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Verbal Behaviors during Employment Interviews of College Students with and without ASD

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Abstract

BACKGROUND: Even well-educated people with ASD struggle with obtaining employment, partially due to social difficulties during interviews. Although increasing numbers of individuals with ASD are entering college, little research focuses on this population. Particularly little is known about how to help college students with ASD obtain jobs.

OBJECTIVE: This study attempts to identify challenges with verbal communication during employment interviews that are specific to college students with ASD.

METHODS: We administered mock employment interviews to 16 college students with ASD and 14 college students without disabilities. Responses to interview questions were coded for content and timing.

RESULTS: Students with ASD exhibited slower onsets of responses and greater variability in response length than students without ASD. Students with ASD reported less desire for social aspects of employment than other students. They did not differ in self-reported social difficulties in the workplace. Although they overwhelmingly fully disclosed disability status, they rarely shared strengths of ASD or how they overcame challenges.

CONCLUSIONS: These findings highlight the need to develop vocational interventions for college students with ASD that help them develop impression management techniques during interviews such as demonstrating interest in social aspects of the workplace, educating interviewers about positive aspects of ASD, and replying in a timely manner.

Keywords: college students, Autism Spectrum Disorder, employment, disability disclosure, job interviews.

Verbal Behaviors during Employment Interviews of College Students with and without ASD

The DSM-5 (2013) defines Autism Spectrum Disorder (ASD) in terms of persistent social-communicative difficulties, such as challenges with nonverbal communication, social-emotional reciprocity, and interpersonal relationships, as well as restricted interests and repetitive behaviors, including sensory atypicalities. Both social and non-social challenges associated with ASD may make the job search difficult (Hendricks & Wehman, 2009; Lee & Carter, 2012) and coupled with stigma associated with ASD (Huws & Jones, 2008; Shtayermman, 2009) employers may be deterred from hiring these individuals. This can create a cycle of unemployment, wherein individuals with ASD have less opportunity to practice work-related skills.

Indeed, employment opportunities remain very limited for individuals with ASD (Hendricks, 2010; Shattuck et al., 2012). Approximately 63% of individuals with ASD are unemployed, versus a 34% unemployment rate in the population with neurotypical development (Newman et al., 2011). Twenty-four percent of adults with ASD are only employed part-time; over half of these individuals desire full-time employment. People with ASD average 81% of the income earned by people without ASD.

Although promising programs to support the transition from high school into employment for individuals on the spectrum have begun to emerge (e.g., Chappel & Somers, 2010; McDonough & Revell, 2010; Strickland, Coles, & Southern, 2013; Wehman et al., 2012), supports to help college students with ASD transition into the workforce remain limited (Van Bergeijk, Klin, & Volkmar, 2008). People with ASD who hold college degrees also struggle to

find employment and are often employed in positions that are not commensurate with their level of education (Howlin, 2000; Hurlbutt & Chalmers, 2004). As increasing numbers of students with ASD are entering college, research is needed to identify specific challenges they may face when seeking employment in order to develop targeted interventions to help them obtain jobs.

Van Bergeijk and colleagues (2008) stated that college students with ASD might face particular challenges during job interviews due to difficulty interpreting tacit social cues. This may be indicative of a reduced Theory of Mind, which some researchers (Baron-Cohen, Leslie & Frith, 1985; Kana et al., 2015; Senju, 2012) have posited is a core characteristic of ASD. Reduced Theory of Mind may make it more difficult for people with ASD to regulate their self-presentation by accurately assessing how their behaviors during interviews influence interviewers' appraisals.

Indeed, recent research has demonstrated benefits of employment interview training for adults with ASD more generally in terms of improved self-presentation skills (Morgan, Leatzow, Clark, & Siller, 2014) and better employment outcomes six months later (Smith et al., 2015). However, neither of these interventions to help people with ASD develop interview skills focused on college students with ASD nor did they include comparison groups of typically developing individuals. Therefore, it is not possible to ascertain the types of challenges that college students with ASD in particular face during employment interviews from prior literature. The current study uses a 12-question mock employment interview to compare how college students with and without ASD respond to employment interview questions.

