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Perceptions of autistic and non-autistic adults in employment interviews: The role of impression management

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ABSTRACT

Background: Social communication and interaction differences can make employment interviews particularly challenging for autistic people, who may be less able to modulate their Impression Management (IM). This makes autism a relevant test case of the extent to which behavioral IM influences perceptions of job candidates.

Method: Two studies are reported. In Study 1, lay-raters watched a video of autistic and non-autistic mock candidates' interviews, and assessed their verbal, non-verbal, and para-verbal behaviors, and likelihood of social approach/avoidance. In Study 2, the presence of behavioral cues was manipulated by using either the interview videos (behavioral cues present) or transcripts (cues absent). Employers rated their overall impression of the candidates (e.g., perceived confidence, conscientiousness, competence, communication skills, etc).

Results: In study 1, autistic candidates were perceived as having a more monotonous tone of voice, being less composed and focused, and displaying less natural eye contact and gestures than their non-autistic counterparts, and received lower ratings for likelihood of social approach. For non-autistic interviewees, relationships were also found between ratings for verbal, para-verbal, and non-verbal behaviors, and social awkwardness and attractiveness. In study 2, non-autistic (but not autistic) interviewees received higher ratings of their confidence and communication skills when assessed by video than by transcript, but this advantage was not found for the autistic candidates.

Conclusions: Results indicate that observers may use different information when evaluating autistic compared with non-autistic interviewees, possibly due to qualitative differences in behavior. Implications of different behavioral presentations in autistic candidates are discussed, including the potential benefits of using transcripts or more structured interviews to enable recruiters to focus on interviewee answers, whilst being less influenced by non-verbal and para-verbal behaviors.

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1. Introduction

In the current study, we investigate the extent to which behavioral (verbal, non-verbal, and para-verbal) Impression Management (IM) influences interviewers' perceptions of autistic and non-autistic candidates undergoing employment interviews. Autism provides a valuable test for the influence of IM on interviewer perceptions due to differences in social communication (including verbal, non-verbal, and para-verbal factors), memory recall, and interview performance in this group. We report on two studies. In Study 1, lay-raters viewed autistic and non-autistic candidates undergoing a mock employment interview, observed via video. Lay-raters assessed candidates across a range of verbal, non-verbal, and para-verbal behaviors, as well as on measures of the likelihood of social approach/ avoidance, to investigate which behavioral factors may be associated with first impressions of autistic and non-autistic candidates. In Study 2, we assessed if and how the presence or absence of observable behavioral cues influenced expert (i.e., employers') overall impressions of the same candidates, viewed either by video (behavioral cues present) or by transcript (behavioral cues absent).

Employment interviews can be considered exercises in self-presentation, whereby candidates must engage in effective IM to succeed. Verbal IM refers to a candidate's (conscious or unconscious) verbal attempts to maximize their positive attributes and present a positive self-image for the interviewer when answering the interview questions. Verbal IM tactics may be *self-focused*, to evidence skills, experience, and qualities desirable for a role via self-promotion; for example, describing our own competencies and role in positive outcomes (Stevens & Kristof, 1995). In addition, candidates also engage in *other-focused* verbal IM, such as ingratiation (behaviors aimed at instilling interpersonal liking, including 'opinion conformity' with the interviewer; Peeters & Lievens, 2006), or 'other enhancement' (expressing favorable opinions about the interviewer or company; Ellis et al., 2002). *Defensive* verbal IM may also be deployed to protect or repair one's image (such as in justifying weaknesses or errors; Peeters & Lievens, 2006).

In addition to the above features of answer quality (i.e., verbal IM), IM also encompasses para-verbal (e.g., speech tone, pitch, volume) and non-verbal (e.g., smiling, eye contact, hand gestures, body positioning, etc.) behavioral features, which are also suggested to influence interviewer impressions (Barrick et al., 2009; Bolino et al., 2008; Kristof-Brown et al., 2002; Stevens & Kristof, 1995), conclusions about how well a candidate might 'fit' with the role and organization, and ultimately, interview success (Chen & Lin, 2014; Howard & Ferris, 1996). Yet research findings on IM are mixed. Whilst many studies have found IM to be positively related to interviewer perceptions of candidates and the likelihood of interview success (DeGroot & Motowidlo, 1999; Hollandsworth et al., 1979; Kacmar et al., 1992; McGovern & Tinsley, 1978; McShane, 1993; Posthuma et al., 2002), other research has found IM to be less influential to an interviewer's judgements of candidate suitability, particularly when interviews are more structured (Barrick et al., 2009; Ellis et al., 2002; McShane, 1993; Peeters & Lievens, 2006; Stevens & Kristof, 1995; Tsai et al., 2005). There is, however, considerable heterogeneity in the nature of individuals' non-verbal and para-verbal behaviors, and in their ability to regulate and utilize these, meaning that non-verbal and para-verbal IM may be used (unconsciously or consciously) with varying degrees of success (Harris et al., 2007; Roulin et al., 2014).

Autism Spectrum Disorder (henceforth autism) is defined in diagnostic manuals as a neurodevelopmental disorder involving difficulties in social communication and interaction, as well as restricted interests and/or repetitive behaviors (American Psychiatric Association, 2013). It is estimated that 1–2% of the population are autistic,[1] with around a fifth also having a co-occurring intellectual disability (Roman-Urrestarazu et al., 2021).[2] Given differences in social communication and low rates of employment, autism provides a relevant case study for the investigation of IM on both theoretical and practical grounds. Crucially for verbal IM, autism has been characterized by difficulties in reading others' thoughts, feelings and intentions ('theory of mind'; Baron-Cohen et al., 1985; Happé, 1995). Yet these difficulties are likely to be reciprocal; in an employment context, autistic people may struggle to infer what is being requested by an interviewer, but interviewers may also fail to provide adequate context to facilitate an appropriate response (Jaswal & Akhtar, 2019; Milton, 2012). In addition, autistic differences in behavioral presentation (including speech, eye contact, and body language; e.g., de Marchena & Eigsti, 2010; Senju & Johnson, 2009) may influence para- and non-verbal IM. It is pertinent, then, that autistic people comprise the most under-employed disability group in the UK, with just 21.7% of autistic adults being in any form of employment in the first half of 2020 (Office for National Statistics, 2021; see also Hendricks, 2010; Howlin, 2013; Knapp et al., 2009; Lounds-Taylor et al., 2015; Shattuck et al., 2012), and around 46% of those who are employed being considered to be over-qualified and skilled for their current role (Baldwin et al., 2014).

The job interview is frequently cited as a major barrier to gaining employment for autistic people (Bublitz et al., 2017; Chen et al., 2015; Hendrickx, 2008; Lorenz et al., 2016; Maras et al., 2020; Morgan et al., 2014; Richards, 2012; Scott et al., 2019). Indeed, interviews across a variety of real-world situations – from police interviews to health and social care consultations – can be difficult for this group, particularly due to the ubiquitous use of open-ended questions (i.e., fairly unstructured interviews, e.g., *'tell me about yourself'*; see Crane & Maras, 2018; Maras et al., 2020; Norris et al., 2020). A recent study assessed employment professionals' perceptions of autistic and non-autistic people undergoing mock employment interviews; to investigate employer perceptions, as well as testing the effectiveness of adapting interviews to improve perceptions. Specifically, Maras et al. (2020) found that employers provided lower ratings of autistic adults' performances (as rated from transcripts) compared to non-autistic candidates, but this difference was ameliorated when questions were adapted to become more supportive (more direct, with prompting; see Maras et al., 2020). Despite

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[1] We use 'identity first' language (e.g. 'autistic person') to respect the views of many autistic people and their families in the UK (e.g. Kenny et al., 2016). We also recognise the wider natural variation of neurodiversity; thus, we use the term 'non-autistic' to describe our participants who do not have a diagnosis of autism.

