2010

The Effect Of Video Modeling And Social Skill Instructionon On The Social Skills Of Adolescents With High Functioning Autism And

Bruce Blake
University of Central Florida

THE EFFECT OF VIDEO MODELING AND SOCIAL SKILL INSTRUCTIONON ON THE
SOCIAL SKILLS OF ADOLESCENTS WITH HIGH FUNCTIONING AUTISM AND
ASPERGERS SYNDROME: IS THE INCORPERATION OF YOUTUBE VIDEOS
EFFECTIVE?

by

R. BRUCE BLAKE
B.F.A. The School of the Art Institute of Chicago, 1996
M.B.A. University of Phoenix, 2004

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Child, Family and Community Sciences
in the College of Education
at the University of Central Florida
Orlando, Florida

Summer Term
2010

Major Professor: Suzanne Martin

ABSTRACT

Research conducted on video modeling has shown that these strategies are most effective when they include specific strategies to address conversation skills. Social skills research has also shown that teaching social skills to adolescents in group settings may be more effective than presenting them on an individual basis. Adolescents with Aspergers Syndrome (AS) and High functioning Autism (HFA) participated in a12-week Social Skills Training (SST) program. In addition to pre-and post-study measures, conversation skills data were collected before and after the application of the independent variable (video modeling). Follow-up interviews were also conducted with participants, secondary participants, and parents of the primary participants. After a two-week baseline phase, participants attended weekly social skills training and received the treatment of video modeling with videos found on YouTube. This established pre-existing social and conversation skills and enabled the measurement of changes over the course of the 12 week program. After post intervention data were collected, additional data were collected with participants and secondary participants, neuro-typical peers, as a measure of treatment generalization. This study proposed that presenting social skills videos found on YouTube, would be effective in increasing levels of initiation, responses and conversation skills, thereby increasing communication effectiveness and reducing social rejection by peers. Although some gains in conversational skill levels were observed by most participants in the study significant increases in conversation skill levels were not observed in both ASD only group settings or of the ASD neuro-typical mixed group setting.

I would like to dedicate this doctoral dissertation to my family.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1
THE PROBLEM AND ITS CLARIFYING COMPONENTS

Introduction

This chapter has been organized to introduce the problem of the study and define its clarifying components. The purpose and significance of the study for theory and practice are presented. Also introduced are the rationale for and the elements of the conceptual framework, definition of terms, and the research questions.

Statement of the Problem

Adolescence is a major transition period for all adolescents. During adolescence, a greater array of variables, e.g., social expectations, physical and emotional change, may converge and cause increasing stress, anxiety, and in some cases increasing depression (Myles, 2001; Wing, 1981). Adolescence is a period when peer relationships acquire central importance. It is also a stage when the majority of adolescents are feeling confused and unsure about themselves in relation to their bodies, their emotions, and their place in society (Brown, 1990). This is a critical issue for adolescents with High functioning Autism/Aspergers Syndrome (HFA/AS), because it means that an even greater focus will fall on the area of functioning in which they are least competent. In many cases, adolescents with HFA/AS facing these challenges might exhibit more inflexible behaviors, an increased amount of time engaged with special interests, more stereotypic behaviors, and more anger or aggressive outbursts.

1

<u>Purpose of the Study</u>

Over the past 40 years, a body of research regarding the effectiveness of video modeling to teach social skills has been established (Buggey, Toombs, Gardener, and Cervetti, 1999). Charlop-Christy et al., 2000; Kehle, Clark, Jenson, & Wampold, 1986; Lonnecker et al., 1994; Bellini, 2000). Furthermore, an emerging body of research demonstrates great promise for the use of video modeling (VM) (peer, adult, or self as model), as an effective intervention modality for individuals with HFA/AS Nikopoulos and Keenan, 2004; Alcantara, 1994; Buggey et al., 1999; Thiemann & Goldstein, 2001).