The Employment Interview

Timing of verbal responses. Wimpory and colleagues (2002) posited that difficulties people with ASD face with social coordination arise from impaired “biological clocks”. Evidence of atypical perception of time among individuals with ASD (Allman, DeLeon, & Wearden, 2011; Brodeur, Gordon Green, Flores, & Burack, 2014; De Jaegher, 2013; Foss-Feig et al., 2010; Maister & Plaisted-Grant, 2011) suggests that people with ASD may exhibit atypicalities in the onset and/or duration of their verbal responses during employment interviews. Individuals with ASD may also experience difficulties processing speech (O’Connor, 2012; Visser et al., 2013). Timing atypicalities and challenges processing speech could lead to delays between the end of an interviewer’s question and the beginning of the interviewee’s response. Delays in the onset of responses could negatively impact the interviewer’s perception of the applicant’s competence. We hypothesized that college students with ASD would exhibit delays in responding to interview questions and atypicalities in the duration of responses indicative of differences in time perception compared to students without ASD.

Impression Management. Recent research has begun to investigate how applicants influence the impression they give to interviewers (Bye et al., 2010; Gilmore & Ferris, 1989; Higgins & Judge, 2004). Impression management requires constant monitoring of the verbal and nonverbal cues given by the interviewer. It also necessitates that the applicant presents not simply a positive self-presentation, but one that is congruent with the views of the interviewer (Swider, Barrick, Harris, & Stoverink, 2011). Thus, the ultimate goal of self-presentation is to make the interviewer view the applicant in an affiliative manner (Fox & Spector, 2000). Impression management has been shown to be ubiquitous during employment interviews with

applicants with neurotypical development (Chen & Lin, 2014) and often involves subtle deception (Weiss & Feldman, 2006) as applicants attempt to conform to expectations about the position. Indeed, initial impressions can set up a positive rapport that subsequently influences hiring decisions (Barrick, Swider, & Stewart, 2010; Stevens & Kristoff, 1995).

The constant monitoring needed for image management is grounded in the understanding of how one's behavior can influence another person's judgment of oneself. Individuals with ASD may have difficulty with inferring these effects due to reduced Theory of Mind (Baron-Cohen, 1995; Frith, 2001; Strickland et al., 2013 – but see Begeer, Malle, Nieuwland & Keysar, 2010, for findings suggesting that the ability to use Theory of Mind during interactions is unimpaired among young adults with ASD). Importantly, one result of reduced Theory of Mind is that the person may give out more information than would be wise – or be too honest (Baron-Cohen, 2007; Jaarsma, Gelhaus & Welin, 2012). For example, a common interview question enquires what interviewees liked and did not like about previous jobs – an indirect way of determining whether they will be a good fit for a position. Although there may be several ineffective answers, a mention of difficulties with former clients, coworkers, or employers, could have deleterious effects: the interviewer might assume the applicant was responsible for these difficulties or that they were unable to address such difficulties in an effective manner. We hypothesized that college students with ASD would be more likely to mention social difficulties in past work than their peers without ASD.

Even for jobs with limited need for socialization, it is often necessary to present a desire to engage with coworkers during an interview in order to seem like someone others would enjoy

working with. However, due to the social challenges and heightened honesty associated with ASD (Baron-Cohen, 2007; Jaarsma, Gelhaus & Welin, 2012), we expected college students with ASD to express less interest in working with others than their peers without ASD when asked what they look for in a workplace. Similarly, when specifically asked how they work with others as a team, we expected college students with ASD to mention less desire to work collaboratively with others. Heightened honesty may also cause individuals with ASD to disclose a disability in a manner that can potentially result in unfounded discrimination.

Disability Disclosure. One important aspect of interviews for any person with a disability is the choice to disclose disability status to an interviewer or potential employer. Unfortunately, this important decision is discussed in only one of the aforementioned interview trainings for individuals with ASD (e.g., Smith et al., 2014). Disclosure of disability status has far-reaching implications. Choosing to disclose a disability can remove anxiety that comes with hiding a disability; it is also necessary to gain needed workplace accommodations (Jans, Kaye, & Jones, 2012; Martz, 2003). Disclosure of invisible disabilities such as ASD may allow applicants to gain the confidence of employers, as they are seen as honest, although this benefit may only be apparent if one discloses early during interviews (Roberts & Macan, 2006); in addition, although employers may evaluate individuals with disabilities more highly based on disclosure, some research indicates this does not necessarily translate into employment (Dalgin & Bellini, 2008). The disclosing process may provide an opportunity for people with disabilities to educate employers about their disabilities (Bowen & Blackmon, 2003) and may foster greater social awareness through practice in self-advocacy (Meyerson & Scully, 1995;

Skelton & Moore, 1999). However, disclosing a disability may also limit employment opportunities and create discriminatory practices in the workplace if the applicant is hired. Applicants who choose to disclose may be seen as incompetent (Madaus et al., 2002; Von Schrader, Malzer, & Bruyere, 2014), thus limiting promotions. Co-workers may use stigmatizing beliefs to judge individuals with disabilities, leading to isolation.

