

THE DOUBLE INTERVIEW: ASSESSING THE SOCIAL COMMUNICATION
OF ADOLESCENTS WITH ASPERGER SYNDROME

by

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ABSTRACT

This was a study designed to determine if there is was difference in performance on a social communication assessment procedure (the Double Interview Task) in adolescents with Asperger Syndrome and adolescents of the same age who were developing typically. Five adolescents developing typically and five adolescents with Asperger Syndrome participated.

The data revealed a difference in performance between groups. Adolescents with Asperger Syndrome used more utterances to ask questions, asked more shallow questions, diverted the topic, asked linear questions, and asked questions that only related to their interests.

Results from the Double Interview task support the use of this tool as a means to assess the social communication abilities of adolescents with Asperger Syndrome. Speech language pathologists could easily adopt the Double Interview Task as an assessment tool. The information gathered from the interview provides insight into social communication skills, which can lead directly into the formulation of goals for intervention. The Double Interview could be used as a baseline measure, to monitor progress during intervention, and as a post intervention measure.

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Chapter I

Introduction

Asperger Syndrome

Physician Hans Asperger first identified Asperger Syndrome in 1944 when he described four children who had difficulty integrating socially into groups. This pervasive developmental disorder has gained much attention since Asperger's first description. Asperger Syndrome describes a cluster of symptoms primarily involving difficulty with social interactions (Myles 2003).

According to the Diagnostic and Statistical Manual of Mental Disorders – 4th edition (DSM-IV-TR; American Psychological Association, 2000), to receive the diagnosis of Asperger Syndrome, an individual must exhibit (a) qualitative impairment in social interactions and (b) restricted, repetitive, and stereotyped patterns of behavior, interests or activities. The DSM-IV-TR further specifies that Asperger Syndrome does not involve a significant delay in language or cognitive development. These symptoms result in a significant impairment in social and occupational functioning (DSM-IV-TR; American Psychiatric Association, 2000).

Indeed, the social interaction deficits of individuals with Asperger Syndrome are well recognized (American Psychiatric Association, 2000; Gillberg 1998; Szatmari [et.al.](#), 1989; World Health Organization, 1990). Social and communicative difficulties are argued to be the most handicapping aspect associated with Asperger Syndrome (Paul, 2003). Because the social interaction deficits are significant and

well recognized, continued research in this area is needed. This study was designed to investigate an assessment tool used to evaluate social communication; therefore it is important to first understand the concept of social cognition and how it relates to social communication.

Social Cognition

Social cognition has been defined as “our innate ability to think through and apply information to succeed in situations that require social knowledge” (Winner, 2004). Social cognition is how humans attempt to understand how others think, perceive, feel, and react. Developing an understanding of other’s actions, thoughts, and feelings is necessary for effective functioning in the social world (Hala, 1997).

The development of social cognition. The development of social cognition begins early in life. Typically developing infants are tuned into humans from the very beginning. Research from Colombo and Bundy (1981) report that infants spend more time listening to human voices than to other sounds. Infants also prefer to look at humans over inanimate stimuli (Walton, Bower, and Bower, 1992). Remarkably, by about seven months of age, infants begin to recognize emotional expressions of others (Walker-Andrews & Grolnick, 1983).

The development of social cognition typically begins as infants look for a person’s reaction to objects and social events (Bruner, 1981). This is called social referencing. The emergence of this skill suggests that infants not only detect and discriminate others’ expressions, they also form a connection between those expressions and other events in the environment (Franco, 1997). Babies as young as

ten months old use emotional information, such as an adult's facial expressions and tone of voice, to make decisions (Walden and Ogan, 1988).

Over time, social referencing develops into theory of mind, which enables a child to understand that others have intentions, thoughts, desires, and feelings that differ from their own (Quill, 2000). This ability allows individuals to anticipate, comprehend, and predict social behaviors of others.

Theory of mind, or perspective taking, changes as a child develops. A developmental theory of perspective taking is outlined by Selman (1980). According to Selman (1980), these stages begin with the egocentric viewpoint in early childhood and end with in-depth perspective taking in adolescence. Children three to six years of age have an "egocentric viewpoint." In this stage, the child has a sense of differentiation between himself and others, but does not distinguish the social perspective (thoughts and feelings) from himself. Children six to eight years of age are in the "social-informational perspective taking stage." The child is aware that others have a social perspective based on their own reasoning, and this perspective may or may not be the same as their own. Children eight to ten years of age are said to be in the "self reflective" perspective taking stage. The child can judge other's intentions, purposes, and actions by putting himself in another's place. By ten to twelve years of age, the adolescent is in the "mutual perspective taking stage" and can step outside the two-person dyad and view the interaction from a third person perspective. Between twelve and fifteen, the adolescent is said to be in the "social and conventional system of perspective taking" stage. In this final stage, the

adolescent realizes mutual perspective does not always lead to complete understanding. The participants developing typically in the study are hypothesized to be at this final stage of perspective taking.

Social cognition and adolescence. Adolescence is defined as “the developmental period of transition from childhood to early adulthood, starting at approximately 10 to 12 years of age and ending at 18 to 22 years of age” (Santrock, 1999). During this time, adolescents’ thoughts become more abstract, logical, and idealistic. They are more capable of examining their own thoughts, others’ thoughts, and what others are thinking about them. Adolescents are also more likely to interpret and monitor the social world (Santrock, 1999).

Social cognitive changes are also seen in the way adolescents begin to interpret personality (Santrock, 1999). Unlike children, adolescents do not rely only on the concrete information they have about a person. They consider previously acquired information in combination with current information. Adolescents also take into account contextual or situational variability in behavior. They understand that behavior changes with context and others do not always behave consistently. Finally, adolescents do not accept surface traits as a valid description of a person or themselves. They begin to look for deeper, more complex, and even hidden causes of personality (Santrock, 1999).

Social cognition and Asperger Syndrome. The diagnosis of Asperger Syndrome implies the existence of a social and communicative deficit (Klin & Volkmar, 2003; Paul, 2003; Silliman et al., 2003). Individuals with Asperger

Syndrome have limited abilities for learning and/or applying socially relevant information to academic, social, home, and community settings (Winner, 2002). More specifically, these difficulties in the social world include: difficulty comprehending others' facial expressions, an impairment in the ability to use non-verbal behaviors to regulate social interaction, and making adjustments to fit different social contexts or the needs of different listeners (Koning & Magill-Evans, 2003). Individuals with Asperger Syndrome may be able to correctly describe other people's emotions, intentions, or social conventions, but are often unable to act on this knowledge in an "intuitive and spontaneous fashion, thus losing the tempo of the interaction" (Klin & Volkmar, p. 3). Additionally, Konig and Magill-Evans (2001) found that individuals with Asperger Syndrome were able to infer the affective state of others when labeling still photographs, but had difficulty doing the same task with videotapes. The simultaneous presentation of facial, voice, body, and situational cues inhibited these individuals from correctly interpreting the social situation.

Currently, three major theories exist to explain social cognition deficits. These theories include: Theory of Mind (Baron-Cohen, Leslie, & Firth, 1985), Central Coherence Theory (Firth, 1989), and Executive Dysfunction Theory (Ozonoff, Pennington & Rogers, 1991).

Theory of Mind. The Theory of Mind hypothesis is said to be the most influential psychological hypothesis of autism (Klin, 2000). Theory of mind is the ability to understand that others have intentions, thoughts, desires, and feelings that differ from their own (Baron-Cohen, Tager-Flusberg, and Cohen, 1993). Individuals

with Asperger Syndrome are hypothesized to have theory of mind deficits, which impact their ability to make more complex inferences about the cognitive and social states of others (Silliman et al., 2003). These individuals have difficulty understanding that behavior is typically regulated by mental states (such as beliefs, thoughts, expectations, desires, and intentions) and not by factual reality (Baron Cohen et al., 1993).

Not only do individuals with Asperger Syndrome have difficulty understanding others' mindsets, research by Konig and Magill-Evans (2001) suggested that some adolescents do not understand their own emotions and actions. The Social Skills Rating System (Gresham and Elliot, 1990), a questionnaire evaluating social skills, was given to parents, teachers, and adolescents with Asperger Syndrome. On average, adolescents with Asperger Syndrome in this study rated themselves more competent than did their teachers and parents. As a group, the participants were relatively positive about their general social skills (Konig & Magill-Evans, 2001). While others saw deficits in social communication, these adolescents did not.

Theory of mind, or the ability to assume another person's perspective, contributes to a child's peer group status and quality of his or her friendships (Santrock, 1999). This is because children who are skilled at perspective taking are better at understanding the needs of their companions and are likely to communicate more effectively with them (Hudson, Forman, & Brion-Meisels, 1982).