[2] The focus of the present research is on autistic adults without intellectual disability, to provide an initial investigation of IM and interview performance associated with autism itself that is not confounded by intellectual disability.

this, autistic candidates were rated more poorly than their non-autistic peers in terms of their confidence, communication skills, likeability, and easiness to work with regardless of whether questions were adapted or not. Maras et al.'s (2020) findings are limited, however, by ratings being based upon interview transcripts, which provide little information about candidates' non-verbal and para-verbal behaviors. This issue is critical because self-presentation and IM – which, in addition to answer quality (verbal IM), also includes para-verbal and non-verbal behaviors – are available to the interviewer in real-life employment interviews, and may influence perceptions and hiring decisions (Barrick et al., 2009; Bolino et al., 2008; Chen & Lin, 2014; Howard & Ferris, 1996; Kristof-Brown et al., 2002; Stevens & Kristof, 1995).

Recent research highlights a specific area within which autistic people may behave in an effortful manner to 'camouflage' behaviours, in an attempt to reduce their observable differences and 'appear neurotypical' (Cook et al., 2021; Hull et al., 2017; and see Pryke-Hobbes et al., 2023 for a discussion of camouflaging in the workplace). A recent conceptual study examined camouflaging in autism as an IM function (Ai et al., 2022). The authors outline a model which suggests that camouflaging conceptually overlaps with IM, although it includes additional motivations and cognitive functions specific to autistic people who are attempting to 'fly under the radar' in neurotypical contexts. Further, Ai et al. (2022) highlight the importance of two-way communication in the difficulties that arise when non-autistic and autistic people communicate (i.e., the double empathy problem; Milton, 2012), and the importance of this interactive effect in slowing an autistic individual's IM learning and optimisation over time throughout the lifespan (Ai et al., 2022). However, the authors argue that, despite the cognitive and social challenges inherent, over time and with many iterations (i.e., repeated real-life practising), autistic people can develop a more intuitive and automatic form of IM processing, although this may be slower and more effortful (Ai et al., 2022). This conceptual framework therefore provides a model whereby autistic people may already engage in a form of IM, perhaps on a daily basis, with potential implications for the use and effectiveness of IM in applied settings, including in employment interviews.

A recent study examined the impact of para-verbal and non-verbal behaviors on employment interview success in autistic and non-autistic college students (Whelpley & May, 2023). The students were provided with one mock-interview question, with their answers audio and video recorded. These answers were then presented to another set of college students who, blind to group, rated their performance based on either the transcript (i.e., verbal response alone), or the video (verbal response alongside para- and non-verbal behaviors). The authors found an overall group difference, indicating poorer ratings of autistic mock-candidates' performance on a range of factors (including trustworthiness, likeability, attractiveness, confidence, and awkwardness) than their non-autistic counterparts, but interactions indicated that this finding applied for the video-format only. Autistic candidates were also rated as being more awkward in the videos, and were more likely to receive negative hiring decisions from raters, even though they were not deemed less qualified for the role. However, when given transcripts only, the opposite effect appeared, whereby autistic candidates were rated more favorably than the non-autistic group. This initial evidence indicates that differences in para- and non-verbal behaviors in autistic people may contribute to negative impressions during employment interviews. However, the study has several limitations. First, the mock-interview consisted of just one question, rather than the entire interview interaction. The mock-candidates' responses were also effectively supported by the provision of a detailed description of what was required (i.e., they were told to *"describe your qualifications for the role and discuss why you would be a strong candidate"*), as well as being given time to prepare their answer, which may mean that this study design was more supportive for autistic candidates than typical interviews, with implications for group differences in rater evaluations (see Maras et al., 2020). Second, both the mock-candidates and the raters were college students, meaning that the findings may not necessarily generalize to the broader population involved in both attempts to gain employment, and in making hiring decisions.

Overall, the literature to date suggests that differences in autistic people's verbal, para-verbal, and non-verbal behaviors may negatively influence interviewer perceptions (Bublitz et al., 2017; DeGroot & Motowidlo, 1999; Grossman, 2015; Grossman et al., 2018; Harnum et al., 2007; Hollandsworth et al., 1979; McShane, 1993; Morrison et al., 2019; Sasson & Morrison, 2019). Such behaviors include differences in the content and structure of their responses, and how these are delivered (e.g., speech tone, pitch, and prosody, emotional expression, eye-contact, and gestures). Despite the implication that negative perceptions of autistic people will compound the disadvantage already experienced during standard interviews (Maras et al., 2020; Norris et al., 2020), the influence of such group differences when candidates are being assessed in an entire employment interview, and in samples that go beyond college students, is yet to be examined.

1.1. Aims

In the current study, we investigated the extent to which employers' impressions of candidates are affected by verbal, non-verbal, and para-verbal IM. In Study 1, we assessed lay-raters' general first impressions of autistic and non-autistic interviewees undergoing a standard mock employment interview, observed via video, to characterize the behavioral features of the two groups of interviewees. Raters assessed autistic and non-autistic interviewees across a range of verbal, non-verbal, and para-verbal behaviors, as well as the likelihood of social approach/avoidance using the First Impressions Scale (Sasson et al., 2017), to investigate which behavioral factors may be associated with likelihood of engaging with autistic and non-autistic candidates. In Study 2, we directly assessed the impact of observable (para-verbal and non-verbal) IM on expert (i.e., employer) ratings of autistic interviewees compared to non-autistic interviewees. Raters were presented with candidates' interview responses either via video recordings, whereby behavioral differences are visible, or via interview transcripts, whereby behavioral differences are less apparent. For Study 1, it was expected that videos of autistic candidates would be rated less favorably than those of their non-autistic counterparts, and that the degree to which lay raters wished to approach/avoid a candidate would be related to their perceptions of the candidates' verbal, non-verbal, and para-verbal behaviors. For Study 2, it was also anticipated that autistic people would receive poorer ratings compared to non-autistic people

from the employer-raters, and that this would be particularly apparent when the interviews were viewed via video.

2. Study 1: method

2.1. Design

We investigated how lay raters (i.e., those without significant interviewing experience) perceived candidates' verbal, non-verbal, and para-verbal behaviors. We also utilized the First Impressions Scale (Sasson et al., 2017) to directly investigate perceptions of behavioral differences and IM between groups, and the influence of such factors on rater perceptions. A between-subjects design was employed, whereby participants rated either an autistic or a non-autistic candidate via video.

2.2. Rater participants

Rater participants were recruited via general sampling, including departmental participant databases and social media, so that a minimum of two rater participants rated each stimulus (see Procedure). Raters were targeted for recruitment based on not having significant prior experience of interviewing people in an employment context, such that this study would provide a broad characterization of our sample of interviewees, and that they would be unlikely to know or guess that this study was related to autism. Recruitment also deliberately targeted raters aged across the lifespan. Participants were recruited if they spoke English fluently, had normal/corrected-to-normal vision and hearing, and did not work or study at the University of Bath at the time of participation (to protect interviewee anonymity). 114 responses were received, with data for 23 responses removed due to being incomplete/not started. In addition, one duplicate response was removed (participant's most recent response). The final sample therefore included 90 lay-rater participants aged 18–70 years ($M = 39.82$, $SD = 13.70$), who rated themselves on average 1.19 on a six-point scale asking, *"How experienced do you consider yourself to be at interviewing other people?"* ($SD = 1.40$, range $= 0–6$; 72 female, 18 male).

