CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Descriptive Assessment of Social Skills Across Conversational Contexts

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By

Britany Beauchesne

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The thesis of Britany Beauchesne is approved:

Tara Fahmie, Ph.D.	Date
Gary Katz, Ph.D.	Date
Sara Berzenski, Ph.D.	Date
Stephanie Hood, Ph.D., Chair	Date

California State University, Northridge

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Abstract

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Effective and appropriate social skills are critical to an individual's quality of life and likability. While there are many efficacious interventions available, current literature is lacking normative data and of social validity of specific social skills. In this study, we collected normative data of social skills exhibited by 16 neuro-typical individuals across three conversational contexts: one-on-one with a friend, one-on-one with someone unfamiliar, and in a group of four. The aims of the study were to examine how conversational context changes an individual's social behavior. Descriptive statistics were used to examine the participant's use of a variety of social skills in the conversational settings.

CHAPTER 1
INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder in which persistent social deficits and problematic behaviors are present and cause significant impairments in many areas of the individual's life (American Psychiatric Association, 2013). Social impairments are usually noticed first by caregivers, such as delays in the development of the child's language abilities, or lack of interest in social situations or interactions (APA, 2013). As the individual ages, the social impairments persist and cause significant dysfunction throughout all areas of life (Howlin, 2000), including social skill deficits that interfere with the ability to make and maintain friendships, and gain and sustain employment.

Sterling, Dawson, Estes, and Greenson (2007) demonstrated that individuals with autism who had higher cognitive and verbal intelligence assessment scores on the WAIS-III (Wechsler Adult Intelligence Scale- Third Edition), and less impacted deficits in social and communicative skills, but yet deficits that would still qualify for an ASD diagnosis (Autism Diagnostic Observation Schedule), were more likely to report depressive symptoms. Thus, high functioning individuals with fewer reported impairments from the ADOS may be more aware of their differences from their peers, and therefore, report more depressive symptoms. In addition, Hedley and Young (2006) make evident the correlation between an increased awareness and perception of being different from others and increased reports of depression symptoms. Individuals, who are high functioning, highly capable, and aware of their differences, experience more loneliness than neuro-typical children in regard to friendships (Bauminger & Kasari, 2000). Thus, there is a correlation between deficits in social skills and the quality of one's personal life. However, social skill deficits do not only affect one's personal life. Social skill deficits can be a barrier to formal educational training and advancement in the workforce. Cedarland, Hagberg, Billstedt, Gillberg,

and Gillberg (2008) reported that adults living with ASD had poorer life outcomes than their counterparts with Asperger Syndrome, including less formal education and a lower full-scale intelligence quotient, engagement in fewer occupational activities, and fewer individuals living independently. Thus, social skills are not only critical to an individual's ability to fit in with their peers, but to be happy and have positive life outcomes.

Conversing with peers is an important social skill for individuals in many contexts, and according to Odom and McConnell (1992), how effectively and appropriately individuals perform in these contexts is what determines one's social competence. Individuals with a better social competency are likely to have more positive and successful interactions, whereas individuals with minimal social competency have fewer interactions with positive outcomes. Turkstra, Ciccia and Seaton (2003) conducted a descriptive assessment of conversation skills and demonstrated that a successful conversation requires a person to have an appropriate skill set that includes vocal-verbal behaviors (e.g., answering questions), non-vocal-verbal behaviors (e.g., eye contact, gaze, and nodding) and taking turns in both the speaker and listener role. One purpose of conversing with someone is to exchange information with another person and to leave a positive impression of yourself on that conversation partner. An individual's impression or the degree of likeability is influenced by the degree of social mistakes within a conversation. For example, Place and Becker (1991) demonstrated that a person is more likable when pragmatic competence is displayed by having 91 10-year-old girls listen to audiotaped scenarios of pragmatic skills being used appropriately or inappropriately, and rated how much they would like to play with the girl in the audio recording. Subjects rated the girl in the audiotape as more likeable when the skills were used appropriately. The inability to use language appropriately and in the correct context, as well as

exchange information appropriately or manage impressions can be detrimental to a person's likability.

Social skills interventions have been developed to teach specific social skills with the goals of teaching individuals to communicate their wants and needs (Radley, Dart, Moore, Battaglia & LaBrot, 2017), to have successful interactions with peers and adults (Laugeson & Frankel, 2010), to have successful conversations (Laugeson & Frankel, 2010), and to make and sustain valuable friendships (Laugeson, Frankel, Mogil & Dillon, 2009). The Program for the Education and Enrichment of Relational Skills (PEERS; Laugeson & Frankel 2010), is a social skills program in which participants have weekly 90-min sessions working on one skill per week for 14 weeks (Laugeson & Frankel, 2010). The PEERS curriculum target skills include choosing appropriate friends, building conversational skills, and how to have successful get-togethers with peers (Laugeson & Frankel, 2010). The authors demonstrated that the PEERS program significantly improved social skills and social engagement with others (Gantman et al., 2012; Laugeson et al., 2015) and that these skills maintained at a 16-week follow-up (Laugeson et al., 2015). Other forms of social skills interventions include: (a) peer mediated behavioral skills training (Beaulieu, Hanley & Santiago, 2013), (b) video modeling (Charlop & Milstein, 1989), (c) video self-modeling (Boudreau & Harvey, 2013), (d) interventions in an individual's school (Kasari et al., 2016), (e) self-management (Koegel, Park, & Koegel, 2014), (f) and behavioral skills training (Hood, Luczynski, & Mitteer, 2017; Leaf et al., 2016; Nuernberger et al., 2013). To teach individuals to be competent and preferred conversation partners, these interventions not only need to help individuals learn social skills effectively, but also to teach skills so that they also occur in other non-teaching contexts. Also, important when teaching social skills, in particular, is the extent of social acceptability of the skills selected, the teaching procedures used,

and the obtained outcomes (Wolf, 1978). Goldstein (2002) reviewed communication interventions and noted that only three of the 60 articles reviewed included measures of social validity.

Although there is strong empirical support for behavior analytic interventions to teach social skills (e.g., see Reichow & Volkmar, 2010 for a review), as Capps, Kehres, and Sigman (1998) state, many interventions do not use normative descriptive data as a strong rationale for mastery criterion, but rather anecdotal observations. It is important to understand how typically-developing individuals interact with one another in order to understand the conversational deficits of individuals with social and communicative difficulties. Despite the importance of understanding typical interactions, to our knowledge, researchers have not fully studied normative conversational skills across different conversational contexts. This poses a problem as clinicians are currently teaching individuals with social deficits how to interact with others, but the interventions are devoid of criteria-based on normative data to reflect the social validity of the social skills. The goal of social skills interventions is not only to improve social skills, but to improve the skills to the level that their typically developing peers exhibit. These interventions should result in achieving a mastery of social skills to an indistinguishable degree from their peers. This achievement may increase the likelihood that when an individual with a disability interacts with others, they will have a positive interaction and thus increase the likelihood of subsequent interactions. To achieve this goal, social skills interventions should utilize normative data to develop interventions that clinicians use to promote socially significant behavior change. Not only is it important to understand typical interactions, but it is also necessary to understand how typically-developing individuals' social skills change across contexts. For example, it is necessary to know how social behaviors are different while talking with a friend than while speaking with a group. Conversations

happen in various contexts every day, therefore it is important to help individuals with deficits be able to adapt their skills as necessary.

Turkstra, Ciccia, and Seaton (2003) had typically-developing adolescents engage in three-min conversations to observe the frequency of vocal-verbal and non-vocal verbal behaviors throughout the conversations. They observed high rates of non-vocal behaviors including: nodding, keeping facial expressions as displaying neutral or positive emotions, and back-channel responses (positive feedback). In addition, they observed high rates of vocal-verbal behavior including: asking questions to the conversation partner, answering questions, and making a statement related to the topic of conversation. In contrast, Turksta and colleagues (2003) observed low rates of negative emotions, turning away from the conversation partner, repeating the conversation partner's statement, asking for clarification, unrelated statements, and no response. In addition, Turkstra (2001) compared typically developing individuals' conversational behavior in three different groups: one-on-one with a same sex partner, one-on-one with an opposite sex partner, and with a professional Speech Language Pathologist. Individuals engaged in high levels of eye contact, turning toward the other person, nodding and shrugging, facial expressions, and contingent responses. Individuals who had conversation partners of the opposite sex or a professional partner tended to ask less direct questions to their partner, make less eye contact, but exhibit more nonverbal behavior (e.g., smiling, nodding).

The purpose of the present study is to assess social skills of neurotypical adults across three conversational contexts: one-on-one with a known conversation partner, one-on-one with an unknown conversation partner, and in a group conversation. Similar to Turkstra, Ciccia and Seaton (2003) and Turkstra (2001), occurrence of necessary conversational skills will be

observed for each context. In addition, we evaluated individual conversational skills across three different contexts.

CHAPTER 2

METHODOLOGY

Participants and Setting

Sixteen participants, ages 19 to 35, were recruited for the study through flyers placed around the California State University at Northridge campus. Five of the participants identified as cisgender female, ten identified as cisgender male, and one preferred not to disclose gender identity. Five participants listed their race as mixed, one as Asian, three as Caucasian, and seven as Latinx or Hispanic. All participants were typically developing and had no presenting social deficits as identified by their score on the Social Responsiveness Scale, 2nd edition (SRS-2) and as they indicated on the demographic form on the diagnosis question. Participants were recruited in quads; an individual signed up for the study with three other friends. In return for their time commitment to the study, we gave twenty-dollar Amazon gift cards to each participant immediately following the completion of conversations on the day they participated.

Observations of the participants took place in a university-based clinic. All observations took place in a room with cameras set up to record interactions. Six cameras were used: (a) two Kimire 1920x1080 Full HD Digital Camcorders, (b) two Zoom Q8 Handy Video Recorders, (c) one Panasonic HC-V770 50x i.zoom Full HD video camera, and (d) one Panasonic 20x Optical Zoom Full HD video camera. Each camera was on a tripod and placed at the end of the table the sat participants around. Additionally, each participant wore a Shure WH20XLR Dynamic Headset Microphone which plugged into a Tascam DR-60D mkII Linear PCM Recorder for DSLR to record the audio of the conversation. The microphones were worn around the back of the participants head, with the ends over the top of their ears and the microphone positioned by the corner of their mouth. The experimenters pressed record on the audio and video recorders

before beginning the instructions, and the experimenters stopped the recording after the participants completed the post-conversation form and prior to the next set of participants entering the room. We used the video recordings to collect data on the dependent measures.

Procedure

The study was run on two different days, with a group of 8 (two quads) being observed per day. Each one of the days took approximately three hours to complete. Following informed consent, participants completed a SRS-2, and a participant information form (see Appendix A) to identify their topics of interest and noninterest.

The order of the conversations was randomized and balanced. The researcher split the participants into pairs. The flow chart in Appendix B lists the order of the conversations that took place, as well as the three-digit code representing each participant included in each of the conversations. However, prior to conversations the researcher delivered standard instructions. Prior to conversations with friends, a researcher asked the participants to converse with their conversation partner as they typically would outside of this study, but to refrain from planning any upcoming events. We asked the participants to avoid upcoming events in attempt to keep conversation topics similar across conversational partners; participants having conversations with unfamiliar individuals would likely not be planning upcoming events. Prior to conversations with unknown individuals, the researcher informed the participants that they are to have a 10-min conversation with someone new, and that they should interact with each other as they typically would when meeting someone for the first time outside of this study. The conversations were not structured and they were free to engage in any topic of conversation. Following each 10-min conversation, the researcher re-entered the room asked the participants to independently

complete the post-conversation form (see appendix C). Then, we gave the participants a two-min break.

Following completion of all the one-on-one conversations, participants had two separate group conversations, with each group containing four individuals. First, they conversed with a group of all friends. The researcher told the participants that they are to have a 10-min conversation with their friends, and to just converse as they typically would outside of the study. Then they conversed with one friend, and two unknown people. Once the participants were in the rooms, the researcher told participants that they may know some people in the group better than others, but to try to have a conversation as you typically would outside of this study. After the final conversation, the participants were brought back into one room together. Each participant then completed a form regarding their demographic information including date of birth, ethnicity, education level, individual and family income, diagnoses, assigned sex at birth, gender identity, and sexual orientation (See Appendix D).