While theory of mind deficits are a challenge for any individual with Asperger Syndrome, this may be particularly difficult for adolescents (Myles, 2001). Adolescents generally consider themselves to be “masters of subtlety” (Myles, 2001 p. 18). They appear to act disinterested when they are truly excited. Adolescents with Asperger Syndrome who do not know these “rules” do not fit in socially and are instantly isolated from their peers (Myles 2001).

Central Coherence Theory. The Central Coherence Theory states that students with autism spectrum disorders have difficulty conceptualizing to a larger whole (Firth, 1989). They think in parts and do not fully relate the information to a larger pattern of behavior and thought (Winner, 2002). This contributes to difficulties with problem solving. Individuals with Asperger Syndrome may view the problem as a whole, thus making it difficult to generate more than one solution. The Central Coherence Theory also account for difficulties in communication. For example, if an adolescent with Asperger Syndrome was engaged in a conversation, he might listen to the responses his conversational partner provided as separate facts, and not link information to previously acquired knowledge he has about the person. Therefore, the adolescent may ask shallow questions of their partner, thereby making it difficult to form a deeper relationship.

Executive Dysfunction Theory. Executive dysfunction relates to difficulty “creating organizational structures that allow for flexibility and prioritization” (Winner, 2002). In other words, individuals with Asperger Syndrome have trouble with organizing, planning, shifting attention, and multitasking (Myles, 2001).

According to Ozonoff, Pennington, & Rogers (1991), executive function is defined as “the ability to maintain an appropriate problem-solving set for attainment of a future goals; it includes behaviors such as planning, impulse control, inhibition of prepotent but irrelevant responses, set maintenance, organized search, and flexibility of thought,” (p. 1083). This theory accounts for the perseverative, rigid, and inflexible nature of Asperger Syndrome (Ozonoff et al., 1991).

Executive dysfunction can affect communication and conversation abilities. By nature, conversation requires sophisticated planning, timing, and self-regulation (Turkstra, Ciccia, & Seaton, 2003). Individuals with Asperger Syndrome have difficulty, due to executive dysfunction, in these areas thus making conversation a challenge. Additionally, the ability to shift attention is key to conversation. It is necessary to filter out environmental distracters in order to focus on the conversational partner. This may also be difficult for individual with executive function deficits.

A difference in the development of theory of mind may contribute to dysfunction in central coherence and executive function. There appears to be a positive relationship between an individual’s theory of mind deficit and their corresponding level of deficit in central coherence and executive functioning (Winner, 2002). Taken as a whole, these theories may help to explain the overall difficulties associated with social cognitive deficits.

Social cognition and social communication in Asperger Syndrome. The specific nature of language deficits in individuals with Asperger Syndrome is poorly

defined in the literature (Konig & Magill-Evans, 2001). Although the diagnostic criteria states that there are no significant delays of language development (DSM-IV-TR), individuals with Asperger Syndrome, as a result of their social cognitive deficits, are less able to demonstrate varied uses of language in social settings (Paul, 2003). Their social cognitive deficits are expressed in how they use and understand language (Dennis, Lazenby, & Lockyer, 2001). In fact, theory of mind deficits are hypothesized to be the cause of the social and pragmatic deficits (Baron Cohen, 1995; Firth, 1989; Tager-Flusberg, 1993). Thus, there is a strong connection between social cognition and social communication.

The social communication skills of individuals with Asperger Syndrome are characterized by several factors. Individuals with Asperger Syndrome exhibit unsuccessful pragmatic communication (Tager-Flusberg, 1993; Firth, 1989). Pragmatics is the domain of language that is concerned with use of language in social contexts. Pragmatic communication deficits of individuals with Asperger Syndrome include difficulty making inferences (Dennis et al., 2001; Myles 2003), using contextually appropriate mental state terms such as *think*, *feel*, and *know* (Happe, 1993; Jolliffe & Baron Cohen, 1999) and difficulty using irony, lies, humor, and metaphors (Baron-Cohen, O’Riordan, Stone, Jones, & Plisited, 1999; Myles 2003, Wetherby & Prizant, 2000).

The communication style of individuals with Asperger Syndrome is often characterized by marked verbosity (Klin & Volkner, 2003; Myles, 2003). The individual may talk about a favorite subject for great lengths of time, without

considering if his conversational partner is interested, engaged, or attempting to interject a comment or change the subject of conversation (Klin & Volkner, 2003; Wetherby & Prizant, 2000). Communication may also be tangential and circumstantial resulting in one-sided, egocentric conversation (Klin & Volkner, 2003; Myles 2003).

“Successful communication depends upon how conversational partners are able to infer motivation underlying each other’s mental states” (Silliman, Diehl, Bahr, Hnath-Chisolm, Zenko, & Friedman, 2003, p. 237). Since adolescents with Asperger Syndrome have difficulty with perspective taking, successful communication is a challenge. This affects not only the social world of an adolescent but also the academic world. Perspective taking and effective communication skills are, indeed, essential for educational success (Silliman et al., 2003). Because social cognition is at the core of verbal communication (Silliman et al., 2003) it is important to have a means to assess social communication.

Assessing Social Communication

Social communicative abilities are central to achieving community inclusion, peer acceptance, and academic success (Paul, 2003). It is important to have a means by which to assess these skills. The challenge, however, is finding a tool that accurately assesses the difficulties individuals with Asperger Syndrome experience. Indeed, assessment tools that evaluate social communication are not well established and often lack any formal normative base (Brice & Montgomery, 1969; Hughes, 1990; Prutting & Kirschner, 1987).

Some standardized tests that have been developed to assess the pragmatic aspect of communication include the Test of Pragmatic Language (TOPL) (Phelps-Teraskai & Phelps-Gunn, 1992) and the Social Pragmatic Subtest of the Comprehensive Assessment of Spoken Language (CASL) (Carrow-Woolfolk, 1999). The TOPL presents students with a variety of social scenarios to which they must respond with an example of how they would handle the situation. The CASL includes a range of subtests that are designed to explore receptive, expressive, and pragmatic language. A subtest of pragmatic judgment can be used with children of all ages.

Often times adolescents with Asperger Syndrome score within normal limits on these standardized tests. There are many possible explanations for this. In general, standardized tests evaluate language skills. Many adolescents with Asperger Syndrome have good grammar, vocabulary, and sentence structure, resulting in average to above average test results (Myles, 2001). Standardized tests fail to capture the difficulty with the social use of language. Another reason adolescents with Asperger Syndrome perform well on standardized tests is due to the nature of the test. Typically, in formalized tests, the problem to be solved is clearly defined by the question posed and items are tested in isolation. This plays to the strengths of individuals with Asperger Syndrome because it does not require them to generalize information in order to provide a correct response. Individuals with Asperger Syndrome have particular difficulty generalizing in novel social situations, which

make up most spontaneous social situations in real life. Standardized test do not assess social situations in this true to life manner.

Standardized tests are also limited in their practical application because they assess superficial social knowledge and not student's true social communication deficits (Winner, 2002). Individuals with Asperger Syndrome have difficulty with conversation. This is because conversations occur with no advanced notice, yet they require sophisticated planning, timing, and self regulation (Turkstra et al., 2003). Standardized tests do not capture the nature of spontaneous conversation, therefore impairments are not evident by viewing standardized test scores. Pragmatic assessment needs to take place within the framework of a whole discourse and not within the framework of individual units isolated from context (Neville, 1990; Klin & Volkmar, 2003). Currently, however, there is not a single standardized assessment to explore social communication skills while engaged in the act of communication (Winner, 2002).

Though there are no standardized measures of social communication, Damico (1991) developed the Clinical Discourse Analysis, which takes a functional rather than a structural perspective of language. The Clinical Discourse Analysis is based on Grice's (1975) principles. A conversational sample is taken, transcribed and then analyzed for errors in the categories of quantity, quality, relation and manner of communication. The tool has been used to identify individuals who have difficulties with conversational language skills.

Double Interview Task. The Double Interview task, developed by Winner (2002) is an informal assessment procedure created to evaluate social communication skills while engaged in the act of communication. It has the functional orientation of the Clinical Discourse Analysis with a focus on the areas of social communication usually deficient in individuals with Asperger Syndrome. The Double Interview begins with the clinician interviewing the participant. The clinician asks questions about the adolescent's relationships and hobbies. Following the interview, the clinician brings out three personal photographs. The pictures assist the participant in generating possible questions to ask the clinician. After looking at the pictures, the participant is then asked to interview the clinician.

While Winner has developed this tool and has been encouraged by her use of it, it has not been administered to typical peers to compare performance with an individuals with Asperger Syndrome. Winner (2002) believes the interview evaluates the students' ability to shift perspective, to organize their thoughts into language that moves in a purposeful direction toward someone else's area of interest, and to formulate questions and follow up with more specific questions to explore another person's interest.