2.3. Mock employment interviews

Interviews were obtained from a previous study investigating employers' ratings of autistic and non-autistic participants during unadapted and adapted mock employment interviews (see Maras et al., 2020 for full details). Briefly, in the first phase of the study, autistic and non-autistic adults participated in mock employment interviews, answering standard (*unadapted*) employment interview questions. In the second phase, interviewees returned to answer a different set of *adapted* interview questions. Questions included those aimed at eliciting descriptions of experience and activity, personality characteristics, and self-evaluative information, as well as past employment experience and situational judgements. For example, an unadapted question; "Tell me a little bit about yourself", was adapted to "First, I'm going to ask you to give me a short introduction to yourself: What are your best personal characteristics? What are your educational qualifications? What work experience do you have?", with each aspect asked in turn (Maras et al., 2020). Interviews were audio-video recorded and transcribed, and only the videos of the standard, unadapted interviews were used for the current study. Twelve of the interviews were excluded from the current study (e.g., an autistic participant disclosed their diagnosis during the interview). Video stimuli were therefore available for 14 autistic and 18 non-autistic interviewee participants. Autistic and non-autistic interviewees did not differ significantly in terms of age or IQ, but as expected, the autistic group had significantly higher scores on the Autism Spectrum Quotient (AQ), measuring levels of autistic traits (80% specificity for AQ; Baron-Cohen et al., 2001; see Table 1, Appendix 1). All original study materials are available in (Maras et al., 2020).

2.4. Procedure

Participants received a secure link to one group-anonymized video file, and the study was hosted on the Qualtrics online questionnaire platform, whereby raters inputted their demographic information and candidate ratings. Participants were informed that the candidates had completed a mock employment interview as part of a study. They rated their overall impressions of each interviewee (after watching the video) based on commonly observed behaviors implicated in first impressions of autistic people, and those that have been shown to shape employer impressions of candidates (e.g., DeGroot & Motowidlo, 1999; Hollandsworth et al., 1979; Kacmar et al., 1992; McGovern & Tinsley, 1978; McShane, 1993; Posthuma et al., 2002). The first set of factors were rated on 7-point Likert scales (from 1 = not at all, to 7 = very much), and included the items *'How monotonous was their tone of voice?', 'How composed did they appear?', 'How appropriate was their vocabulary?', 'How coherent was their speech?', 'How clear was their speech?', 'How natural were their facial expressions?', 'How natural was their body language?', 'How natural was their eye contact?', 'How natural were their gestures?',* and *'How focused were they?'* (Crane & Wilcock, Maras et al., 2018), with the addition of *'How appropriate was their tone of voice* (and) *voice volume?'* from (Mathrick et al., 2017). In addition, the First Impressions Scale (Sasson et al., 2017) was included, with participants responding from strongly agree to strongly disagree on six items depicting various traits (awkwardness, attractiveness, trustworthiness, intelligence, assertiveness, and likability), and four items assessing likelihood of approach/avoidance behaviors in response to the interviewee (e.g. "I would hang out with this person in my free time").

Participants received a secure link to a video of a mock interview, and the Qualtrics survey link for inputting their demographic information and ratings. A minimum of two participants rated each stimulus (this applied to 15 stimuli; the remainder each had three raters). Participation took 20–30 min, and participants were reimbursed £ 5 for their time.

2.5. Ethical considerations

APA ethical standards were adhered to when conducting this research. Participants provided informed online consent to take part and were fully debriefed after completing the study. Ethical approval was obtained from the Psychology Research Ethics Committee at the University of Bath, Department of Psychology. Before participating, rater participants agreed that should they recognize an interviewee from the video, they must stop watching immediately and inform the researcher. Rater participants were also advised that the interviews were strictly confidential, and were explicitly instructed not to download nor distribute the videos, nor discuss their content with anyone outside of the research team.

3. Study 1: results

First, a multivariate analysis of variance (MANOVA), with Group (autistic vs. non-autistic) as a between-subjects factor, and mean ratings on each impressions item as dependent variables was conducted.[3] All descriptive and inferential statistics are reported in Table 1.

The groups were rated similarly for coherence and clarity of speech, as well as appropriateness of their vocabulary. Although voice tone and volume (para-verbal factors) were rated similarly between groups, autistic candidates were perceived as having a more monotonous tone of voice, and being less composed and focused. On non-verbal factors, the groups were rated as having similarly natural facial expressions and body language, but autistic people were rated as displaying less natural eye contact and gestures. In terms of the First Impressions Scale (Sasson et al., 2017), ratings were more negative for autistic people on all aspects associated with approach/avoidance. Specifically, they were rated as being more socially awkward and less attractive, and raters were more likely to say that they would be less likely to hang out or start a conversation with autistic compared to non-autistic interviewees, and that they would mind living near or sitting next to the autistic candidates. However, the groups were rated similarly for being trust-worthy/honest and on perceived aggressiveness/dominance.

Prior to investigating the relationships between verbal, non-verbal, and para-verbal behaviors and likelihood of approach/avoidance, exploratory factor analysis was used to identify sub-factors related to the behavioral items (thus reducing the number of correlations required). Exploratory factor analysis was conducted in SPSS 28 (IBM), using principle component analysis as the extraction method, with oblique rotation using Kaiser normalization, as we anticipated intercollinearity between factors (Goretzko et al., 2021). Two factors were identified from the visual scree plot and with eigenvalues greater than 1 (Beavers et al., 2013), which were comprised primarily of Para-verbal and Verbal, and Non-verbal items respectively (see Table 2). These two factors explained 75.10% of the cumulative variance. One item (Appropriate Vocabulary) had cross-loadings above .30 on both factors; this item was grouped within the Paraverbal/Verbal factor due to loading higher on this factor and being theoretically consistent with other items within the factor.

To determine how verbal, non-verbal, and para-verbal behaviors were related to first impressions of candidates, factor scores were created as mean scores from all items included within each factor, and then the two novel factors (see Table 2) were correlated with the six items from the First Impressions Scale (Sasson et al., 2017). Results are presented, by group (autistic vs. non-autistic), in Table 3. For the non-autistic interviewees, being rated as less socially awkward was related to more positive perceptions of verbal, para-verbal, and non-verbal behaviors, and being more attractive was also related to positive impressions of paraverbal and verbal behaviors. No relationships between factors were found for the autistic candidates.

4. Study 1: discussion

In Study 1, we assessed lay rater perceptions of autistic and non-autistic mock employment interview candidates' verbal, non-verbal, and para-verbal behaviors, as well as the degree to which raters indicated they would approach/avoid the candidates, and how these factors may be related between-groups. The aim of this study was to characterize the interviewee sample, prior to assessing differences between groups as rated by experts (employers) when para- and non-verbal behaviors were present (videos) or absent (transcripts) in Study 2.

Although the groups were rated similarly in terms of their appropriate use of vocabulary, clarity and coherence of speech, and tone of voice and speech volume, autistic candidates were rated as having a significantly more monotonous tone of voice than their non-autistic counterparts. In addition, autistic people's eye contact and gestures were perceived as being less natural, and they were rated as being less focused and composed compared to non-autistic candidates. These findings broadly map on to the depiction of a 'low non-verbal' candidate created by McGovern and Tinsley (1978), who was instructed to exhibit behaviors including making minimal eye contact, displaying 'low energy' level (via reduced smiling), using fewer hand gestures and restricted body movement, lack of affect and voice modulation, and interrupted speech fluency (i.e., more hesitations). McGovern and Tinsley (1978) concluded that candidates would be more likely to be rejected when they avoided eye contact, hesitated more, and when their speech could be described as 'flat'. At a group level, the autistic candidates in the current study may present many of the behaviors broadly (and erroneously) reflecting this 'low non-verbal' characterization (e.g., Peppé et al., 2007; de Marchena & Eigsti, 2010). Groups were, however, rated similarly for

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[3] Ratings for the items 'How monotonous was their tone of voice?', 'This person is socially awkward', 'I would mind if I had to live near this person', and 'I would be uncomfortable sitting next to this person' were reverse-coded, such that higher scores indicate a more positive rating for all items.

