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Exploring the Efficacy of Acceptance and Commitment Therapy and Behavioral Skills Training to Teach Interview Skills to Adults with Autism Spectrum Disorders

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Abstract

Objectives Interviewing for jobs is a challenge for many young adults with autism spectrum disorders, potentially due to deficient social repertoires and anxiety about the application process. While there is research on the efficacy of behavioral skills training for workplace behaviors, there is limited research on management strategies for covert behaviors that may interfere with the process of obtaining a job, such as feelings of anxiety.

Methods This study investigated the efficacy of a brief acceptance and commitment training protocol and behavioral skills training on simulated interview performance for three young adults with autism spectrum disorders. Mindfulness and defusion exercises were implemented prior to a mock job interview, and performance was measured. Behavioral skills training was added to the instructional package if criterion of the skill was not met.

Results The ACT protocol produced some improvements in performance, but BST was required for all three participants to master the skills.

Conclusions All of the participants not only demonstrated a skilled interviewing repertoire upon conclusion of the experiment but either interviewed for, or obtained, an actual employment position. Further research is needed to evaluate the effects of ACT strategies for teaching new skills, especially in stressful environments.

Keywords Acceptance and commitment training · Behavioral skills training · Autism · Job interviewing

Obtaining meaningful employment is an obstacle for many adults with autism spectrum disorder, despite the fact that many individuals have the intellectual functioning necessary to be successful in a variety of positions. Research suggests that the job interview itself may be a significant barrier, as some individuals may never get passed the interview stage. Siperstein et al. (2014) suggested that many individuals with autism may not have acquired the social skills necessary to perform well during an interview. In addition, because many individuals with autism are keenly aware of their social deficits (see Giarelli et al. 2013), they may be likely to avoid situations in which their deficits are most pronounced, including highly anxiety-provoking and unpredictable situations such as interviews.

Behavioral skills training, which consists of instructions, modeling, role rehearsal, and feedback is a well-established protocol for teaching job interview skills to individuals with developmental disorders (Hall et al. 1980). Although behavioral skills training has been utilized by practicing behavior analysts for some time, it continues to be investigated for its efficiency in establishing new skills in a variety of contexts, including more recent investigations where promoting success in the work-place is a priority. Grob et al. (2018) recently demonstrated that behavioral skills training, which included stimulus prompts to facilitate generalization, was effective in teaching a variety of job-related social skills to adults with autism, including responding to feedback and asking for a task model. Importantly, the procedure was effective in promoting generalization to novel circumstances. Lerman et al. (2017) advocated for the assessment and instruction of such skills in naturalistic, yet controlled, simulated settings. These authors found that target responses such as asking one's supervisor for assistance and for materials to perform a task could be readily identified and remediated in such analogue settings (see also Bennett and Dukes 2013).

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Although it is conceivable that people with autism may have never experienced effective instructional protocols such as behavioral skills training for establishing job interviewing skills, covert emotional experiences such as anxiety may also participate in performance challenges. Brazeau et al. (2017), working in a naturalistic, simulated setting such as that described by Lerman et al. (2017) and Grob et al. (2018), found that participants with high-functioning autism exhibited overt indicators of anxiety at such a high frequency that their performance during practice interview sessions was severely limited. Some participants even reported anxiety surrounding their pursuit of employment so extreme that they were reluctant to even participate in regular practice sessions (Brazeau et al. 2017). Indeed, 55% of people with autism spectrum disorders experience at least one anxiety disorder, and anxiety disorders appear to be more common in individuals with less severe cognitive limitations (Davis et al. 2008). Brazeau et al. (2017) reasoned that participants' private, covert experiences may be just as much a reason for poor performance during interview sessions as the fact that they may not have acquired appropriate interviewing skills, or, realistically, some combination of both issues may contribute to their difficulties.

Acceptance and commitment training (ACT) has been widely used with individuals without developmental disorders who experience anxiety, with the goals of increasing the ability to endure aversive private experiences, contact the present moment, and pursue values-consistent behaviors that will promote contact with important external reinforcers. ACT has been implemented in therapy settings for those working with individuals with autism (see Pahnke et al. 2019), and much interest exists on the incorporation of ACT into behavior analytic practice (i.e., Gould et al. 2018). Brazeau et al. (2017) examined the effects of experiential exercises widely used by the ACT community on the performance of the aforementioned participants during practice job interviews. The authors found that mindfulness and cognitive defusion exercises led to substantial increases in performance, but that behavioral skills training was necessary for enhancing certain aspects of participants' interviewing. This study suggested that a potential role for the adoption of acceptance and commitment training by behavior analysts may be to utilize it in conjunction with social skills instruction, particularly when participants' overt indicators of anxiety contribute to their limitations.

