Published in final edited form as:

J Autism Dev Disord. 2016 March ; 46(3): 921–933. doi:10.1007/s10803-015-2633-0.

Improving Verbal Empathetic Communication for Adults with Autism Spectrum Disorder

Lynn Koegel, Ph.D., Kristen Ashbaugh, M.A., Anahita Navab, M.A., and Robert Koegel, Ph.D.

Koegel Autism Center, Department of Counseling, Clinical, and School Psychology, University of California, Santa Barbara, Santa Barbara, CA 93106-9490

Abstract

The literature suggests that many individuals diagnosed with Autism Spectrum Disorder (ASD) experience challenges with recognizing and describing emotions in others, which may result in difficulties with the verbal expression of empathy during communication. Thus, there is a need for intervention techniques targeting this area. Using a multiple baseline across participants design, this study examined the effectiveness of a video-feedback intervention with a visual framework component to improve verbal empathetic statements and questions during conversation for adults with ASD. Following intervention, all participants improved in verbal expression of empathetic statements and empathetic questions during conversation with generalization and maintenance of gains. Furthermore, supplemental assessments indicated that each participant improved in their general level of empathy and confidence in communication skills.

Keywords

empathy; Autism Spectrum Disorder; social conversation; social-emotional reciprocity; sharing emotions

Increasing Empathic Communication Skills for Adults with Autism Spectrum Disorder

According to the DSM-5, individuals with a diagnosis of Autism Spectrum Disorder (ASD) must demonstrate persistent deficits in social communication and social interaction (American Psychiatric Association, 2013). Illustrative symptoms in this area include difficulties with social-emotional reciprocity, abnormal social approach, difficulty with back-and-forth conversation, reduced sharing of interests, emotions, or affect, and difficult initiating or responding to social interactions. The lack of these behaviors may interfere with

Correspondence concerning this article should be addressed to Lynn Koegel or Kristen Ashbaugh, Counseling, Clinical, and School Psychology Department, Graduate School of Education, University of California, Santa Barbara, Santa Barbara, California, 93106-9490. Phone (805) 893-2049, Fax (805) 893-2658, lynnk@education.ucsb.edu or kristen@education.ucsb.edu.

Lynn Koegel, Ph.D., Clinical Director, Koegel Autism Center, University of California, Santa Barbara; **Kristen Ashbaugh, M.A.**, Counseling, Clinical, and School Psychology Department, University of California, Santa Barbara; **Anahita Navab, M.A.**, Counseling, Clinical, and School Psychology Department, University of California, Santa Barbara; **Robert L. Koegel, Ph.D.**, Counseling, Clinical, and School Psychology Department, Koegel Autism Center, University of California, Santa Barbara; Lynn and Robert Koegel are partners in the private firm, Koegel Autism Consultants, LLC.

social conversation and the development of social relationships for individuals on the spectrum. In particular, challenges with the expression of empathy may limit successful social interactions and lead to difficulty understanding and expressing interest in peers, and making and maintaining friendships (Baron-Cohen & Wheelwright, 2004; Laugeson, Frankel, Mogil, & Dillon, 2009). These symptoms are often present early on, and can worsen over time (Locke, Ishijima, Kasari, & London, 2010; Locke, Kasari, Rotheram-Fuller, Kretzmann & Jacobs, 2013). Without intervention, challenges with social communication and the expression of empathy may continue throughout the lifespan and impact an individual's social functioning.

Empathy is a broadly defined and complex construct, yet the literature indicates that there are specific communication skills that are important in order to express empathy (Hill, 2009). Empathy has long been considered challenging for individuals with ASD, yet empathy is considered an intricate concept that has multiple components (Baron-Cohen & Wheelwright, 2004). The literature suggests that there are many types of empathic responses, and it is difficult to determine one correct definition of how to appropriately display empathy (Hill, 2009; Rogers, 1980). However, the field generally agrees that empathy involves a congruent emotional response to another's emotional state (Hill, 2009). Furthermore, empathy is thought to consist of both a cognitive component (i.e. understanding what the other is saying) and an affective component (i.e. recognizing what the other is feeling) (Baron-Cohen & Wheelwright, 2004; Hill, 2009). Expressing empathy is considered an important interpersonal communication skill for developing positive relationships, and involves thinking, sensitivity and understanding of the perceptual world of the other (Rogers, 1980; Salem, 2003). Empathy is distinguished from sympathy in that empathy entails a correspondence of positive or negative affect, whereas sympathy is a response of compassion or concern and does not necessarily match the emotion perceived in another (Gruen & Mendelsohn, 1986).

Some have suggested that there may be ambiguity about the level of empathy in individuals with ASD. However, if there are even minimal levels of empathy, then it may be possible to teach the expression of empathic communication skills. Although empathy is a complex concept, there are specific communication skills that can be used to help appropriately express empathy, such as active listening statements and asking relevant questions (Hill, 2009; Nugent & Halvorson, 1995). Active empathic listening is considered a core skill in the expression of empathy (Huitt, 2009; Nugent & Halvorson, 1995). The literature suggests that active empathic listening helps individuals connect cognitively and involves repeating back to the person what you think he or she is communicating in order to express an understanding of what they said (Huitt, 2009). In addition to active empathic listening, initiating relevant questions is thought to help individuals connect emotionally in that asking questions demonstrates interest and engagement in what the other person is saying. Both active listening statements and empathic question-asking are considered learnable communication skills; however these skills have not been extensively examined for adults on the autism spectrum (Salem, 2003).