Purpose of Study

Improving the social communication skills of individuals with Asperger Syndrome is often a target for intervention. To date, there are no standardized assessments available to evaluate these skills while engaged in the act of communication. Nor is there normative information on the social communication

skills of typically developing peers. The Double Interview task is a promising assessment tool that has been tested clinically but not in the research arena. The purpose of this study is to determine if there is a difference in performance on the Double Interview task in adolescents with Asperger Syndrome and adolescents of the same age who are developing typically.

Chapter II

Method

Participants

5 adolescents developing typically participated in the study. 5 male adolescents with the diagnosis of Asperger Syndrome participated. All adolescents were diagnosed based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). The adolescents were solicited through letters sent to the Autism Asperger Resource Center at the University of Kansas Medical Center, the Lawrence Public Schools, the Schiefelbusch Speech-Language Hearing Clinic, and a newspaper advertisement in the Lawrence local paper (see Appendix A for the letter to parents and Appendix B for the newspaper advertisement).

Adolescents fit the criterion for this study based on age, a diagnosis, and availability. The parents of the adolescents read and signed an informed consent form that explained the conditions of the study and confirmed their willingness to participate (see Appendix C). See table 1 for a listing of participant demographics.

Table 1

Participant Demographics

Participant Number	Sex	Age	Grade	Diagnosis
1	M	12	6	Developing Typically
2	F	13	7	Developing Typically
3	M	13	7	Developing Typically
4	M	12	6	Asperger Syndrome
5	M	12	6	Asperger Syndrome!ADHD
6	M	13	8	Asperger Syndrome
7	M	14	8	Asperger Syndrome!OCD
8	M	12	5	Asperger Syndrome! Mood Disorder
9	F	12	6	Developing Typically
10	F	13	7	Developing Typically

Setting

The study took place at various locations around the Lawrence and Kansas City area. Five participants were interviewed in their home. Two participants were interviewed at the Schiefelbusch Speech Language Hearing Clinic. One participant was interviewed at the University of Kansas- Edwards Campus in Overland Park, Kansas. Two participants were interviewed in their school in Lawrence. The location of the interview was determined by the preference of the participant and his or her family.

Procedures

The legal guardians of each participant were asked to complete a questionnaire about their child's age, diagnosis, communication, and social skills. (see Appendix D). The Double Interview task began by the researcher reading an assent procedure (see Appendix E). This gave the participant the opportunity to ask questions before the interview started. The researcher then began interviewing the participant (see Appendix E for the protocol). The researcher ended her portion of the interview by summarizing what she learned about the participant through the interview.

The researcher then informed the participant that it was his or her turn to ask questions. This portion of the task began as the researcher displayed three personal photographs. The first photograph was of the researcher with her family. The second photograph was a picture of the researcher with a group of seven friends. The third photograph was of the researcher and her fiancé. The researcher asked the participant to explain what the pictures on the table were about. The purpose of the photographs was to assess the adolescent's ability to shift perspective, read other's faces, account for contextual cues, and ability to make inferences.

After looking at the pictures, the participant was asked to be the interviewer. Before beginning, the researcher explained that the job of an interviewer is only to ask questions that give information about the other person. The participant was given a list of words that could be used to start a question, reminded he could use any of the pictures to ask questions, and was then asked to start the interview. See Appendix G

for a list of questions asked participants developing typically and Appendix H for questions asked by participants with Asperger Syndrome.

If a participant had difficulty generating questions, a cueing hierarchy was used. During the interview, the researcher kept track of how many questions the participant asked. If the participant asked at least ten questions and then stated he could not think of another question, the interview ended. If the participant had asked less than ten questions, the cueing hierarchy was used. See Table 2 for the cueing hierarchy.

Table 2

Cues Provided

[CP1] The researcher drew 4 boxes across a piece of paper to provide a visual framework of how many questions the student was to ask before the task was discontinued.

[CP2] The researcher pointed to the pictures on the table and reminded the student that he or she could use the information to ask questions of the researcher.

[CP3] The researcher directed the student to a specific topic that he/she could talk about. For example, "What could you ask me about my family?"

Data Collection and Coding

The researcher videotaped all interviews using a VHS camera. The interview was recorded and later transcribed by the researcher. Because the purpose of the study was to examine the adolescent's social communication, only the portion where the adolescent was the interviewer was transcribed. The interview was transcribed into the Systematic Analysis of Language Transcripts (SALT) software (Language

Analysis Laboratory University of Wisconsin – Madison, 1984). The transcription was coded for specific parameters adapted from Winner (2002). (See Appendix I for an example of a coded transcript of a participant developing typically and Appendix J for a transcript of a participant with Asperger Syndrome). The definitions of the parameters used for coding are listed in Table 3. See Appendix F for examples of the codes.

Table 3

Definitions of Codes

Comment Only [CO]

The individual comments on what he knows rather than formulating questions about what he wants to find out.

Personal Interest [PI]

The individual asks questions or gives comments that relate to himself or his interests.

Difficulty Formulating Questions [FQ]

The individual has difficulty formulating questions to ask the evaluator. This is signaled by sighs of frustration with the activity, awkward silence of more than 2.3 seconds or verbalizing that they are unable to think of questions.

Shallow Question [SQ]

The question asked is a closed-ended question, which does not solicit deeper information about the interviewee. The individual fails to provide a follow-up question about the same topic. This code is given to describe the quality of the child's question.

Diverts Topic [DT]

The individual diverts the topic to his own experiences, making comments about himself. He takes more than one conversational turn relating to his personal interest.

Repeated Question [RQ]

The individual asks the researcher the same questions asked of him.

Revision [R]

The individual uses false starts and self-interruptions, which change the direction of the statement or question. The revision code is given when the individual uses two or more false starts.

Unclear Question [UQ]

The individual asks a question that is unclear in meaning resulting in the researcher asking for clarification.

Linear Question [LQ]

The individual's line of questioning is linear in nature. He asks the same question but with a different referent.

Redirected [RD]

The child is redirected after pauses longer than 3 seconds or to bring the child's focus back to asking questions. After the examiner has redirected the child, the [RD] code is placed after the child's next question.

Reliability

Four interviews were randomly selected for interobserver reliability. This represented 40% of the total interviews. Two graduate students in speech language

pathology served as reliability judges. Reliability was calculated by dividing the total agreements by the total number of agreements plus disagreements.

Reliability was calculated for transcription and coding. The transcription coding was used to measure the accuracy of transcription. The transcription reliability for Participant # 2 was 97%, Participant # 4 was 97%, Participant # 6 was 98%, and Participant # 9 was 96%.

The reliability for coding was used to measure the agreement of coding pertinent variables within the interview. The variables of interest were: personal interest, difficulty formulating questions, shallow questions, diverts topic, revision, redirections, repeated questions, unclear questions, and cues provided. The coding reliability for Participant #2 was 92 %, Participant # 4 was 89%, Participant # 6 was 88%, and Participant # 9 was 87%.

Chapter III

Results

The purpose of this study was to determine if there was a difference in performance on a social communication assessment procedure, the Double Interview task, (Winner, 2002) in adolescents with Asperger Syndrome and adolescents of the same age who are developing typically.

Quantitative Measures

The differences in the number of utterances, number of errors, number of utterances with one or more errors, and percent of utterances with errors were compared. The adolescents with Asperger syndrome used more utterances and made more errors than their peers. See Tables 4, 5, and 6.

Table 4

Individual Performance: Participants Developing Typically

Participant Number	Number of Utterances	Number of Errors	Number of Utterances with 1 or More Errors	% Utterances with Errors
1	28	8	8	29%
2	27	1	1	.04%
3	60	10	10	17%
9	20	11	7	35%
10	19	9	9	47%

Table 5

Individual Performance: Participants with Asperger Syndrome

Participant Number	Number of Utterances	Number of Errors	Number of Utterances with 1 or More Errors	% Utterances with Errors
4	92	37	36	39%
5	162	51	33	20%
6	148	28	26	18%
7	245	61	46	19%
8	58	31	23	40%

Table 6

Across Group Performance

	Typically Developing	Asperger Syndrome
Number of Utterances	30.8 (16.8)	141.0 (71.8)
Number of Errors	7.8 (4.0)	46.0 (16.2)
% Utterance with 1 or More Errors	23%	23%

The number of questions asked and length of interview were compared across participants. Participants with Asperger Syndrome asked more questions and took longer for the interview than did their typically developing peers. See Table 7, 8, and 9.