A key factor that may determine others' responses to disclosure is whether one elaborates upon one's disability by explaining it, describing strengths associated with the disability, and/or how one has overcome disability-related challenges (Jans et al., 2012). A simple statement of disclosure without any elaboration may resign an interviewer to use preconceived and inaccurate information about a disability based on stigmatized views of disabled individuals. Indeed, misconceptions about ASD are common (e.g., Gillespie-Lynch et al., 2015; Obeid et al., 2015). The Americans with Disabilities Act (ADA) may not be sensitive enough to prevent employer discrimination in all cases (Santuzzi, Waltz, Rupp, & Finkestein, 2014), with many still facing discrimination in hiring practices (Dalgin & Bellini, 2008). Disclosure should involve an assessment of how a disability may affect performance on tasks associated with a position (Madaus, 2008). Importantly, this assessment must take into account potential stereotypes associated with the disability and should include strategies to address these stereotypes during the interview (Dalgin & Bellini, 2008). Based on challenges with impression management, we expected that individuals with ASD who disclosed during the interview would not subsequently elaborate about their disability.

Aims and Hypotheses of Current Study

The goal of this research was to gain a clearer understanding of challenges that college students with ASD face during employment interviews. We focused on atypical *verbal* responses during interviews as difficulties with nonverbal communication are part of the diagnostic criteria for ASD (American Psychiatric Association, 2013). Therefore, nonverbal challenges, such as reduced or excessive eye contact and gestures, should be general targets of interventions to help college students with ASD communicate effectively during interviews based on the diagnostic criteria for ASD. Although subtle linguistic challenges are common even among people with ASD who have high communicative competence (Boucher, 2012), verbal behaviors are *not* part of the diagnostic criteria for ASD. Therefore, greater understanding of how people with ASD express themselves verbally during employment interviews is needed in order to develop targeted interventions to support them. Results from this research may inform vocational training that improves employment outcomes. Through the use of a comparison group, this research addresses gaps in prior research.

Hypothesis 1

Research indicates that individuals with ASD may detect timing differently than those without ASD (e.g., Wimpory et al., 2002). We expected that college students with ASD would exhibit atypicalities in the timing of responses, or slower onsets of responses and longer responses to interview questions. We also expected more variability in the durations of responses (as they would respond at length to things that aligned with their focused interests while responding briefly to other topics).

Hypothesis 2

Research has shown that individuals with ASD may have trouble monitoring how others perceive them (e.g., Frith, 2001; Strickland, Coles, & Southern, 2013) and have a tendency to be very honest (e.g., Baron-Cohen, 2007). This can cause difficulties managing the image they are presenting to the interviewer. Thus we expected college students with ASD to more frequently discuss tangential non-job related interests when asked to describe themselves during the mock interview, to more frequently describe social challenges and to less frequently express interest in collaborating with others in the workplace relative to students without ASD. In addition, we expected that disclosure would not be accompanied by a subsequent elaboration that would allow for disclosure to be framed in a positive light.

Method

Participants

Participants included 16 college students who self-reported a diagnosis of ASD and 14 college students with no self-reported disabilities. College students with ASD were recruited through an ongoing mentorship program for college students with ASD and other disabilities, Project REACH, a collaborative program developed by the last author of this manuscript, a psychologist, and the Center for Student Accessibility. Students with ASD were invited to participate in mock interviews as pre-tests for Project REACH's first attempt at providing an interview skills curriculum (adapted from Morgan et al., 2014) to help college students with disabilities develop employment skills. Participants with ASD who elected to complete a pre-test mock interview received a \$10 Amazon gift card for participating. Participants with ASD

had been enrolled in Project REACH in prior terms but the curricula in prior terms of Project REACH had not focused on interview skills.

All 16 participants with ASD self-identified as autistic. Fourteen of the participants with ASD provided documentation of an educational classification of ASD, in the form of Individualized Education Programs (IEPs) and/or Clinical Evaluations, to the Center for Student Accessibility to obtain academic accommodations. Two of the participants with ASD had IEPs listing related classifications (one had a speech/language impairment and another had a mood disorder). However, one of these students had been receiving autism services since childhood and the other self-reported a heightened SRS-2 T score of 90. Non-disabled students were recruited through the college's online research participation website and received research credit for participating. Sixteen students were originally recruited to the "no disabilities" group, but two disclosed a disability, and were excluded from analyses.