Although autism is a developmental disorder that is typically diagnosed during childhood, social communication difficulties can continue in adulthood (Hendricks & Wehman, 2009;

Seltzer, Shattuck, Abbeduto & Greenberg, 2004; Zager & Alpern, 2010). Research suggests that individuals with ASD can make improvements in their social communication and behavioral skills, but data indicate that few individuals move into average range in the social communication area (Seltzer et al., 2004). Individuals with ASD often report being frustrated by social relationships, and many express a desire for information about how to appropriately interact with others such as how to engage in social conversation, what behaviors are considered “rude,” and what are appropriate topics to discuss (Hellemans, Colson, Verbraeken, Vermeiren, & Deboutte, 2007, Jennes-Coussens, Magill-Evans, & Koning, 2006; Sperry & Mesibov, 2005). A primary challenge in social interaction for individuals with ASD relates to their difficulty expressing empathy to others, particularly in the context of social conversation (Sperry & Mesibov, 2005). That is, many individuals with ASD have challenges with verbal empathic communication skills during social conversation (e.g. providing statements to reflect feelings and asking open-ended questions), which can hinder social interactions and friendship development from childhood to adulthood (Baron-Cohen & Wheelwright, 2004; Yirmiya et al., 1992). These social communicative difficulties can often lead to lower satisfaction and confidence with socialization, diminished self esteem, and fewer friendships and romantic relationships for individuals with ASD (Byers, Nichols, & Voyer, 2012).

The literature strongly supports a need for interventions to improve areas relating to empathy, as research shows that individuals with ASD who demonstrate some empathic abilities have better overall social functioning and enhanced relationships with others (Baron-Cohen & Wheelwright, 2004). Furthermore, initial research indicates that increased empathic abilities in young adults as indicated by their scores on self-report measures such as the Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004) prior to treatment may serve as a predictor of treatment outcome in interventions targeting other areas such as social cognition, social awareness and responsiveness, and peer engagement (Shipley, Bolourian, Bates, & Laugeson, 2014). Empathic skills in adults with ASD also appear to determine sensitivity to social rewards (Neufeld, Levrini, Barry, & Chakrabarti, 2014), which may imply that empathy determines individuals’ motivation to direct attention to social information, in line with the social motivation theory of autism (Chevallier, et al., 2012).

Given the persistent and frequent challenges with social communication and the potential long-term negative effects of minimal social relationships, this study was designed to assess specific communication skills relating to the verbal expression of empathy for individuals with ASD. The specific communication skills of providing empathic listening statements and initiating questions to express empathy during social conversation were targeted. In this preliminary study, the effectiveness of an intervention technique using video feedback with a visual framework component was used to address the following research questions: (1) Will a targeted intervention produce improvements in the participants’ ability to make empathic listening statements during social conversation with peers; (2) Will a targeted intervention produce gains in the participants’ ability to initiate questions to express empathy during social conversation with peers; (3) Will any gains in treatment generalize to other peers and maintain in a long-term follow-up; (4) Will intervention lead to improvements in a standardized assessment of empathy for participants; and (5) Will

intervention result in collateral gains in participants' reported confidence with socialization and interactions with peers?

Method

Participants and Setting

Three adults ages 19–26 participated in this study. Each adult met the following criteria: (a) Diagnosis of an Autism Spectrum Disorder by an outside agency, confirmed through our center according to criteria in the DSM-IV-TR (American Psychiatric Association, 2000). Specifically, all participants were diagnosed with ASD by a medical doctor or psychologist specializing in developmental disabilities and referred to a state agency for assistance with social communication skills. The state agency confirmed their diagnosis of autism and referred them to the University Autism Center for treatment; (b) Language structures intact and ability to produce syntactically correct sentences during social conversation; (c) No presence of a co-morbid neurological disorder (e.g. brain tumor, Cerebral palsy, etc.); and (d) Experiencing social difficulties related to empathic communication skills as noted by the referring agency, direct observations, peer-reports, and self-report (e.g. difficulty interacting with others, minimal friendships, challenges in social conversation). The participants were selected from a pool of approximately 20 adults receiving services because they were the most severe in regard to a low level of verbal empathic communication skills. All participants had an IQ in the average or above average range. At intake, all participants spent little time responding to or asking questions about their conversational partner's interests, all reported that they had few to no social contacts each week, and each participant discussed having a desire to have friends and engage in social activities with peers. An outside record of intervention was maintained throughout the study, and participants did not receive additional intervention related to social communication throughout the duration of the study. In addition, each participant completed the Adult Autism Spectrum Quotient questionnaire to indicate severity of autism traits (AQ; Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001). Table 1 presents information on each participant.

Additionally, informed consent was obtained by all participants included in this study and participants were informed that video feedback and visual frameworks would be used to attempt to improve their social communication skills.

Participant One—John was 26 years old at the start of the study and was a male of Euro-American origin. He was a senior majoring in anthropology at a four-year university, and lived independently in on-campus housing with several roommates. He maintained an overall grade point average of 3.8. In his free time, John engaged in solitary activities around his restricted interest (i.e. playing video games online). He reported that he had no friends and did not participate in any social activities.

Participant Two—Peter was 19 years old at the start of the study and was a male of Middle Eastern origin. He was a freshman majoring in science at a four-year university, and lived in a single room on campus. He maintained an overall grade point average of 3.65. He engaged in solitary activities related to his restricted interests (i.e. playing video games and

watching Anime). He reported not having any friends and did not participate in any extracurricular social activities.

Participant Three—Dan was 20 years old at the start of the study and was a male of Euro-American origin. He previously attended a four-year university but dropped out due to personal dissatisfaction related to his social and academic difficulties. Consequently, he moved home with his parents and was attending a community-college studying video game design. His grade point average at the community college was 4.0. He participated in the school's computer science club and tennis, but did not get together with peers outside of these structured activities. Further, he reported feeling unhappy because he had few friends and he discussed that it was very difficult for him to engage in and maintain conversations with peers.

All intervention sessions were conducted in a clinic room at the University Autism Center. Clinic rooms were decorated similar to a living room with chairs, sofas, and pictures on the walls. A small video camera was placed on a tabletop to record sessions. Generalization probes were collected in campus and community settings where no intervention took place, including courtyards, parks, coffee shops, restaurants, and the University Center.