Response Definition and Measurement System

We measured the proportion of the conversation in the speaker and listener roles. We scored the duration of speaking and listening and divided each by the total conversation time and the quotient was converted to a percentage. We measured gaze and orientation in both speaker and listener roles and summarized these measures as a percentage. For instance, we scored the duration of gaze while speaking divided by the individual's total speaking time and the quotient was converted to a percentage. Regardless of the speaker or listener role we measured subtle-motor distracting non-vocal behavior and gross-motor distracting non-vocal behavior as durations and divided by the total conversation time and the quotient was converted to a percentage. Each definition of the dependent measures is found in Table 1.

In the speaking role, we measured: (a) on topic comments, (b) changes in topic, (c) unintelligible responses, (d) repeating utterances, (e) completing utterances, (f) asking questions of confirmation or clarification, (g) sharing private information, and (h) teasing or criticizing. We measured each occurrence and divided by the number of times in the speaker role, and converted the quotient to a percentage. In addition, we measured conversing about non-preferred topics of conversation. That is, we recorded each time that conversation partner A followed a non-preferred topic and divided by each time conversation partner B initiated a non-preferred topic and converted the quotient to a percentage. Answering questions was measured as the number of questions answered divided by the number of questions asked and the quotient was converted to a percentage. Answering own questions was measured by the number of times a participant provided an answer to their own question divided by the number of questions the participant asked, and the quotient was converted to a percentage. Additionally, in the listener role, we also measured negative feedback, positive feedback, and listener's uninterest and summarized these measures as a percentage. Interruptions were measured as the occurrence divided by the number of times in the listener role and converted the quotient to a percentage, as well as a rate.

We measured giving compliments in two ways: (a) the number of compliments given divided by the number of times the person spoke, and (b) the number of compliments given divided by the number of times the conversation partner brought up either their appearance, possessions, or a performance. Accepting compliments was measured by the number of compliments accepted divided by the number of compliments received and the quotient was converted to a percentage. We measured the speaker's response to indices of uninterest. That is, we recorded each change in conversation following an index of uninterest and divided by the total number of times the other conversation partner engaged in indices of uninterest and the

quotient was converted to a percentage. Last, we measured appropriate gestures as the number of appropriate gestures divided by the total number of gestures and the quotient was converted to a percentage.

Regardless of the speaker or listener role we measured subtle-motor distracting non-vocal behavior and gross-motor distracting non-vocal behavior as durations and divided by the total conversation time and the quotient was converted to a percentage. Participants also rated their conversation partners on the post-conversation form regarding whether they would have another conversation with the person, whether they would be friends with the person, and an overall rating of the person's social skills throughout the conversation. Participants used a Likert scale for the ratings, with 1 denoting they would not want to be friends with the person, would not have another conversation with the person, and very poor conversation skills. A rating of 5 denoted they would be friends with the person, have another conversation with the person, and very strong social skills.

All data collectors were graduate and undergraduate psychology and behavior analysis students. Observers collected second-by second data from recorded video via Excel spread sheets and could pause and rewind while scoring. Each observer scored a specific set of measures for each video to prevent fatigue. Observers recorded the time at which the dependent measure occurred for frequency measures, and the onset and offset for duration measures. Each observer was trained to collect data from videos not used in the current study until they scored all dependent measures at 80% or above on at least two conversations compared to the primary data collector. During training in the case of a disagreement, observers discussed the disagreement until an agreement was reached and scored an additional video. A second data collector independently scored the dependent measures for 30% of conversations across all conditions.

This data was used only for reliability and was not entered in the data set. An agreement was scored for the frequency measures if the secondary data collector scored the same response within 2-s of the primary data collector's recording (Mudford, Taylor, & Martin, 2009). An agreement was scored for duration measures if the secondary data collector recorded the same response within a ± 2-s window as the primary data collector. To calculate the interobserver agreement (IOA), the number of agreements was divided by the number of agreements plus disagreements, multiplied by 100 to convert to a percentage. IOA data is listed in table 2.

CHAPTER 3

RESULTS

Results were examined using descriptive statistics. Much like Hughes et al. (1998), a normative range was used to determine the appropriate amount of each skill in conversations. This normative range consisted of one standard deviation above the group mean, and one standard deviation below the group mean (Hughes et al., 1998). Means and standard deviations for each dependent measure in each type of conversation are shown in Table 3. We wanted to examine gender differences among the dependent measures, but the sample size was not large enough. Preliminary results are listed in Table 4.

Figure 1 depicts the proportion of the conversation in a speaker and listener role, gaze orientation in the speaker and listener role, and body orientation in the speaker and listener role. On average, conversation partners in both the friend and novel one-on-one conversations spent approximately 50% of the conversation time in the speaker role (friend: $\bar{x}$ = 49.79, SD = 14.45; novel: $\bar{x}$ = 51.81, SD = 13.98), and 50% of the time in the listener role (friend: $\bar{x}$ = 50.54; SD = 14.04; novel: $\bar{x}$= 48.26, SD = 13.26). In the friend group conversations, participants on average spoke approximately 27% of the time ($\bar{x}$ = 26.82, SD = 12.39) and listened approximately 71% of the time ($\bar{x}$ = 70.96, SD = 16.08). In mixed group conversations, participants spoke approximately 34% of the time ($\bar{x}$ = 34.84, SD = 15.36) and listened approximately 66% of the time ($\bar{x}$ = 66.2, SD = 15.35).

Participants gazed at their conversation partner less frequently while speaking than they did while listening across all conversation types. Gazing was observed the least frequently while speaking in the novel conversations at approximately 58% of the time while speaking ($\bar{x}$ = 57.63, SD = 17.53). In contrast, gazing was observed the most frequently while in the listener role of

the conversation during the novel conversations with the participant gazing approximately 88% ($\bar{x}$ = 88.23, SD = 11.17) of the time in the listener role. While in the speaker role of the conversation, participants were observed gazing at their conversation partners the most frequently in the friend group conversations and mixed group conversations. Conversely, while in the listener role of the conversation, participants in the friend group conversations gazed the least frequently at conversation partners, with approximately 81% ($\bar{x}$ = 81.08, SD = 10.2). There was a high level of variability in the amount of gaze made in both roles of the conversation, leading to a large normative range.

In both the speaker and listener roles of the conversation, participants spent most of the conversation time directly facing their conversation partner. Regardless of speaking or listening, participants on average spent 94-99% of the conversation time oriented toward the conversation partners in all conversation types (see Table 3). For both the speaker and listener role, the normative ranges were much larger for the one-on-one conversations. Normative ranges for the group conversations were small.

Figure 2 displays the proportion of on topic comments made throughout the conversations and how often a participant changed the topic. Figure 2 also depicts how often a participant repeated or completed a conversation partner's utterance, interrupted their conversation partner, teased or criticized someone, or spoke about private information. Additionally, figure 2 depicts the proportion of the conversation that a participant engaged in indices of uninterest, and corresponding changes in the topic of conversation from the conversation partner.

Conversing on topic occurred at high rates across all conversation types. Participants continued to speak about the current topic for approximately 94-97% of the speaking time.

Standard deviations were all approximately 2-4%, resulting in a very narrow normative range. Talking about non-preferred topics occurred infrequently. When non-preferred topics were initiated, participants spoke about the topic at high rates in the novel and friend one-on-one conversations, and friend group conversations (see table 3). High standard deviations indicate that the normative range for this behavior is large. Non-preferred topics were not initiated in mixed group conversations. Additionally, changing the topic of conversation was a low frequency behavior among all conversation types. Participants only changed the topic in approximately 4-7% of the speaking opportunities (see Table 3). On average, participants initiated a new topic of conversation less than once per min. Engaging in indices of uninterest while listening did not occur often in any type of conversation. Additionally, when uninterest was displayed, it was rarely responded to by changing the topic (see Table 3). Uninterest was not responded to at all in the friend one-on-one, mixed group, or friend group conversations. Listener uninterest was shown one time in a novel one-on-one conversation, and it was the speaker immediately changed the topic of conversation.

Participants in all conversation types repeated their conversation partner's utterances less than 15% of the speaking opportunities. Conversely, although completing someone's utterance rarely occurred, participants most frequently completed a conversation partner's utterance in the novel one-on-one conversations and the least frequently in the mixed group conversations (see Table 3). Additionally, participants interrupted their conversation partner approximately 25% of the time they were in the listener role in the one-on-one and mixed group conversations (see Table 3). Participants interrupted their conversation partner on average approximately 33% in friend group conversations ($\bar{x}$ = 32.5, SD = 9.36).

Teasing and criticizing was a low frequency behavior across all conversation types. It most frequently occurred in friend group conversations. There were no instances of teasing and criticizing in the mixed group conversations. Similarly, sharing private information occurred infrequently among the conversations, but higher amounts were observed in the novel one-on-one conversations at 1.6% of speaking opportunities on average, and in the friend one-on-one conversations at 1.1% of speaking opportunities on average (see Table 3).

Figure 3 displays how often participants asked questions, including asking for confirmation and clarification, and how often they answered a question, including answering their own question. The highest average rates of asking questions were seen in conversations that were one-on-one with novel individuals (see Table 3). The highest average amount of answering questions occurred in the friend one-on-one conversations and the novel one-on-one conversations. On average, fewer questions were answered in the group conversations. Answering their own question, or following up with information about themselves, occurred most frequently in novel on-on-one and friend group conversations. The normative range of asking questions is large, meaning there was variability in question asking and answering.

We examined the rate of question asking in each conversation (excluding asking for clarification and confirmation). Participants across all conversation types asked approximately one question per min. Standard deviations are large in comparison to the mean, creating a large normative range.

Figure 4 displays the proportion of the listener role spent engaging in positive and negative feedback, the proportion of the conversation time spent displaying distracting behavior, and frequency of appropriate gestures. The highest average rates of positive feedback occurred in the novel and friend one-on-one conversations; participants gave positive feedback

approximately 27% of the time they were in the listener role of the conversation (see Table 3). The normative range for amount of positive feedback given ranged from approximately 5-12% in all conversation types. No participant engaged in negative feedback in any conversation.

Subtle-motor distracting non-vocal behavior occurred at higher average rates in conversations that involved friends. In the friend group conversations, these behaviors occurred approximately 41% of the conversation time ($\bar{x}$ = 41.41, SD = 26.17). In the one-on-one friend conversations ($\bar{x}$ = 29.54, SD = 30.49) and the mixed group conversations ($\bar{x}$ = 29.82, SD = 31.06), which includes one friend of participant, these behaviors occurred approximately 30% of the conversation time. There were fewer instances of subtle-motor distracting behavior in one-on-one conversations with novel individuals ($\bar{x}$ = 24.78, SD= 23.16). The high variability of these behaviors observed in these conversations created a large normative range. Friend one-on-one, friend group, and mixed group conversations had approximately equal amounts of gross-motor distracting non-vocal behavior; it occurred approximately 20% of the total conversation time (see Table 3). Just as with the subtle-motor distracting non-vocal behavior, there was high variability in these conversations, creating a large normative range of this behavior. The use of appropriate gestures was also examined throughout the conversations. Making gestures while speaking (i.e. talking with your hands, pointing, etc.) was a high frequency behavior across all conversations. All gestures made during the conversations by all participants were considered appropriate.

Figure 5 depicts the frequency of giving compliments regarding a conversation partner's appearance, performance, or possession. In addition, we summarized the proportion of accepting compliments. Giving compliments regarding a conversation partner's appearance, performance, and possessions occurred infrequently during the total speaking opportunities. Conversely, when

a participant referenced their appearance, performance, or possession, a conversation partner gave a compliment more frequently (see Table 3). Taken together, participants in the novel one-on-one and mixed group conversations gave 1 compliment per conversation across all conversation contexts. Participants in the friend one-on-one conversations and friend group conversations gave less than 1 compliment per conversation (see Table 3).