The purpose of this study was to extend the work of Brazeau et al. (2017) by exploring the degree to which ACT protocols might facilitate performance during mock job interviews in participants with autism spectrum disorders. The individuals who participated all reported high levels of anxiety surrounding the process of applying for jobs, and had never received formal instruction on job interviewing. With the goal of identifying the settings and conditions under which behavior analysts might use ACT, this study employed a brief ACT protocol. Brief protocols (see Johns et al. 2016) may be most desirable for behavior

analysts with heavy case-loads and limited time to engage in a one-on-one format with clients. Importantly, this study evaluated behavior change using a task analysis. The heavy volume of evidence for the efficacy of ACT to date has utilized participants' self-report as a dependent measure, a criticism voiced cogently by Newsome et al. (2018). Substantiating behavior change using objective, reliable measures of behavior change is important for establishing the parameters under which behavior analysts might effectively incorporate ACT into their practice.

Method

Participants

The three participants all attended a university-based clinic for young adults with autism spectrum disorder that focused upon behavioral flexibility and social skills instruction. All of the participants were interested in obtaining a job but expressed anxiety about applying and interviewing. None of the participants experienced significant language or cognitive delays. John was a 24-year-old male diagnosed with ASD who had never been employed nor been on a job interview. Danny was a 25-year-old male diagnosed with ASD and schizophrenia and depression. Danny reported that he constantly worried about what other people thought about him, which made job interviews challenging. Danny had worked for a brief period in a family-owned business alongside his father. Brandon was a 26-year-old male diagnosed with ASD who had previously been employed, but he had never received training in interviewing. Brandon was receiving job coaching to help him fill out applications at the time of the study. However, Brandon had not been on any job interviews prior to beginning the study and had difficulty speaking clearly.

Procedure

Settings and Materials

All mock interview sessions took place in a university clinic containing a table with a chair for the interviewer and a chair for the participant. ACT sessions were conducted in a separate therapy room. All of the sessions were video recorded so that interobserver agreement and procedural reliability could be evaluated. Task analysis data were recorded on a laptop computer that was secured with a personal password.

An interview task analysis (TA), shown in Appendix 1, was adapted from that used in Brazeau et al. (2017) and modified to incorporate recommendations for effective interviewing provided on a university career center website. A worksheet, shown in Appendix 2, that included written instructions corresponding to the steps in the TA was utilized for the BST portion of the intervention. A video of the experimenter

modeling each step in the TA during a mock interview was also used during BST.

Three mindfulness and three defusion exercises were used for the ACT intervention portion of the experiment. The activities were chosen from *The Big Book of ACT Metaphors* (Stoddard and Affari 2014) and were implemented based upon a script. Mindfulness exercises included "Observing Thoughts" (p. 92), "Going Along with the Process" (p. 94), and "The Dandelion" (p. 101). Defusion exercises included "Pickle, Pickle, Pickle" (p. 71), "Floating Leaves on a Moving Stream" (p. 68), and "Watching the Mind Train" (p. 68). The scripts ranged from half a page to two pages in length.

A five-question social validity questionnaire that was designed for purposes of this study was used to assess the participants' satisfaction with the intervention. The questions were formatted according to a five-point Likert scale with response options ranging from "Not true at all" to "Very true."

Design

A non-concurrent multiple-baseline across participants design was used. Each test session consisted of the participants completing a mock interview with the experimenter, in which their performance on the TA was scored. BST was implemented if the mindfulness and defusion exercises did not result in either mastery of the TA or an increasing trend toward mastery above the levels depicted during baseline. Follow-up tests were conducted with a novel interviewer 2 weeks after the last intervention session to evaluate skill maintenance and generalization.