Experimental Design and Procedures

The effectiveness of a targeted intervention to improve empathic communication skills for adults with ASD was evaluated using a multiple baseline across participants design. This design, with each participant serving as their own control, is widely used in the field of autism, where participants with the diagnostic category show considerable heterogeneity (Campbell, 1988; Zhan & Ottenbacher, 2001). Heppner et al. (1999) states that single-subject designs provide a useful means to test the effects of specific therapeutic techniques, and in-depth information can be collected on the use of the intervention technique over time. This design includes a large number of data points gathered in a time series analysis over a period of four months, and three participants meets the standard for the research design (Kratochwill et al., 2010). There is a staggered introduction of the independent variable at different points in time, so that each individual participant provides their own control for purposes of assessing the replication of the effect as well as a comparison to the baseline condition. This phase repetition and effect replication allows the researchers to rule out possible threats to internal validity (Harris & Jenson, 1985; Kratochwill et al., 2010). Baseline sessions were systematically staggered for three, seven, and ten weeks respectively for the three participants. Intervention sessions were conducted once per week for 40 minutes in a clinic room at the University Autism Center. Intervention was implemented at this level due to time constraints of participants, as they were full-time students with limited availability. Follow-up data were also collected with unfamiliar conversation partners in the natural environment one month following intervention to assess for generalization and maintenance of treatment gains. In addition, two-year follow up data were collected for two participants that were available.

Baseline

Prior to the start of intervention, baseline conversation probes were collected for each participant. Each baseline probe consisted of a videotaped, ten-minute conversation with a graduate student clinician or similarly-aged typically-developing peer, in which the conversational partner provided at least four opportunities for the participant to verbally respond with empathic communication skills (see Table 2).

For example, if school was brought up in the conversation, the conversational partner was instructed to provide an opportunity for the participant to use empathic communication skills, such as saying “I am very stressed about a difficult test that I have coming up.” Conversational partners were asked to wait briefly (but not to create an unnatural pause) to allow time for a response from the individual with ASD. These opportunities were provided in order to assess the level in which participant’s would use empathic communication skills when provided with opportunities in the context of a social conversation. No instructions or prompts were provided to the participants during the baseline probes.

Intervention

Intervention sessions were conducted once per week for approximately 40 minutes per session. Each weekly intervention session consisted of approximately 30 minutes of video-feedback, with a visual framework available as a schematic guide (See Figure 1). Additionally, each weekly intervention session ended with a 10-minute typical conversation with novel, un-cued topics in which the participant was instructed to practice their verbal empathic communication skills with the visual framework available for reference. The 10-minute conversation probe was then used for the video-feedback session the following week. During these conversation probes, the conversational partner provided approximately five opportunities (range four to seven depending on the flow of the conversation) that were designed to evoke a verbal empathic response from the participant. Intervention was conducted over a five, nine, and six week period, respectively, for the participants. The visual framework component and video feedback procedures are described below.

Visual Framework—The visual framework consisted of three sequential boxes that were used as steps and a schematic reference to help guide participants in using empathic communication skills during intervention (See Figure 1). Each participant was instructed on how to use the visual framework during the first intervention session, and each step of the framework was described by the clinician. The first box was designed to assist the participants to listen and identify the conversational partner’s comments that prompted an opportunity for an empathic listening statement and question. Participants were instructed to use the first box to assist them in listening to recognize that an appropriate time to express empathy occurred when a peer made a comment that incorporated a positive or negative *emotion* (e.g. “I am disappointed that I got sick over the weekend” or “I am excited about spring break”). The second box cued the participant to use an empathic communication skill, specifically to make an empathic listening statement. They were instructed that an empathic listening statement was a statement that reflected the thoughts and feelings of their conversational partner, and showed understanding and accurate reflection of the person’s emotion. The third box prompted the participant to use another empathic communication

skill and follow-up with a question to further express empathy. All participants were taught that an empathic question was to follow their empathic listening statement, and was a relevant question that regarded their conversational partner's emotional state. For example, if the conversational partner said "I am disappointed that I got sick over the weekend" then the participant was prompted to use the visual framework to recognize that was a comment that required a verbal response of an empathic listening reflection statement (e.g. "That sounds rough" or "I'm sorry to hear you are not feeling well") and then a question (e.g. "Can I do anything to help?" or "Have you been to a doctor?"). The visual framework was reviewed each week during intervention and used as a guide during video-feedback. Additionally, a hard copy of the framework was placed on the table in front of the participants during practice conversations as an optional reference of the empathic communication skills.

Video Feedback—Each week during intervention, the participant received video-feedback from the previous week's practice conversation probe. During the video-feedback portion of each intervention session, the participants were shown clips of opportunities for a verbal empathic response that the clinician provided during the previous week's conversation probe. During video-feedback, the participants were first shown an opportunity in which they used appropriate empathic communication skills in their response. A positive example was shown first so that the participants observed a clip in which they could recognize their ability to use empathic communication skills during social conversation. This step was intended to provide a positive model and to begin with an example that could be verbally reinforced. Next, the participant was shown clips of opportunities in the previous week's conversation in which the participant "needed improvement", and did not use empathic communication skills in their response. For each clip in which the participant did not use empathic communication skills in their response, the participant was instructed to use the visual framework schematic and think of three responses that included an empathic listening statement followed by three possible empathic questions related to the opportunity. For example, if a clip was shown in which the peer made a statement such as "I am really happy that I got an A in my class" and the participant did not respond or did not respond with an empathic listening statement, then the clinician paused the video and the participant brainstormed three possible empathic listening statements (e.g. "Wow, that is impressive", "That sounds exciting", or "That is great to hear your good news") and three empathic questions (e.g. "What class was it in?", "Are you going to celebrate?", or "Did you have to take an exam?") that they could have made. Each video-feedback session ended with another positive clip and verbal praise from the clinician regarding the appropriate use of verbal empathic communication skills from the previous week.