The age range of the participants with ASD was 17 to 38 years ($M = 22.88$, $SD = 6.81$). Of 3 females and 13 males; 2 identified as Black, 1 as Hispanic, and 13 as White. The age range of the participants with no disabilities was 18-26 ($M = 20.71$, $SD = 2.97$). Of 2 females and 12 males; 3 identified as Hispanic, 1 as Asian, 1 as Black, and 9 as White. See Table 1 for participant characteristics.

Interviewers

Seven interviewers assisted over the course of data collection (five volunteers and the first and third author). All interviewers were aware that some of the students participating in the

mock interviews were involved in Project REACH and that it was a mentorship program for students with ASD and other disabilities. Interviewers were *never* informed if a given interviewee had ASD, a different disability or no disability. Mock interviews were always conducted by people who had not previously been involved with Project REACH and had not met the interviewee before.

Measures

Social Responsiveness Scale-2. The SRS-2 includes a standardized self-report measure of autism traits (Constantino & Gruber, 2012). Higher scores indicate more autistic traits. This scale includes 65 items, comprising 5 subscales: social awareness, social cognition, social communication, social motivation, and restricted interests and repetitive behavior. Raw scores were transformed into T-scores. T-scores of 60 or higher indicate high likelihood of ASD. The measure has high sensitivity but low specificity (Aldridge, Gibbs, Schmidhofer, & Williams, 2012).

Degree of socialization required by job. Participants were asked to select which job they were applying for 24 hours before the interview. One typically developing participant was not asked what job that they were applying for and another typically developing participant's response to this initial question was cut off in the video recording. The jobs that participants chose to apply for were coded as requiring high- or low-levels of social engagement by two independent coders who obtained above 80% reliability on the coding scheme. When consensus was not reached, the primary researcher coded the jobs using onetonline.org.

Work history. Participants were asked to list all work experiences they had in the past and/or currently have. These could include jobs, research assistant positions, internships and volunteer positions. They were also asked to discriminate between paid jobs and volunteer experiences. These responses were coded to determine the number of self-reported prior paid work and volunteer experiences.

Procedure

Participants were advised at least 24 hours prior to the mock interview to choose a job they would like to pretend to apply for during the mock interview. Participants engaged in a 12-question mock employment interview (conducted by an unfamiliar interviewer) lasting approximately 15 minutes. The list of the interview questions (see Appendix A) was designed to be general enough to accommodate a range of positions and was based on common interview questions gleaned from research, including behavioral interview questions.

The interviews were video-recorded. Participants were made aware of the recording, and informed of measures used to maintain confidentiality. The audio files extracted from these recordings were transcribed, and used to code verbal responses and timing. Although the quality of auditory recordings was high, the quality of video was inconsistent and did not permit coding of nonverbal behaviors.

Response timing coding. We coded the timing of responses in milliseconds using Audacity software, defined as the lag from the beginning of response to end of response. We coded response onset (the gap between the end of the interviewer's question and the beginning of

the interviewee's response) and response duration (the amount of time from the beginning to the end of the participant's response to a specific question). Timing variables, particularly the onset of responses, allowed us to assess temporal coordination between the interviewer and applicant. Two independent coders coded both onset and duration of responses in milliseconds. A high degree of reliability was found: the average ICC was 1.00 ($p < .001$).

Verbal coding. We coded the verbal responses to interview questions. We used a coding scheme derived by consensus between the researcher and two coders blind to the diagnoses, who achieved research reliability (greater than 80% agreement). Dichotomous non-mutually exclusive codes were used to code responses from the questions. For the analyses presented in this research, we analyzed the following codes in responses to six of the interview questions.

Impression management.

"Tell me a little about yourself." In order to address our hypothesis that college students with ASD would be more likely to discuss non-job related information such as their hobbies or focused interests, we coded for mention of non-job related information. *"What did you like most and least about previous jobs?"* In order to address our hypothesis that college students with ASD would be more likely to discuss prior social difficulties in the workplace, we coded for negative discussion of social aspects of the workplace (e.g., critiques of co-workers, employers, or conflict among co-workers). *"What do you look for in a workplace?"* In order to address our hypothesis that college students with ASD would less frequently report a desire for social aspects of the workplace than their peers without ASD, we coded whether or not participants expressed

desire for social aspects of the workplace, such as a *friendly* environment. “*What is your greatest strength and your greatest weakness?*” In order to address our hypothesis that college students with ASD would be more likely to report a social weakness, we coded whether participants mentioned social difficulties, including not liking to work with difficult people or work with coworkers. “*How do you work with others as a team?*” In order to address our hypothesis that college students with ASD would be report less interest in working with others, we coded for mention of desire to collaborate with others in the workplace.