. VM integrates a powerful learning modality for adolescents with HFA/AS of visual cues for instruction with a frequently studied intervention strategy (Bellini & Akullian, 2007). In addition, researchers have shown that skills learned via VM generalize across different settings and conditions, and that the positive gains made during the video modeling intervention are maintained for months following the conclusion of the intervention(Thiemann & Goldstein, 2001;Bellini & Akullian, 2007). This is particularly important for adolescents with HFA/AS who have considerable difficulties transferring skills from one setting to another (Dowrick, 1999).

Although Social Skills Training (SST) programs benefit from growing empirical support, many adolescents with HFA/AS do not have access to SST programs, and many instructors lack basic information including (a) an understanding of ASD, (b) training in teaching social skills, (c) access to evidenced-based social skill curriculum, or (d) the resources to create effective video models. There is a need to incorporate social skills training into preparation programs of teachers, and clinicians working with adolescents

2

with HFA/AS. Furthermore, ensuring that evidenced-based SST programs are accessible to individuals who need them should be considered when creating SST programs. SST is currently the most potent intervention for helping individuals develop more rewarding and meaningful relationships and for promoting social integration into the community. Access to SST programs for adolescents with HFA/AS should be viewed as a right not a luxury, and the planning and provision of education, mental health, and community-based services should attend to this right accordingly (Musser & Bellack, 2007).

The purpose of this study was to determine whether providing conversation skills instruction via VM found on YouTube, was effective in improving conversational skills performance, and levels of initiating and responding behaviors of adolescents with HFA/AS. The results were also evaluated with dependent variables such as: (a) speech acknowledgers, (b) non-verbal communication, (c) speech duration, (d) conversational questions directed to the confederate, and (e) appropriate disclosures along rates and levels of initiation and responses. It is hoped that increasing the effectiveness of interpersonal communication will benefit adolescents with HFA/AS both in a social context, e.g., intra-peer communication, self determination, and a post-school context, e.g., acquiring and maintaining employment or volunteering. Empirically, the 12-week SST program extended previous work by including both formal and informal assessments along with standardized pre- and post-intervention measures. Parent and participant interviews were conducted to for social validity measures. Notes taken during focus groups were reviewed for further evidence of the success and efficacy of the 12-week program.

Significance of the Study for Theory

Cognitive strategies discussed in the literature included video modeling, a procedure by which persons were allowed to view others functioning at a slightly higher level than their normal ability through the creative use of: (a) digital VM, (b) rehearsal, which was effective for rote memory of factual information, (c) advanced organizers which included separating the main idea and supporting facts while outlining content, (d) cooperative learning which retained the efficiency of whole-group or universal training while enhancing the effectiveness and individualization of selected group training (Lonnecker, Brady, McPherson, & Hawkins, 1994; Schunk & Hanson, 1989).

This study was conducted to add to the specific applications of theories of VM and cognitive strategies in social skill programs, because there was only limited research on VM and adolescent conversation skill development, and no current research on the application of internet-based VM found on YouTube. In addition, this investigation was undertaken to expand the knowledge base of learning theories regarding the effectiveness of social learning theory and constructivist learning strategies. Finally, the research was focused on the 12-week time frame during which instructional intervention occurred and the extent to which there was a positive effect on participant achievement.

Significance of the Study for Practice

Translating effective SST programs into practice has been a critical challenge for researchers and practitioners (Brown & Odom, 1995). Even the most robust empirically based intervention, if not used by practitioners, is impotent in promoting and supporting

adolescent social skill development. The primary reasons that research has often not translated into practice are: (a) researchers have not disseminated their findings in a manner that is "user friendly" for many important consumers (Shwartz, Carta, & Grant, 1996); (b) many interventions lack ecological validity due to their prerequisites of highly trained personnel, a reliance on modified materials and technical assistance, and (c) the basic cost of curriculum packages or materials. The goal of the present study was to provide clear protocols, evidence-based best practices, and clear procedural guidelines in order to facilitate the transfer of research findings. Furthermore, the use of internet-based tools increased accessibility and the dissemination of related resource materials.