Follow-Up

To assess for maintenance and generalization of treatment gains, follow-up data were collected after the intervention phase. Follow-up data were collected one month after intervention for all participants, and two years after intervention was completed for two of the three participants who were available for data collection. One-month follow-up data were obtained from social conversations that took place in natural settings (e.g. restaurants, parks, etc.) and with novel peers that were unfamiliar to the participant. During the long-

term follow-up probes for the two participants that were available, conversational partners were previous clinicians that provided opportunities that evoked both positive (e.g. happy, excited) and negative (e.g. sad, stressed) emotions but were different opportunities that were presented during baseline and intervention. This was designed to assess the ability of the participants to verbally respond to their conversational partner's emotional state and assess for long-term maintenance of gains and stimulus-response generalization.

Fidelity of Implementation

Intervention was conducted by clinicians who were doctoral students in clinical psychology. All clinicians attended weekly supervision with a doctoral level psychologist or licensed Ph.D. level speech-language pathologist. In addition, undergraduate psychology student observers scored each clinician for fidelity of implementation during 33% of the intervention sessions. Specifically, an observer scored the clinician for correct implementation of the following intervention components: (a) Described the components of the visual schematic to the participant during the first intervention session; (b) Provided examples of the appropriate use of empathic listening statements and questions; (c) Provided video-feedback during the weekly intervention sessions that included at least three video clips of opportunities for empathic listening statements and questions from the previous week's conversation probe; (d) Within these three examples, provided both examples that needed improvement and positive examples in which the participant appropriately expressed empathy; (e) Prompted the participant to produce three examples of empathic listening statements for each opportunity; (f) Prompted the participant to produce three examples of empathic questions for each opportunity; and (g) Provided the visual cue during the conversation probe following the video feedback. Scores of eighty percent or above were considered to be effective implementation of the intervention procedures. All clinicians in the study met fidelity of implementation.

Dependent Measures

This study aimed to assess the effects of an intervention to improve specific empathic communication skills for adults with ASD. As such, the following dependent measures were analyzed: (1) The percentage of the participant's responses that included an empathic listening statement after each opportunity provided by the conversational partner; (2) The percentage of responses that included an empathic question after each opportunity provided by the conversational partner; (3) Supplemental measures of collateral gains in standardized level of empathy as measured by the Empathy Quotient; and (4) Social validation data through a self-report questionnaire relating to the participants' general confidence in their interactions with peers and ability to express empathy. Each data category is defined below:

Empathic Listening Statements—Data were collected on the percentage of opportunities that the participant responded with an appropriate empathic listening statement during each conversational probe. An appropriate empathic statement was defined as a verbal response that indicated that the participant could identify with or understand another's situation or feeling. Thus, correct responses were scored if they repeated or reflected the correct emotion of the peer's emotional state (e.g., a peer said "I am mad because I sprained my ankle over the weekend", and the participant responded with "I'm

sorry, that must have hurt”). Incorrect responses included statements that were unrelated to the conversational partner’s emotional state (e.g., the peer said “My grandmother is in the hospital”, and the participant responded with an unrelated utterances, such as “I don’t like the bottled water they sell in the vending machine”), responses that did not express empathy (the participant responded with “I see”, “I don’t like discussing personal things” or “Oh!”), or no response at all to the conversational partner’s statement. To collect data on this measure, each conversation probe was transcribed for all opportunities made by the conversational partner that elicited an empathic response, as well as the participant’s verbal response to the opportunity (see Table 2). The observer then coded the participant’s response, and recorded a “plus” if the response included an appropriate empathic listening statement and a “minus” if the response did not include an appropriate empathic listening statement. The percentage of opportunities in which the participant responded with an appropriate empathic listening statement was recorded for each conversation probe.

Empathic Questions—Data were also collected on the percentage of opportunities that the participant responded with an appropriate empathic question during each conversation probe. An appropriate empathic question was defined as a response that included an on-topic question that showed interest in the peer’s emotional state immediately following the opportunity (e.g., the peer said “I had such a fun weekend”, and the participant responded with “That sounds great, what did you do?”). Incorrect responses included unrelated comments or questions (e.g., the peer said “I got really sunburned over the weekend”, and the participant responded with “Have you ever been to Paris?”), questions that did not express empathy (e.g., the peer said “I had such a fun spring break”, and the participant responded with “Do you want to hear about my weekend?”) or no response. Similar to the data recording procedure for empathic statements, data for empathic questions were collected through an observer watching each conversation probe and transcribing all opportunities for an empathic response from the conversational partner and the participant’s verbal response to each opportunity. For each transcribed response to an opportunity, the observer coded the participant’s response and recorded a “plus” if the response included an appropriate empathic question and a “minus” if the response did not include an appropriate empathic question. The percentage of opportunities in which the participant responded with an appropriate empathic question was recorded for each conversation probe.

Supplemental Assessment of Empathy—Supplemental data on level of empathy were collected pre- and post-intervention through the Empathy Quotient (EQ). The EQ is a self-report questionnaire used to measure the general level of empathy in an individual (Baron-Cohen & Wheelwright, 2004). The EQ contains 60 items, 40 of which are clinically relevant to empathy (e.g. “I find it easy to put myself in somebody else’s shoes”, “Seeing people cry doesn’t really upset me”) and 20 filler items that are intended to divert the participant from a sole focus on empathy (e.g. “I try to keep up with the current trends and fashions”, “I like to do things at the spur of the moment”). The participant was asked to rate each statement as “Strongly agree”, “Slightly Agree”, “Slightly Disagree” or “Strongly Disagree”. The EQ is scored from zero to 80, with a higher score indicating a higher level of empathy. This measure attempts to assess whether an individual understands others’ feelings

in terms of being able to take their perspective and whether an individual makes an appropriate emotional response to others' emotional states.

Social Validation—Social validity of the intervention was assessed through the participants' confidence in communication and socialization before and after intervention. The following areas were evaluated through a self-report questionnaire: (1) Confidence in peer conversations; (2) Confidence in ability to express empathy with peers; (3) Confidence in ability to ask questions to peers; and (4) Importance of expressing empathy. Participants were directed to rate their confidence level on a 7-point Likert scale, ranging from 1 (Very Insecure) to 7 (Very Confident).