Table 7

Interview Questions and Time. Typically Developing Participants

Participant Number	Number of Questions Asked	Length of Interview in Minutes
1	13	3:58
2	11	4:55
3	18	6:46
9	12	3:40
10	10	4:00

Table 8

Interview Questions and Time. Participants with Asperger Syndrome

Participant Number	Number of Questions Asked	Length of Interview in Minutes
4	37	10:30
5	20	9:45
6	19	13:40
7	24	19:58
8	3	11:30

Table 9

Interview Questions and Time. Across Groups

	Typically Developing	Asperger Syndrome
Number of Questions	12.8 (3.1)	20.6 (12.17)
Length of Interview	4:40 (1:16)	13:05 (4:07)

Qualitative Measures

Information about the quality of participant's interviews was obtained by analyzing the types of errors made during the interviews. Overall, the participants with Asperger Syndrome made more errors. See Tables 10, and 11.

Table 10

Type of Errors: Participants Developing Typically

Error Code	Participant 1	Participant 2	Participant 3	Participant 9	Participant 10
Comment Only	0	0	0	0	0
Personal Interest	0	0	0	1	0
Difficulty Formulating Questions	2	0	3	1	3
Shallow Question	3	0	3	5	4
Diverts Topic	0	0	0	0	0
Repeated Question	1	0	1	3	1
Revision	0	0	2	0	0
Linear Question	0	0	0	0	0
Unclear Question	0	0	1	0	0
Redirected	0	0	0	0	0

Cue
Provided

2

1

0

1

1

Table 11

Type of Errors: Participants with Asperger Syndrome

Error Code	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8
Comment Only	0	0	0	0	7
Personal Interest	0	11	0	9	0
Difficulty Formulating Questions	4	4	12	9	9
Shallow Question	22	21	2	20	3
Diverts Topic	0	10	10	19	0
Repeated Question	2	0	1	2	0
Revision	2	0	0	0	0
Linear Question	5	0	3	4	0
Unclear Question	7	1	1	1	0
Redirected	0	3	1	0	1
Cue Provided	0	1	1	1	11

The types of errors used in the interviews were compared across groups. See table 12. Participants

in both groups had the highest number of errors in the Shallow Question category; however participants with Asperger Syndrome had a greater number of errors within that category. Participants with Asperger Syndrome had higher numbers of errors in the Diverts Topic and Personal Interest categories. Overall, the participants with Asperger Syndrome had more errors in each category.

Table 12
Type of Errors: Across Groups

Code	Typically Developing Participants	Participants with Asperger Syndrome
Comment Only	0	7
Personal Interest	1	20
Difficulty Formulating Questions	9	38
Shallow Question	15	68
Diverts Topic	0	38
Repeated Question	6	5
Revision	2	2
Linear Question	0	12
Unclear Question	1	10
Redirected	0	5
Cue Provided	5	14

Chapter IV

Discussion

This study compared the performance of adolescents with and without Asperger Syndrome on an informal social communication assessment, the Double Interview Task (Winner, 2002). The results of the study indicated that there were differences in performance between the groups. The specific differences will be discussed quantitatively and qualitatively.

Quantitative Differences

Overall results indicated that adolescents with Asperger Syndrome used more utterances per interview, asked more questions, and had a higher number of errors within their interview. As a group, these adolescents were less effective with their language and question asking abilities. For example, Participant #3, an adolescent who is developing typically, used 60 utterances to ask a total of 18 questions. Participant #6, an adolescent with Asperger Syndrome, asked almost the same number of questions but used 148 utterances. The literature supports these findings. Klin and Volkner (2003) reported the communication style of individuals with AS is often characterized by marked verbosity.

The Double Interview Task may have been difficult for adolescents with Asperger Syndrome because it targets what may be their core deficits in social cognition and social communication. Adolescents with AS had more difficulty with the task (as shown through the higher number of errors) than their peers developing typically. Based on what is known about Asperger Syndrome, more errors by the

students with Asperger Syndrome would have been expected. The types and quality of errors was less predictable.

Table 5 compares performance between groups on the Double Interview task. The percentage of utterances containing one or more errors is a particularly interesting result. Both groups had 23% of their utterances containing one or more errors. Thus, this calculation does not discriminate between groups. Although it is not useful in describing group differences, it would be important to calculate when working with one individual. This measure would be a way to track individual changes over time.

Qualitative Differences

Qualitatively, there was a difference in the types of questions asked by each group. Specific error categories distinguished the groups. These categories included: Shallow Questions, Diverts Topic, Linear Questions, Comment Only, and Personal Interest.

Shallow questions. A category of errors that defined the groups was the Shallow Question category. Shallow questions failed to solicit follow up questions, which provide deeper information about a person or topic. According to Winner (2002), follow up questions are key to conversational success. While both groups had the highest number of errors in the Shallow Question category, the adolescents with Asperger Syndrome had a higher number (68 vs. 15) and a poorer quality.

Winner (2002) suggests the use of shallow questions is due to a lack of ability to “organize information by formulating questions to direct a single topic of

discussion” (p. 186). The use of shallow questions could also be supported by the Central Coherence Theory (Firth, 1989). This theory states that individuals with Asperger Syndrome think in parts and do not connect information to a bigger picture. Within the Double Interview Task, the participants with Asperger Syndrome may have difficulty using the information they learned from asking questions to creating new follow up questions. They may have had difficulty understanding how the answer of one question could relate to new question. Consider the following portion of an interview of a participant with Asperger Syndrome:

C: Who are your friends?

E: In this picture these are all of my high school friends.

E: Do you want to know their names?

C: Yeah.

E: That’s Katie, Erika, Laurie, Krista, Laura, Megan and me.

C: And what’s your fiancé’s name?

Instead of asking more information about the researcher’s friends, the participant moved on to a new line of questioning. He did not follow up with deeper questions about the friends. A few conversational exchanges later, the participant asked the researcher where she met her friends. He did not use the previously acquired information (the researcher’s friends were from high school) to generate a new question that provided deeper information.

Between groups, there was also a difference in the overall quality of the shallow questions. The participants with Asperger Syndrome tended to ask less

personal, and in some cases, more unusual questions. Table 13 illustrates some of these differences.

Table 13

Examples of Shallow Questions: Across Participant Performance

Participants Developing Typically	Participants with Asperger Syndrome
Where do you think you'll move after you get out of college?	Do you like being alive?
Where did you meet your fiancé?	Do you have any DVD's?
What school do you go to?	Did you have any un-friends in school?
What's your favorite sport?	How old were you when these pictures were taken?
Where'd you grow up?	Do you like to eat chili?

Diverts topic . The Diverts Topic category was one that clearly defined a difference between participants with and without Asperger Syndrome. Adolescents with Asperger Syndrome diverted the topic, to something related to their experiences or interests, a total of 38 times. Participants developing typically did not divert the topic once. Consider the following example of a participant diverting the topic:

C: Do you have PVR on your TV?

E: What is that?

C: Pre-viewing video recording something like that.

E: No.

C: You can record videos with the remote and it has, you have a thing.

C: You can record any shows you want.

E: Wow.

C: It stores it for you.

C: You're gonna have to make sure you have insurance cause there's always a problem and you have to call a technician if you have it in your room. C:

And they have to go all the way to the back of your house, like, go to the satellite.

E: Yeah?

C: Yeah our is up so high you could see the guy like all the way in our window.

When participants with Asperger Syndrome diverted the topic, their communication became tangential. For example, after the researcher revealed one of her hobbies was dancing, a participant diverted the topic to his dislike of school dances. The participant took seventeen conversational turns on this topic alone. In a separate instance, a participant with Asperger Syndrome used thirty-eight conversational turns to explain the difference between the book and movie version of the *Wizard of Oz*.

It is significant to note that not all participants with Asperger Syndrome diverted the topic. Two participants did not do so. Participant number eight did not divert topic. He had great difficulty formulating questions, and the entire interview consisted of the him stating that he did not have questions to ask. Participant number four also did not divert the topic. There are possible explanations for this. This participant was "rule bound" and rigid in his completion of the interview. It is possible that he may have listened to the researcher describe an interview as a time when only the interviewer asks questions of the interviewee. The adolescent may have stuck to this rule and stayed on topic.

The literature supports the “diverts topic” phenomena. According to Winner (2002), individuals with AS have a difficulty in shifting perspective to think about others’ experiences. Klin & Volkner (2003) describe the communication of individuals with Asperger Syndrome to be tangential with a lack of consideration for the conversational partner. Myles (2003) describes their conversational style as egocentric, with a tendency to discuss at length a topic of little interest to others. During the Double Interview task, the participants with Asperger Syndrome may have had difficulty shifting perspective, resulting in many instances of diverting the topic. The results support the notion that there may be theory of mind deficits in individuals with Asperger Syndrome. This was demonstrated when participants asked question of the researcher, but quickly diverted back to talking about their own experiences and interests.