<center>Social Skills Training</center>

Social and communicative skills represent critical adolescent development skills in a transition focused education (Kohler & Field, 2003). Due to the lack of research on social skills instruction for adolescents with HFA/AS, it is necessary to extrapolate the benefits reported. For example, Attwood (1998) noted that social skills instruction decreased inappropriate behaviors for adolescent students with ASD. Furthermore, researchers (Baker & Welkowitz, 2005; Myles, Simpson, Ormsbee, & Erickson, 1993; Odom & Strain, 1984) noted that the most beneficial mold of intervention will often be a small group of adolescents with HFA/AS experiencing similar or related difficulties. Researchers have identified self-initiated social interactions as a key factor in predicting improvements or general positive outcomes for children with autism (Koegel, Koegel, Shoshan, & McNerney, 1999). Researchers have shown that full inclusion alone does not

<center>5</center>

guarantee that individuals with AS or HFA will be actively socially engaged with their peers (Myles, Simpson, Ormsbee, & Erickson, 1993; Odom & Strain, 1984).

<p style="text-align:center">Conversational Skills</p>

It has also been shown that conversation skill instruction is a critical component to improve the social skills of adolescents (Plienis et al., 1987). More specifically, these skills include: (a) joint attention, (b) speech acknowledgers, (c) speech duration, tone and pace, (d) appropriate disclosures of information, and (e) non-verbal communication

By definition, communication requires at least two people (or other sentient beings), a sender of a message and a receiver. The need for communicating partners constitutes the essential social aspect of communication (Downing, 2005). Communication is fundamental to most activities in the lives of adolescents. The ability to make requests, choices, protest, and comment is integral to early development of self-confidence, self-esteem, and intelligence; and remains central throughout life as adolescents develop relationships, network with peers, navigate school, and enter vocational and volunteer environments (Alwell & Cobb, 2007). Early conversation skill research was conducted primarily in residential or clinic based settings (Sternberg, & Owen, 1985). More recently, conversation skill research has been conducted in community based settings (Lamb, Bibby, Wood, 1997; Smith & Griffin, 2002). However, very few studies have been conducted with students with autism. For example, of the eight communication studies reviewed, only one involved children with autism

(Newman, Buffington, Hemmes, 1996). There was a need for further investigation into improving communication skills for adolescents with HFA/AS.

<div align="center">Video Modeling</div>

Video modeling is an empirically based method for providing social skills instruction to adolescents with HFA/AS. Video modeling is based on the seminal work conducted by Bandura with children (1977). Bandura's theory of social learning, demonstrated that modeling had a significant influence on the development of children based on their skill acquisition through observation (1977). Video modeling involves a person watching a video of specific behaviors and then imitating the behavior in the video (Bellini & Akullian, 2007). Video modeling can be utilized across many settings and for individuals of varying disabilities (Charlop-Christy, Le, & Freeman, 2000). Other research has shown how video modeling can be effective in teaching persons with developmental disabilities and supports domestic skills (Goodson, Sigafoos, O' Reilly, Cannella, & Lancioni, 2007). Apple, Billingsley, & Schwartz,(2005) researched the effects of video modeling on children with HFA/AS and found video modeling to be effective in increasing compliment-giving behaviors. Several researchers have suggested that training using multiple exemplars seems particularly applicable to interventions designed to promote conversation skill use (Charlop-Christy &Daneshvar, 2003; Bellini, 2003, 2006; Mesibov, 1984). The research of video modeling has increased in recent years, especially among children with ASD. However, video modeling research with adolescents with HFA/AS has been limited.

Rationale for the Study

In many instances, adolescents who have been diagnosed with HFA/AS have had difficulties socializing with their peers, comprehending informal social cues and maintaining friendships, despite having average to gifted intellectual skills (Barnhill, Hagiwara, Myles, & Simpson, 2000). Social skill deficits in adolescents with HFA/AS can lead to internal problems such as depression and external problems such as aggression (Simpson & Miles, 1998, Barnhill, 2001).

