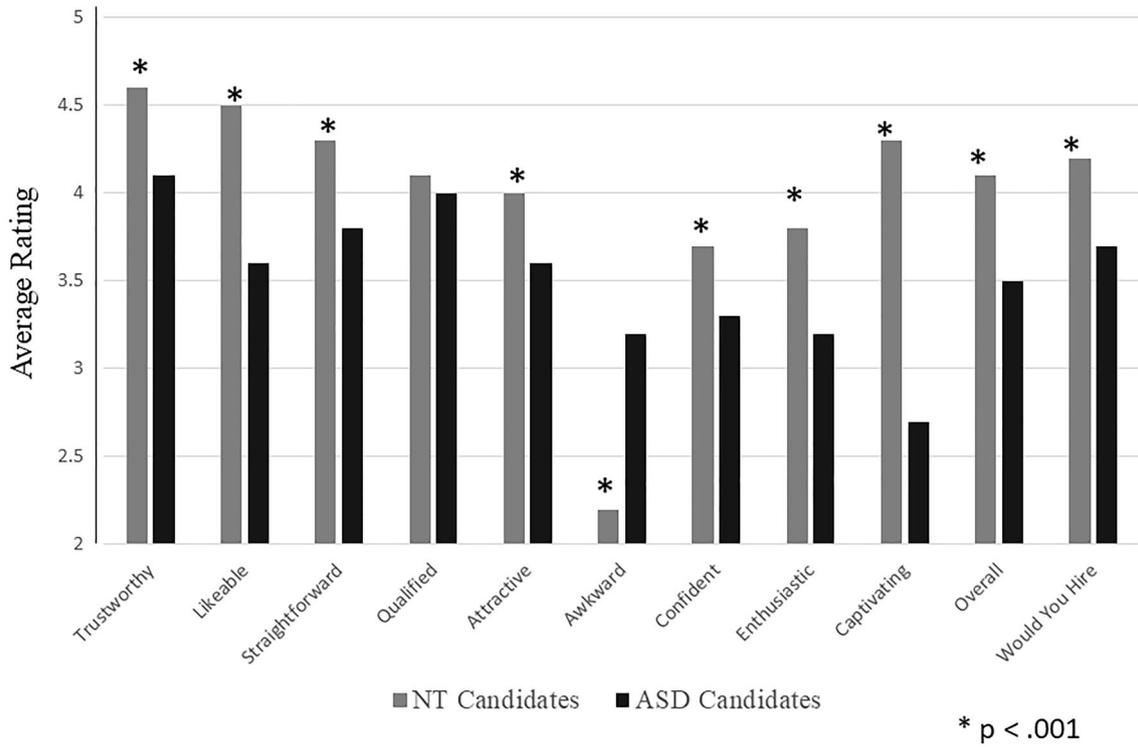


Fig. 2 Average ratings for NT candidates and candidates with ASD across all social and hiring dimensions in the video condition