Interobserver Reliability

A secondary observer coded 30% of randomly selected conversation probes using the same operationalized definitions and data coding procedures described above. Percentage agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements, and multiplying by 100 to yield a percentage. An agreement was defined as each observer scoring a clinician's comment as an opportunity that elicited a verbal empathic response, each observer scoring the participant's response to an opportunity as including an empathic statement, and each observer scoring the participant's response to an opportunity as including an empathic question. The percent agreement for number of opportunities eliciting a verbal empathic response provided by the peer was 88% with 12 of 14 points above 80% (range 67–100%). The percent agreement for the number of responses with appropriate verbal empathic statements provided by the participant was 95% with 13 of 14 points above 80% (range 75–100%), and the percent agreement for the number of responses with appropriate verbal empathic questions provided by the participant was 93% with 13 of 14 points above 80% (range 75–100%).

Results

The results indicate that all three participants improved in the targeted communication skills related to verbal expression of empathy. Specifically, all participants increased their ability to use empathic listening statements and empathic questions following the intervention, with data showing maintenance of treatment gains. Results for each dependent measure are described below.

Empathic Listening Statements

The first aim of this study was to assess whether participants would demonstrate improvements in their ability to respond with appropriate empathic listening statements during social conversation with peers. Results illustrate that all three participants increased their empathic listening statements during social conversation. Figure 2 shows the percentage of responses with appropriate empathic listening statements for each participant. During baseline, each participant had difficulty communicating empathic listening statements during social conversation. However, at the start of intervention, all three participants improved in their ability to express verbal empathic listening statements to their peers. Specifically, John responded with an appropriate listening statement of empathy to an

average of 5.6% (range: 0–17%) of opportunities during baseline, and improved to an average of 79% percent (range: 40–100%) following the start of intervention. In addition, he responded to 100% of opportunities with an empathic listening statement during his one-month follow-up, and 100% of opportunities during his two-year follow-up. Peter did not respond with any empathic listening statements during baseline conversational probes. However, he improved to an average of 71% of empathic listening statements (range: 29–100%) during intervention. During his one-month follow-up with a novel peer in the natural environment, he responded with empathic listening statements 50% of the time. Peter was unavailable for a long-term maintenance probe. Dan improved from appropriately responding with a listening statement of empathy an average of 37% (range: 17–57%) of opportunities during baseline conversational probes to an average of 87% (range: 43–100%) during intervention. At one-month follow-up with a new peer in the natural setting, he responded with an empathic listening statement an average of 82% (range: 80–83%) to opportunities. During the long-term follow-up, he maintained his improvements and responded with an empathic listening statement to 50% of opportunities. Additionally, there were no overlapping data points for Peter and John and two overlapping data points for Dan (percentage of non-overlapping data was 89%) on this measure.

Empathic Questions

The second aim of this study was to assess if the intervention would improve the participant's ability to appropriately ask questions to express empathy during social conversation. Results show that all three participants increased their verbal empathic questions during social conversation. Figure 3 shows the percentage of responses with appropriate empathic questions for each participant. During baseline, data illustrate that each participant responded with few empathic questions. However, during intervention, each participant improved in his ability to verbally respond with empathic questions during social conversation. Specifically, during baseline John responded with appropriate empathic questions an average of 24% (range: 0%-40%) to opportunities provided by the conversational partner, and during intervention he improved to an average of 97% (range: 86–100%) of responses with appropriate empathic questions. During follow-up, his empathic questions maintained at 100% one month following intervention, and he expressed empathic questions to 60% of opportunities at his two-year follow-up probe. Peter responded with appropriate empathic questions an average of 12% (range: 0–50%) during baseline conversations, and improved to an average of 82% (range: 43–100%) of responses with empathic questions during intervention. During follow-up with a peer he responded with empathic questions after all (100%) of the opportunities. Similarly, Dan improved from responding to opportunities with an empathic question an average of 33% (range: 17–50%) during baseline to an average of 84% (range: 71–100%) during intervention. During his one-month follow-up with a peer, Dan responded with empathic questions an average of 90% of the time. For the long-term follow-up two years after intervention, Dan responded to 63% of the opportunities with an empathic question. Additionally, there were no overlapping data points for Dan and John and one overlapping data point for Peter (percentage of non-overlapping data was 94%).

Supplemental Assessment of Empathy—In addition to examining specific communication skills related to verbal empathy, we assessed whether more broad changes occurred in general level of empathy by administering the Empathy Quotient pre and post intervention. (EQ; Baron-Cohen & Wheelwright, 2004). Results from the Empathy Quotient indicated that all participants improved in their general level of empathy following intervention (see Table 3). Specifically, on this measure Dan increased from the low range of empathy for typical individuals to the average range of empathy for typical individuals. Likewise, Peter increased from the below average range for individuals with ASD to the above average range for those with ASD. While John remained in the below average range of empathy following intervention, he did demonstrate an increase in his measured Empathy Quotient.

Social Validation—To assess for social validity of the intervention, data were collected on the participant's self-reported confidence in areas related to communication. Results from the social validity measure indicated that all participants reported improvements in confidence in communication and expression of empathy following intervention (see Table 4). Specifically, Peter increased from "somewhat confident" to "confident" in his peer conversations, and improved from "neutral" to "somewhat confident" in his ability to express empathy. Furthermore, John increased from "very insecure" to "neutral" in his confidence in expressing empathy, and improved from "insecure" to "neutral" in his confidence in asking questions to peers. Dan reported in the neutral to somewhat confident range at baseline, and maintained in that range post-intervention.