Linear questions. Linear questions were coded when the participant asked the same question but with a different referent. Consider the following example taken from an interview with a participant with Asperger Syndrome:

C: Do you have any pets?

E: No, I don't.

C: Does your family have any pets?

E: Nope they don't.

C: Does your fiancé have any pets?

E: He used to have a dog.

C: Do any of your other friends have pets?

E: Some of them have dogs, one has a cat.

Participants in the group developing typically did not use linear questions. The use of linear questions may be due to difficulty formulating questions. It is easier to ask the same question and change the referent than to generate a new question. Even though participants who were developing typically had difficulty formulating questions, this tended to be signaled by longer pauses followed up by an original question. Adolescents with Asperger Syndrome also paused, but used linear questions more often than generating an original question.

Literature regarding the Executive Dysfunction theory (Ozonoff et al., 1991) may provide a rationale for the linear question phenomena. This theory states that individuals with Asperger Syndrome have rigid or inflexible thinking. Therefore, during the Double Interview Task a participant with Asperger Syndrome may have had trouble changing his line of questioning due to the inflexible nature of his thoughts. Once he was on a subject, it was easier to ask all the questions about that subject than to generate a new line of questioning.

Personal interest. Yet another qualitative difference found between the groups was in the Personal Interest category. Personal Interest was coded when the participant asked questions or gave comments that related to himself or his interests. Adolescents with Asperger Syndrome were given this code a total of 20 times. Examples include: *Do watch Aqua Teen Hunger Force? Have you seen the Lion King 2?* and *Do you go on AOL Instant Messenger?* The Personal Interest category was used only once by the participants developing typically. In this instance, the

participant asked the researcher if she had braces when she was younger. The participant then shared that she was going to get braces later that week.

Winner (2002) attributes the use of the Personal Interest to either an inability to shift perspective to think about another person, or to difficulty formulating novel language unrelated to his or her area of interest. This is supported in the literature by research in perspective taking. Baron-Cohen's (1995) research supports the notion that individuals with Asperger Syndrome have deficits in Theory of Mind development. During the Double Interview task, the adolescents may have had difficulty shifting their perspective to think about the researcher, resulting in comments or questions related to themselves.

Implications for Use

The information gained from this study can be of use to families and professionals working with adolescents with Asperger Syndrome. The following information explains how the Double Interview task can be an effective tool by which to measure social communication.

The Double Interview can be used to assess and describe functional language that is not captured during traditional standardized testing. It evaluates the students' ability to shift perspective, to organize thoughts into language that moves in a purposeful direction toward someone else's area of interest, and to formulate questions and follow up with more specific questions to explore another person's interest (Winner, 2002). The Double Interview can be used as a baseline measure, to monitor progress during intervention, and as a post intervention measure.

The Double Interview is a relatively easy method of assessment that requires little training to familiarize oneself with the procedure. Evaluating the results of the interview, however, takes more skill. One may find that with practice and a solid understanding of social communication, scoring becomes a relatively simple task.

The time to administer the interview depends upon the individual. In this study, the average total length of interview for an individual with Asperger Syndrome was around 30-40 minutes. Given the results, this would be worth the time invested.

The first portion of the task involved the clinician interviewing the participant. This is beneficial because it is a natural way to develop a new relationship and to build rapport. The speech language pathologist has the opportunity to learn about a student, while the student has the equal opportunity to ask questions of the speech language pathologist. The professional can use the first part of interview to gather specific information about hobbies and interests, but also about social relationships. Some of the questions Winner (2002) developed for this task are displayed in Table 14. This table illustrates how information about the student's skills and perceptions can be explored by asking specific questions.

Table 14

Interview Questions and Implications

Question	Implication of Question
Are kids nice to you at school? How do you know if someone is not being nice? What do you like to do with your friends?	Explores the quality of the student's friendships.
Do you usually remember to turn in your homework? What happens if you forget? What do you like to spend most of your time doing? What are your brother's hobbies?	Explores organizational skills and problem solving skills. Explores the intensity of their interests. Explores how much they are aware of people they live with.
Do you ever feel embarrassed? What makes you feel embarrassed?	Explores perspective taking abilities.

After the clinician interviews the participant, the clinician then displays three personal photographs. In Winner's (2002) work, she uses this portion of the Double Interview task to assess a student's ability to shift perspective, read others' faces, account for contextual cues, and ability to infer. In her experience, students with Asperger Syndrome express difficulties in these areas when looking at the photographs. For example, they have difficulty identifying her in the photo, or are unable to infer that she is pictured with a husband and daughters.

While Winner reports this picture identification task to be helpful in assessing these abilities, the results of this study did not provide the same information. All participants with Asperger Syndrome had no difficulty identifying the researcher and making inferences about the people she was photographed with. It is possible that the participants in this study did not have these difficulties, yet they might be apparent in other adolescents with Asperger Syndrome. The photographs were

found to be beneficial, however, to the task. Participants in both groups relied heavily on the photographs to generate questions to ask the researcher. Adolescents who seemed to be reserved may have felt a little less intimidated by the task because they had visual cues to assist in question formulation.

The participant as the interviewer is key to the assessment of social communication within this framework. The speech language pathologist can gather information about the effectiveness of a student's communication by looking at the number of questions asked related to the total number of utterances used. This part of the assessment gives insight into the social communication abilities of an individual during natural, spontaneous conversation.

Information obtained from the Double Interview task can be beneficial for education and intervention. The results of the interview provide a specific profile of the adolescent's social communication in a natural setting. This information is highly individualized, which is ideal for designing intervention specific to the adolescent's needs. This information can lead directly to the writing of IEP goals (Winner, 2002). These goals could be related to increasing perspective taking abilities to increasing awareness of nonverbal behaviors that provide information about interactions. The difficulties highlighted from the Double Interview Task (shallow questions, difficulty formulating questions, diverting topic and so forth) can be used as targets for intervention.

Results from the assessment can be summarized by using the Double Interview Analysis Worksheet (see Appendix K). The worksheet allows the speech

language pathologist to record the total utterances, total errors, total utterances with errors, and percentage of utterances with errors. The Double Interview could be used as a pre and post measure of intervention. For example, the assessment could be given at the onset of intervention. It could then be re-administered to monitor progress. Since the Double Interview procedure is easy to learn, another professional unfamiliar with the student, such as educator or another speech language pathologist, could re-administer the assessment. This would keep the Double Interview as naturalistic as possible. The speech language pathologist would analyze the re-administration and then compare the results.

Limitations

The findings of this study are limited in terms of sample size. Only five adolescents with Asperger Syndrome and five adolescents developing typically were studied. Although many parent support groups and public schools were solicited for participants, only a limited number of consent forms were returned. Another limitation to the study is that two of the typically developing participants were siblings of each other. The results of their interviews were similar in nature. The sample size was not as varied as desired. The study was also limited in terms of geography. All participants resided in the Lawrence/Kansas City area. Another limitation is due to the sex of the participants. All of the participants with Asperger Syndrome were male and only two of the five participants developing typically were male. Factors due to gender could possibly influence the results.

Future Research

More research is needed in the area of Asperger Syndrome and the Double Interview task. It would be interesting to conduct this study with more participants in this age range. While results are promising, it would be helpful to have more participants to strengthen the study. Another future area of research might be to investigate the implementation of this assessment tool as part of the intervention process. The Double Interview task could be given as a pre and post test measure of intervention. This tool could be useful in measuring outcomes of social communication intervention.

Summary

In adolescence, teenagers engage in social interaction primarily by talking. Language is the primary tool for interaction, unlike younger children whose social interactions are mediated by activities and games (Paul, 2003). Adolescents with Asperger Syndrome have difficulty engaging in this way, and are therefore limited in their ability to form relationships and friendships (Paul, 2003). Because of this, social communication intervention may be the most important feature of intervention at the secondary level (Paul, 2003). If intervention is going to take place, it is first necessary to assess social communication skills.

Results from the Double Interview task support the use of this tool as a means to assess these abilities. The adolescents with Asperger Syndrome in this study performed differently than their age-matched peers on the Double Interview Task. These differences included: using more utterances to ask questions (less “effective”

communication), asking more shallow questions, a tendency to divert the topic, asking linear questions, and asking questions that only related to their interests.

Speech language pathologists could use the Double Interview Task as a tool to evaluate social communication skills while engaged in the act of communication when students are within normal limits for language on standardized tests, yet have difficulty in daily situations. Although the study is limited by sample size, geography, and gender, it does provide information on the social communication skills of typically developing adolescents and those with Asperger Syndrome on the same task. The information gathered from the procedure provides information on social communication skills, which can lead directly into the formulation of goals for intervention.