Mock Interviews

Prior to the experiment, participants were encouraged to review a list of 20 common interview questions obtained from a university career center. Mock interviews were conducted throughout baseline, ACT and BST, and at follow-up. Before each session, participants were reminded to treat each mock interview like an actual interview for the position that they desired. Each interview consisted of four questions, which were randomly selected using a random number generator. If a question was selected that had been used within the previous two sessions, another question was included in its place. The interviewer asked the questions in a neutral tone and maintained a neutral facial expression while the participant spoke. The interviewer presented the next question if the participant did not answer a question within 3 s. Each interview lasted approximately 5–10 min.

Mindfulness and Defusion

The ACT intervention phase was implemented following stable baseline responding. These sessions included one mindfulness exercise and one defusion exercise. The mindfulness exercises were used to bring present moment awareness to the participant, and the purpose of the defusion exercises was to create a distance between the participant and their negative thoughts or feelings prior to the interview. The exercise for each session was chosen randomly. No exercise was repeated consecutively. The experimenter conducted the exercises by following a script and providing feedback and guidance to participants. Following the exercises, the experimenter talked about the experience with the participant, including negative thoughts that occurred during the exercises.

A mock interview session followed each ACT intervention session.

Behavioral Skills Training plus ACT

BST sessions were conducted prior to ACT sessions once the BST phase was instated. Participants were first given the worksheet including instructions for how to respond during the mock interviews. The experimenter reviewed the worksheet with the participants and answered any questions the participant had. Next, the experimenter showed the video of the experimenter modeling an appropriate mock job interview to the participants. After answering any questions, the experimenter conducted a mock interview and provided corrective feedback to participants for steps missed. The practice and feedback portions of BST were repeated until the participant demonstrated 100% accuracy on the TA, after which time a mock interview was conducted without feedback. This continued until the participant demonstrated at least 82% (9/11) or accuracy on the TA for two consecutive test sessions.

Follow-up

Approximately 2 weeks after the final session, each participant completed a test session following the same procedure as that described during baseline.

Measures

Independent variables included the ACT intervention, which included mindfulness and defusion exercises, and behavioral skills training, which consisted of written instructions, modeling, role rehearsal, and feedback. The dependent variable was the percentage of steps performed correctly on the interviewing TA, scored separately for each participant. The criterion for inferring accuracy was 9/11 steps completed correctly or 82% correct. If neither mastery nor an increasing trend in performance at a level above that of baseline was observed following three ACT sessions, BST was implemented.

Two observers viewed videos of intervention and test sessions and measured the dependent variable independently. Interobserver agreement (IOA) was calculated by dividing the observers' agreements by the disagreements and multiplying by 100. Mean IOA was 92% across 50% of the total sessions for John, 89% for 40% of the total sessions for Danny, and 93% for 42% of the total sessions for Brandon. Procedural reliability was calculated for 37% of the sessions. An independent researcher evaluated the experimenter's implementation of the independent variables using a checklist designed for the study. Procedural reliability was calculated by dividing the number of steps implemented correctly by the total number of steps in all sessions and multiplying by 100. Procedural reliability for 37% of the total number of sessions was 99% for the ACT sessions and 100% for 33% of the BST sessions.

Participants completed the social validity questionnaire at the conclusion of the experiment. The maximum score for the questionnaire was 25, which indicated high levels of satisfaction with the interventions.

Data Analyses

The researchers used visual inspection to determine the results of the study. This included examining changes in levels, trends, and means across the three phases. The average score was calculated for each phase by adding the total scores for each session in that phase and dividing the number of sessions in that phase. An increasing level, mean, or an increasing trend above baseline indicated an effect of the intervention.

Results

John

Figure 1 shows that John performed with a mean accuracy level of 53% correct during baseline. During the ACT only phase, John performed with a mean accuracy level of 55% with an increasing trend and a range of 45–64% steps correct. John did not attain mastery criterion during this phase, and his level of accuracy did not exceed that of baseline, so ACT+ BST was implemented. During this phase, John's mean level of accuracy was 76%. During the follow-up session, John performed with 100% accuracy. John completed the entire experiment in 14 total sessions and reached mastery criterion of the skill in five ACT+BST sessions.