Table 1

Descriptive and inferential statistics for group differences across impressions factors.

	Non-autistic (N = 18)	Autistic (N = 14)	Group effects
'How.?' (Crane & Wilcock, Maras et al., 2018):			
…composed did they appear?	4.97 (1.09)	4.07 (1.22)	$p = .035^*$, $\eta^2p = .14$
…focused did they appear?	5.23 (0.94)	4.26 (1.00)	$p = .009^{**}$, $\eta^2p = .21$
… appropriate was their vocabulary?	5.18 (0.99)	4.65 (1.30)	$p = .207$, $\eta^2p = .05$
… monotonous was their tone of voice?	4.06 (1.35)	3.14 (1.01)	$p = .043^*$, $\eta^2p = .13$
… coherent was their speech?	5.03 (1.12)	4.63 (1.07)	$p = .319$, $\eta^2p = .03$
… clear was their speech?	5.19 (1.18)	4.52 (1.61)	$p = .119$, $\eta^2p = .08$
… natural were their facial expressions?	5.19 (1.28)	4.71 (0.87)	$p = .240$, $\eta^2p = .05$
… natural was their body language?	4.97 (1.43)	4.22 (0.96)	$p = .099$, $\eta^2p = .09$
… natural was their eye contact?	4.65 (1.13)	3.67 (1.49)	$p = .042^*$, $\eta^2p = .13$
… how natural were their gestures?	4.86 (1.26)	3.85 (0.83)	$p = .014^*$, $\eta^2p = .19$
'How appropriate was.?' Mathrick et al. (2017):			
… their tone of voice?	5.26 (1.03)	4.76 (1.16)	$p = .208$, $\eta^2p = .05$
… their voice volume?	5.23 (1.00)	5.20 (1.30)	$p = .941$, $\eta^2p = .00$
First Impressions Scale (Sasson et al., 2017):			
This person is socially awkward	2.69 (0.67)	1.82 (0.60)	$p = .001^{**}$, $\eta^2p = .33$
This person is attractive	2.78 (0.40)	2.17 (0.43)	$p < .001^{***}$, $\eta^2p = .36$
This person is trustworthy/honest	3.16 (0.35)	3.15 (0.51)	$p = .985$, $\eta^2p = .00$
This person is aggressive/dominant	1.60 (0.38)	1.75 (0.60)	$p = .397$, $\eta^2p = .02$
I would hang out with this person in my free time	2.41 (0.38)	2.08 (0.35)	$p = .020^*$, $\eta^2p = .17$
I would mind if I had to live near this person	3.59 (0.35)	3.23 (0.40)	$p = .010^*$, $\eta^2p = .20$
I would be uncomfortable sitting next to this person	3.56 (0.45)	3.13 (0.53)	$p = .021^*$, $\eta^2p = .17$
I would start a conversation with this person	2.89 (0.42)	2.54 (0.29)	$p = .012^*$, $\eta^2p = .19$

$^*p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 2

EFA Factor Loadings for two-factor solution.

Item	Factor 1 (Para-verbal and Verbal)	Factor 2 (Non-verbal)
Appropriate Volume	1.026	
Appropriate Tone	0.887	
Clear Speech	0.885	
Coherent Speech	0.794	
Monotonous tone	0.660	
Natural Facial Expressions	0.558	
Appropriate Vocabulary	0.477	0.395
Natural Eye Contact		0.996
Composed		0.972
Natural Body Language		0.756
Natural Gestures		0.710
Focused		0.624

NB: Only factor loadings greater than.30 are shown.

how natural their facial expressions and body language appeared.

In terms of first impressions (Sasson et al., 2017), autistic people were perceived as more socially awkward and were rated lower on attractiveness compared to the non-autistic interviewees, in line with recent findings by Whelpley and May (2023). In addition, the current findings indicate that every avoidance-related item was more likely to be endorsed by a rater when observing an autistic candidate, including for example an increased tendency to say that they would mind sitting next to, and even living near to, the autistic candidates. However, similar ratings were also observed between groups for trustworthiness/honesty, and aggressiveness/dominance. In their initial study using the First Impressions Scale, Sasson et al. (2017) concluded that autistic people's para- and non-verbal cues, including prosody, facial expressions, and body posture, were perceived more negatively compared to those of non-autistic people, and that these negative perceptions were associated with a reluctance on the part of the observer to imagine engaging with the person. In this study, although reluctance to engage with autistic candidates was observed for our raters, alongside lower ratings of attractiveness, and more negative judgements of awkwardness, eye contact, gestures, composure, and focus, we did not find significant between-group differences for ratings of facial expressions and body language. In addition, the only para-verbal factor differing between groups was autistic people being rated as having a more monotonous tone of voice. The current findings extend those of Whelpley and May (2023), who found higher ratings of awkwardness and lower ratings of attractiveness for autistic candidates, with observer ratings in the current study based on observing an entire interaction, rather than a thin slice or single question.

Raters in the current study observed the entire employment interview, but still endorsed several avoidance-related items, including that they *would* mind sitting next to or living nearby to autistic candidates, to a greater extent than non-autistic candidates. Again, as observer ratings were based on watching a candidate performing in an employment interview, the content of their responses can be suggested to be making a large contribution to overall rater perceptions (see Maras et al., 2020). Answers in employment interviews

Table 3

Correlations between behavioral items and first impressions Factors. Results for non-autistic interviewees (n = 18) are presented above the diagonal; results for autistic interviewees (n = 14) are presented below the diagonal.

	Para-verbal and Verbal behaviors	Non-verbal behaviors	Socially Awkward	Attractive	Trustworthy or Honest	Aggressive or Dominant	Would Hang Out With	Would Mind Living Near	Would be Uncomfortable Sitting Next To	Would Start Conversation
Paraverbal and Verbal behaviors		.673	**.707***	**.725***	.270	.060	.182	.295	.599	.344
Nonverbal behaviors	.542		**.736***	.532	-.440	.024	-.350	.170	.588	.214
Socially Awkward	.612	.588		.644	.070	-.023	.143	.455	.567	.309
Attractive	-.139	.335	.067		.182	-.054	.311	.157	.432	.067
Trustworthy or Honest	.501	.352	.098	.399		-.130	.174	.311	.056	.025
Aggressive or Dominant	-.027	.647	.123	.033	-.054		-.200	-.173	-.024	-.037
Would Hang Out With	.300	.352	.375	.393	.356	-.137		.070	.021	.443
Would Mind Living Near	.627	.144	.085	-.188	.406	-.393	.192		.616	.182
Would be Uncomfortable Sitting Next To	.288	.321	.202	.381	.308	-.227	.399	.236		.417
Would Start Conversation	-.146	.388	.177	.496	.207	.094	.329	.019	.631	

[*] *significance calculated using Bonferroni-Holm (Holm, 1979; rank-calculated p values);* Socially Awkward vs. Paraverbal and Verbal behaviors; *p* < .001136, Socially Awkward vs. Nonverbal behaviors; *p* < .001111, Attractive vs. Paraverbal and Verbal behaviors; *p* < . 001136.

give a significant overview of the person, such as their experiences, strengths, weaknesses, and how they deal with people. As such, this contextual information may have contributed to negative first impressions of autistic people in this study, and recent research indicates that employers can adapt their approach (i.e., by adapting the interview questions used) in order to minimize this disadvantage for autistic candidates (Maras et al., 2020). Finally, recruitment for this study was specifically targeted such that raters were derived from ages across the lifespan, which may also have impacted perceptions; for example, it is proposed that younger people, such as college students (as included in Whelpley & May, 2023), may be more tolerant of diversity (e.g., Janmaat & Keating, 2019).