Disability disclosure.

“*Please tell me something personal about yourself. For example, what is your religion, do you have any children, or do you have a disability?*” We asked participants this question, which is illegal to ask during a job interview in the United States, near the end of the interview. We coded the nature of disclosure, if participants with ASD used full disclosure (sharing one’s diagnosis) or partial disclosure (sharing specific symptoms without divulging diagnosis), and any elaboration following disclosure. We coded elaboration into two sub-codes: (a) discussion of disability or symptoms by reference to overcoming any limitations associated with disclosed information and (b) discussion of disclosed information in terms of a strength. In order to address our hypothesis that college students with ASD would frequently disclose disability without elaborating, we provide the frequency of the aforementioned codes specifically for participants with ASD.

Results

We ran descriptive statistics for the standardized measures and the timing variables. Timing variables exhibited a high level of skew and/or kurtosis. Therefore, we used log transformations to normalize onset and duration of responses for analyses. Descriptive statistics are reported for the non-transformed versions of each variable for ease of interpretation.

Group Differences on Standardized Assessments

As would be expected, college students with ASD self-reported higher levels of autistic traits than students without ASD ($t(28) = 2.87; p = .008$). Unexpectedly, six of the college students with ASD (38%) self-reported SRS-2 T scores below the cut-off for clinical concern of ASD. However, all of the college students with ASD who self-reported SRS-2 T scores below 60 had participated in the Project REACH mentorship program in prior semesters; participation in Project REACH programming has been associated with significant decreases in self-reported SRS-2 scores (Bublitz et al., 2015). In addition, four students (29%) who identified as having no disability self-reported SRS-2 T scores above the cut-off for clinical concern.

There was no significant difference between students with ASD and those without disabilities with respect to the degree of socialization required by the jobs they applied for, $p = .22$. Table 2 lists the jobs students applied for, as well as if each position was coded as requiring a high or low degree of socialization. Two job titles were missing for the non-ASD group, one due to interviewer error and one due to recording error. There were no significant differences in self-reported paid work experiences between college students with ASD ($M = 1.50, SD = 1.79$) and those without ASD ($M = 2.64, SD = 2.10$), $p = .12$. There were no differences in volunteer

experiences between college students with ASD ($M = .75$; $SD = 1.29$) and those without ASD ($M = .29$, $SD = .61$), $p = .23$.

Analyses of the Timing of Responses to Interview Questions

A MANOVA with the log transformed timing of onset of responses to the 6 interview questions as dependent variables and ASD classification as the independent variable revealed an overall group difference in the onset of responses, $F(6, 21) = 2.89$, $p = .03$; Wilk's $\Lambda = 0.55$, partial $\eta^2 = .45$. Post-hoc tests revealed that college students with ASD ($M = 1.86$, $SD = 2.01$) exhibited slower onsets of responses than students without ASD ($M = .86$, $SD = .38$) when they were asked what they liked most and least about their previous jobs ($p = .017$). Similarly, college students with ASD ($M = 2.09$, $SD = 1.42$) exhibited slower onsets of responses than students without ASD ($M = .88$, $SD = .66$) when asked how they work with others as a team ($p = .007$). Although a MANOVA with the log-transformed durations of responses to the 6 interview questions yielded no effect of diagnosis ($p = .51$), an ANOVA with the standard deviation of the log-transformed duration of responses indicated that participants with ASD ($M = 26.94$, $SD = 25.91$) exhibited greater variability in the duration of their responses than participants without ASD ($M = 12.88$, $SD = 6.54$, $F(1, 28) = 11.08$; $p = .002$; partial $\eta^2 = .28$).

Analyses of the Content of Responses to Interview Questions

Chi-square analyses were used to examine potential group differences in the frequency of specific verbal responses to interview questions. Consistent with hypotheses, participants with ASD (0%) were less likely than those without ASD (50%) to report interest in social aspects of the workplace when asked what they were looking for in a job, $\chi^2(2) = 10.44$, $p = .002$. For

example, individuals without ASD were more likely to provide responses such as, “friendly environment, I still like people like doing their job, at the same time they're relaxed.” Similarly, participants with ASD (38%) were less likely to mention working well with others than students without ASD (79%) when asked how they work with others as a team, $\chi^2(1) = 5.13, p = .03$. Participants without ASD were more likely to mention that, “you can't work by yourself you need a group of people, people that can lift you up and lift each other up and we can win”.