Danny

As shown in Fig. 1, Danny performed with a mean level of accuracy of 42% during baseline. During the ACT only phase, Danny performed with a mean accuracy level
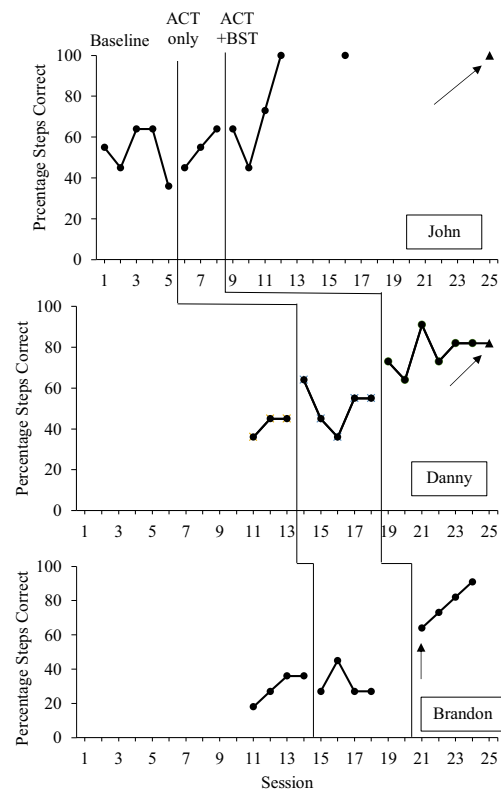

Fig. 1 Percentage of steps correct for all the participants. The triangles represent John and Danny's score on the follow-up session. The arrows represent where each participant reported that they completed a job interview and potentially obtained a job

of 51% with an initially decreasing trend then increasing trend and a range of 36–64%. Like John, Danny did not attain mastery criterion during this phase, and his level of accuracy did not exceed that of baseline, so ACT+ BST was implemented. During this phase, Danny's mean level of accuracy was 78%. During the follow-up session, Danny scored 82% accuracy. Danny completed the entire experiment in 14 total sessions and attained mastery criterion in six sessions during the ACT+BST phase.

Brandon

Figure 1 shows that Brandon performed with a mean level of accuracy of 29% during baseline. During the ACT only phase, Danny performed with a mean accuracy level of 32% with an initially decreasing, then increasing trend and a range of 27–45%. Like John and Danny, Brandon did not attain mastery criterion during this phase and his level of accuracy did not exceed that of baseline, so ACT+BST was implemented. During this phase, Brandon's mean level of accuracy was 78%. Brandon was unable to complete a follow-up session. Brandon completed the entire experiment in 12 total sessions and reached mastery criterion of the skill in four sessions during the ACT+BST phase.

Social Validity

Possible scores on the social validity questionnaire ranged from 5 to 25, with higher scores indicating greater satisfaction with the intervention. John scored 23, Danny scored 19, and Brandon scored 24. These scores indicated that all of the participants were extremely satisfied with the interventions utilized in the experiment.

Discussion

Results from this study coincide with those from other studies confirming that BST is a reliable and efficient means of establishing vocationally relevant social skills in individuals with autism spectrum disorders (Grob et al. 2018; Lerman et al. 2017). Although widely researched, BST continues to warrant attention as a strategy that might promote the acquisition of a number of skills necessary for successful community living. Not only did our participants master the steps in the interviewing task analysis but all reported satisfaction with the instructional protocols used in the study, and, importantly, either interviewed for a community job or secured an actual job upon conclusion of the study. All of the participants had previously expressed extreme hesitation about the application process and avoided pursuing competitive employment. Although a functional relation cannot be inferred between our intervention and the participants' pursuits of employment, it does seem likely that our study's procedures contributed to their success. In fact, a goal of ACT is to promote values-consistent behavior and committed actions that are consistent with one's goals. In their employment pursuits, it seems that for these participants, an important outcome was achieved. It is quite likely that participants' mastery of the interview protocol helped them feel more comfortable. This more flexible behavioral repertoire stands in contrast to the suppression of anxious thoughts or avoidance of situations that may be likely to produce such thoughts.