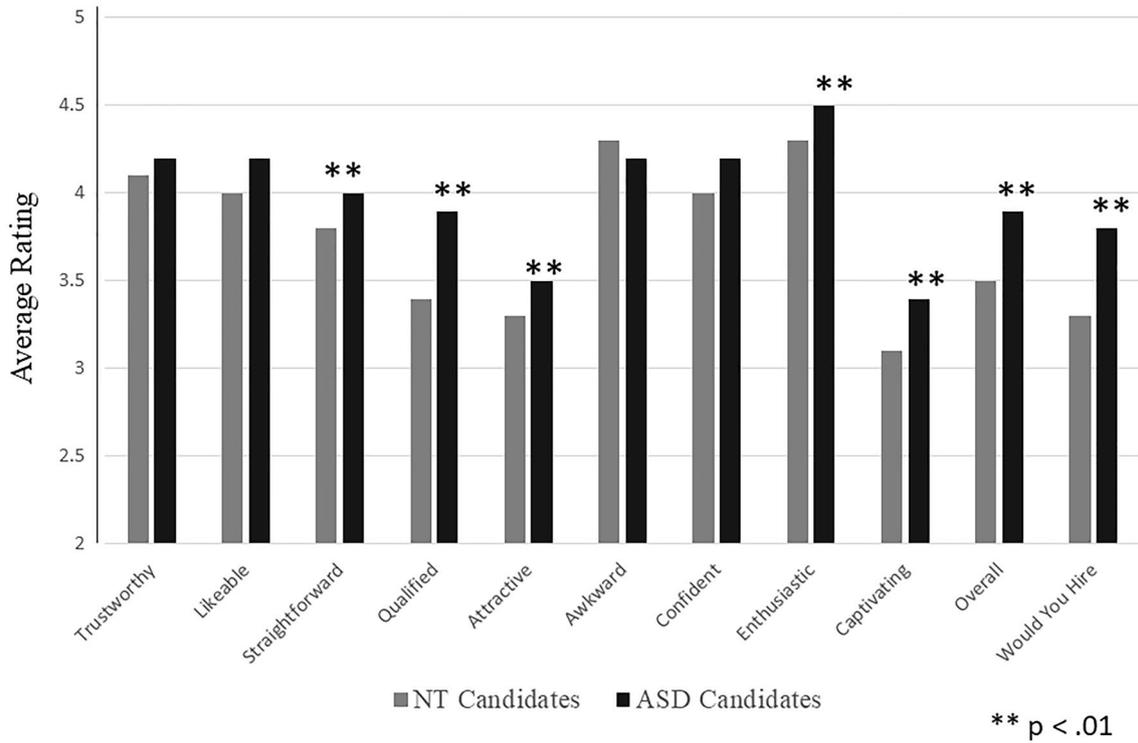


Fig. 3 Average ratings for NT candidates and candidates with ASD across all social and hiring dimensions in the transcript condition

**Table 1** Relative weights analysis of predictors of likelihood hiring decision

	Video condition				Transcript condition			
	ASD group		NT group		ASD group		NT group	
	Raw weight	Relative weight	Raw weight	Relative weight	Raw weight	Relative weight	Raw weight	Relative weight
Trust	0.09	16.28	0.09	12.16	0.08	12.13	0.12	14.37
Liking	0.07	13.33	0.06	8.35	0.07	10.05	0.09	10.36
Straightforward	0.08	13.92	0.06	8.55	0.07	10.84	0.09	10.92
Qualified	0.14	24.98	0.23	31.25	0.23	33.1	0.23	26.81
Attractiveness	0.03	4.50	0.04	5.09	0.06	8.01	0.09	10.48
Awkwardness	0.01	2.22	0.02	3.13	0.01	1.85	0.04	5.20
Confident	0.04	6.69	0.08	11.14	0.04	5.38	0.04	4.89
Enthusiastic	0.05	9.06	0.06	7.58	0.03	4.97	0.02	2.52
Captivating	0.05	9.04	0.09	12.75	0.09	13.65	0.12	14.45
Total R-Squared	0.56		0.73		0.69		0.86	

Relative weight 95% confidence interval excludes zero  
 ASD autism spectrum disorder, *R-Squared* total explained variance of the dependent variable

and Rating,  $F(10, 3070) = 45.8, p < 0.001, \eta^2 = 0.13$ , and a three-way Interview Group X Modality X Rating interaction,  $F(10, 3070) = 13.9, p < 0.05, \eta^2 = 0.04$ . Follow-up comparisons explored patterns of group differences across modalities and ratings.

As can be seen in Figs. 1, 2 and 3, these interactions were driven by the fact that the pattern of ratings for NT versus ASD interviewees differed dramatically for the video versus transcript conditions. When evaluators watched the interview videos, candidates with ASD were rated significantly less favorably on average than NT candidates,  $t(150) = 13.7, p < 0.001$  (see Fig. 1). The advantage for NT candidates was evident for every measure with the exception of “qualified,”  $t(150) = 1.1, p = 0.29$  (see Fig. 2). Thus in the video condition, candidates with ASD were rated as significantly less trustworthy,  $t(150) = 7.6, p < 0.001$ , likeable,  $t(150) = 12.4, p < 0.001$ , attractive,  $t(150) = 17.1, p < 0.001$ , straightforward,  $t(150) = 6.4, p < 0.001$ , confident,  $t(150) = 7.7, p < 0.001$ , enthusiastic,  $t(150) = 8.4, p < 0.001$ , and captivating,  $t(150) = 8.6, p < 0.001$ , than NT candidates. They were also rated as reliably more awkward,  $t(150) = 11.4, p < 0.001$ . Furthermore, despite the fact that interviewees with ASD were *not* rated as less qualified than NT interviewees, they received lower overall ratings,  $t(150) = 9.7, p < 0.001$  and were significantly less likely to be hired,  $t(150) = 7.7, p < 0.001$ .