When receiving a compliment, a participant accepted the compliment by smiling approximately 27% of the time in the novel conversations ($\bar{x}$ = 26.85, SD = 42.45), 67% of the time on average in the friend conversations ($\bar{x}$ = 66.67, SD = 51.64), and 60% of the time in the mixed group conversations ($\bar{x}$ = 60, SD = 41.83). No compliments were accepted by smiling in the friend group conversations. Participants accepted a compliment by saying "thank you" approximately 6% of the time in the novel conversations ($\bar{x}$ = 5.56, SD = 23.57), 17% of the time in the friend conversations ($\bar{x}$ = 16.67, SD = 40.82), and 21% of the time in the mixed group conversations ($\bar{x}$ = 21.43, SD = 39.34). No compliments were accepted by saying "thank you" in the friend group conversations. Pleased acceptance of a compliment occurred 21% of the time in the mixed group conversations ($\bar{x}$ = 21.43, SD = 39.34), and 14% of the time in novel conversations ($\bar{x}$ = 13.89, SD = 26.97). There were no instances of pleased acceptance of a compliment in the friend and friend group conversations. An embarrassed acceptance of a compliment only occurred in the mixed group conversations. Tempered acceptance of a compliment occurred approximately 10% of the time in the novel conversations ($\bar{x}$ = 10.19, SD = 26.28), 33% of the time in the friend conversations ($\bar{x}$ = 33.33, SD = 51.64). There were no instances of tempered acceptance of a compliment in the mixed group and friend group conversations. No participants gave a reciprocal compliment across all conversation context.

We examined the correlations between participant ratings and the dependent measures (see Table 5). There was a positive correlation between the ratings of having another conversation again with the conversation partner and answering your own question ($r= 0.25$, $p = 0.01$). Additionally, these ratings for having another conversation were negatively correlated with listener eye gaze ($r = -0.23$, $p = 0.03$) and responding to uninterest ($r = -0.87$, $p = 0$). Ratings from the scale regarding being friends with the conversation partner were positively correlated with giving a compliment on performance when the conversation partner brings it up ($r = 0.23$, $p = 0.03$), and negatively correlated with listener eye gaze ($r = -0.21$, $p = 0.04$) and responding to uninterest ($r = -0.84$, $p = 0$). Ratings of overall social skill performance during the conversations were positively correlated with asking questions ($r = 0.239$, $p= 0.02$), asking for confirmation ($r = 0.3$, $p= 0.003$), changing the topic ($r = 0.24$, $p = 0.02$), and teasing and criticizing ($r = 0.21$, $p = 0.04$). Social skill performance ratings were negatively correlated with completing utterances ($r = -0.22$, $p = 0.03$) and giving a compliment on appearance ($r = -0.24$, $p = 0.02$).

CHAPTER 4

DISCUSSION

We observed a comprehensive set of conversational social skills to attempt to understand how neurotypical individuals converse, and how conversational context may affect their social behavior. Throughout the conversations, we found that participants shared the conversations equally with each other and spoke on topic. Participants spent most of the conversation time directly facing their conversation partners, as well as frequently looking at the face of the other person. During the conversation, participants frequently asked and answered questions. Also, while listening participants engaged in positive feedback at a high frequency. Conversely, we identified behaviors that rarely occurred in conversations such as sharing private information, teasing and criticizing, and giving and accepting compliments.

Collectively, Turkstra, Ciccia and Seaton (2003), Beaulieu, Hanley and Santiago (2014) and the results of the present study support that conversation partners share the conversation time equally. Equal opportunities for each conversation partner to speak allows each person to contribute to the conversation, including engaging in topics that they enjoy, as well as having an opportunity to change a topic they may not want to speak about. Said differently, this may allow conversation partners to maximize the reinforcing value while minimizing the aversiveness of various topics discussed in a conversation. In addition, this may increase the rapport established between conversation partners as it allows for each conversation partner to get to know each other and hear each other's contributions, rather than one person solely directing the conversation.

Participants directly faced their conversation partner, they also frequently gazed toward the conversation partner. Gazing at a conversation partner's face provides someone with multiple

non-vocal cues (or discriminative stimuli) to aid in the conversation. In the current study, as well as Turkstra, Ciccia and Seaton (2003), participants spent less time gazing at their conversation partner while in the speaker role than in the listener role. Riby et al. (2012) demonstrated that looking at someone's face decreases one's performance on moderately difficult tasks (i.e., math) for individuals with ASD, Williams Syndrome, and of typical development. Looking at someone's face and the multiple non-vocal cues present may compete with covert (thinking) and overt (speaking) behavior of the speaker. Thus, to increase one's fluency while in the speaker role, they may divert their gaze away from the listener. Future research should continue to evaluate the effects of making eye contact during difficult tasks such as, acquisition tasks (e.g., learning to answer wh- questions) and complex storytelling that requires one to engage in covert behavior to remember the story while telling it to someone else.

Similar to the finding of Turkstra, Ciccia and Seaton (2003), individuals rarely spoke off topic. Instead, individuals sustained conversation on a topic throughout the majority of each conversation. Participants conversing on a topic of conversation ranged from 92-97% of the time in the speaker role. Said differently, the conversation partners avoided changing the topic of conversation to something unrelated to the current conversation. In a study by Capps, Kehres, and Sigman (1998), children with autism made relevant comments to the topic of conversation less frequently than neurotypical children. In order for a conversation to have a successful outcome, responses relevant to the current topic should be made.

Throughout all conversations, participants frequently asked and answered questions. We observed higher rates of asking questions in conversations that involved novel conversation partners. When you are meeting someone for the first time, you are trying to get to know them. To facilitate this, individuals will ask their conversation partners more questions. Questions were

answered most often in the one-on-one conversations. The lower amount of questions answered in group conversations is perhaps due to uncertainty of who should answer a question that has been asked to the group as whole, rather than one specific person. Conversely, participants answered their own questions, or followed up with information about themselves after their partner has responded to the question, more often in friend-group conversations, and the least often in one-on-one friend conversations.

Huang et al (2017) demonstrated that people were rated as more likable by their conversation partners when they asked questions. In the current study, we assessed the frequency of question asking (excluding asking for clarification and asking for confirmation) in the conversations. Participants were asking an average of 1 question per min of conversation. Anecdotally, participants asked questions to keep a conversation going and to convey interest in the conversation partner and conversation topic. Asking about 1 question per min indicates that it is important to ask questions, but it may also be important to understand the upper limits as to not increase the aversiveness of receiving multiple questions which could seem like an interview or interrogation. The conversation partner should have time to answer the question thoroughly, before another is asked. We found correlations between a participant's overall social skills ratings and asking questions, and with asking for confirmation. Future research should evaluate the potential differential effects on likability (preference) with functionally different types of questions. That is, evaluating the differential effects of asking follow-up questions when the conversation partner initiated a topic of conversation in comparison to initiating a topic of conversation by asking a question.

While in the listener role of the conversation, participants engaged in high rates of positive feedback. Positive feedback behaviors typically included behaviors such as smiling,

nodding, and vocal expressions such as “yeah” and “mhm.” High rates of these behaviors indicate that while in the listener role of the conversation, participants were still actively engaged in the conversation. Previous literature by Turkstra, Ciccia and Seaton (2003) supports this finding in that they also frequently observed nodding, shrugging, and positive facial expressions. These behaviors may function as reinforcement for the speaker or as a cue (discriminative stimulus) that the listener is interested in the topic being discussed (mutually reinforcing conversation). Conversely, the lack of positive feedback from the listener may signal to the speaker that a change of topic may be necessary (likely functioning as a S-delta).

While it is important to know what behaviors individuals frequently engage in while conversing, it is equally important to understand what behaviors do not occur as often. Engaging in high amounts of these behaviors may lead to unsuccessful conversations, and thus hinder a person’s ability to not only have future conversations, but to make and sustain friendships.

Turkstra, Ciccia and Seaton (2003) demonstrated that participants rarely repeated a conversation partner’s utterance. During this current study, repeating utterances was observed more often than in the previous literature, although the behavior was still considered to occur infrequently. The highest average amount of repeating utterances were seen in both types of group conversations. Repeating utterances were less common in the one-on-one conversations, with the frequency in the novel conversations about half of what was seen in the group conversations. Perhaps this is due to the less predictable nature of whose turn it is to speak in the context of a group conversation. Although repeating utterances is a low frequency behavior among neurotypical individuals in conversations, Capps, Kehres, and Sigman (1998) found that children with autism repeated their conversation partner’s utterances more frequently than neurotypical children. Repeating the conversation partner’s utterance frequently could be an

attempt to keep the conversation going if a person does not have a fluent verbal repertoire (e.g., tacts and interverbals).

In addition, completing a conversation partner's utterance did not occur often. This behavior was observed in the majority of conversations, but it occurred infrequently within these conversations. Turkstra, Ciccia, and Seaton (2003) also found that completing utterances was a low frequency behavior. In this study, we found that the highest average frequencies of completing a conversation partner's utterance occurred in the novel one-on-one conversations.

Interruptions, or attempting to take over the speaker role while the conversation partner is speaking, were observed at approximately equal rates in the one-on-one conversations and mixed group conversations. Participants interrupted their conversation partner at slightly higher average rates in the friend group conversations. In order to compare to Beaulieu, Hanley and Santiago (2014), we measured interruptions as a rate. On average, results of the current study were similar only for the mixed group conversations. The one-on-one and friend group conversations had higher observed amounts of interruptions. While interruptions were a frequent behavior, participants anecdotally did not seem annoyed or upset and did not engage in negative feedback over being interrupted. When participants were interrupted, they would either stop speaking and listen to the conversation partner, or they would continue speaking over the interruption. The simultaneous speaking in the latter did not last long, as someone would give up speaking and listen to the conversation partner. Future research should explore the conditions that lead to interruptions functioning as aversive stimuli and thus decreasing the quality of a conversation. In the current study, high rates of interruption did not appear to negatively impact the conversations, as indicated by the post-conversation forms filled out by conversation partners.

Participants were, for the most part, very pleasant to their conversation partners during the conversations, and avoided saying things that were inappropriate in the conversational setting. Negative feedback was not observed in any conversation by any participant while they were in the listener role. Turkstra, Ciccia and Seaton (2003) also found that negative emotions and negative facial expressions were rare. There were, however, five observed instances of teasing and criticizing. In four instances of teasing, participants teased the friend they were conversing with or made reference to a friend outside of the current conversation. Last, one participant directed their teasing statement toward them self. Anecdotally it appeared none of these instances were meant to be malicious, but rather teasing as a joke. When a participant was teased by one of the conversation partners, it appeared no one was offended. The participant being teased laughed and continued the conversation. Of the three conversations where teasing was displayed in novel conversations, all instances were about well-known people (i.e., Lebron James, actors in a movie).

While asking questions was a frequent behavior, specifically asking for clarification or confirmation of something the conversation partner said, occurred infrequently. Turkstra, Ciccia and Seaton (2003) also reported this result. In the current study, most conversations had zero, or close to zero, average amounts of asking for clarification. There were a few observations of much higher rates of asking for clarification that were outside of the 1 standard deviation normative range. In the conversations where this occurred, it was because a participant was having a difficult time following what the conversation partner was saying. Other instances of asking for clarification were due to one of the conversation partners having a thick accent, and therefore, the participant needed to ask that person to clarify what they were saying more often. Future research should examine this more closely, conversing with individuals from different

cultures or with individuals who are conversing with someone in their second language may increase the rate of asking for clarification but the effect on the conversation partner is unknown.

Participants did not share private information about themselves often. Private information that was shared included discussing sexual orientation, religion, health issues, student loans, and revealing the approximate cost of their apartment. In all instances of sharing private information it resulted in positive feedback or continuing the conversation (both likely forms of reinforcement). There were no instances of a conversation partner reacting with negative feedback or quickly changing the topic of conversation. Similarly, participants infrequently discussed non-preferred topics, instead they conversed on mutual topics of interest. When a non-preferred topic was initiated, most participants continued to speak about the topic without negative feedback.