APPENDIX A
Letter to parents

Dear Parents,

I am a student at KU working on my Masters Degree in speech-language pathology. I am a member of the Communication and Autism Project (CAP) and spent the summer as a counselor at Camp Determination.

Currently, I am conducting research for my thesis and would appreciate your help. I am conducting a study focusing on the assessment of social communication skills in adolescents. I am seeking participants between 12-14 years of age, with and without Asperger Syndrome.

If your adolescent is willing, he/she would participate in the Double Interview Task. This is an informal assessment in which we would interview the adolescent, asking questions about school and his/her hobbies. He/she would then have the opportunity to interview me.

The study should take approximately 45 minutes to complete and would be conducted at a site most convenient for the family.

There are many potential benefits to participating in this study. Information from the assessment may be used to better describe areas of social communication difficulties for children with Asperger Syndrome. This could lead to the development of more specific social communication goals for intervention. The participation of typically developing peers will help to develop normative data in the area of social pragmatic assessment.

The results of the Double Interview Task will be shared with you and may be useful to your family as well as your child's educational providers.

If you are interested in participating or if you would like more information, please contact:

Kari Zweber
(785) 864-4690
jwegner@ku.edu

Dr. Jane Wegner, faculty advisor
(785) 749-9363
kzweber@ku.edu

APPENDIX B
Newspaper Announcement

Lawrence Journal World
Saturday, February 7, 2004

KU seeks subjects for autism research

Kansas University researchers are seeking children with autism to participate in three research projects this spring.

The researchers, in the department of speech -language-hearing, are looking for:

- Toddlers from 24 to 36 months old to examine temperament and communication.
- Families of children with autism up to 7 years old to complete a questionnaire about the availability and use of resources about communication.
- Adolescents 12 to 14 years old with Asperger syndrome to evaluate a social communication assessment tool.

For more information, contact Jane Wegner by Feb. 23 at 864-0645 or jwegner@ku.edu.

APPENDIX C
Informed Consent Statement

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study and the use and disclosure of information about me for the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7563, email dhann@ku.edu.

I agree to take part in this study as a research participant. I further agree to the uses and disclosures of my information as described above. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form. (Use the 18 years old disclaimer only if the study population may include participants under the age of 18).

Type/Print Child's Name

Date

Type/Print Legal Guardian's Name

phone/e-mail address

Guardian's Signature

APPENDIX D
Adolescent History/Background Form

Adolescent's name: _____ Date of birth: _____

Form completed by: _____

_____ Relationship

Date: _____

Phone:

School:

Grade:

Date of Diagnosis _____

By whom?

Please describe your adolescent's communication

Describe your adolescent's social skills

Does your adolescent currently receive services by a speech-language pathologist? If so, please describe current goals and objectives.

Has your child ever attended a social skills group? If so, please describe (setting, length, topic covered).

APPENDIX E
Double Interview Protocol

Assent Procedure:

“I am interested in learning more about you, so I would like to take turns interviewing each other. The interviews should take about 45 minutes. I would like to ask you some questions about school, home, and your hobbies and how you feel about these things. If you don’t feel like answering any questions, you don’t have to, and you can stop talking with me at anytime and that would be fine. I will be happy to answer any questions you may have now or when we are talking together. Do you want to take turns interviewing each other?”

Researcher/Clinician as the Interviewer:

“You will be asked to find out about me by doing an interview. An interview is a time when one person asks questions about the other person in order to find out more about them. The job of the interviewer is only to ask questions that give information about the other person. These are some words we can use to start a question: who, what, when, where, why, how, do you). Now I’m going to interview you, when I’m finished interviewing you, it will be your turn to interview me.”

Interview Questions:

1. Who is your teacher?
2. What is your favorite thing to do in school?
3. How do other kids at school treat you? What do you do if someone is not being nice? How do you know when they are not being nice? Who are your friends at school? What do you like to do with them?
4. When you are in class what do you like to study the most? Least?
5. What are your hobbies?
6. What do you like to spend most of your time doing? (Alternate question: What did you do at home yesterday?)
7. Who lives in your house? What are their hobbies?

8. What do you have to do at home that you dislike?
9. Do you ever feel embarrassed? What makes you feel embarrassed?
10. Do you have any pets?
11. What chores do you do at home?
12. Who do you hang out with at home? Do you have any neighborhood friends?
What do you like to do with them?

“I interviewed you by asking you questions and I learned a lot about you today. I learned you: (have brother/sister, like/don’t like, hobbies...). I learned a lot about you, but you don’t know very much about me. Now it’s your turn to learn about me. I just interviewed you by asking you questions, now you get to ask me questions to find out about me.”

Picture Identification Task:

“Before you start your interview, let’s look at some things. I brought some pictures that belong to me.”

Ask the participant to describe each picture. Ask who they think is pictured and why you might have a picture of those people. By the completion of the picture task, make sure the student has a clear understanding of the pictures.

Participant/ Student As the Interviewer:

“It is now your turn to interview me. You can ask me anything about the pictures we just looked at, or any other questions you might be wondering about me.”

APPENDIX F
Examples of Codes

Comment Only [CO]

The individual comments on what he knows rather than formulating questions about what he wants to find out. For example:

E: Do you want to know anything about my hobbies?

C: Probably one of your hobbies is hanging out with your friends [CO].

Personal Interest [PI]

The individual asks questions or gives comments that relate to himself or his interests.

For example:

C: Do you go on AOL Instant Messenger [PI]?

C: Do you watch Aqua Teen Hunger Force [PI]?

Difficulty Formulating Questions [FQ]

The individual has difficulty formulating questions to ask the evaluator. This is signaled by sighs of frustration with the activity, awkward silence of more than 2.3 seconds or verbalizing that they are unable to think of questions.

For example:

C: I can't think of any more questions [FQ].

Shallow Question [SQ]

The question asked is a closed-ended question, which does not solicit deeper information about the interviewee. The individual fails to provide a follow-up question about the same topic. This code is given to describe the quality of the child's question.

For example:

C: Where did you grow up [SQ]?

E: I grew up in Minnesota.

C: What are your hobbies?

(The child fails to ask a deeper question and moves on to a new topic)

Diverts Topic EDT]

The individual diverts the topic to his own experiences, making comments about himself. He takes more than one conversational turn relating to his personal interest. For example:

C: What about your sister, what's she like?

E: She's a private pilot so she flies planes.

C: Oh, ok.

C: Sounds kind of like my grandma (only she) yeah my grandma loves to travel [DT].

E: Really?

C: Yeah she travels all the time, like she'll be oh (we're) I'm in Phoenix Arizona and oh I'm in Rhode Island or something.

C: It's great when she comes to visit.

Repeated Question ERQ]

The individual asks the researcher the same questions asked of him. The questions include:

1. Who is your teacher?
2. What is your favorite thing to do in school?
3. How do other kids at school treat you? What do you do if someone is not being nice? How do you know when they are not being nice? Who are your friends at school? What do you like to do with them?
4. When you are in class what do you like to study the most? Least?
5. What are your hobbies?
6. What do you like to spend most of your time doing? (Alternate question: What did you do at home yesterday?)
7. Who lives in your house? What are their hobbies?
8. What do you have to do at home that you dislike?
9. Do you ever feel embarrassed? What makes you feel embarrassed?
10. Do you have any pets?
11. What chores do you do at home?
12. Who do you play with or hang out with at home? Do you have any neighborhood friends? What do you like to do with them?

Revision [R]

The individual uses false starts and self-interruptions, which change the direction of the statement or question. The revision code is given when the individual uses two or more false starts. For example:

C: Why are these, why d yo*, why d*, what ho*, what are your hobbies [R]?*

Unclear Question [UQ].

The individual asks a question that is unclear in meaning resulting in the researcher asking for clarification. For example:

C: Did you move at all [UQ]?

E: Um, like move states?

C: Yeah you know or other streets.

Linear Question [LQ]

The individual's line of questioning is linear in nature. He asks the same question but with a different referent. For example:

C: Do you have any pets?

E: Yes, I have a dog.

C: Does your family have any pets [LQ]?

E: No, they don't.

C: Do your friends have any pets [LQ]?

Redirected [RD]

The child is redirected after pauses longer than 3 seconds or to bring the child's focus back to asking questions. For example:

E: Can you think of any other questions?

C: Hmm.

C: Why do you like to swim [RD]?

APPENDIX G

Questions Asked By Typical Peers

Participant 1:

1. Was this like for your bachelors or something?
2. Do you have any pets?
3. What was the Master's for?
4. Where'd you grow up?
5. How long does it take to get a master's?
6. After the four?
7. Where do you think you'll move after you get married?
8. Where's that at? (pointing to picture)
9. Is it like Coca Beach or something?
10. Have you ever gone on any cruises?
11. Do I have to answer the last question?
12. Were you in a sorority?
13. Which one?