According to Simpson & Miles (1998), many adolescents with AS have been considered to be strange, awkward, and difficult to socialize with by their neuro-typical peers. The negative perceptions of neuro-typical peers about adolescents with AS stem from adolescents' (on AS spectrum) inability to comprehend social conventions, others' emotions, read body language or appreciate others' perspectives. The rejection by peers and the isolation of adolescents with AS due to their lack of peer-to-peer content knowledge may have damaging effects on their self-esteem. The caveat for adolescents with AS is that although they may not comprehend the reasons why they are rejected by their peers, in most cases they are aware that the rejection and isolation exist (Church, Alisanki, & Amanullah, 2000; Firth, 1991; Koning & Magill-Evans, 2001). Adolescents with AS may understand that their peers do not want to socialize with them. They may not, however, understand how their behavior affects how others think or feel (Baron-Cohen, 1995; Baron-Cohen & Joliffe, 1997). The "different-ness" adolescents experience can be traumatic (Moran, 2006).

In response to the overarching social interaction quandary of adolescents with HFA/AS, this study was designed to investigate the effects of internet-based video models, on the conversation skills of adolescents with HFA/AS. Furthermore, the researcher investigated adolescents' perceptions of the SST program, video modeling and their conversation skills. The theoretical underpinnings of this study were that the application of multiple and methodical strategies, which synthesize evidenced-based social skills training, and are grounded in learning theory, can put forward efficacious interventions for conversational skills development for adolescents with HFA/AS. Therefore, infusing video models found on YouTube to complement a 12-week SST program based on empirical research, and deeply-rooted in learning theory, may increase conversation skills for adolescents with HFA/AS. It was a presupposition of this study that SST curriculum designers, social skill program developers, and researchers must also consider the tripartite issues of accessibility, implementation and production cost. Consideration of the aforementioned issues may influence research replication and end-user, e.g., teacher, clinician, application of internet-based video modeling and systematic SST similar to that applied in this study. Figure 1 illustrates the theory of effective treatment design use in this study.

Effective Tx
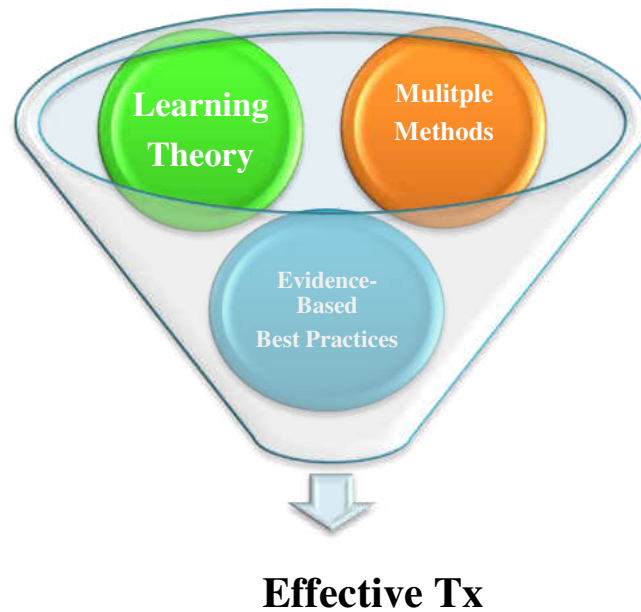
Figure 1. Theoretical underpinnings of the study.

Definition of Terms

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM IV)--published by the American Psychiatric Association and provides diagnostic criteria for mental disorders.

National Secondary Transition Technical Assistance Center (NSTTAC)--a technical assistance and dissemination center funded from January 1, 2006 through December 31, 2010 by the US Department of Education Office of Special Education Programs (OSEP). The mission of NSTTAC is to build effective, efficient, and sustainable research based interventions and models that improve outcomes of youth with disabilities.

The Autism Spectrum Screening Questionnaire (ASSQ)--developed as a first-stage population screening instrument for Aspergers Syndrome in mainstream primary schools with teachers as target raters but later renamed since it efficiently screened for other ASD and was found to be suitable for parents as raters as well (Elhers, Gilbert, Wing 1999). The ASSQ taps into features characteristic of higher functioning individuals. The ASSQ has shown to be both valid and reliable with good sensitivity and specificity in clinical settings. It has also been shown to have good internal consistency and a stable three-factor structure

Social Responsiveness Scale (SRS), Adolescent Version--appropriate for use with children ages 4-18 years; a 65-item rating scale that measures the severity of autism spectrum symptoms as they occur in natural social settings. Completed by a parent or a teacher in just 15 to 20 minutes, the SRS provides a clear picture of a child's social impairments, assessing social awareness, social information processing, capacity for reciprocal social communication, social anxiety/avoidance, and autistic preoccupations and traits.