We observed high rates of subtle and gross-motor distracting non-vocal behavior. Subtle motor distracting non-vocal behavior consisted of behaviors such as playing with pencils, playing with the cord from the microphones, and rubbing hands or fingers. Gross-motor non-vocal behavior was also observed, which consisted of behaviors such as spinning in chair, fixing clothing, adjusting their chair, and touching their face or head. There were high levels of variability among these types of behaviors; some participants engaged in distracting behavior for a majority of the conversation time, while others engaged in minimal amounts. It is currently unknown the function of these non-vocal behaviors for the individual. It may be likely for most individuals these behaviors are maintained by automatic negative (anxiety reducing) or positive (proprioceptive stimulation) reinforcement as these behaviors did not seem to contact social reinforcers. It is unknown how high frequencies of distracting non-vocal behavior may affect the conversation partner's satisfaction with the interaction, as higher rates of these behaviors did not

correlate with significant changes in satisfaction ratings from conversation partners.

There were very few instances of a participant engaging in indices of uninterest during a conversation, and therefore few observed instances of responding to uninterest. An index of uninterest was only observed in four conversations of the total 40. Indications of uninterest included doodling on paper, staring away from the conversation partner, and checking phones. A participant responded to only one of the four observed indices of uninterest. In this conversation, one participant appeared uninterested by looking away from the conversation partner for a long period of time without giving any feedback. The conversation partner immediately discriminated the index of uninterest and attempted to reengage the other partner by changing the topic of conversation. The attempt was successful, and the two partners conversed about a different topic. Critical to this success involves discriminating a conversation partner's index of uninterest, and subsequently changing the topic of conversation. These two skills can increase the potential reinforcing value of the conversation for both individuals. Conversely, if a person has deficits with discriminating indices of uninterest as well as initiating a new topic of conversation, the conversation may end with detrimental effects.

Giving compliments was a low frequency behavior across conversation types. Participants gave more compliments in conversations that involved novel individuals, and none to very few in conversations that involved friends. Participants rarely gave a compliment, but when a conversation partner brought up either their appearance, a performance, or a possession, compliments were given much more frequently. Participants most frequently accepted a compliment with a smile, or by saying "thank you".

Conversational skills outside of the normative range did not predict lower social ratings from conversation partners. There were multiple participants whose conversational skills were

outside of the normative range across multiple skills and yet conversation partners rated their interaction high in satisfaction. This may be due to the rating scale not being sensitive to detect changes in satisfaction. Also, participants were only included in the study if they did not have a social skill deficit identified in the SRS-2. Thus, it is unknown if individual's conversational skills were further from the mean if changes in satisfaction would have been observed. Future research could evaluate the convergent validity between verbal reports on ratings of satisfaction and subsequent interactions between conversation partners. Also, future research should evaluate if there are particular skills that are critical to changes in likability ratings, or if it is a cumulative effect of multiple behaviors outside of the normative range that lead to a decrease in likability.

The demand characteristics inherent in the present study may influence the occurrence of some conversational skills. The video and audio equipment, and purpose of the study described in the consent process as wanting to observe social skills being used in conversations in order to collect data to more effectively help individuals with social deficits, may have increased participant reactivity to the arrangement. Although, Wiemann (1981) found that after 1 min, the reactivity to be minimal. Future research should continue to evaluate conversational skills of neurotypical individuals under conditions that more closely approximate typical interactions.

It is important to understand the nuances of conversational skills. Understanding what may adversely affect the reinforcing value of a conversation is of critical importance to helping individuals with social skill deficits. For instance, what behaviors may cause a conversation partner to become uninterested in having additional conversations or develop a friendship. Individuals with ASD with a core deficit in social skills often report difficulty making friends (Bauminger & Kasari, 2000). Making friends requires multiple successful interactions. A thorough understanding of the individual and cumulative effects of various conversational skills

on likability (preference) will likely lead to more socially valid interventions.

Future research should continue collecting normative data on a large variety of social skills used in different types of conversational contexts. Other demographics also should be considered, including older and younger participants, as well as individuals from other cultures. Given the high number of social skills interventions for children, it will be important to gather normative data of social skills in younger children. We wanted to evaluate cultural differences among social behaviors in the current study, but unfortunately, we did not have a large enough sample size. For example, although there was only one Asian participant, we saw the potential difference of this participant having the lowest rate of asking questions, as well as answering questions the least often. The Asian participant also engaged in much less subtle motor distracting non-vocal behavior but spent the longest amount of time engaging in gross motor distracting non-vocal behavior. Another potential difference is the three Caucasian participants on average spent less time speaking than the other participants. Future research should focus specifically on observing cultural differences among conversational behaviors. The more information obtained from normative studies, the better our confidence will be that we are teaching individuals with social deficits in ways that will most effectively improve their skills and obtain their goals.

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Bauminger, N., & Kasari, C. (2000). Loneliness and friendship in high-functioning children with autism. *Child Development, 71(2)*, 447-456. doi:10.1111/1467-8624.00156.

Beaulieu, L., Hanley, G. P., & Santiago, J. L. (2013). Improving the conversational skills of a college student with peer-mediated behavioral skills training. *The Analysis of Verbal Behavior, 30(1)*, 48–53. http://doi.org/10.1007/s40616-013-0001-8.

Boudreau, J., & Harvey, M. T. (2013). Increasing recreational initiations for children who have ASD using video self modeling. *Education & Treatment of Children, 36(1)*, 49-60. doi:10.1353/etc.2013.0006.

Capps, L., Kehres, J., & Sigman, M. (1998). Conversational abilities among children with autism and children with developmental delays. *Autism, 2(4)*, 325-344. doi: 10.1177/1362361398024002.

Cederlund, M., Hagberg, B., Billstedt, E., Gillberg, I. C., & Gillberg, C. (2008). Asperger syndrome and autism: A comparative longitudinal follow-up study more than 5 years after original diagnosis. *Journal of Autism and Developmental Disorders, 38(1)*, 72–85. doi:10.1007/s10803-007-0364-6.

Charlop, M. H., & Milstein, J. P. (1989). Teaching autistic children conversational speech using video modeling. *Journal of Applied Behavior Analysis, 22(3)*, 275-285. doi:10.1901/jaba.1989.22-275.

Gantman, A., Kapp, S. K., Orenski, K., & Laugeson, E. A. (2012). Social skills training for young adults with high-functioning autism spectrum disorders: A randomized controlled

pilot study. *Journal of Autism and Developmental Disorders, 42,* 1094-1103.https://doi:org/10.1007/s10803-011-1350-6.

Goldstein, H. (2002). Communication intervention for children with autism: A review of treatment efficacy. *Journal of Autism and Developmental Disorders, 32,* 373-396. doi:0162-3257/02/10000-0373/0

Hedley, D., & Young, R. (2006). Social comparison processes and depressive symptoms in children and adolescents with Asperger syndrome. *Autism, 10*(2), 139-153. doi:10.1177/1362361306062020.

Hood, S. A., Luczynski, K. C., & Mitteer, D. R. (2017). Toward meaningful outcomes in teaching conversation and greeting skills with individuals with autism spectrum disorder. *Journal of Applied Behavior Analysis, 50(3),* 459-486. doi:10.1002/jaba.388

Huang, K., Yeomans, M., Brooks, A. W., Minson, J., & Gino, F. (2017). It doesn't hurt to ask: question-asking increases liking. *Journal of Personality and Social Psychology*. Advance online publication. http://dx.doi.org/10.1037/pspi0000097

Hughes, C., Lorden, S. W., Scott S. V., Hwang, B., Derer, K.R., Rodi, M.S., Pitkin, S.E., & Godshall, J.C. (1998). Identification and validation of critical conversational social skills. *Journal of Applied Behavior Analysis, 31(3),* 431-446. doi:10.1901/jaba.1998.31-431

Howlin, P. (2000). Outcome in adult life for more able individuals with autism or Asperger syndrome. *Autism, 4(1),* 63-83. doi:10.1177/1362361300004001005

Kasari, C., Dean, M., Kretzmann, M., Shih, W., Orlich, F., Whitney, R., & ... King, B. (2016). Children with autism spectrum disorder and social skills groups at school: A randomized trial comparing intervention approach and peer composition. *Journal of Child Psychology and Psychiatry, 57(2),* 171-179. doi:10.1111/jcpp.12460.

Koegel, L. K., Park, M. N., & Koegel, R. L. (2014). Using self-management to improve the reciprocal social conversation of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 44(5),* 1055-1063. doi:10.1007/s10803-013-1956-y

Laugeson, E. A., & Frankel, F. (2010). Social skills for teenagers with developmental and autism spectrum disorders: The PEERS Treatment Manual. New York: Routledge.

Laugeson, E. A., Frankel, F., Mogil, C., & Dillon, A. R. (2009). Parent-assisted social skills training to improve friendships in teens with autism spectrum disorders. Journal Of Autism And Developmental Disorders, 39(4), 596-606. doi:10.1007/s10803-008-0664-5

Laugeson, E. A., Gantman, A., Kapp, S. K., Orenski, K., & Ellingsen, R. (2015). A randomized controlled trial to improve social skills in young adults with autism spectrum disorder: The UCLA PEERS® program. *Journal Of Autism And Developmental Disorders*, *45*(12), 3978-3989. doi:10.1007/s10803-015-2504-8.

Leaf, J. B., Leaf, J. A., Milne, C., Taubman, M., Oppenheim-Leaf, M., Torres, N., & ... Yoder, P. (2017). An evaluation of a behaviorally based social skills group for individuals diagnosed with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 47(2),* 243-259. doi:10.1007/s10803-016-2949-4

Mudford, O. C., Taylor, S. A., & Martin, T. (2009). Continuous recording and interobserver agreement algorithms reported in the Journal of Applied Behavior Analysis (1995-2005). *Journal of Applied Behavior Analysis*, *42*, 165–169. https://doi.org/10.1901/jaba.2009.42-165

Nuernberger, J. E., Ringdahl, J. E., Vargo, K. K., Crumpecker, A. C., & Gunnarsson, K. F. (2013). Using a behavioral skills training package to teach conversation skills to young

adults with autism spectrum disorders. *Research in Autism Spectrum Disorders, 7(2)*, 411-417. doi:10.1016/j.rasd.2012.09.004

Odom, S. L. & McConnell, S. R. (1992). Improving Social Competence: An Applied Behavior Analysis Perspective. *Journal of Applied Behavior Analysis, 25*: 239–244. doi:10.1901/jaba.1992.25-239

Place, K. S., & Becker, J. A. (1991). The influence of pragmatic competence on the likeability of grade-school children. *Discourse Processes, 14(2)*, 227–241. http://dx.doi.org/10.1080/01638539109544783.

Radley, K. C., Dart, E. H., Moore, J. W., Battaglia, A. A., & LaBrot, Z. C. (2017). Promoting accurate variability of social skills in children with autism spectrum disorder. *Behavior Modification, 41(1)*, 84-112. doi:10.1177/0145445516655428

Reichow, B., & Volkmar, F. R. (2010). Social skills interventions for individuals with autism: Evaluation for evidence-based practices within a best evidence synthesis framework. *Journal of Autism and Developmental Disorders*, *40*(2), 149-166. doi:10.1007/s10803-009-0842-0

Riby, D. M., Doherty-Sneddon, G. and Whittle, L. (2012), Face-to-face interference in typical and atypical development. *Developmental Science, 15*: 281-291. doi:10.1111/j.1467-7687.2011.01125.x

Sterling, L., Dawson, G., Estes, A., & Greenson, J. (2008). Characteristics associated with presence of depressive symptoms in adults with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 38*, 1011–1018. https://doi.org/10.1007/s10803-007-0477-y

Turkstra, L. S. (2001). Partner effects in adolescent conversations. *Journal of Communication Disorders. 34(1-2),* 151-162. doi:10.1016/S0021-9924(00)00046-0.

Turkstra, L., Ciccia, A., & Seaton, C. (2003). Interactive behaviors in adolescent conversation dyads. *Language, Speech, and Hearing Services in Schools, 34,* 117–127. doi:0161–1461/03/3402–0117

Wiemann, J. M. (1981). Effects of laboratory videotaping procedures on selected conversation behaviors. *Human Communication Research, 7,* 302–311.