Participant 2:

1. Where did you meet your fiancé?
2. How long have you known your friends?
3. Who do you think you're closest with in your family?
4. What's one of your favorite memories of like things you do with your friends just anything?
5. Is there anything in like school like things that you could take back that you wish you didn't do?
6. How old's your sister, are you older or younger?
7. Do you think you were like nice to her when you were younger or were you the mean older sister?
8. Where was this picture taken?

9. What's your favorite thing to do with him, like just hang out or?
10. For this one with you and your friends, when was that or what was the event?
11. What was your least favorite subject in school and why

Participant 3:

1. Why did you choose to go to KU?
2. When was the last time that you saw your sister before you went to college?
3. Does your family live here in Lawrence, or they local or?
4. What were some other colleges that you were considering other than KU?
5. Did you like Minnesota or do you like it here in Lawrence?
6. Do you like snow?
7. Which one of your friends in this picture would you consider your longest known best friend?
8. Where do you think you'll move after you get out of college?
9. What was your favorite thing in elementary school that you remember, elementary and the junior high level?
10. Where do think (if) if you had like anywhere to live in the entire United States or yeah in the entire United States where would you live?
11. What's your favorite sport?
12. What's your favorite hobby?
13. Who was the person you miss most (from) from any anybody moving away or family or whatever, who was the person that you miss the most?
14. What in el* in high school (what) what um sports and classes did you take?
15. Were you on any sports teams?
16. Where was the farthest place that you traveled during dance?
17. What dorm do you stay in?
18. Who is your favorite teacher?

Participant 9:

1. What's your name?
2. How long until you're gonna get married?
3. What's your fiance's name?
4. Do you have pets?
5. Who do you live with?
6. What's your favorite class?
7. What's that?
8. What's your friend's name?
9. Was that at prom or something?
10. What school do you go to?
11. If you had a pet what would it be?
12. . Did you have braces?

Participant 10:

1. What instrument did you play?
2. Do you like to go to the beach?
3. Do you have any pets?
4. Do you like to travel?
5. Do you have a favorite book?
6. What are you doing for studying for thing, yeah?
7. What's that?
8. What was your favorite teacher to have?
9. Who's (one of your) one of your best friends?

APPENDIX H

Questions Asked by Participants with Asperger Syndrome

Participant 4:

1. Who are you?
2. What are you?
3. When were you born?
4. Where were you born?
5. Why were you born?
6. How were you born?
7. Do you like being alive?
8. Who is in (in) your family?
9. What are your hobbies?
10. Who are your friends?
11. And What is your fiancé's name?
12. Do you like him?
13. How do you get along with your friends and your family?
14. (Why um), what are some reasons you like your family, your friends, and your fiancé?
15. When did you meet your friends?
16. When did you meet Ryan?
17. When did you meet your family?
18. What's your Chinese symbol?
19. Do you like dogs?
20. Where do you go to school?
21. How many schools did you go to, in (in) your school career?
22. How many different buildings?
23. How did you like your teachers?
24. Do you have any other friends out of the* these three?
25. Do you have any pets?
26. Does your family have any pets?
27. Does your fiancé have any pets?

28. Do any of your other friends have pets?
29. What were you like as a baby?
30. Did you have any un-friends in school?
31. I mean were there any bullies in school or?
32. Did they ever try to hurt you?
33. Do you like your teachers now?
34. How old were you when these pictures were taken?
35. What's she like?
36. Do any of your friends do anything you wish they wouldn't?
37. Do any of your friends smoke?

Participant 5:

1. Are you a smart independent person that does not do you hack into people's stuff on the computer?
2. Do you go on AOL Instant Messenger?
3. Do you have a screen name?
4. Do you have buddies?
5. Do you know their passwords to their profiles?
6. Are you sure, (are you h*) (do do) do you have a password to your profile?
7. Do you like to play rated R video games?
8. Do you watch Aqua Teen Hunger Force?
9. Do you like to eat chilli?
10. What do you like to watch on tv?
11. What do you like to eat?
12. Or movies, do you like to watch movies?
13. What other shows do you watch?
14. Do you have a PVR on your tv?
15. (wh*) So do you have any movies you like to watch?
16. Have you seen Volcano?

17. How many times have you seen it?
18. What was your favorite part?
19. Have you ever been arrested?
20. Do you have a nose ring like Jillian?

Participant 6:

1. Who are all of your friends?
2. Why are you all dressed up are you like at prom or something?
3. What's his name?
4. When did you meet him?
5. What's your family like?
6. What about your sister, what's she like?
7. How about your mom?
8. Speaking of hobbies, what are your hobbies?
9. How about your dad?
10. Do you like music at all?
11. What kind?
12. What kind of books do you like to read?
13. Is this like for some kind of report or something?
14. Are there are a lot of thesis' that are done like this, I guess that's my question, like creative kinds of things like this like, I thought for awhile that thesis' were just like this big boring report you wrote?
15. What other kinds of stuff do you like to do, I don't know?
16. What high school did you go to (I was just thinking about) maybe I could ask something about oh what's his name, Ryan?
17. When's the thesis due, I don't know?
18. How old are you I guess that is a good question?
19. Where in Minnesota?

Participant 7:

1. Ok first do you have any pets?
2. Second do you have any hobbies?
3. Oh have you seen Rock Horror Picture (Sh*) movie?
4. (Do your) (fr*)(fa*) do you family members have any hobbies?
5. Ok does your dad have any hobbies?
6. Does your mom have any?
7. Does your fiancé have any?
8. So who's your best friend?
9. Do they have any hobbies?
10. Ok ah what's your favorite movie that you've seen?
11. Oh yeah did you see the Emperor's New Groove?
12. Did you see the Lion King 2?
13. Did you see the first one?
14. Did you see Holes the movie?
15. Do you have any DVD's?
16. Ok which ones?
17. Do you have Bring It On Again?
18. Have you seen Bring It On?
19. Ok have you seen American Wedding?
20. Like?
21. How about Men Black?
22. Which ones?
23. Does he have (fast) um fact track on it?
24. What kind of car do you drive?

Participant 8:

1. Well are you into like beach things?
2. And (what) what's up with that on her head?
3. Well like does it mean that you graduated or?

APPENDIX I

Example of a coded transcript: participant developing typically

\$ CHILD, EXAMINER

+ Name:

+ Gender: F

+ DOE: 2/19/2004

+CA: 13;0

+ Context: CON

+ Examiner: Kari Zweber

+ Transcriber: Kari Zweber

-0:00

[CO] Comment Only

[PI] Personal Interest

[DQ] Difficulty formulating questions

[SQ] Shallow Question

[DT] Diverts Topic

[RQ] Repeated Question

[R] Revision

[UQ] Unclear Question

[LQ] Linear Question

[RD] Redirected

[CP] Cue Provided

C Um where did you meet your fiancé?

E Um we met in high school actually so yeah, so years ago.

C Bye {to friend walking in the room}.

E It's ok.

E It's not really that big of a deal.

C Ok.

C Um all right, um how long have you known your friends?

E Um the friends in the picture here I've known since second grade so I'm almost 24 now.

E A really long time.

C (Um who do er) who do you think your closest with in your family?

E That's a really good question.

E I would probably say my mom.

E Um my mom is actually a speech language pathologist too so I think we are very similar in a lot of ways.

E I am close to my dad and my sister too, so that's really great.

E I have a wonderful family.

C What's one of your favorite memories of like things you do with your friends just anything.

E Oh, what a great question.

E Um I remember the funny things from school too like I've had a lot of fun um in college.

E We used to take nightly walks around campus and just a lot of funny stories from that.

E And high school you have the funny stories of like one of my friends got ah her jacket caught in her minivan of her dad's car.

E And this was like she was a freshman in high school and she was like bye dad in the senior parking lot and shut the door and her jacket got caught so he starts driving away and she had to run with the minivan.

E So those memories.

C High school horror stories.

E Yeah.

E Yeah but so funny to think about now.

C Um is there anything in like school like things that you could take back that you wish you didn't do?

E Gosh that's a good question too.

E Nothing that I can really think of.

C Ok.

C Um how old's your sister er are you older or younger?

E She's um younger than I am.

E She's gonna be 21 in a month.

C Ah do you think you were like nice to her when you were younger or were you the mean older sister?

E I think I was ok.

E I think I had my moments that I was not so nice but um.

E Especially when we got older, like right now we have a great relationship so.

C I have to work on that.

E It comes, it just takes time.

C So I'm not completely evil XX ok or not at all.

E N o . C O k . C All right, I'm trying to think of another one.

E I know it's tough.

E If you could think of like five more.

= [CP].

C All right.

C Um where was this picture taken of you <and your fiance>?