Contrary to hypotheses, participants with ASD (69%) were no more likely than participants without ASD (57%) to provide non-job-related themes when asked to tell the interviewer about themselves ($p = .71$). Also contrary to hypotheses, when asked about what they liked least about previous jobs, participants with ASD (19%) were no more likely than participants without ASD (36%) to mention social aspects of the workplace ($p = .42$). Also contrary to hypotheses, when asked what their greatest weakness was, participants with ASD (32%) were no more likely than participants without ASD (7%) to mention social weaknesses ($p = .18$).

Disability Disclosure

Several participants with ASD, 4 out of 16 (25%), disclosed aspects of their disability prior to the question asking them to disclose something personal. Of these, one student fully disclosed their disability status prior to the question, stating, “I’ve got disabilities, ADHD, Asperger’s” when asked to tell the interviewer a little about themselves. Two of the remaining students who disclosed early initially only partially disclosed yet later fully disclosed disability status as a response to the question prompting them to discuss something personal. In response

to this question, 11 out of 16 (69%) of the students with ASD (3 of whom had disclosed either fully or partially earlier) fully disclosed their disability to the interviewer (i.e., “I have like mild Asperger and I have like problems, like you know paying, you know, paying attention”). Three out of sixteen of the students with ASD (19%) chose not to disclose anything about ASD during the entire interview, and two students only partially disclosed – mentioning symptoms yet no diagnosis, including one student who partially disclosed before the question, stating “I’m a little shy. I have some anxiety issues.” Importantly, only 2 out of 16 (13%) of the students with ASD discussed overcoming a disability, such as stating that they “overcome that weak, that, that weakness, by trying to make myself feel you know feel more comfortable in a social situation.” In addition, only 2 out of 16 (13%) of the students with ASD described how ASD can be a strength, such as mentioning that “something you should know about Asperger’s is that people who have it are generally very intelligent” (one of these students discussed both overcoming a disability and strengths associated with ASD).

Discussion

Students with ASD took longer to begin to respond to two common interview questions and exhibited more variability overall in the length of their responses than their peers without ASD. These findings provide some support for Wimpory and colleagues’ (2002) assertion that biological variations in how individuals with ASD perceive time may contribute to social difficulties associated with ASD. These timing differences may reflect more general differences in embodied cognition associated with ASD, or contributions of sensory-motor atypicalities to the “social difficulties” that define ASD (Bertone, Mottron, Jelenic, & Faubert, 2003; Fournier,

Hass, Naik, Lodha, & Cauraugh, 2010; Spencer et al., 2000; Vilensky, Damasio, & Maurer, 1981). Differences in timing likely affect the synchrony of autistic students' engagement with interviewers (DuBois, Hobson, & Hobson, 2014), possibly causing interviewers to view participants with ASD as odd or unable to gauge social interaction. Thus, vocational training for college students with ASD should include guided practice coordinating temporally with interviewers, as well as help detecting subtle social cues suggesting that it might be helpful to alter the pace or content of one's responses. For example, training could include videos of actors responding to interview questions with atypical timing of responses and ask students with ASD to evaluate the interviewees' synchrony with the interviewer and demonstrate potential strategies the interviewees could use to be more in sync with interviewers.

These findings suggest that college students with ASD face specific challenges with verbal aspects of impression management during employment interviews as well. However, these challenges may often be quite subtle; there were more commonalities than differences in the verbal responses of college students with and without ASD who participated in the current study. Students who identified as autistic did not differ from their peers in terms of self-reported social difficulties in the workplace, $p = .311$. In addition, they were neither more nor less likely to mention social weaknesses than their peers, $p = .106$.

However, students with ASD were much less likely than their peers to mention a desire for social interaction in the workplace and were also less likely to describe themselves as interested in collaboration relative to students without ASD. It is not uncommon for others to describe people with ASD as having educational and employment goals that require relatively

low levels of socialization, such as a strong interest in technology-related fields (e.g., Wei et al., 2014). Indeed, people with ASD are often assigned to more solitary jobs through supported employment programs (Howlin, Alcock, & Burkin, 2005).