Weiner, J.S. (2005). Peer-mediated conversational repair in students with moderate and severe disabilities. *Research and Practice for Persons with Severe Disabilities, 30(1),* 26-37. doi:10.2511/rpsd.30.1.26

Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11,* 203-214. doi:10.1901/jaba.1978.11-203

Appendix A

Participant Information

Name:_____ Age: _____

E-mail Address:_____

Phone Number:_____

Who are the three friends you signed up for the study with? How long have you known each friend?

1. _____
2. _____
3. _____

Conversation Preferences

Topics of Interest

1. _____
2. _____
3. _____

Topics of Non-interest

1. _____
2. _____
3. _____

Appendix B
Flow Chart[1]

Research Procedure Overview

Day 1

Consent and Pre-Assessments	Consent →	SRS-2 →	Topics of Interest	
↓				
Conversation 1: Novel	113:121	114:122	115:123	116:124
↓				
Conversation 2: Friend	113:114	115:116	121:122	123:124
↓				
Conversation 3: Novel	113:122	114:121	115:124	116:123
↓				
Conversation 4: Friend	113:115	114:116	122:124	123:121
↓				
Conversation 5: Friend Group	113:114:115:116		121:122:123:124	
↓				
Conversation 6: Mixed Group	113:114:123:124		121:122:115:116	
↓				
Final Comments and Gift Cards				

Day 2

Consent and Pre-Assessments	Consent →	SRS-2 →	Topics of Interest	
↓				
Conversation 1: Novel	129:135	130:136	132:134	131:133
↓				
Conversation 2: Friend	129:131	130:132	134:136	133:135
↓				
Conversation 3: Novel	129:136	130:135	134:131	132:133
↓				
Conversation 4: Friend	129:132	130:131	134:135	136:133
↓				
Conversation 5: Friend Group	129:130:131:132		133:134:135:136	
↓				
Conversation 6: Mixed Group	129:130:133:134		131:132:135:136	
↓				
Final Comments and Gift Cards				

[1] Each participant is represented by a three-digit code. For each of the conversations, the three-digit codes associated with the participants involved are listed.

Appendix C

Post Conversation Form (One-on-one Conversations)

Name of person(s) you had a conversation with:

_____

How long have you known this person(s)?

_____

_____

Did you have anything in common with this person(s)? YES NO

Explain why or why not.

_____

_____

_____

_____

_____

_____

_____

How likely is it that you would have another conversation with this person(s)?:

1	2	3	4	5
I would not want to have a conversation again with this person		I am neutral about having a conversation again with this person		I would definitely have a conversation again with this person

How likely is it that you would be friends with this person(s)?:

1	2	3	4	5
I would not want to be Friends with this person		I am neutral about being friends with this person		I would definitely be friends with this person

How would you rate your conversation partner's overall social skills during the conversation?:

1	2	3	4	5
Very Poor				Very Strong

Post Conversation Form - Group Conversations

Conversation partners:

- _____ :
- _____ :
- _____ :

How long have you known these people?

- ___: _____
- ___: _____
- ___: _____

Did you have anything in common with this people? Please explain why or why not.

- ___:_____
  _____
  _____
- ___:_____
  _____
  _____
- ___:_____
  _____
  _____

How likely is it that you would have another conversation with ______?:

1	2	3	4	5
I would not want to have a conversation again with this person		I am neutral about having a conversation again with this person		I would definitely have a conversation again with this person

How likely is it that you would have another conversation with ______?:

1	2	3	4	5
I would not want to have a conversation again with this person		I am neutral about having a conversation again with this person		I would definitely have a conversation again with this person

How likely is it that you would have another conversation with ______?:

1	2	3	4	5
I would not want to have a conversation again with this person		I am neutral about having a conversation again with this person		I would definitely have a conversation again with this person

How likely is it that you would be friends with _____?:

1	2	3	4	5
I would not want to be Friends with this person		I am neutral about being friends with this person		I would definitely be friends with this person

How likely is it that you would be friends with _____?:

1	2	3	4	5
I would not want to be Friends with this person		I am neutral about being friends with this person		I would definitely be friends with this person

How likely is it that you would be friends with _____?:

1	2	3	4	5
I would not want to be Friends with this person		I am neutral about being friends with this person		I would definitely be friends with this person

How would you rate _____’s overall social skills during the conversation?:

1 2 3 4 5

Very Poor Very Strong

How would you rate _____’s overall social skills during the conversation?:

1 2 3 4 5

Very Poor Very Strong

How would you rate _____’s overall social skills during the conversation?:

1 2 3 4 5

Very Poor Very Strong

Appendix D

DEMOGRAPHIC INFORMATION

Please answer all of the items below. The information you provide will allow us to better identify who we are studying. All information provided will remain anonymous and confidential.

---

1. **Date of Birth:** ___/____/_____

2. **Ethnicity:** (check all that apply)
   - ☐ Caucasian
   - ☐ Latino/Hispanic
   - ☐ African American
   - ☐ Asian
   - ☐ Native American
   - ☐ Middle-Eastern
   - ☐ Other (specify): _____

3. **Highest Level of School Completed?**
   - ☐ Some High School
   - ☐ Freshman
   - ☐ Sophomore
   - ☐ Junior
   - ☐ Senior
   - ☐ Master's Degree

4. **Assigned Sex at Birth:** What sex were you assigned at birth, on your original birth certificate?
   - ☐ Male
   - ☐ Female

5. **Family of Origin Income**
   - ☐ Less than $20,000
   - ☐ $20,000 to $34,999
   - ☐ $35,000 to $49,999
   - ☐ $50,000 to $74,999
   - ☐ $75,000 to $99,999
   - ☐ Over $100,000

6. **Current Individual Income**
   - ☐ Less than $20,000
   - ☐ $20,000 to $34,999
   - ☐ $35,000 to $49,999
   - ☐ $50,000 to $74,999
   - ☐ $75,000 to $99,999
   - ☐ Over $100,000

7. **Diagnosis:** (check all that apply)
   - ☐ No Diagnosis
   - ☐ Autism
   - ☐ Asperger's Disorder
   - ☐ ADHD
   - ☐ Depression
   - ☐ Anxiety
   - ☐ Social Anxiety Disorder
   - ☐ Other (specify): _____

8. **Current Gender Identity:** What is your current gender identity? (check all that apply)
   - ☐ Cisgender Male- a person whose gender identity aligns with those typically associated with the sex assigned to him at birth
   - ☐ Cisgender Female- a person whose gender identity aligns with those typically associated with the sex assigned to her at birth
   - ☐ Androgynous- a person who identifies/presents as neither distinguishably masculine nor feminine
   - ☐ Gender-fluid- a person who does not identify with a single fixed gender; of or relating to a person having or expressing a fluid or unfixed gender identity
   - ☐ Transgender- a person whose gender identity and/or expression is different from cultural expectations based on the sex they were assigned at birth
   - ☐ Different Identity (please state):_____

Appendix D (continued)

9. **Sexual Orientation:** Do you think of yourself as (check all that apply):
   - ☐ Asexual- a person without a sexual attraction or desire for other people
   - ☐ Gay- a person who is emotionally, romantically or sexually attracted to members of the same gender
   - ☐ Bisexual- a person emotionally, romantically, or sexually attracted to more than one sex, gender, or gender identity though not necessarily simultaneously, in the same way or to the same degree
   - ☐ Pansexual- a person with the potential for emotional, romantic, or sexual attraction to people of any gender though not necessarily simultaneously, in the same way or to the same degree
   - ☐ Heterosexual- a person sexually attracted to people of the opposite sex

Table 1
Definition of Dependent Measures

Dependent Measure	Definition
Percentage speaking	The time spent in the speaker role divided by the total time of the conversation
Percentage listening	Time in the listener role divided by total conversation time
Speaker gaze	Looking directly at the face of the listener while speaking (Hood, Luczynski & Mitteer, 2017; Nuernebrger et al., 2013)
Listener gaze	Looking directly at the face of the speaker while listening (Hood, Luczynski & Mitteer, 2017; Nuernberger et al., 2013)
Speaker orientation	Speaker's face and body is rotated towards the listener. A measure of the angle of a participant's shoulders towards the conversation partner, using the following codes: a) directly facing the conversation partner, b) indirectly facing the conversation partner (less than a 90 degree angle), c) a right angle to the conversation partner (90 degrees), d) more than a right angle (more than 90 degrees, less than 120 degrees), e) participant almost has their back to the conversation partner's torso (more than 120 degrees, less than 180 degrees), f) participant has their back to the conversation partner's torso (180 degrees), g) any body orientation more than 180 degrees (Remland, Jones & Brinkman, 1995). Codes are mutually exclusive- only one code can be applied during a duration. During group conversations, orientation can be measured between the participant and any of the other three conversation partners (the participant can be facing any one of the other conversation partners to be considered appropriately oriented), or towards the center of the table the group is seated at (the central point of the group).
Listener orientation	Listener's face and body is rotated facing towards the speaker. A measure of the angle of a participant's shoulders towards the conversation partner, using the following codes: a) directly facing the conversation partner, b) indirectly facing the conversation partner (less than a 90 degree angle), c) a right angle to the conversation partner (90 degrees), d) more than a right angle (more than 90 degrees, less than 120 degrees), e) participant almost has their back to the conversation partner's torso (more than 120 degrees, less than 180 degrees), f) participant has their back to the conversation partner's torso (180 degrees), g) any body orientation more than 180 degrees (Remland, Jones & Brinkman, 1995). Codes are mutually exclusive- only one code can be applied during a duration. During group conversations, orientation can be measured between the participant and any of the other three conversation

(continued)

Table 1
Definition of Dependent Measures

Dependent Measure	Definition
Listener orientation (continued)	partners (the participant can be facing any one of the other conversation partners to be considered appropriately oriented), or towards the center of the table the group is seated at (the central point of the group).
On topic comments	Vocal responses, statements, or questions that involve the topic currently being discussed
Initiating change of topic	Making a statement or asking the conversation partner a question about a topic other than the one currently being discussed (Hood, Luczynski & Miteer, 2017)
Rate of topics discussed	The number of topics discussed throughout the conversation, divided by 10 to get a rate of topics per minute
Showing uninterest	Looking in places other than directly at the speaker (e.g. around the room, at a watch, at a phone), not actively listening to the speaker or offering feedback, or yawning, for 5 or more seconds (Hood, Luczynski & Mitteer, 2017). Does not include if a vocal statement is made to show the behavior is not out of boredom, or if phone use is within context of conversation (e.g. someone who is looking at their phone for more than 5 seconds but has said "I want to show you…"
Responding to indices of uninterest	Shifting the conversation by changing the conversation topic being discussed by either making a statement about something else, or asking a question (Hood, Luczynski & Mitteer, 2017)
Repeating part of utterance	Echoing part of what the conversation partner just said (e.g. "I think swimming is really fun." "Yea it is fun") (Turkstra, 2001)
Completing part of utterance	Finishing the statement for the conversation partner. Example: "I can't believe she…" "won the lottery! I know!" (Turkstra, 2001)
Sharing private information	Intimate information that would be inappropriate to tell someone you are just meeting; information that you would share with a close friend (PEERS) (e.g. home address, income, financial information, religion)
Teasing and criticizing	Statements that may belittle or ridicule the conversation partner (e.g. name calling, sarcasm) (PEERS). This includes teasing or criticizing outside of the immediate conversational context (e.g. making fun of the current or previous conversation partner, making fun of a celebrity, passing judgement, name-calling). Person maintains the speaker role.