Discussion

The results of this study suggest that intervention can be effective in increasing verbal empathic communication skills for individuals with ASD. In addition, once individuals with ASD are taught to respond with appropriate verbal empathy, standardized measures suggest that there are improvements in general level of empathy as well as confidence in communication skills. The results of this study have several theoretical implications. First, difficulty with empathic responses during social conversation may relate to challenges with multiple cues. That is, individuals with ASD sometimes respond to fewer cues of a given stimulus or demonstrate overselective attention by responding to an irrelevant cue of a stimulus (Lovaas, Schreibman, Koegel, & Rehm, 1971). In regard to social conversation, there are many cues that occur simultaneously, and a conversational partner must be mindful of various social, linguistic, and pragmatic features that occur concurrently. It may be that attention to the conversational partner's need for an empathic response is challenging, and therefore not demonstrated with this population. This is supported in a study by Koning and Magill-Evans (2001) in which 21 adolescent boys who had Asperger's syndrome, 16 of which claimed to have no friends, were compared to 21 control participants matched for age, IQ, and socioeconomic status. Participants were shown clips of people interacting and asked to describe how they felt. The results showed that the adolescents with ASD were able to infer the affective state of others in circumstances wherein fewer cues are required, such as labeling still photographs or matching contextual and facial expressions. However, when simultaneous presentations of facial, voice, body, and situational cues were presented, there

were significant differences noted between the groups. More specifically, while both groups made use of the facial cues, the adolescents with ASD showed far less use of other cues such as body gestures, body movements, situational cues, and voice cues. This suggests that difficulties with the ability to process multiple social cues may interfere with their ability to understand emotion and express empathy. Because intervention has resulted in the improvement in responding to multiple cues in other areas (Burke & Cerniglia, 1990), it may be possible that this intervention improved the participants' abilities to respond to the multiple cues that occur during social conversation and thus improved their verbal empathic responses.

Other theories make distinctions between different forms of empathy when discussing the cause of the challenges for individuals with ASD in expressing empathy. It has been proposed that the impairment of empathy in individuals with ASD has both a cognitive and affective component (Baron-Cohen & Wheelwright, 2004). Cognitive empathy includes areas related to displaying empathic understanding, such as those discussed in theory of mind or switching attention to take another's perspective. Furthermore, cognitive theories of autism suggest that pragmatic deficits in ASD are a consequence of an impaired theory of mind (Baron-Cohen, Leslie, & Frith, 1985). Meanwhile, affective empathy signifies an observer's emotional response to the affective state of another and can manifest as displaying empathic interest. It has been proposed that these theories could be integrated, given that cognitive and affective systems may interact in an inseparable manner to form the deficits in empathy that are characteristic of ASD (Hermelin & O'Connor, 1985; Baron-Cohen, 1988). This study examined both areas during the intervention, and found that the participants could improve in areas related to both what has been labeled as "cognitive" and "affective" areas. Results suggest that at least some minimal level of empathy may exist for individuals with ASD. Future research may want to incorporate standardized theory of mind tests to examine if improving the verbal expression of empathy results in collateral gains in theory of mind. It would be beneficial to examine assessments such as the Sally Anne Test or Strange Stories Test and to measure for possible changes in different levels of theory of mind (Happé, 1994).

Related, some have hypothesized that executive dysfunction may be the reason that individuals with ASD sometimes have difficulty with initiating and ending appropriate gestures of affection (Andrews, Attwood, & Sofronoff, 2013). It is interesting that many of the participants responded to their conversational partner's bids for empathy with a response related to their own interests. It may be that practicing empathic responses not only provided opportunities for generating novel responses in place of responses that were comfortable, but also allowed them to learn how to recognize more complex emotions and how to use these in the context of social conversation. Future research on specific areas of the brain that may improve with this type of intervention may be interesting to examine.

Another area worth consideration is the fact that many individuals with ASD are socially isolated by peers or self-isolate themselves throughout the lifespan. The lack of social interaction with peers may interfere with their learning of appropriate social responses. It was interesting to note that many of the participants did verbally respond to the conversational partner's opportunities for an empathic response, but their responses were not

appropriate. Individuals with ASD often use limited functions of language (Koegel, Carter, & Koegel, 2003; Koegel & Koegel, 2013) and learning how to use empathic communication skills may require both observation and practice in addition to using a wide variety of linguistic functions. Without adequate peer social interaction, individuals with ASD may not receive adequate opportunities for learning and practicing verbal communication of empathy.

There are several limitations to the current study. First, this study exclusively targeted specific communication skills in the context of social conversation. While the majority of young adult interactions involve conversation, we did not include areas that also may be weak, such as understanding facial cues or body language. It may be that additional intervention to seamlessly respond to visual and auditory cues is necessary. More research in this area may be fruitful. Next, all of our participants were of average cognitive functioning. Many research studies suggest that the extent of symptom severity and level of communication (Mehzabin & Stokes, 2011) plays a role in relationships among individuals with ASD. The participants in the current study all had fewer symptoms and did not have impairments in syntax. It would be interesting for future research to explore the success of the current intervention with individuals with language and cognitive deficits.

Additionally, the participants attended weekly sessions. More frequent sessions may have been more beneficial, however weekly sessions may have provided opportunities for the participants to practice the targeted area between sessions. Further studies in this regard may be interesting.

Finally, this was a preliminary study that focused on whether it was possible to teach the specific communication skills of expressing verbal empathic listening statements and questions during social conversation. Aside from the generalization conversation probes with peers and natural environments, we did not assess whether improvements occurred in regard to enhanced friendships and other interpersonal relationships. However, we did interview two of the three participants with whom we still had contact. Both reported that they had developed meaningful friendships and were on track in their career path, and felt that their improvements in social conversation were a contributing factor to their personal and professional success. While it is unclear whether these improvements in social interaction and academics/employment were a direct consequence of the intervention, both had not received any subsequent social intervention following participation in this study. More research assessing how widespread and helpful this particular intervention was in collateral areas should be helpful.