In light of the goals obtained by the participants at the conclusion of the study, future research should continue to investigate the use of ACT to address avoidance behaviors that may interfere with performance of other skills. While the effects of ACT on BST performance was unclear within this study, future studies could determine which ACT processes are beneficial when used in conjunction with skills training. For example, if the goal of ACT is to engage value-directed behaviors, it may be useful to implement ACT following BST to facilitate engagement in newly established skills outside the simulated or analogue teaching setting. Future research might also address the limitations of this study. For instance, one limitation was that the ACT interventions were brief, and the same exercises were used for all three participants. Additionally, only mindfulness and defusion exercises were used. The effects of the ACT intervention may have been more apparent if a more comprehensive protocol was delivered. Another limitation of the study was the time constraint, which is common in clinical practice. Each participant completed the study in 12–14 sessions. While this is efficient, follow-up assessments were not possible with all of the participants. Future research should continue to explore these and other variables related to the incorporation of ACT into behavior analytic practice.

Compliance with Ethical Standards

Appendix 1

Behavior	Definition	+ or −
Participant greets interviewer at the beginning of the interview verbally and with a smile	This includes a verbal greeting and can also include a physical greeting of shaking hands or waving and smiles	
Participant refrains from visibly fidgeting	Fidgeting includes any repetitive movement that occurs three or more times during the interview. Examples include tapping fingers, playing with hair, or shaking leg.	
Participant answers each question promptly	Participant emits a verbal response within 10 seconds after the end of the question.	

(continued)

Behavior	Definition	+ or −
Participant sits up straight/does not slouch or cross arms at any point during the interview	The participant maintains an upright position during the entire interview.	
Participant maintains eye contact while interviewer is speaking	The participant looks at the interviewer's eyes while the interviewer is speaking. If the participant looks away, it is for no more than 2 s.	
Participant maintains eye contact while they are speaking	The participant looks at the interviewer's eyes while they are speaking. If the participant looks away, it is for no more than 2 s.	
Participant speaks clearly	The participant speaks at a steady pace and annunciates words so that each one is understood.	
Participant speaks in a neutral or positive tone	The participant's tone is not too loud or harsh.	
Participant fully answers each question	The response provided by the participant contains a clear answer to the question.	
Participant ends the interview with an appropriate goodbye.	These should include a verbal and nonverbal response. Apppropriate responses include "Goodbye", "Have a nice day", "Thanks", "Nice to meet you", etc. and waves or handshakes.	
Refrain from self-reprimand behaviors, verbal or nonverbal	Behaviors can include any physical touching of the hands to another body part forcefully or any audible sound with a harsh tone (for example, grunting). Behaviors can also include negative verbal statements about the self.	
	Total	/11

Appendix 2

Job Interview Skills

Greet the interviewer when they enter the room or when you enter the room. Wave or shake hands, as well.

- This will show the interviewer that you are friendly and confident.
- Examples:

– "Hi, my name is _____"
– "It's nice to meet you"
– "Hi, how are you?"

Do not fidget in front of the interviewer.

- Fidgeting could be a sign that you are nervous or unsure.
- This includes:

– Messing with hands or hair
– Messing with objects
– Swaying back and forth
– Shaking your leg

Answer each question promptly.

- Answering the question quickly will show confidence in yourself.

- Try to answer each question within about ten seconds. It is okay to pause so that you can think. If you need additional time to think, you can say:

– "I am organizing my thoughts"
– "I am thinking of something specific"

Sit up straight. Do not slouch or cross your arms across your chest.

- This will show the interviewer that you are confident in yourself.

Look at the interviewer while they are speaking.

- This lets the interviewer know that you are paying attention.

Look at the interviewer while you are speaking.

- This shows the interviewer that you are confident in your answer and focused on the question.

Make sure to speak clearly.

- It is important for the interviewer to hear everything that you are saying clearly.

Use a neutral or positive tone when speaking.

- This will show the interviewer that you are friendly.

  Answer the question completely.

- It is important to answer every question that the interviewer asks completely to show that you are prepared and focused.
- This includes:

– Answering every question if the interviewer asks more than one.
– Giving enough information so that the interviewer understands what you are saying without having to ask more questions.

During the interview, do not show any outward frustration at yourself.

- It is important to refrain from doing these to show the interviewer that you are confident and prepared for the interview.
- Examples:

– Do not mutter about something you forgot.
– Do not say anything negative about yourself.
– Do not show any physical signs of frustration including grimacing, hitting yourself, or clenching your fists.

When the interview is over, tell the interviewer goodbye and wave or shake hands again.

- This gives the interviewer a last impression of you that is friendly and confident.
- Examples:

– "It was nice to meet you"
– "Have a good day"

"I look forward to hearing from you"

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