A very different pattern emerged in the transcript condition. When evaluators read the interview transcripts, candidates with ASD were rated significantly *more* favorably on average than NT candidates,  $t(157) = 4.4, p < 0.001$  (see Fig. 1). This pattern was fairly consistent across measures (see Fig. 3). Interviewees with ASD were rated as significantly more straightforward,  $t(157) = 3.3, p < 0.001$ , attractive,  $t(157) = 3.2, p = 0.002$ , captivating,  $t(157) = 4.6, p < 0.001$ , and enthusiastic,  $t(157) = 3.2, p = 0.002$ , than NT interviewees. Their ratings were also marginally higher for trustworthiness,  $t(157) = 1.7, p = 0.09$ , likeability,  $t(157) = 2.9, p = 0.052$ , and confidence,  $t(157) = 1.9, p < 0.06$ , though their ratings for awkwardness did not differ from those of NT interviewees,  $t(157) = 0.4, p = 0.67$ . Finally, candidates with ASD in the transcript condition were rated as more qualified,  $t(157) = 7.0, p < 0.001$ , were given higher overall scores,  $t(157) = 4.4, p < 0.001$ , and were more likely to be hired,  $t(157) = 5.7, p < 0.001$ , than NT candidates.

Using code provided by Tonindandel and LeBreton (2011), we performed a relative weights analysis to understand the importance of the different ratings with respect to predicting the likelihood of hiring. We note that we can compare relative weights within, but not across, models in terms of statistical significance and, consequently, cross model comparisons are directional. Table 1 shows the

relative weights for the different ratings in video and transcript conditions.

Examining only the video condition, we see that the level of qualification is a more important predictor of hiring intentions for NT candidates compared to ASD candidates, despite qualification being the most important predictor across both models. In turn, trustworthiness, likeability, and straightforwardness are more important predictors for candidates with ASD. This is interesting because the mean difference in qualifications for NT and ASD candidates was not very different; however, the mean differences in trustworthiness, liking, and straightforwardness are significantly different and favor NT candidates. In the transcript condition, the importance of being qualified becomes more important for ASD candidates relative to NT candidates. Thus, in the absence of visual cues, not only are ASD candidates rated as more qualified than NT candidates, but the relative importance of being qualified also increases in terms of hiring intentions.

## Discussion

Individuals with ASD often exhibit atypical social behaviors and are perceived by NT individuals to be different, awkward, and less appealing than individuals without ASD (Edey et al., 2016; Faso et al., 2015; Grossman, 2015; Grossman et al., 2019; Kennedy & Adolphs, 2014; Neumann et al., 2006; Sasson et al., 2017). The present data indicate that this atypical social presentation adversely impacts job interview performance and reduces the likelihood that individuals with ASD will be hired for a job, even when they are perceived as highly qualified. In our study, young adults with and without ASD completed mock job interviews and were recorded on video. Evaluators naïve to the neurodiverse nature of the candidate sample then either watched the interview videos or read interview transcripts, and rated candidates on social dimensions and qualifications, and the likelihood that they would hire each candidate. We predicted that evaluators whose ratings were based on the video tapes (style + content) would rate people with ASD less favorably than those without ASD on most social dimensions, and that impressions of ASD versus NT individuals would not differ for traits associated with competence. We also predicted that despite perceiving individuals with ASD as qualified, evaluators would be less likely to hire them. Consistent with these hypotheses and other findings (e.g., Grossman, 2015; Sasson & Morrison, 2019; Sasson et al., 2017), evaluators who watched the videos rated candidates with ASD significantly less favorably than NT candidates on a number of social dimensions, although they did find candidates with ASD to be as qualified as NT candidates. Despite these

qualifications, evaluators nonetheless reported a lower likelihood of hiring candidates with ASD.

These data suggest that the hiring bias against candidates with ASD derives from a distaste for their atypical social presentation rather than their professional qualifications. Consistent with this suggestion are two key findings from our relative weights analysis: first, social traits including likeability and straightforwardness played a greater role in hiring decisions for candidates with ASD than NT candidates. Second, evaluators' perception that a candidate was qualified for a job played a smaller role in hiring decisions for candidates with ASD relative to NT candidates. Thus, although evaluators perceived candidates with ASD to be equally qualified, they found candidates with ASD to be significantly less socially desirable than NT candidates, and their hiring decisions were adversely and differentially influenced by their social perceptions.