However, an important issue in regard to empathy relates to the extent to which generalization of newly-learned verbal empathic responses occur. Many studies have shown that while some generalization may be noted with interventions implemented through social skills groups and/or computer based programs, there is often a lack of generalization (Golan & Baron-Cohen, 2006). The present study used real life social situations with similarly-aged peers and generalization was evidenced to novel conversational partners in new settings. Additionally, the two-year follow probes with two participants suggest that the treatment gains maintained long-term. Both participants maintained their improvements in using

empathic statements and empathic questions in social conversation after two years following completion of the intervention. It may be that incorporating the teaching and practice in contexts that closely resembles real life situations is important.

The present study suggests that intervention can be effective in improving empathic communication skills for adults with ASD. Results indicate that this also appears to lead to enhanced overall empathy and increased confidence in communication with others. This study shows promise for behavioral techniques to improve an important area of social communication, and is an important direction for future research.

Acknowledgments

The authors would like to express their appreciation to the participants in this study. In addition we would like to thank Ross Candelore and Ashley Anderson for their assistance with the data collection and analysis. This research was supported by Autism Speaks. Robert and Lynn Koegel are also partners in the private company, Koegel Autism Consultants. For additional information on this study please contact Lynn Koegel at lynnk@education.ucsb.edu.

References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed., text rev.. Washington, DC: Author; 2000.
- American Psychiatric Association. Diagnostic and Statistical manual of mental disorders. 5th ed.. Arlington, VA: American Psychiatric Publishing; 2013.
- Andrews L, Attwood T, Sofronoff K. Increasing the appropriate demonstration of affectionate behavior, in children with Asperger syndrome, high functioning autism, and PDD-NOS: A randomized controlled trial. *Research in autism spectrum disorders*. 2013; 7(12):1568–1578.
- Baron-Cohen S, Wheelwright S. The empathy quotient: an investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Journal of autism and developmental disorders*. 2004; 34(2):163–175. [PubMed: 15162935]
- Baron-Cohen S. Social and pragmatic deficits in autism: Cognitive or affective? *Journal of Autism and Developmental Disorders*. 1988; 18(3):379–402. [PubMed: 3049519]
- Baron-Cohen S, Leslie AM, Frith U. Does the autistic child have a ‘theory of mind’? *Cognition*. 1985; 21:37–46. [PubMed: 2934210]
- Baron-Cohen S, Wheelwright S, Skinner R, Martin J, Clubley E. The autism-spectrum quotient (AQ): Evidence from asperger syndrome/high-functioning autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders*. 2001; 31(1):5–17. [PubMed: 11439754]
- Burke JC, Cerniglia L. Stimulus complexity and autistic children's responsivity: Assessing and training a pivotal behavior. *Journal of Autism and Developmental Disorders*. 1990; 20:233–253. [PubMed: 2347822]
- Byers ES, Nichols S, Voyer SD. Challenging stereotypes: sexual functioning of single adults with high functioning autism spectrum disorder. *Journal of autism and developmental disorders*. 2013; 43(11):2617–2627. [PubMed: 23526036]
- Campbell P. Using a Single-Subject Research Design to Evaluate the Effectiveness of Treatment. *American Journal of Occupational Therapy*. 1988; 42(11):732–738. [PubMed: 3218666]
- Chevallier C, Kohls G, Troiani V, Brodtkin ES, Schultz RT. The social motivation theory of autism. *Trends in Cognitive Sciences*. 2012; 16(4):231–239. [PubMed: 22425667]
- Golan O, Baron-Cohen S. Systemizing empathy: Teaching adults with Asperger syndrome or high-functioning autism to recognize complex emotions using interactive multimedia. *Development and psychopathology*. 2006; 18(02):591–617. [PubMed: 16600069]
- Gruen RJ, Mendelsohn G. Emotional responses to affective displays in others: The distinction between empathy and sympathy. *Journal of Personality and Social Psychology*. 1986; 51(3):609–614.