Our exploratory Factor Analysis produced two novel factors, grouped broadly around verbal and para-verbal behaviors in Factor 1 (Appropriate Volume, Appropriate Tone, Clear Speech, Coherent Speech, Monotonous tone, Natural Facial Expressions, and Appropriate Vocabulary), and non-verbal behaviors in Factor 2 (Natural Eye Contact, Natural Body Language, Natural Gestures, and being more Composed and Focused). These results suggest that behaviors important to the formation of impressions of people undergoing employment interviews may fall under two distinct categories (although it is noted that facial expressions loaded onto both the verbal and para-verbal factor). These factors were related to raters' hypothetical intention to interact with non-autistic interviewees: being rated as less socially awkward was related to more positive perceptions of verbal, para-verbal, and non-verbal behaviors, and being more attractive was also related to positive impressions of para-verbal and verbal behaviors. However, no such relationships were found for the autistic candidates.

This study characterized our sample of interviewees when observed via video, gathering impressions from lay raters. The results indicate that observers may be using different information when they evaluate autistic interviewees compared to their non-autistic counterparts, perhaps because of qualitative differences in behavior. However, this study did not specifically examine impressions directly related to an interviewee's aptitude and employability as a candidate, nor the role of observable behavioral cues (i.e., non-verbal and para-verbal behaviors only observable via video) compared to when such cues are not observable (i.e., when reading the interviewee's responses on a transcript). Study 2 was therefore conducted to achieve these aims.

5. Study 2: method

5.1. Design

Our second study investigated the impact of behavioral differences, as assessed by viewing format on raters' overall impressions of autistic and non-autistic candidates. A 2 (Group: autistic vs. non-autistic) × 2 (Format: transcript vs. video) mixed design was used, whereby Format was within-participants.

5.2. Rater participants

Rater participants were recruited using the researchers' professional contacts (within the employment industry), via departmental participant databases, and via social media, so that a minimum of two rater participants rated each stimuli pair (see Procedure). Raters were targeted for recruitment based on being likely to have some prior experience of interviewing people in an employment context, and being unlikely to know or guess that this study was related to autism research (e.g., by knowing the researcher). Participants were recruited if they spoke English fluently, had normal or corrected-to-normal vision and hearing, and did not work or study at the University of Bath or University College London at the time of participation (to protect stimuli participant anonymity). Data for three rater participants were removed from the analyses for the following reasons: participant data entry error meant it was not possible to determine which format of the interview the participant was rating (N = 1); the participant had technical issues whilst watching the video (loss of audio; N = 1); and it was unclear whether the participant had viewed and rated both stimuli (N = 1). Further, as there were an uneven number of raters for each format combination (e.g., three ratings for the transcript, but four for the video) for six stimuli pairs (i.e., 12 interviewees), the most recent rater's participation was removed in each case.

The final sample included 90 rater participants aged 20–71 years (M = 39.97, SD = 14.50), who rated themselves on average 3.51 on a six-point scale asking, *"How experienced do you consider yourself to be at interviewing other people?"* (SD = 1.71).[4] Most participants took part remotely online (N = 69), with 21 participants completing the study at the University of Bath (total raters N = 90; 51 female, and 39 male). Participants also completed some brief scales to provide an index of their autism knowledge (Autism Awareness Scale; Gillespie-Lynch et al., 2015),[5] experience with autistic people (Level of Contact Scale; Gardiner & Iarocci, 2014; Holmes et al., 1999; Morrison et al., 2019), and stigma against autistic people (Social Distance Scale; Gillespie-Lynch et al., 2015), with average scores within the range of prior studies with non-autistic raters (e.g., Morrison et al., 2019; see Table 4).

5.3. Procedure

The stimuli used were as in Study 1. Stimuli pairs were created for the current study by randomly pairing an autistic interviewee's stimuli with another autistic interviewee's stimuli (one video, one transcript), and a non-autistic interviewee's stimuli with another

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[4] Six participants rated themselves as '0', with one of the six answering 'yes' to a question about having interviewing experience. Removing these participants from the analyses did not affect the direction nor significance of the result, therefore their data were included.

[5] We removed item 13; "People with autism have empathy" due to debate regarding this issue (see, e.g., Fletcher-Watson & Bird, 2020; Milton, 2012)

Table 4

Rater participant demographics.

Demographic factors	Rater participants (N = 90)
Gender	51 female, 39 male
Age (years)	$M = 39.97$, ($SD = 14.50$), range = 20-71
Interviewing experience (0-6 scale rating)	$M = 3.51$ ($SD = 1.71$), range = 0-6
Autism Awareness Scale (Gillespie-Lynch et al., 2015)	$M = 11.94$, $SD = 4.08$, range = 2-22
Level of Contact Scale (Gardiner & Iarocci, 2014; Holmes et al., 1999; Morrison et al., 2019)	$M = 6.37$, $SD = 2.85$, range = 1-12
Social Distance Scale (Gillespie-Lynch et al., 2015)	$M = 9.53$, $SD = 3.18$, range = 6–18

non-autistic interviewee's stimuli (one video, one transcript), such that each rater participant rated one interview transcript and one video from both an autistic or non-autistic interviewee. The ratings study was hosted on the Qualtrics online questionnaire platform. Participants were informed that the interviewees they were rating had been completing a mock employment interview as part of a study. They rated their overall impressions of each interviewee (after watching the video or reading the transcript) on a 5-point scale (ranging from 'not at all' to 'extremely') on nine aspects: confidence, motivation, knowledgeability, conscientiousness, competence, intelligence, communication skills, likeability, and how easy they would be to work with. These constructs were identified as crucial factors upon which employers base their ratings of interviewees (Huffcutt, 2011; see also Salgado & Moscoso, 2002; Smith et al., 2014) and were also utilized in the Maras et al. (2020) study. Rater participants received secure links to one anonymized, group-blinded transcript and video file, and a Qualtrics survey link for inputting demographic information and ratings for each interview. Viewing order was counterbalanced between video and transcript formats. After completing the ratings, participants were asked questions about their autism knowledge, experience, and stigma. A minimum of two rater participants rated each stimulus (this applied to three stimuli pairs; the rest had three raters). Participation took 30–45 min, and participants were reimbursed £ 8 for their time.

6. Study 2: results

Ratings on one item for two participants were excluded from the analyses due to being low-scoring outliers indicated by boxplots: one rating was removed for the conscientious item (non-autistic participant, transcript format: 2.08 SDs below the mean), and one rating was removed from the intelligent item (autistic participant, video format: 2.08 SDs below the mean).

A multivariate analysis of variance (MANOVA), with Format (transcript vs. video) as the within-subjects factor, Group (autistic vs. non-autistic) as the between-subjects factor, and mean ratings on each of the nine impressions items as the dependent variables indicated no significant multivariate effect of Group on raters' overall impressions, Pillai's Trace = 0.42, $F(9, 20) = 1.63$, $p = .174$, $\eta^2 p = .42$. However, there was a significant multivariate effect of Format, Pillai's Trace = 0.73, $F(9, 20) = 3.64$, $p < .001$, $\eta^2 p = .73$. Univariate tests indicated significantly higher ratings for the video compared to transcript format for perceptions of confidence ($p = .003$), knowledgeability ($p < .001$), conscientiousness ($p = .023$), intelligence ($p < .001$), and being a good communicator ($p = .001$; see Table 5). There were no differences between Formats for perceived motivation ($p = .542$), competency ($p = .120$), likeability ($p = .140$), or easiness to work with ($p = .955$).