Data from the transcript condition align with these findings, as the pattern of ratings for candidates changed dramatically in the absence of visual and social cues. We predicted that the difference in ratings for people with and without ASD would be significantly reduced (or eliminated) for evaluators whose ratings were based on the transcripts (content only), and our findings support that prediction. Transcript raters found candidates with ASD to be as likeable and confident as, and no more awkward than, NT candidates. Candidates with ASD were perceived as significantly *more* straightforward, attractive, enthusiastic, and captivating than NT candidates. Raters also judged candidates with ASD as more qualified and were more likely to hire them than NT candidates. Finally, our relative weights analysis indicated that being perceived as qualified played a greater role for candidates with ASD in the transcript versus video condition. Thus, in the absence of social cues, not only were candidates with ASD perceived as more qualified, but those qualifications also played a greater role in hiring decisions.

Clearly, it is not what candidates with ASD say in a job interview but rather how they present themselves that poses a barrier to success. These findings echo previous studies that demonstrate that individuals with ASD are perceived as socially awkward relative to NT individuals, even after just a few seconds (e.g., Grossman, 2015; Grossman et al., 2019; Sasson & Morrison, 2019; Sasson et al., 2017). Indeed, Sasson et al. demonstrated that unfavorable impressions of people with ASD can be formed quickly and on the basis of minimal information (e.g., pose, voice prosody, facial structure). Furthermore, atypical social behaviors common among people with ASD can be alienating even in the abstract. When NT individuals read fictional vignettes that included characters who exhibited behaviors commonly associated with ASD, they reported a desire to socially distance from those characters, perceived them as less emotionally stable, and were less likely to recommend that they

be hired for a job (Butler & Gillis, 2011; McMahon et al., 2021).

## Implications

The consequences of these negative evaluations can be devastating. For adults with ASD, poor interview performance contributes to high rates of unemployment, leaving people with ASD vulnerable to poverty, homelessness, and social isolation (Hendricks, 2010; Hendricks & Wehman, 2009). For employers, our finding that ASD candidates were perceived as qualified but were nonetheless less likely to be hired suggests that employers who reject a candidate with ASD as a result of a job interview may very well miss out on competitive candidates who offer diverse abilities and unique strengths. Indeed, data from our transcript condition—which indicate higher ratings for candidates with ASD than NT candidates—suggest that employers who base hiring decisions on face-to-face interviews may reject the best candidates for a job, particularly if the position does not require strong social skills.

Due to the substantial impact that the atypical social presentation of people with ASD has on job interview success, and the cascading consequences of unemployment, it is important to explore avenues for improving the hiring process for individuals with ASD. These avenues could include alternative selection methods or adapting interviews to make the strengths of ASD applicants easier for reviewers to see. With respect to the prior, alternatives could involve work-based samples, selection tests (e.g., personality inventories), or skill-based assessments that span multiple interview sessions or an extended session rather than a single, brief interview (Annabi & Locke, 2019; Carrero et al., 2019; Tomczak et al., 2021). Several companies including Microsoft and SAP have successfully used work samples, though it is unclear if this approach is scalable to other businesses. Further, getting selected into these programs involves disclosure of an ASD diagnosis, which can be a difficult decision for many with ASD (Whelpley et al., 2021). Future research should examine the benefits, challenges, and viability of these alternative hiring mechanisms.

Given that most companies still require an interview as a precursor to employment, an important question concerns how to augment traditional interviews to create more equitable outcomes for qualified candidates, be they on the spectrum or otherwise neuroatypical. Some research suggests that changing the content of the questions asked in job interviews could result in more favorable outcomes for autistic applicants, though it is important to note that the results still show significant disadvantages for interviewees on the spectrum (Maras et al., 2021). A survey of experts found that using less structured interviews may have the potential to decrease adverse impact to those on the spectrum

(Tomczak et al., 2021) though other work suggests that less structured interviews puts ASD applicants at a disadvantage (Patton, 2019). Another option is to identify specific aspects of the social interaction that drive the unfavorable impressions of individuals with ASD (e.g., grooming, eye contact, personal space), and address those specific behaviors through intervention and training for individuals with ASD. However, evidence suggests that this route is not likely to be optimal or effective. Although a number of behavioral differences among people with and without ASD have been identified (e.g., Faso et al., 2015; Guha et al., 2016; Kennedy & Adolphs, 2014), growing evidence suggests that the negative evaluations of individuals with ASD are not driven by a single difference or a collection of isolated differences, but rather by a complex synthesis of physical and social cues that can include behaviors, fashion, and grooming habits (Sasson et al., 2017). Thus, attempts to improve interview performance by addressing one or more of these differences are not likely to have a significant effect.