- Happé F. An advanced test of theory of mind: Understanding of story characters' thoughts and feelings by able autistic, mentally handicapped, and normal children and adults. *Journal of Autism and Developmental Disorders*. 1994; 24(2):129–154. [PubMed: 8040158]
- Harris FN, Jenson WR. Comparisons of multiple-baseline across persons designs and AB designs with replication: Issues and confusions. *Behavioral Assessment*. 1985; 7(2):121–127.
- Hendricks DR, Wehman P. Transition from school to adulthood for youth with autism spectrum disorders: Review and recommendations. *Focus on Autism and Other Developmental Disabilities*. 2009; 24(2):77–88.
- Hellemans H, Colson K, Verbraeken C, Vermerien R, Deboutte D. Sexual behavior in high-functioning male adolescents and young adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*. 2007; 37(2):260–269. [PubMed: 16868848]
- Heppner, P.; Kivlighan, D.; Wampold, B. *Research Design in Counseling*. 2nd edition. California: Wadsworth Publishing; 1999.
- Hermelin, B.; O'Connor, N. Logico-affective states and non-verbal language. In: Schopler, E.; Mesibov, GB., editors. *Communication problems in autism*. New York, NY: Plenum Press; 1985.
- Hill, CE. *Helping skills: Facilitating, exploration, insight, and action*. 3rd ed.. Washington: American Psychological Association; 2009.
- Hobson, RP. Beyond cognition: A theory of autism. In: Dawson, G., editor. *Autism: new perspectives on diagnosis, nature and treatment*. New York, NY: Guilford; 1989. p. 22–48.
- Huitt, W. *Empathetic listening*. Educational Psychology Interactive. Valdosta, GA: Valdosta State University; 2009. Retrieved [date], from <http://www.edpsycinteractive.org/topics/process/listen.html>
- Hurlburt RT, Happe F, Frith U. Sampling the form of inner experience in three adults with Asperger Syndrome. *Psychological Medicine*. 1994; 24(2):385–395. [PubMed: 8084934]
- Jennes-Coussens M, Magill-Evans J, Koning C. The quality of life of young men with Asperger syndrome: A brief report. *Autism*. 2006; 10(4):403–403. [PubMed: 16908482]
- Koegel LK, Carter CM, Koegel RL. Teaching Children with Autism Self Initiations as a Pivotal Response. *Topics in Language Disorders*. 2003; 23(4):134–145.
- Koegel, RL.; Koegel, LK. *The PRT Pocket Guide: Pivotal Response Treatment for Autism Spectrum Disorders*. PO Box 10624, Baltimore, MD 21285: Brookes Publishing Company; 2013.
- Kratochwill, TR.; Hitchcock, J.; Horner, RH.; Levin, JR.; Odom, SL.; Rindskopf, DM.; Shadish, WR. *Single-case designs technical documentation*. 2010. 84 Retrieved from What Works Clearinghouse website: http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf
- Koning C, Magill-Evans J. Social and language skills in adolescent boys with Asperger syndrome. *Autism*. 2001; 5(1):23–36. [PubMed: 11708387]
- Laugeson EA, Frankel F, Mogil C, Dillon AR. Parent-assisted social skills training to improve friendships in teens with autism spectrum disorders. *Journal of autism and developmental disorders*. 2009; 39(4):596–606. [PubMed: 19015968]
- Locke J, Ishijima EH, Kasari C, London N. Loneliness, friendship quality and the social networks of adolescents with high- functioning autism in an inclusive school setting. *Journal of Research in Special Educational Needs*. 2010; 10(2):74–81.
- Locke J, Kasari C, Rotherman-Fuller E, Kretzmann M, Jacobs J. Social network changes over the school year among elementary school-aged children with and without an autism spectrum disorder. *School Mental Health*. 2013; 5(1):38–47.
- Lovaas OI, Schreibman L, Koegel R, Rehm R. Selective responding by autistic children to multiple sensory input. *Journal of Abnormal Psychology*. 1971; 77:211. [PubMed: 5556929]
- Mehzabin P, Stokes MA. Self-assessed sexuality in young adults with high functioning autism. *Research in autism spectrum disorders*. 2011; 5(1):614–621.
- Neufeld, J.; Levrini, V.; Barry, A.; Chakrabarti, B. *Empathy modulates the reward value of mimicry: Implications for imitation based interventions for autism*; Poster presented at the International Meeting for Autism Research; Atlanta, Georgia. 2014 May.
- Nugent W, Halvorson H. Testing the Effects of Active Listening. *Research on Social Work Practice*. 1995; 5(2):152–175.

- Roger, C. A way of being. Boston: Houghton Mifflin; 1980.
- Salem, R. Empathic Listening. In: Burgess, Burgess, editor. Beyond Intractability. University of Colorado, Boulder: Conflict Information Consortium; 2003.
- Seltzer MM, Shattuck P, Abbeduto L, Greenberg JS. Trajectory of development in adolescents and adults with autism. *Mental retardation and developmental disabilities research reviews*. 2004; 10(4):234–247. [PubMed: 15666341]
- Shipley, E.; Bolourian, Y.; Bates, S.; Laugeson, EA. Empathy as a predictor of treatment outcome in young adults with ASD following the UCLA PEERS intervention; Poster presented at the International Meeting for Autism Research; Atlanta, Georgia. 2014 May.
- Sperry LA, Mesibov GB. Perceptions of social challenges of adults with autism spectrum disorder. *Autism*. 2005; 9(4):362–376. [PubMed: 16155054]
- Yirmiya N, Sigman M, Kasari C, Mundy P. Empathy and Cognition in High-Functioning Children with Autism. *Child Development*. 1992; 63:150–160. [PubMed: 1551323]
- Zager D, Alpern CS. College-based inclusion programming for transition-age students with autism. *Focus on Autism and Other Developmental Disabilities*. 2010; 25(3):151–157.
- Zhan S, Ottenbacher K. Single subject research designs for disability research. *Disability and Rehabilitation*. 2001; 23(1):1–8. [PubMed: 11213316]

Figure 1.
Visual framework used in intervention procedures

Figure 2.
Percentage of responses with appropriate empathetic listening statements

Figure 3.
Percentage of responses with appropriate empathetic questions

Table 1

Participant Characteristics

	John	Peter	Dan
Age	25:10	18:9	19:9
Sex	Male	Male	Male
Level of Education	Four-year University	Four-year University	Community College
Ethnicity	Caucasian	Middle Eastern	Caucasian
Diagnosis	ASD	ASD	ASD
Autism Quotient	43	29	22

Table 2

Examples of opportunities for empathic responses

Positive Empathic Opportunities	Negative Empathic Opportunities
"I'm so happy that I got an A on my last exam"	"I've been feeling sick all week"
"I'm really excited for my friend to come visit this weekend"	"I'm stressed with exams coming up"
"I'm proud of myself for running a half marathon"	"I'm frustrated because my roommate is being very messy"
"I can't wait to go on vacation to Hawaii this summer"	"I'm disappointed because my friend has to move away next month"

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Table 3

Empathy Quotient Scores Pre and Post Intervention

	John		Peter		Dan	
	Pre	Post	Pre	Post	Pre	Post
Empathy Quotient (EQ)	11	14	17	29	28	38

Table 4

Satisfaction in Socialization

	Baseline				Post-Intervention			
	Confidence in peer conversations	Confidence in expressing empathy	Confidence in asking questions to peers	Importance of expressing empathy	Confidence in peer conversations	Confidence in expressing empathy	Confidence in asking questions to peers	Importance of expressing empathy
John	2 Insecure	1 Very insecure	2 Insecure	3 Somewhat unimportant	3 Somewhat insecure	4 Neutral	4 Neutral	4 Neutral
Peter	5 Somewhat confident	4 Neutral	5 Somewhat confident	4 Neutral	6 Confident	5 Somewhat confident	5 Somewhat confident	6 Important
Dan	4 Neutral	5 Somewhat confident	5 Somewhat confident	7 Very important	4 Neutral	5 Somewhat confident	4 Neutral	7 Very important