(continued)

Table 1
Definition of Dependent Measures

Dependent Measure	Definition
Talking about non-preferred topics	Following the conversation, continuing speak about the topic (Hood, Luczynski & Mitteer, 2017). If a participant says they do not like talking about something, it should be scored as a non-preferred topic. If someone simply states that they do not like something, it should not count as a non-preferred topic (e.g. person saying "I don't like cars" vs "I don't like talking about cars).
Asking questions	Speaker requests information or a response from the listener (Hood, Luczynski & Mitteer, 2017). Does not include asking for clarification or asking for confirmation.
Asking for clarification	"What did you say?", "Could you say that again?" (Hood, Lucynski & Mitteer, 2017).
Asking for confirmation	Asking for verification of the information (e.g. "Did it really rain on Tuesday?"). (Turkstra, 2001)
Rate of question asking	The number of questions asked (excluding asking for confirmation and asking for clarification) throughout the conversation, divided by 10 min to get rate of questions asked per min
Answering question	Responding with the information that was requested by the conversation partner (Turkstra, 2001). Does not include answering own question.
Answering own question	Sharing information about yourself in response to the question asked to the conversation partner
Unintelligible responses	Vocal or verbal behavior that can't be understood by the listener (Weiner, 2005)
Interruption	An attempt to speak before the conversation partner has finished their response. Does not include verbal positive feedback because they are not trying to take the speaker role (Hood, Luczynski & Mitteer, 2017); Beaulieu et al., 2013).
Positive feedback	Response that indicates acknowledgment (Hood, Luczynski & Mitteer, 2017; Beaulieu et al., 2013), including vocal responses such as "mhm", "yup", "that's cool", and gestures including nodding and smiling. Does not take over the speaker role.

(continued)

Table 1
Definition of Dependent Measures

Dependent Measure	Definition
Negative feedback	Inappropriate responses that indicate acknowledgment. Includes inappropriate hand or arm movements that do not help to emphasize statements about the topic being discussed; hand gestures that are not communicative. Also includes rude/offensive statements such as a response that has crude language or is meant to dismiss or disprove the conversation partner (e.g. "that's dumb" "you're so stupid") (Hood, Luczynski & Mitteer, 2017). Brief statements without the person taking the speaker role.
Appropriate gestures	Appropriate hand or arm movements that help to emphasize statements about the topic being discussed (Hood, Luczynski & Mitteer, 2017; Spence, 1981), communicative hand gestures (Turkstra, 2001). You can distinguish between two separate gestures as ones that have some sort of pause or hands return back to a neutral position between them.
Distracting non-vocal behavior	Engaging in a behavior that is considered socially inappropriate for the given situation, or when that behavior is rated by observers as interfering with social interaction (Hughes et al. 1998; Koegal & Frea, 1993). Can be categorized as either subtle distracting behavior or gross distracting behavior.
Subtle-motor distracting	Visible small body movements that don't relate to the topic of conversation (e.g. finger movements, small hand movement, toe/foot tapping)
Gross-motor distracting	Visible large body movements that don't relate to the topic of conversation- e.g. touching/covering face, moving arms, head on table, turning in chair, adjusting in chair, fixing clothing (Hood, Luczynski & Mitteer, 2017; Dotson et al., 2010).
Giving compliments	Making a kind, appropriate comment about the listener
Appearance	A statement of praise on any aspect of the conversation partner's "physical attributes and features, clothing, or jewelery" (Knapp, Hopper & Bell, 1984) or other "accessories" (Doohan & Manusov, 2004) at any point during the conversation. Examples (Doohan & Manusov, 2004): "your hair looks nice", "you have great eyes", "that shirt looks really nice on you", "I like that coat. Is it new?"
Performance	A statement of praise, commendation, or admiration regarding "individual ability or skills (either work, play, home/domestic, or verbal performance" (Knapp, Hopper & Bell, 1984). Examples (Doohan & Manusov, 2004): "you are really good with computers", "you were so good at sailing practice today", "don't stress, you did well on that test"

(continued)

Table 1
Definition of Dependent Measures

Dependent Measure	Definition
Possessions	A statement of praise, commendation, or admiration regarding a "person's possessions, including children, spouses, and property" (Knapp, Hopper & Bell, 1984). Examples (Doohan & Manusov, 2004): "oh that is a really nice gift", "I really like your new golf bag", "your new watch is cool"
Rate of compliments	The number of compliments given per 10 min of conversation
Accepting compliments	
Smiling	Upward movements of the sides of mouth and cheeks, with or without seeing teeth, within 5 seconds of receiving compliment
Saying "thank you"	Participant saying "thank you" or "thanks" within 15 seconds of receiving a compliment
Pleased acceptance	The participant accepts the compliment by expressing his or her pleasure with the object of the compliment or the complementor's judgment (e.g. "I'm happy with it" or "I'm glad you like it").
Embarrassed acceptance	The recipient blushes, stammers, or "floods out" in some other way (e.g. "aww c'mon")
Tempered acceptance	The recipient acknowledges the compliment with a disclaimer or "minimizing" phrase- e.g. "thanks, but my wife bought it" or "yea, but I've got 10 more pounds to lose"
Return compliment	The recipient responds with a compliment- e.g. "you do too"

Table 2
Average Interobserver Agreement Data

Dependent Measure	Conversation Type			
	Novel	Friend	Mixed Group	Friend Group
Speaker role	92%	89%	92%	92%
Listener role	95%	90%	92%	91%
Speaker gaze	91%	96%	95%	94%
Listener gaze	90%	92%	94%	93%
Speaker orientation	98%	95%	99%	100%
Listener orientation	99%	97%	99%	99%
On topic comments	98%	96.5%	98%	97%
Initiating change of topic	97%	96%	98%	98%
Talking about non-preferred topics	100%	98%	100%	95%
Showing uninterest	100%	100%	97%	95%
Responding to uninterest	100%	100%	100%	100%
Repeating utterance	92%	98%	90%	88%
Completing utterance	95%	96%	96%	98%
Teasing and criticizing	95%	93%	100%	100%
Sharing private information	94%	98%	92%	98%
Asking questions	96%	94%	97%	97%
Asking for confirmation	98%	96%	100%	95%
Asking for clarification	96%	100%	100%	100%
Answering question	90%	96%	99%	98%
Answering own question	85%	88%	91%	93%
Positive feedback	89%	91%	90%	88%
Negative feedback	100%	100%	100%	100%
Unintelligible responses	100%	100%	100%	100%
Subtle-motor distracting non-vocal behavior	88%	89%	87%	90%
Gross-motor distracting non-vocal behavior	90%	89%	91%	88%
Appropriate gestures	95%	92%	93%	91%
Giving compliments on appearance	100%	100%	100%	100%
Give compliments- partner brings up appearance	100%	100%	100%	100%
Giving compliments on performance	97%	95%	95%	100%
Give compliments- partner brings up performance	93%	100%	91%	100%
Giving compliments on possessions	100%	100%	100%	100%
Give compliments- partner brings up possession	100%	100%	100%	100%

(continued)

Table 2

Average Interobserver Agreement Data

Dependent Measure	Conversation Type			
	Novel	Friend	Mixed Group	Friend Group
Accepting compliments- smiling	97%	100%	93%	100%
Accepting compliments- "thank you"	100%	100%	100%	100%
Accepting compliments- pleased	95%	100%	91%	100%
Accepting compliments- embarrassed	100%	100%	100%	100%
Accepting compliments- tempered	90%	92%	100%	100%
Accepting compliments- return	100%	100%	100%	100%

Note. $\bar{x}$ = average; SD = standard deviation. Measurements are percentages.

Table 3
Descriptive Statistics Results

Dependent measures	Novel		Friend		Mixed Group		Friend Group	
	X	SD	X	SD	X	SD	X	SD
Speaker role	51.81	13.98	49.79	14.45	33.84	15.36	26.82	12.39
Listener role	48.26	13.26	50.54	14.04	66.20	15.35	70.96	16.08
Speaker gaze	57.63	17.53	61.32	17.07	73.81	12.84	77.17	11.01
Listener gaze	88.23	11.17	84.43	12.25	85.72	13.67	81.08	10.2
Speaker orientation code A	94.39	18.01	93.43	18.03	99.79	0.58	98.93	4.12
Speaker orientation code B	5.57	18.04	6.07	15.68	0.21	0.58	1.05	4.02
Speaker orientation code C	0.00	0.00	0.50	2.81	0.00	0.00	0.00	0.00
Listener orientation code A	95.86	12.04	93.68	18.12	99.84	0.37	99.20	2.26
Listener orientation code B	4.10	11.95	5.67	15.33	0.16	0.37	0.78	2.21
Listener orientation code C	0.00	0.00	0.65	3.67	0.00	0.00	0.01	0.05
On topic comments	96.7	3.26	96.34	4.42	97.19	2.71	94.63	4.04
Initiating change of topic	4.61	4.44	5.36	5.32	3.99	3.07	7.43	5.48
Rate of topics	0.42	0.30	0.42	0.33	0.36	0.28	0.65	0.46
Talking about non-preferred topics	100	0.00	83.34	23.57			91.67	16.67
Interruptions	25.75	9.91	25.72	10.11	26.05	9.81	32.5	9.36
Rate of interruptions	5.83	2.64	5.24	2.21	3.81	1.23	5.18	2.01
Showing uninterest	0.03	0.20	0.02	0.11	0.04	0.16	0.50	1.17
Responding to uninterest	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Repeating utterance	8.03	5.68	10.55	5.34	14.88	8.64	14.33	6.16
Completing utterance	3.65	5.94	2.66	2.56	1.62	1.34	1.81	2.49
Teasing and criticizing	0.30	0.99	0.30	0.73	0.0	0.0	0.49	1.38
Sharing private information	1.58	3.42	1.09	3.97	0.91	2.44	0.23	0.62
Asking questions	21.36	10.53	17.70	9.44	17.22	9.97	12.96	6.96
Rate of asking questions	1.34	0.72	1.26	0.78	0.89	0.86	1.05	0.59
Asking for confirmation	8.37	6.09	5.97	4.58	8.38	6.33	4.47	4.04
Asking for clarification	0.74	2.26	0.37	1.08	0.78	1.43	0.67	1.08
Answering question	90.85	7.89	94.11	8.01	79.56	16.45	74.88	19.31
Answering own question	24.83	18.91	20.03	14.31	24.80	17.40	29.97	24.84
Positive feedback	27.30	9.76	26.77	12.03	23.37	5.86	24.76	9.55
Negative feedback	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unintelligible responses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtle-motor distracting non-vocal behavior	24.78	23.16	29.54	30.49	29.82	31.06	41.41	26.17
Gross-motor distracting non-vocal behavior	18.59	21.43	20.87	21.35	20.99	18.50	19.05	14.43
Appropriate gestures	100.0	0.00	100.0	0.00	100.0	0.00	100.0	0.00
Rate of compliments given	1.00	1.10	0.20	0.40	0.80	0.90	0.10	0.30

(continued)

Table 3

Descriptive Statistics Results

Dependent measure	Novel		Friend		Mixed Group		Friend Group	
	X	SD	X	SD	X	SD	X	SD
Giving compliments on appearance	0.10	0.38	0.03	0.18	0.00	0.00	0.00	0.00
Give compliments- partner brings up appearance	19.44	17.35	25.00	35.36	0.00	0.00	0.00	0.00
Giving compliments on performance	1.45	1.86	0.17	0.55	0.95	1.24	0.13	0.51
Give compliments- partner brings up performance	33.65	37.49	28.57	48.8	53.13	33.91	0.00	0.00
Giving compliments on possessions	0.17	0.61	0.15	0.48	0.47	0.89	0.00	0.00
Give compliments- partner brings up possession	44.44	50.92	12.5	35.35	60.0	54.77	0.00	0.00
Accepting compliments-smiling	26.85	42.45	66.67	51.64	71.43	39.34	0.00	0.00
Accepting compliments-“thank you”	5.56	23.57	16.67	40.83	21.43	39.34	0.00	0.00
Accepting compliments-pleased	13.89	26.97	0.00	0.00	21.43	39.34	0.00	0.00
Accepting compliments-embarrassed	0.00	0.00	0.00	0.00	7.14	18.90	0.00	0.00
Accepting compliments-tempered	10.19	26.28	33.33	51.64	0.00	0.00	0.00	0.00
Accepting compliments-return	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note. $\bar{x}$ = average; SD = standard deviation. Measurements are percentages, except when indicated as a rate.