E <Um> it was taken in Florida the weekend that we got engaged.

C That's cool.

C Um what's your favorite thing to do with him, like just hang out or?

E Yeah, yeah.

E He lives in Minnesota and I'm here in Kansas obviously so it's really just hang out and watch movies and do the little stuff you know that we never get to do.

C So what, for this one with you and your friends <> (what was the) when was that or what was the <event>.

E <>.

E <This is my friend>.

E Yeah, my friend Laurie she got married in October, so not too long ago, so that was at her wedding.

C Oh.

E Yeah.

C Yeah I'm like it doesn't look like it was far enough away to be prom or anything and only three of you are in dresses.

E <I know>.

E I know.
E I know, yeah.
E These guys were bridesmaids <so they> had the same dress.
C <Yeah>.
E And Laurie in her bridal gown.
C Ok.
C Um what was your least favorite subject in school and why?
E Definitely math.
E Hands down.
E Um, I'm just not a numbers person.
E I love English and reading and speech kinds of stuff, communication stuff.
E So anything that is the opposite of math.
E Well that's all I have.

APPENDIX J

Example of a coded transcript: participant with Asperger Syndrome

\$ CHILD, EXAMINER

+ Name:
+ Gender: M
+ DOE: 2/20/2004
+CA: 12;2
+ Context: CON
+ Examiner: Kari Zweber
+ Transcriber: Kari Zweber
-0:00

[CO] Comment Only
[PI] Personal Interest
[FQ] Difficulty formulating questions
[SQ] Shallow Question
[DT] Diverts Topic
[RQ] Repeated Question
[R] Revision
[UQ] Unclear Question
[LQ] Linear Question
[RD] Redirected
[CP] Cue Provided

C Who are you [SQ]?
E Well, my name is Kari.
C What are you [UQ][SQ]?
E What do you mean?
E A person, is that what you're asking?
C Uhhuh.
C When were you born [SQ]?
E I was born on June 10th, 1980.
C Where were you born [SQ]?
E In St_Cloud, Minnesota.
C Why were you born [UQ] [SQ]?
E I don't know that answer.
C I was joking.
E I know you are.
C How were you born [UQ]?
C I'm joking too.
C Do you like being alive [SQ]?
E Yes I do.
E I think it's great.
C Mom don't think I'm getting too personal, I'm joking {Addressing mom}.
= {Mom makes a comment to C}
C She also likes to be very serious.
C Okay, let me see, who is in (in) your family [SQ]?
E Um, my mom Jane, my dad Joe, and my sister Ann.
C You need to face the camera so they are looking at you.
E Oh, it's okay.

E I just need to hear the voices more than anything else.
C Oh.
E Thanks though.
C And, could you repeat that?
E Oh, this is my mom Jane, my dad Joe, and my sister Ann.
C And you.
E And me, right.
C Okay, what are your hobbies [RQ]?
E Um I love to read, watch movies.
C I like reading and watching movies too.
E Do ya?
C Yeah.
E Some things in common then.
C Anyways continue.
E Um, I like talking on the phone, to my family, or <friends>.
C <Of course>, that's what girls do.
E Yeah, that's one of my hobbies.
E And I love to swim.
C Okay, let's see [NQ].
C Who are your friends [UQ] [SQ]?
E Um, well this picture, these are all my high school friends.
E Do you want to know their names?
C Yeah.
E That's Katie, Erikka, Laurie, Krista, Laura, and Megan and me.
C And what's your fiancé's name?
E His name is Ryan.
C Do you like him [SQ]?
E I do like him.
C How do you get along with your friends and your family?
E We get along really well, I think we have a lot of fun together.
C [FQ].
C (Why um), what are some reasons you like your family, your friends, and your fiancé?
E Um, that's a great question.
E I think because they're all really good listeners.
E They listen <to me talk>.
C <That's opposite of me>.
E And they love to have fun.
C Okay, when did you meet your friends [SQ]?
E Um, the friends in this picture, (we met), I met some of them in second grade.
E But most of them in junior high and high school.
C When did you meet Ryan [SQ]?
E We meet in high school.
C When did you meet your family [SQ]?
E The moment I was born.
C Um, could you repeat, when were you born?
E Yeah, June 10th, 1980.
C Do [FQ].
C Now here's a really tough question.

E O k a y , I ' m
r e a d y . C What's your Chinese,
um, symbol [SQ]?
E I have no idea.
C When were you born?
E Oh, oh okay.
E I think it's the monkey.
E Is that what you're talking about?
E The zodiac sign?
C Yeah.
E Gemini.
C No, I'm (I'm) talking about the Chinese zodiac.
E The Chinese, so the monkey?
C So you're a monkey?
E Yep.
C Oh, I was born (year), the year of the monkey, 1992.
E Oh.
C Okay, um, here's another tough question.
C [FQ].
C Do you like dogs [SQ]?
E I do like dogs.
E They're pretty friendly.
C Except this one's not too friendly.
E That's okay.
C (To the floor).
C (Um, where are) where do you go to school [R]?
E At KU.
C Um, how many schools did you go to, in (in) your school career [SQ]?
E < O h m y > g o o d n e s s .
C <Other than>, other than (your K*) the one you go to now.
E Do you want me to start at the very beginning?
C Yes please.
E L e t ' s s e e , p r e s c h o o l .
C No I mean, I know that, what grades you went to I mean [UQ].
E How many different buildings?
C Yeah.
C And their names.
E Okay, I went to um Redeemer preschool school, Sunny Hollow Elementary, Eden Lake
Elementary, Oak Point Intermediate, Central Middle School, Eden Prairie High School, the
University of Missouri, and the University of Kansas.
C Okay and [FQ].
C (How)how did you like your teachers?
E You know, for the most part I liked them all a lot.
E I think I got pretty lucky.
C Why did you like them?
E I think they were good teachers, (they were really good at), they knew what they were
teaching, they knew about their subject, and ah they knew how to teach.
C Hmm let's see [FQ].
C And last but not least, do you have any other friends out of (the*) these three [SQ].

C (Pointing to pictures).

E I do, I just picked one picture of my high school friends but I have some friends from college too and family friends.

C Do you have any pets [RQ]?

E No, I don't, not right now?

C Does your family have any pets [SQ]?

E Nope they don't.

C Does your fiancé have any pets [SQ]?

E Hehasadog.

C Do any of your other friends have pets [SQ]?

E Um, some of them have dogs, one has a cat.

C Um, what were you like as a baby?

E I don't know.

E I think my mom said I was pretty laid back.

E Pretty easy.

C My mom says that kind of the same thing.

E Uh huh.

C In different words.

E Uhhuh.

C Um did you have any un_friends in school [UQ]?

E <What do you mean>?

C <I mean>.

C Enemies?

E Enemies?

E Oh, probably not enemies but I definitely got along better with some people than others.

C (That's pretty much) I mean were there any bullies in school or>

E Oh yeah, yeah.

C Did any of them try to like hurt you?

E No, they never tried to hurt me.

C Do you like your teachers now [SQ]?

E I do.

E Out of all the teachers I've had, I think these are the best.

C How old were you when these pictures were taken [SQ]?

E Oh let's see, I was probably about twenty in this one.

C I mean how old were you?

E Yep, I was like twenty_years_old <in this one>.

C <Twenty>.

E In this one, it was just taken this year, so twenty_three.

E And this one was this year too, so twenty_three.

C Hmm [DQ].

C Do you have any (brothers) or brothers?

E Nope.

E Just a sister.

C What's she like?

E She is <twenty>.

C <How>.

E She's almost twenty_one.

C What is she like though?

E Oh, she <is>.
C <Is> she a brat, is she?
E No, she's an adventurer.
E She likes, she's a private pilot, so she likes flying planes and taking lots of different adventures.
E She's kinda the opposite of me.
C Your one of those people that's just, I am fine on the ground.
E Yep.
C [DQ].
C Do any of your friends do anything you wish they wouldn't [UQ]?
E Do I think my friends what?
C Do things you wish they wouldn't?
E No not really right now, we get along pretty well.
C Well (I mean) I mean things they do, when you're not around or.
E No, not really.
C I mean like do any of your friends smoke [SQ]?
E Nope.
C Ok, so I think that's good.
E All right

APPENDIX K
Double Interview Analysis Worksheet

Student's Name

Date

DOUBLE INTERVIEW ANALYSIS

Comment Only	
Shallow Question	
Personal Interest	_____
Difficulty Formulating Questions	
Diverts Topic	
Repeated Question	
Revision	_____
Unclear Question	
Linear Question	
Revision	_____
Cue Provided	_____
<hr/>	
Total Utterances	_____
Total Errors	_____
Total Utterances with Errors	_____
Percentage of Utterances with Errors	

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