The Format × Group interaction was significant, Pillai's Trace = 0.62, $F(9, 20) = 3.64$, $p = .008$, $\eta^2 p = .62$, with univariate tests indicating significant interactions for confidence ($p = .033$) and being a good communicator ($p = .031$). A paired-samples t-test

Table 5

Descriptive statistics for non-autistic and autistic groups' ratings on the Unadapted interviews (transcripts and videos; standard deviations in parentheses).

	Transcript		Video	
	Non-autistic adults; N = 18	Autistic adults; N = 14	Non-autistic adults; N = 18	Autistic adults; N = 14
Confident	$M = 1.64$ (0.53), range = 1.00-2.67	$M = 1.29$ (0.61), range = 0.00-2.50	$M = 2.25$ (0.68), range = 1.00-3.67	$M = 1.54$ (0.80), range = 0.50-3.00
Motivated	$M = 2.15$ (0.51), range = 1.33-3.00	$M = 1.82$ (0.61), range = 0.67-2.67	$M = 2.44$ (0.49), range = 1.50-3.33	$M = 1.80$ (0.50), range = 1.33-3.00
Knowledgeable	$M = 1.82$ (0.51), range = 1.00-3.00	$M = 1.76$ (0.53), range = 1.00-2.67	$M = 2.40$ (0.38), range = 1.67 – 3.00	$M = 1.95$ (0.63), range = 1.00-3.00
Conscientious	$M = 2.11$ (0.39), range = 1.33-2.67	$M = 2.01$ (0.53), range = 1.00-3.00	$M = 2.58$ (0.48), range = 1.67-3.33	$M = 2.09$ (0.58), range = 1.33-3.33
Competent	$M = 1.96$ (0.64), range = 0.67-3.00	$M = 1.74$ (0.52), range = 1.00-2.33	$M = 2.30$ (0.48), range = 1.67-3.33	$M = 1.85$ (0.62), range = 0.67-2.67
Intelligent	$M = 2.06$ (0.36), range = 1.33-2.67	$M = 1.74$ (0.55), range = 0.67-2.67	$M = 2.43$ (0.45), range = 1.67-3.00	$M = 2.18$ (0.36), range = 1.50-2.67
Good communicating	$M = 1.57$ (0.43), range = 1.00-2.33	$M = 1.17$ (0.52), range = 0.33-2.00	$M = 2.36$ (0.63), range = 1.00-3.33	$M = 1.40$ (0.88), range = 0.00-3.00
Likeable	$M = 2.18$ (0.36), range = 1.33-2.67	$M = 1.71$ (0.80), range = 0.00-2.67	$M = 2.58$ (0.57), range = 1.67-3.33	$M = 1.82$ (0.57), range = 0.67-2.67
Easy to work with	$M = 2.26$ (0.60), range = 0.67-3.33	$M = 1.54$ (0.64), range = 0.33-2.67	$M = 2.19$ (0.68), range = 1.00-3.33	$M = 1.68$ (0.78), range = 0.00-2.67

indicated that non-autistic interviewees received higher ratings of confidence based on videos compared to transcripts, $t(17) = -4.89$, $p < .001$. For autistic interviewees, this difference was non-significant, $t(13) = -1.15$, $p = .270$ (see Fig. 1). Paired-samples t-tests assessing 'good communicator' ratings demonstrated a similar pattern, with non-autistic interviewees receiving higher ratings from videos compared to transcripts, $t(17) = -4.50$, $p < .001$, with no such advantage for the autistic group, $t(13) = -1.27$, $p = .225$ (see Fig. 2). The interaction therefore appears to be driven by a significant 'video advantage' for the non-autistic group for confidence and being a good communicator, which is not apparent for the autistic group. Univariate tests for all other items were non-significant ($ps > .061$).

7. Study 2: discussion

The findings from Study 2 build upon those of Study 1 by directly investigating the impact upon employer perceptions of mock candidates when non-verbal and para-verbal behaviors are present alongside verbal answer content (i.e., when viewing the video), compared to when only answer content is available (reading the transcript). Findings indicate that non-autistic candidates attain a video advantage in terms of their perceived confidence and ability to communicate compared to when the transcript alone is provided; a finding not observed for the autistic interviewees. The current findings build upon those of Maras et al. (2020), who assessed employer perceptions of candidates based on answer content only (i.e., using interview transcripts), and found that employers provided lower ratings of answer quality for autistic compared to non-autistic candidates, as well as rating them more poorly for overall impressions, including on confidence, communication skills, likeability, and easiness to work with. Autistic people may therefore be further disadvantaged during employment interviews when non-verbal and para-verbal behaviors are taken into consideration alongside their responses to interview questions (Sasson et al., 2018; Whelpley & May, 2023).

These findings align with those of Whelpley and May (2023), who also found ratings of lower confidence in autistic adults when observed via video, alongside poorer ratings on several other factors (e.g., likeability, trustworthiness, enthusiasm). These findings are also similar to those of Sasson et al. (2017), whereby first impressions of non-autistic, but not autistic, people were improved when visual information was available alongside speech content (i.e., transcripts). Our finding that autistic people were rated more poorly in terms of their communication skills on video is also consistent with Sasson et al. (2018), who found that raters perceived autistic people as being less articulate compared to their non-autistic counterparts when viewing videos of the participants 'pitching' for selection to a reality- or game-show. Watching the videos, which provide non-verbal and para-verbal cues (e.g., tone of voice, speech volume, body posture, facial expressions, gestures, eye-contact) alongside verbal response content may generate negative first impressions of autistic people, and a reluctance to engage with them – or, in this case, to offer them employment (Morrison et al., 2019; Sasson et al., 2017; Whelpley & May, 2023; but see contrasting results for autistic observers in DeBrabander et al., 2019). Indeed, autistic candidates in the current study were disadvantaged in the video compared to transcript format for the 'good communicator' and 'confidence' items; it could be reasonably expected that perceptions of these aspects would require, or at least be significantly influenced by, the above cues. This result is compared to ratings on other items, which did not appear to confer a video advantage for non-autistic people (e.g., competence, knowledgeability), and which could be expected to be driven to a greater degree by the content of a candidate's answer (verbal IM). This interpretation is also supported by recent findings indicating that, when observed via videos, although autistic candidates were less likely to receive a positive hiring decision, even though they were *not* rated as being less qualified for the role (Whelpley & May, 2023).

The findings from Study 2 therefore highlight how, when undergoing a mock employment interview, autistic candidates are at relative disadvantage (i.e., perceptions of them are not improved, whereas those for non-autistic candidates are) when their *entire* performance is rated (i.e., by watching the video). This finding adds to previous evidence of such a disadvantage from more detailed employer evaluations of transcripts (Maras et al., 2020), and lends support to the notion that, as well as verbal IM, non-verbal and para-verbal behaviors may also play an important role in shaping interviewer perceptions (Barrick et al., 2009; Bolino et al., 2008; Kristof-Brown et al., 2002; Stevens & Kristof, 1995; Whelpley & May, 2023).