Table 4
Means by Gender

	Cisgender Female		Cisgender Male	
Dependent Measure	X	SD	X	SD
Speaker role	47.07	16.33	42.64	18.01
Listener role	52.87	16.79	57.10	17.47
Speaker gaze	65.93	16.88	64.01	17.89
Listener gaze	88.95	10.68	84.0	12.20
Speaker orientation A	97.41	6.32	94.49	18.24
Speaker orientation B	2.59	6.31	5.21	17.05
Speaker orientation C	0.0	0.0	0.27	2.05
Listener orientation A	97.87	5.18	95.37	15.59
Listener orientation B	2.06	4.94	4.29	13.89
Listener orientation C	0.0	0.0	0.35	2.68
On topic comments	95.36	4.74	96.66	3.22
Initiating change of topic	6.78	5.34	4.68	4.49
Rate of topics	0.55	0.31	0.41	0.36
Rate of asking questions	1.38	0.80	1.12	0.74
Asking questions	19.08	9.87	16.64	9.74
Asking clarification	0.59	1.43	0.61	1.76
Asking confirmation	6.70	5.15	6.22	5.71
Answering questions	88.25	13.74	87.64	14.01
Answering own questions	20.47	15.67	25.73	20.17
Repeating utterance	11.49	6.14	10.91	7.18
Completing utterance	2.38	2.72	3.00	4.53
Sharing private information	1.28	4.30	1.09	2.68
Interruptions	28.19	10.71	25.94	9.79
Rate of interruptions	5.19	2.44	5.02	6.93
Teasing and criticizing	0.43	1.12	0.24	0.83
Showing uninterest	0.06	0.31	0.14	0.61
Responding to uninterest	0.0	0.0	7.69	27.74
Talking about non-preferred topics	100.0	0.0	88.89	17.21
Unintelligible responses	0.0	0.0	0.0	0.0
Rate of giving compliments	0.04	0.09	0.06	0.08
Giving compliments- appearance	0.05	0.27	0.04	0.24
Giving compliments- appearance (brought up)	12.5	17.68	13.89	22.15
Giving compliments- performance	0.54	1.29	0.74	1.34
Giving compliments- performance (brought up)	35.46	39.79	31.17	40.02
Giving compliments- possessions	0.13	0.55	0.21	0.61
Giving compliments- possessions (brought up)	26.67	43.46	30.77	48.04

(continued)

Table 4
Means by Gender

Dependent Measures	Cisgender Female		Cisgender Male	
	X	SD	X	SD
Accepting compliments- smiling	58.33	49.16	42.42	47.06
Accepting compliments- “thank you”	16.67	40.83	6.82	23.38
Accepting compliments- pleased	22.22	40.37	12.12	25.81
Accepting compliments- tempered	8.33	20.41	15.15	35.23
Accepting compliments- embarrassed	0.0	0.0	2.27	10.66
Accepting compliments- return	0.0	0.0	0.0	0.0
Positive feedback	29.51	12.70	23.88	7.96
Negative feedback	0.0	0.0	0.0	0.0
Appropriate gestures	100	0.0	100	0.0
Subtle-motor distracting non-vocal Behavior	19.72	20.38	37.05	29.75
Gross-motor distracting non-vocal behavior	18.63	24.00	20.27	17.74

Note. $\bar{x}$ = average; SD = standard deviation. Measurements are percentages, except when indicated as a rate.

Table 5
Correlations

Dependent Measures	Be Friends with Conversation Partner	Have Additional Conversation	Social Skills Rating
Speaker role	-0.05	0.00	0.13
Listener role	0.07	0.03	-0.06
Speaker gaze	0.01	0.01	-0.11
Listener gaze	-0.21*	-0.23*	-0.11
Speaker orientation A	-0.01	-0.10	-0.12
Speaker orientation B	0.01	0.10	0.12
Speaker orientation C	0.06	0.06	0.07
Listener orientation A	-0.06	-0.11	-0.13
Listener orientation B	0.05	0.11	0.13
Listener orientation C	0.06	0.06	0.07
On topic comments	0.04	0.02	-0.16
Initiating change of topic	0.03	0.08	0.24*
Rate of topics	0.05	0.01	0.08
Rate of asking questions	0.05	0.01	0.08
Asking questions	-0.07	-0.08	0.24*
Asking clarification	-0.03	-0.08	-0.05
Asking confirmation	-0.07	-0.09	0.30**
Answering questions	-0.03	-0.02	0.01
Answering own questions	0.15	0.25*	0.06
Repeating utterance	0.03	-0.01	0.08
Completing utterance	-0.03	-0.03	-0.22*
Sharing private information	-0.06	-0.02	0.05
Interruptions	0.12	0.05	-0.10
Rate of interruptions	-0.01	0.00	-0.09
Teasing and criticizing	0.04	0.12	0.21*
Showing uninterest	0.08	0.07	-0.05
Responding to uninterest	-0.84**	-0.87**	0.34
Talking about non-preferred topics	-0.32	-0.33	0.18
Unintelligible responses	b	b	b
Rate of giving compliments	0.09	0.02	-0.09
Giving compliments-appearance	0.11	0.09	-0.24*
Giving compliments-appearance (brought up)	0.36	0.33	-0.14

(continued)

Table 5
Correlations

Dependent Measures	Be Friends with Conversation Partner	Have Additional Conversation	Social Skills Rating
Giving compliments-performance	-0.03	-0.12	0.14
Giving compliments-performance (brought up)	0.32*	0.14	0.03
Giving compliments-possessions	-0.12	0.04	0.16
Giving compliments-possessions (brought up)	-0.22	-0.44	0.05
Accepting compliments-smiling	0.20	0.03	0.15
Accepting compliments-“thank you”	0.02	0.00	0.04
Accepting compliments-pleased	0.15	0.09	0.04
Accepting compliments-tempered	0.07	-0.02	0.02
Accepting compliments-embarrassed	0.01	-0.04	0.13
Accepting compliments-return	[b]	[b]	[b]
Positive feedback	0.14	0.17	0.09
Negative feedback	[b]	[b]	[b]
Appropriate gestures	[b]	[b]	[b]
Subtle distracting non-vocal behavior	0.03	0.03	-0.11
Gross distracting non-vocal behavior	0.18	0.11	0.06

Note. Pearson Correlation Coefficients. [b] = coefficient could not be computed because variables are constant; * = correlation is significant at the 0.05 level; ** = correlation is significant at the 0.01 level

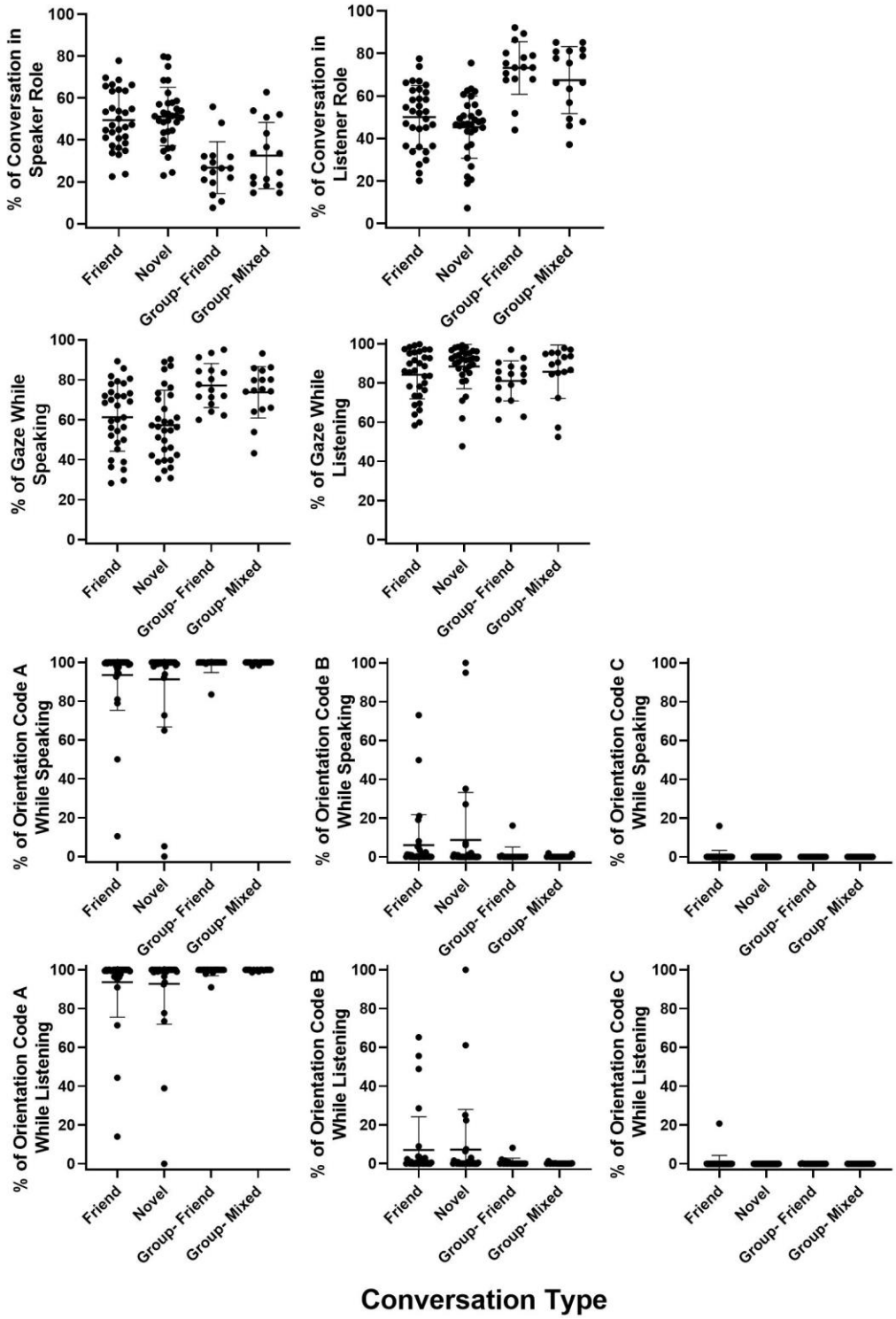

Figure 1. Individual scores of each participant for the proportion of conversation time in the speaker and listener role, looking at the conversation partner, and body orientation to the conversation partner. Mean and +/- 1 standard deviation are displayed for each conversation.