Another potentially more effective approach for leveling the playing field may be to increase employers' awareness and knowledge about ASD, and to encourage candidates with ASD to disclose their diagnosis to potential employers. Studies demonstrate that impressions of individuals with ASD are significantly more favorable when raters have increased understanding of autism (McMahon et al., 2021; Morrison et al., 2019; Sasson & Morrison, 2019). Morrison and colleagues, for example, found that high autism-related stigma and a lack of knowledge about ASD contributed significantly to negative first impression ratings, and that variability in the ratings of people with ASD was driven more by the characteristics of the raters than of the individuals with ASD. Furthermore, first impression ratings improved when raters had high knowledge of ASD, but only consistently so when diagnosis information was provided. Data from other studies similarly show that ratings of individuals with ASD improve when the ASD diagnosis is disclosed (McMahon et al., 2021; Sasson & Morrison, 2019). We note, however, that disclosure may only be advantageous when employers are well-educated about ASD as other research disclosure during the interview can lead to biased and stigmatized evaluations (Whelpley et al., 2021). First impressions from NT raters with low ASD knowledge and high autism-related stigma were significantly lower for ASD candidates when an ASD diagnosis was explicit (Morrison et al., 2019). Thus, increasing employers' knowledge and understanding of ASD will likely be essential in improving outcomes for candidates with ASD.

## Limitations

The findings reported here should be viewed in the context of several limitations. The mock interviews used in

this study were minimally interactive, but traditional job interviews tend to involve significant give and take between employer and candidate. Because many individuals with ASD face significant social challenges, the fact that our paradigm involved minimal interaction likely resulted in *higher* ratings for candidates with ASD in the video condition than would be observed in a traditional interview. Thus, it is likely that we underestimated the gap between ASD and NT candidates who engage in face-to-face interviews. Our interview situation was also somewhat artificial in the sense that candidates were asked to discuss their qualifications for their dream job, and jobs varied by candidate. By contrast, the vast majority of job interviews require that candidates discuss their qualifications for one specific job, which may or may not be their dream job. In these situations, individuals with ASD may be less adept than NT candidates in knowing how to frame their personal strengths to align with a specific employment position. Again, these differences may have led to an underestimation of the gap between ASD candidates and NT candidates.

Additionally, the individuals who participated in the mock job interviews were all college students, and no participant with ASD had a dual diagnosis of intellectual disability. Thus, it is not clear if the findings will generalize to cognitively impaired populations. We also used college students, rather than employers, as our evaluators, and while this is a common practice in the literature (McMahon et al. 2021; Morrison et al., 2019; Sasson et al., 2017) and likely includes individuals who will at some point be involved in hiring, it could have affected overall evaluations. For example, research suggests that many employers have low performance expectations for individuals with psychological and neurological disorders, including ASD (e.g., Richards, 2012; Santuzzi et al., 2014; Shih et al., 2013). Because diagnosis rates for ASD are higher now than they were previously, young college students are more likely than older employers to have learned alongside autistic individuals in general education classrooms and may be more tolerant of and less prejudiced against neurominorities. Alternatively, HR practitioners and recruiters may have received more diversity-related training than undergraduate students, and thus could be more open to neurodiverse candidates. Because college students and employment recruiters may differ in experience with and/or training regarding neurodiversity, and because college students generally have little experience in hiring practices, future research should consider including individuals responsible for hiring within their companies as evaluators. Finally, we examined only group-wise comparisons and did not address individual differences among candidates with ASD, nor did we examine whether individual characteristics of the raters (e.g., gender, autism knowledge) affected the results reported here.

## Conclusions

The present study provides converging evidence that the atypical social behaviors exhibited by individuals with ASD adversely and differentially influence perceptions of candidates and interview outcomes. When competing with NT candidates, failure in a face-to-face interview is likely, even when candidates with ASD are perceived as qualified. Evaluators who watched the interview videos gave relatively less weight to the qualifications of ASD candidates when making hiring decisions, and instead based those decisions more heavily on the candidates' social performance. However, candidates with ASD can be competitive in the job market and their qualifications will matter when social interaction is removed from the hiring process. When evaluators read the interview transcripts and all social and behavioral cues were removed, raters gave greater weight to the qualifications of ASD candidates and were more likely to offer them a job.

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## Declarations

**Conflict of interest** The authors have no known conflicts of interest for this work.

**Ethical Approval** All procedures complied with APA ethical guidelines for the recruitment and testing of human participants. Approval for this study was granted from the Institutional Review Board at the College of Charleston, protocol # 2018-02-20-144946.

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