If all people with ASD desired jobs that required a low-level of socialization, the tendency observed in the current study for people with ASD to indicate reduced interest in social aspects of the workplace during employment interviews might actually prove to be adaptive. However, as is evident by the jobs applied for by participants with ASD in the current study (see Table 2) and as is also evident in prior literature (e.g., Jordan & Caldwell-Harris, 2012), many people with ASD have a strong interest in fields that do require a high-level of socialization, such as management or psychology. Therefore, vocational trainings for college students with ASD should provide them with guided practice displaying an effective level of interest in social aspects of the workplace as well as practice collaborating with co-workers. Trainings should be tailored to the employment goals of individuals. Given that a number of both students with and without ASD were fairly vague about the job they wanted to apply to (one participant with ASD repeatedly stated that he simply wanted “any job” and did not care what it was as long as he would get paid for it), such training should help students learn how to identify and effectively seek out jobs that match their interests. O*NET (<https://www.onetonline.org/>), published by the U.S. Department of Labor, provides a wealth of inventories to help students learn about their values and interests.

Although the majority of the college students with ASD in the current study fully disclosed that they were autistic during the interview, very few of them discussed overcoming a

disability or framed their disability as a strength. Therefore, students with ASD were ineffective in educating the interviewer about strengths associated with their disability. Simply disclosing that one is autistic without sufficient elaboration may cause employers to use stigmatizing preconceptions about disability to assess an applicant's viability as an employee (Jans, Kaye, & Jones, 2012). These findings suggest that vocational training for college students with ASD should include guided practice evaluating what type of disclosure is likely to be effective in specific employment situations and should include techniques for educating others through disclosure. Such interventions should include practice evaluating the intentions of the interviewer in asking specific questions in order to help participants navigate questions that are designed to elicit weaknesses by reframing potential weaknesses as strengths.

Interventions designed to help college students with ASD apply higher level aspects of Theory of Mind during employment interviews could build upon Theory of Mind trainings for younger individuals with ASD (e.g., Heerey, Keltner, & Capps, 2003; Ozonoff & Miller, 1995) by focusing on guided practice interpreting and responding to subtle social cues quickly in the moment. ASD-related difficulties understanding other minds may reflect challenges identifying one's own perspective (Lombardo et al., 2010; Lyons & Fitzgerald, 2013; Reddy, Williams, Costantini, & Lan, 2010). Therefore, trainings to help college students who have ASD with perspective taking during interviews should focus not only on interpreting and responding to employers' cues but also on interpreting and responding to one's own internal experience (e.g., by recognizing anxiety in order to apply self-regulating strategies before the anxiety escalates).

Universal Design for Employment Interview Training

The high degree of overlap in the verbal responses of college students with and without ASD observed in the current study, as well as similarities in work history and in the vagueness of self-reported desired employment positions, speaks to the importance of vocational training interventions based on the principles of Universal Design, or strategies designed to engage and support diverse groups of students who might vary in age, gender, race/ethnicity, immigrant status, language background, or disability status (Bublitz, Wong, Donachie, Brooks, & Gillespie-Lynch, 2015). According to the principles of Universal Design, training designed to minimize challenges that students with ASD in particular face in college or in the workplace are likely to improve the accessibility of vocational supports for *all* college students (Scott, McGuire, & Shaw, 2003). In addition, inclusion of students with and without ASD in vocational interventions will allow both groups of students to learn from one another. The increasing number of college students with ASD is consistent with a more general pattern of broadening diversity on college campuses (discussed in Bublitz et al., 2015). As learning to understand diverse others is an important goal of modern education, vocational curricula that are designed based on the principles of Universal Design will create settings that are useful to all students.

Limitations

Vocational interventions for people with disabilities should include training of people in the community (i.e., employers), as stigma is a key barrier we did not address. Although Theory of Mind was discussed as a possible determinant of poor impression management, we did not examine Theory of Mind directly. Future research should directly investigate associations between Theory of Mind skills and performance in mock interviews. Our manner of

categorizing the degree of socialization required by each job was categorical and likely does not capture the nuances of social interaction inherent to specific positions.

Although interviewers were blind to the diagnostic status of interviewees, they varied in their past experience with autism. We also did not assess how interviewers viewed the social and timing atypicalities exhibited by college students with ASD in the current study. Future research should include ratings of the interviewees' behaviors by potential employers, including their likelihood of hiring each individual, in relation to the interviewers' past experiences with autism. Although slower onsets of responses among students with ASD suggests atypicalities of temporal coordination with the interviewer, future research could examine the interaction itself more closely, by assessing the rhythm of responses, narrative coherence and nonverbal mirroring behaviors.