8. Discussion and implications

Our two studies examined, for the first time, autism as a test case for the influence of different aspects of IM on interviewer
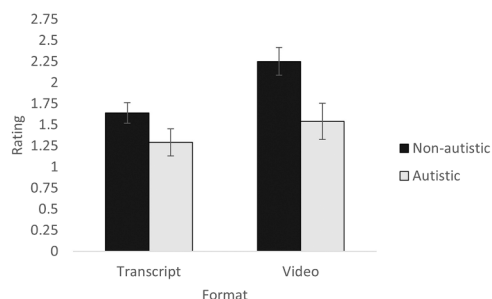

Fig. 1. Group differences on the 'Confidence' item for the transcript vs. video formats.
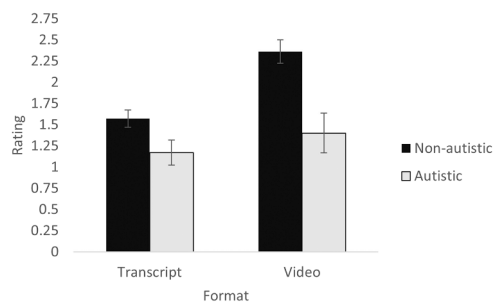
Fig. 2. Group differences on the 'Good communicator' item for the transcript vs. video formats.

perceptions, due to differences in this group in terms of social communication (including verbal, non-verbal, and para-verbal behaviors) pertinent to IM (Grossman et al., 2018; Hollandsworth et al., 1979; Huffcutt, 2011; Kacmar et al., 1992; McGovern & Tinsley, 1978; Morrison et al., 2019; Posthuma et al., 2002; Salgado & Moscoso, 2002; Sasson et al., 2017; Smith et al., 2014) and interview performance (e.g., Maras et al., 2020; Norris et al., 2020). The purpose of the current study was two-fold. First, to gather general background impressions of verbal, non-verbal and para-verbal factors by a large group of lay-raters who observed videos of autistic and non-autistic candidates undergoing mock employment interviews. Second, we compared ratings based on either transcripts or videos of the interviews to investigate the extent to which non-verbal and para-verbal IM influenced hiring-relevant assessments of the candidates by expert raters.

In Study 1, autistic interviewees were rated as being more socially awkward, less attractive, less focused and composed, having less natural eye contact and gestures, and a more monotonous tone of voice, compared to the non-autistic candidates. In addition, raters were more likely to indicate hypothetical social avoidance of autistic interviewees. Sasson et al. (2017) note that being rated as more awkward may lead to a decreased likelihood of observers wishing to engage with the person, which is reflected by the current findings. The results also provide further evidence for their suggestion that factors associated with the social liking of a person (such as awkwardness and attractiveness) may be more detrimental to first impressions of autistic people than factors pertaining to the actual content of their responses in interviews, or their perceived competence and intelligence (Maras et al., 2020; Sasson et al., 2017). The findings also support the suggestion that higher levels of social skills are related to improved chances of candidate selection (Barrick et al., 2009; Whelpley & May, 2023). Future studies are therefore needed to directly investigate the reasons given by observers for their ratings in order to assess which factors are important to candidate selection.

The factor analysis conducted for Study 1 suggested that there may be two underlying groupings of behaviors related to first impressions in the current study: 1) verbal (e.g., content of responses) and para-verbal (e.g., voice tone, volume), and 2) non-verbal (e. g., eye-contact, body language, gestures). Ratings of non-autistic interviewees' verbal, non-verbal, and para-verbal behaviors were related to perceived social awkwardness and attractiveness, but no such relationships were found for the autistic candidates. It is possible that relationships between the factors may have emerged for autistic candidates if the sample size were larger. Future studies should aim to recruit larger samples (of both mock/real life candidates to be rated, and rater participants), although the sample size of the current study reflects similar prior research, for mock candidates (e.g., Sasson & Morrison, 2019; Whelpley & May, 2023) and raters (e.g., Norris et al., 2023). These findings may however suggest that observers use different information to evaluate autistic compared to non-autistic interviewees, perhaps because of qualitative differences in behavioral cues. These results, which indicate a relationship between hypothetical approach behaviors (analogous to hiring decisions) and verbal and para-verbal behaviors, also provides further evidence that such behaviors are related to interview outcomes (Huffcutt, 2011; McMahon et al., 2020; Whelpley & May, 2023). It will be important for future research to consider whether unconscious bias training or similar approaches need to be adapted specifically to focus on the behaviors that differentiate autistic and non-autistic people, rather than impressions more generally.

The results from Study 2 indicated that non-autistic candidates experienced a significant 'video advantage' (compared to ratings based on transcripts) for perceptions of their confidence and whether they were a good communicator, which was not present for autistic candidates. It is possible that the addition of video information (i.e., non-verbal and para-verbal cues) may exacerbate negative impressions of autistic people due to observers' (often negative) perceptions of idiosyncratic verbal and non-verbal behaviors in this group (de Marchena & Eigsti, 2010; Grossman et al., 2018; Morrison et al., 2019; Neumann et al., 2006; Peppé et al., 2007; Sasson et al., 2017; Senju & Johnson, 2009). These differences can be expected to disadvantage autistic people, as during an employment interview it is often not only the quality of an interviewee's response, but also their communicative behaviors that drive an interviewer's perceptions (de Marchena & Eigsti, 2010; Geelhand et al., 2021; Higgins et al., 2008; Müller et al., 2003; Neumann et al., 2006; Peppé et al., 2007; Richards, 2012; Scott et al., 2019; Senju & Johnson, 2009). Moreover, it has been reported that autistic people experience difficulties with accurately assessing others' perceptions of their personality (Sasson et al., 2018), and report becoming distracted by and anxious about 'upholding' neurotypical interviewing norms, such as 'conducting' IM during employment interviews (Sarrett, 2017). That non-autistic candidates (but not autistic candidates) were rated more highly in terms of their confidence and communication skills based on video ratings therefore provides further evidence for the suggestion that non-verbal and para-verbal IM, rather than purely the content of candidates' answers or verbal IM, may drive the formation of some negative impressions of autistic people (McMahon et al., 2020; Sasson et al., 2017; Whelpley & May, 2023).

In terms of verbal IM, captured by the content of interviewees' responses, tactics used in real-world employment interviews are suggested to focus primarily on 'self-promotion', which, if successful, would enable the candidate to appear more competent (Gilmore & Ferris, 1989; Lievens & Peeters, 2008; Stevens & Kristof, 1995). Indeed, applicants are suggested to use self-promotion, fit-with-organization, and other-enhancement tactics during employment interviews (Stevens & Kristof, 1995); all of which require an awareness that such methods are necessary, as well as the social and communicative skills needed to convey such tactics effectively (although it should be noted that the benefits of using self-focused IM do not necessarily increase linearly; Bolino et al., 2008). These tactics may therefore be more difficult for autistic candidates to implement, especially in interviews using standard questioning techniques (Maras et al., 2020). However, as this study found that non-autistic candidates were rated as being more confident and better communicators when being observed via video compared to transcript, but the same effect was not present for the autistic group, this disadvantage for autistic candidates must be, at least in part, related to behavioral differences, and not wholly attributable to verbal IM (as in Whelpley & May, 2023). These findings therefore highlight that employers' perceptions of autistic candidates may be more negatively influenced by behavioral factors compared to their non-autistic counterparts (Barrick et al., 2009; Bolino et al., 2008; Kristof-Brown et al., 2002; Stevens & Kristof, 1995). These findings build upon those of Maras et al. (2020), who found that, based on answer content alone, the disadvantage faced by autistic people faced with standard job interview questions can be ameliorated when questions are adapted to be more supportive.