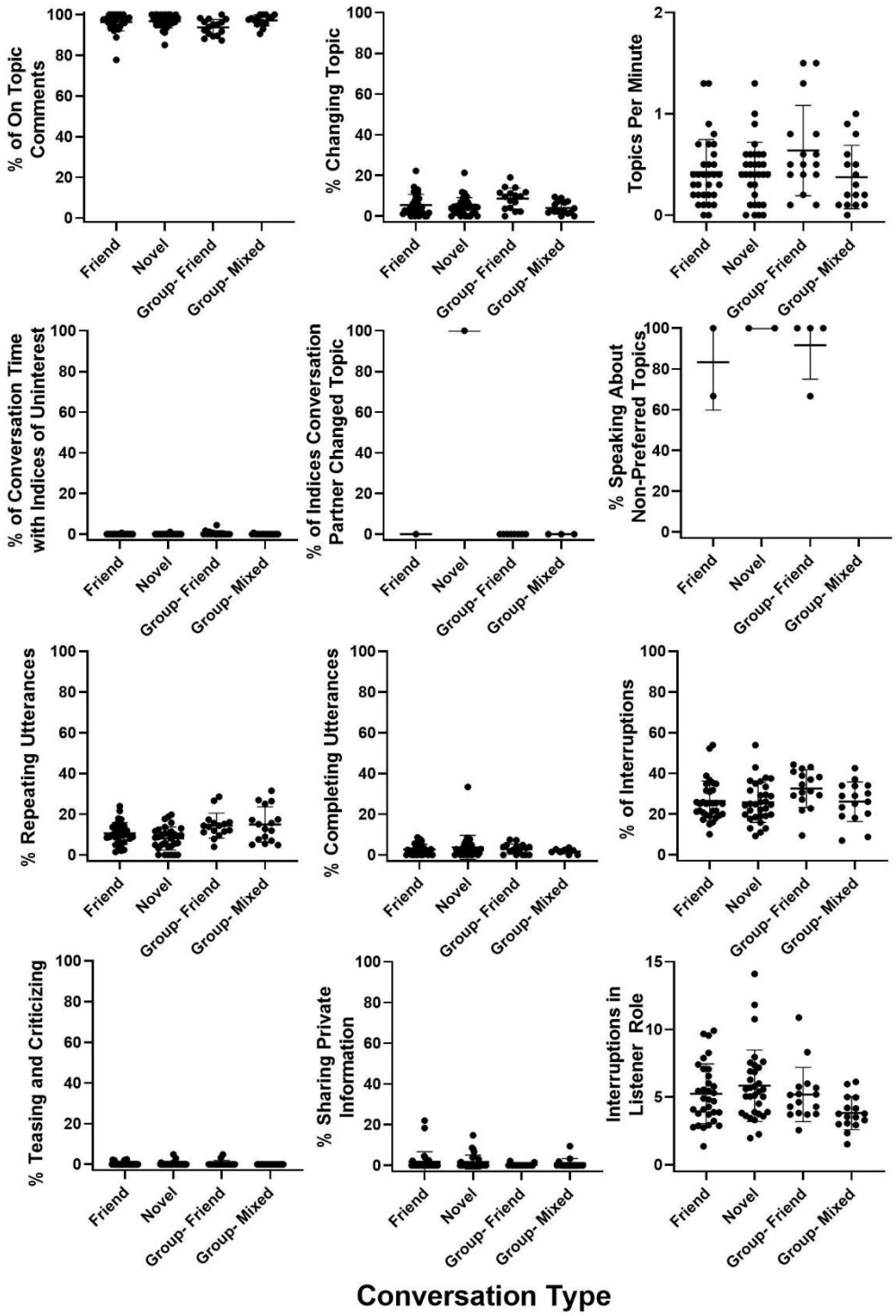

Figure 2. Individual scores of each participant show the percent of opportunities engaged in each behavior. Mean and +/- standard deviation are displayed.

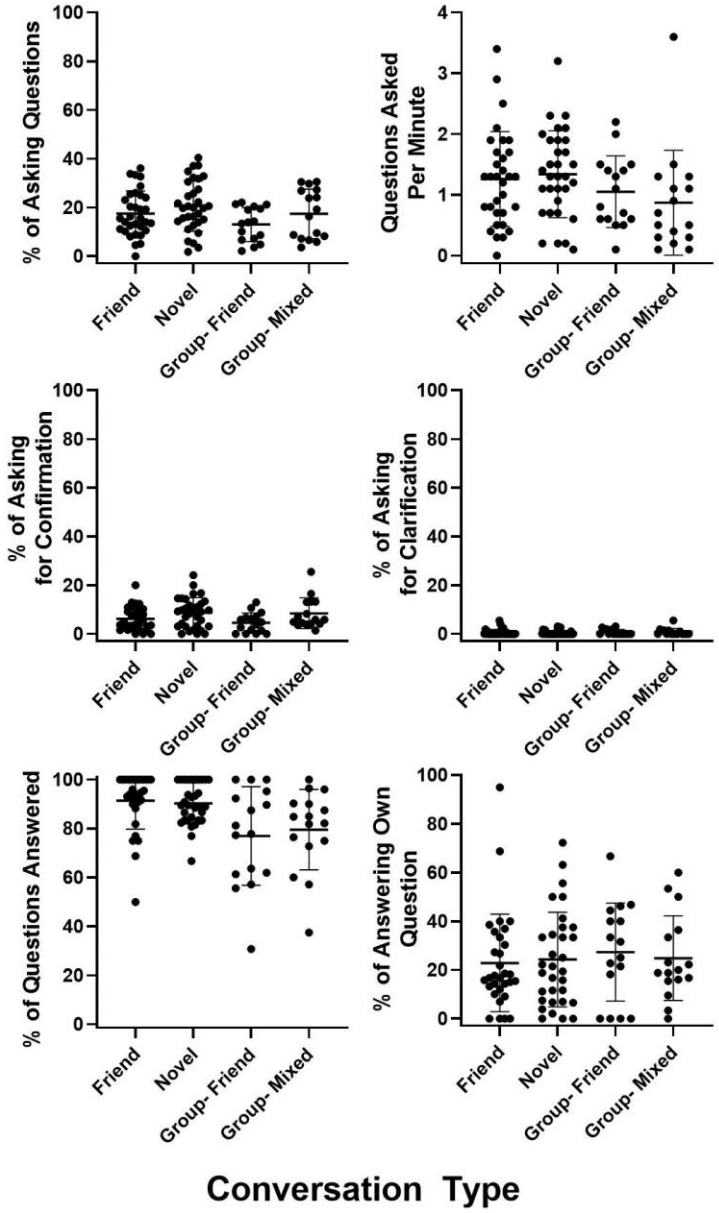

Figure 3. Individual scores of each participant show the percent of opportunities engaged in each behavior. Mean and +/- standard deviation are displayed.

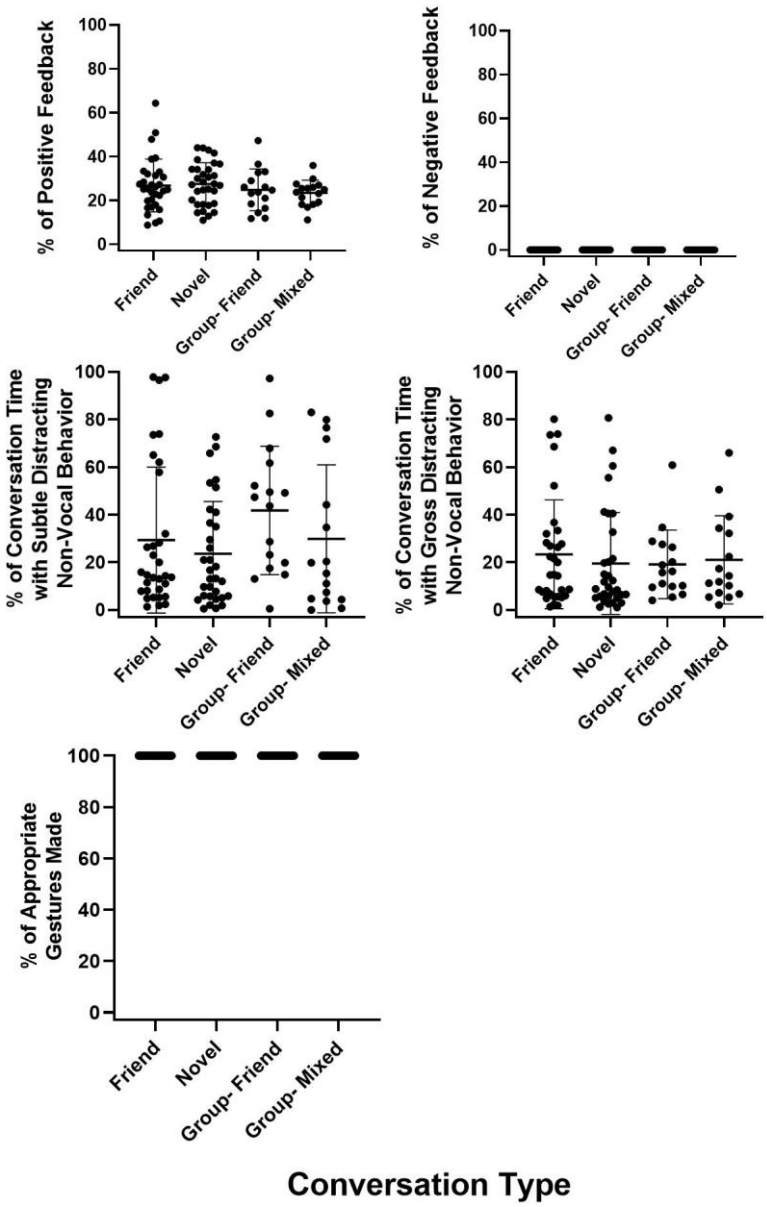

Figure 4. Individual scores of each participant show the proportion of listener role spent engaged in positive and negative feedback, proportion of conversation time engaged in distracting behavior, and percent of gestures that were appropriate. Mean and +/- 1 standard deviation are displayed.

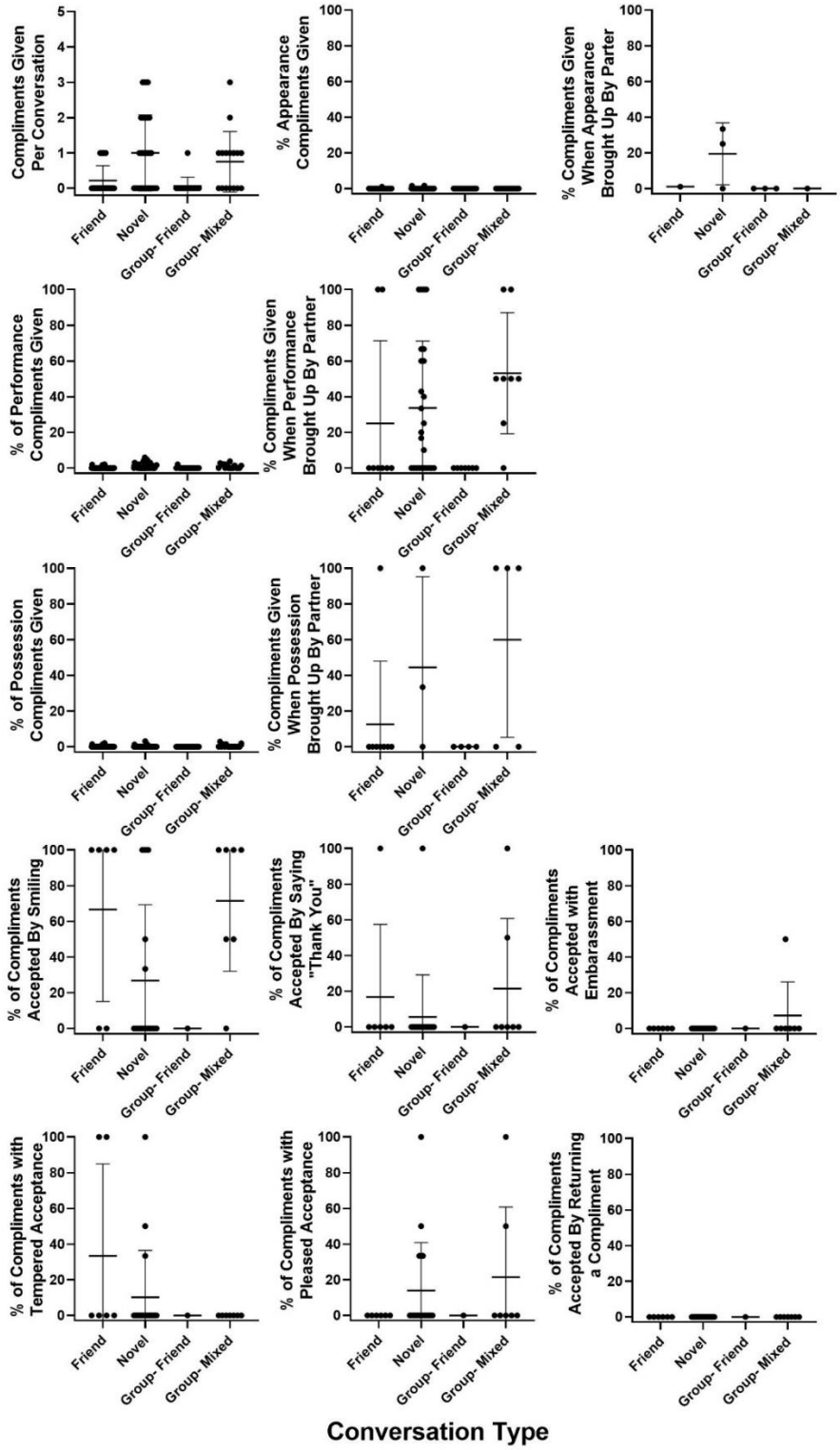

Figure 5. Individual scores of each participant show the proportion compliments accepted to compliments given, as well as the percentage of speaking opportunities where a compliment was given. Mean and +/- 1 standard deviation are displayed.