Our inability to assess nonverbal behaviors due to the limited quality of the video recordings is a key limitation of this research. Another key limitation is our reliance on educational classifications of ASD rather than gold standard diagnostic measures such as the Autism Diagnostic Observation Schedule. However, prior work with adults with ASD has often relied on educational classifications (e.g., Newman et al., 2011; Shattuck et al., 2012; Wei et al., 2014). Although no significant differences in the work and volunteer history of students with and without ASD were observed, students with ASD reported numerically lower numbers of prior jobs. In addition, no inquiry was made of income earned at these jobs. Given that the interview data was collected while students were currently enrolled in college, many of the reported jobs may be part-time low-wage work. Given that people with ASD often end up in

relatively menial low-paying jobs long-term (Hurlbutt & Chalmers, 2004), success finding such jobs in college does not undermine challenges faced when students with ASD seek post-college employment. Another consideration is whether past supports provided by Project REACH may have affected performance on the mock interviews. Although interview and employment skills were not a focus of Project REACH curriculum prior to this study, participation in the program in the past had been associated with improved self-reported social symptoms (Bublitz et al., 2015). Finally, the small sample sizes in the groups limits generalizability.

Conclusions and Future Directions

This study revealed that college students with ASD who were enrolled as matriculated students in a large urban university exhibited subtle atypicalities in their verbal responses during employment interviews relative to their peers without ASD. While participants with ASD did not differ from their peers in their descriptions of prior social difficulties in the workplace and social weaknesses, they did express less interest in engaging with others in the workplace. College students with ASD also exhibited more variable response lengths and were slower to respond to the interviewer than students without ASD. These findings suggest that vocational interventions for college students with ASD should include strategies to support impression management and should be based on the principles of Universal Design, as students with and without ASD face shared difficulties during employment interviews.

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Table 1

Participant Characteristics

ASD $n = 16$				No Disabilities $n = 14$			
Age	Gender	Ethnicity	SRS T-score	Age	Gender	Ethnicity	SRS T-score
20	female	Black	70	18	male	White	67
17	male	White	76	23	female	White	47
21	male	White	69	24	male	Hispanic	43
27	female	Hispanic	55	18	male	Hispanic	44
18	female	White	58	18	male	White	47
18	male	White	46	24	female	White	51
36	male	White	68	18	male	Hispanic	41
18	male	White	62	26	male	White	41
18	male	White	54	18	male	Black	46
17	male	White	68	20	male	Asian	74
18	male	White	64	19	male	White	44
22	male	White	90	22	male	White	57

24	male	Black	46	18	male	White	68
20	male	White	57	24	male	White	61
20	male	Mix	71				
32	male	White	70				

Table 2

Jobs Applied for by Participants

ASD <i>n</i> = 16		No Disabilities <i>n</i> = 14	
Job	How	Job	How
	Social		Social
Medical field	2	Position in sales	2
Accountant	1	Tutor	2
Manager in gaming industry	2	Data not available	
Working with animals at animal shelter/pet care	1	Credit analyst	1
Detective	2	Physical therapist	2
Third-grade special education English teacher	2	Detective for FBI	2
Psychology specializing in disabilities	2	Data not available	
Cashier	2	Electrician	1
Junior developer position	1	Stocking/receiving	2
Any job	1	Cashier	2

Regular maintenance job	1	Court officer's test	2
Sales associate position at Adidas shoes	2	Prosecuting lawyer	2
Graphic design	1	Sales position	2
Social skills therapist	2	Bank teller	2
GameStop employee	2		
Technology-computer science	1		

Note: “2” refers to jobs with high degree of socialization, “1” refers to jobs with low degree of socialization.

Appendix A: Interview Questions

Questions reported in **bold**

- 1.**So tell me a little about yourself.**
2. Why do you want to work at our company?
3. What jobs have you had in the past and how have they prepared you for this position?
4. **What did you like most and least about previous jobs?**
5. **What do you look for in a workplace?**
- 6.**What is your greatest strength and your greatest weakness?**
7. Describe a difficult work situation and how you dealt with it?
8. How do you handle stress?
- 9.**How do you work with others as a team?**
10. Where do you see yourself 5 years from now?
- 11.**Please tell me something personal about yourself. For example, what is your religion, do you have any children, or do you have a disability?**
12. Do you have any questions? (Let them respond and answer any questions) Thank you we will be in contact with you soon.