Recent research has suggested that autistic people's efforts to 'camouflage' their autistic behaviors in order to try and 'appear neurotypical' can be viewed through an IM lens (Ai et al., 2022). However, autistic people report varying degrees of success in terms of their camouflaging attempts (Hull et al., 2017). In addition, it should be noted that communication between employers and candidates is a two-way process, requiring understanding and adjustment on both sides (see the double empathy problem; Milton, 2012). Our current findings add to recent evidence indicating that autistic people are disadvantaged in employment interviews due to a range of factors, including difficulties interpreting standard interviewing questions, and differences in behavioral presentations. We highlighted how employers can adapt their communication (i.e., by adapting interview questions to make the desired response clearer), and encourage diagnosis disclosure in candidates who wish to do so (Norris et al., 2023), in order to minimize this disadvantage for autistic candidates (Maras et al., 2020).

8.1. Implications for practice

The current findings provide further evidence that the wealth of employment interview training tips and programs currently available, which focus on enabling the autistic candidate to change their behaviors, is unlikely to be sufficient in supporting autistic people to perform to the best of their ability. Indeed, as previous research has found that instructing candidates to use IM tactics does not modify their non-verbal and para-verbal cues, these behaviors may not be amenable to direct control, meaning that traditional training may be insufficient (Peeters & Lievens, 2006). As this and previous studies indicate, employers also need to understand the difficulties faced by autistic candidates in terms of adhering to the same IM 'playbook' as non-autistic candidates, and account for this when assessing performance. It is also crucial to think carefully about question phrasing to enable all candidates to give their best responses (Maras et al., 2020). Indeed, using more structured interviews may better enable recruiters to focus on job-related content (verbal IM) whilst being less influenced by non-verbal and para-verbal behaviors, which may be especially beneficial in 'levelling the playing field' for autistic candidates (Barrick et al., 2009; Rosenfeld, 1997; Tsai et al., 2005). The current findings indicate that, in addition to adapted questioning enabling autistic people to provide more detailed and relevant answers (Maras et al., 2020), their use may also shift the interviewer's focus away from non-verbal and para-verbal behaviors, and towards the content of the interviewee's answers (Barrick et al., 2009). Employers should therefore consider making such basic adaptations to their questioning to enable all candidates to perform to the best of their abilities, as opposed to relying on interventions focused on training autistic people to adopt neurotypical interviewing styles (e.g., Sarrett, 2017). In addition, the current findings have important implications for initiatives such as unconscious bias training, particularly with regard to the impact of perceiving someone as being 'socially awkward', and the implications of this for hiring decisions.

8.2. Limitations

Watching a video of a previously conducted employment interview is clearly a qualitatively different experience to participating in the interview as an active observer (i.e., as the interviewer), with a stake in the outcome (hiring decision). Indeed, interviewers often perceive greater use of IM by candidates compared to an external assessor (as raters in the current study could be thought of; Barrick et al., 2009). Although high-fidelity, full-length mock employment interviews such as those used in the current study are suggested to be a valuable method of examining IM and interview performance, and relationships between IM and candidate ratings have been found to be similar across studies with varying degrees of rater accountability and stake (Barrick et al., 2009). Future research should therefore endeavor to embed 'live' interviewer ratings of autism-relevant behaviors and performance in real-world employment interviews to further examine the role of answer content and IM on overall impressions of autistic candidates. In addition, Ellis et al. (2002) suggest that the use of experience-based questions may drive candidates to promote their own positive qualities and traits (self-promotion IM), whereas situational questions may lead candidates to use ingratiation-focused IM. The questions used in the interviews for the current study could be perceived as being predominantly experience-based (Maras et al., 2020), which may mean that it is difficult to apply the findings to situational questioning. Finally, it is noted that IM may not accurately predict eventual job performance (Barrick et al., 2009). Employers may therefore wish to consider other methods of assessing potential candidates for employment suitability, particularly depending on the type of job role (e.g., taster days).

8.3. Implications for future research

It was beyond the scope of the current study to understand whether disclosing one's autism diagnosis may affect employer perceptions. However, future research should investigate the role of diagnosis disclosure on perceptions of autistic candidates (see Norris et al., 2023). There is limited research to date on the impact of disclosing *before* employment, i.e., during recruitment and interviewing (Flower et al., 2021; McMahon et al., 2020; Sarrett, 2017), but a recent study indicates potential positive implications for interviewer perceptions (Norris et al., 2023). Other relevant literature also indicates that disclosure may be important in preventing negative first impressions (Brosnan & Mills, 2016; Crane & Wilcock, Maras et al., 2018; Maras et al., 2019; Nah & Tan, 2020; Sasson & Morrison, 2019; Thompson-Hodgetts et al., 2020). With a recent survey indicating that less than a quarter of autistic people have chosen to disclose their diagnosis when applying for a role (Romualdez et al., 2021), and another indicating that employer autism knowledge and social desirability may affect how employable they perceive disclosed autistic candidates to be (McMahon et al., 2020), further research into the impact of disclosure on hiring decisions is required. On a related theme, examining differences between autistic and non-autistic *interviewers* could also shed light on the implications of mutual misunderstanding between non-autistic and autistic pairs in important communicative contexts (Jaswal & Akhtar, 2019; Milton, 2012).

Future researchers may also wish to expand upon the question types (e.g., situational vs. experiential) used to further examine IM and its implications for interview performance in this population. In addition, research should aim to extend the current findings, focusing on non-verbal and para-verbal behaviors displayed by autistic and non-autistic candidates by attempting to identify the exact IM tactics being deployed, and how these relate to interviewer perceptions. Finally, with the increasing use of remote interviewing, it is important to examine technology-mediated interviews, where there may be less opportunity to utilize non-verbal and para-verbal IM (Basch et al., 2020, 2021; Blacksmith et al., 2016).

CRediT authorship contribution statement

Norris Jade Eloise: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Visualization, Writing – original draft, Writing – review & editing. **Nicholson Jemma:** Investigation, Project administration, Resources, Writing – original draft, Writing – review & editing. **Prosser Rachel:** Data curation, Investigation, Project administration, Resources, Writing – original draft, Writing – review & editing. **Farrell Jessica:** Data curation, Investigation, Project administration, Resources, Writing – original draft, Writing – review & editing. **Remington Anna:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing. **Crane Laura:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing. **Hull Laura:** Formal analysis, Visualization, Writing – review & editing. **Maras Katie:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Supervision, Visualization, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors have no declarations of interest.

Data Availability

Data will be made available on request.

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Appendix 1

Table A1
Interviewee demographics: Mean Age, Wechsler Abbreviated Scale of Intelligence (WASI-II) and Autism Quotient (AQ) scores by diagnosis group.

	Autistic adults (N = 14)	Non-autistic adults (N = 18)	t tests
Age (years)	31.64 (SD = 9.86) range = 22-52	30.28 (SD = 9.45); range = 18-47	$t(30) = 0.40, p = .694, d = 0.14$
VCI	106.14 (SD = 11.69); range = 85-128	108.11 (SD = 9.79); range = 79-119	$t(30) = -0.52, p = .608, d = 0.18$
PRI	107.50 (SD = 15.35); range = 82-131	106.89 (SD = 9.05); range = 92-129	$t(19.87) = 0.13, p = .896, d = 0.05$
FSIQ	107.71 (SD = 13.67); range = 91-132	108.67 (SD = 8.53); range = 88-123	$t(20.63) = -0.23, p = .822, d = 0.08$
AQ-50 *	35.92 (SD = 7.43); range = 23-46	11.17 (SD = 6.07); range = 3-22	$t(29) = 10.20, p < .001, d = 3.65$

*AQ-50 data were not available for one autistic participant

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