Autism Spectrum Disorders (ASD)--a diagnosis provided by a medical professional or other certified assessment personnel and a valid score on the Autism Diagnostic Inventory Revised (APA, 2004; Le Couteur, Lord, & Rutter, 2003).

Aspergers Syndrome (AS)--first described by Hans Aspergers as including three developmental deficiencies: social behavior, communicative language and obsessive unpredictable behavior. Individuals with AS should have little or no cognitive impairment, as a result they should also be at or above grade level academically.

High functioning Autism (HFA)--a formal term applied to individuals with ASD who show some symptoms of autism but are close to normal. One definition similar to that of AS is that individuals with HFA have an IQ above some cutoff value such as 80-85. There is no consensus as to the definition and the extent of the overlap between HFA and AS.

Neuro-typical peers-- adolescents who have not been diagnosed with any disorders of speech, language, cognition, or motor development. Their development is normal and without any disturbance of the neurological system.

Social Skills Training(SST)-- the direct social skill strategies, role-play and rehearsal opportunities, domain knowledge supports, i.e., advanced organizers, and socialization opportunities.

Video Modeling(VM)-- the use of videos to demonstrate(researcher-created or participant-created, i.e., video self modeling, appropriate social skill behaviors via examples and non-examples, e.g., a video may show inappropriate conversation behavior then demonstrate an alternate appropriate behavior.

YouTube-- a video sharing website where users can upload, view and share video clips. The YouTube video technology to display a wide variety of user-generated video content, including movie clips, TV clips, and music videos.

Internet-based video models--similar to VM. However, internet-based media like YouTube, requires that users be connected to the internet. Digital media content cannot be downloaded or copied, only viewed while connected to the world-wide-web.

Parent-- a legal adult charged with care of a participant.

Participant-- one of 10 adolescents with HFA/AS whose social behavior is the dependent measure of the study

Research Questions

1. To what extent did conversation skill video models found on YouTube and social skill training, increase the level of conversation skills ratings of adolescents with HFA/AS?

2. To what extent did conversation skill video models found on YouTube and social skill training, increase the level of conversation skills ratings of adolescents with HFA/AS when grouped with their non-disabled neuro-typical peers?

3. What was the specific impact in social functioning as a result of video models found on YouTube and social skill training of conversation skills for adolescents with HFA/AS as measured by the Autism Spectrum Screening Questionnaire (ASSQ)?

4. What was the specific impact in social functioning as a result of video models found on YouTube and social skill training of conversation skills for adolescents with HFA/AS as measured by the Social Responsiveness Scale (SRS)?

H_0: Video modeling with internet-based video models and social skill training in a 12-week SST program does not impact the level of conversational skill performance of adolescents with HFA/AS.

H_1: Video modeling with internet-based video models in a 12-week SST program does not impact the level of conversational skill performance and social functioning of adolescents with HFA/AS with their neuro-typical peers.

H_2: Video modeling with internet-based video models in a 12-week SST program does not impact the level of conversational skill performance on the AASQ

H_3: Video modeling with internet-based video models in a 12-week SST program does not impact the level of conversational skill performance on the SRS.

Research Design

A quasi-expirmental design was used by the principal investigator in the study. The simple interrupted time series design was particularly appropriate when evaluating the efforts of learning and its process, and this was the goal set forth for this study. Probes are administered before and after a manipulation of independent variables of natural occurrence. Interrupted time series design is an efficient way to analyze and determine the outcome of variables on a large scale. This design is most effective when the treatment variable is anticipated to have a quick and noticeable effect on the group. Additionally, interrupted time series design is more appropriate when the treatment is

presented at one time (Cook & Campbell, 1979:Cooper, Heron, & Heward, 1987). Figure

2 illustrates the overall design of the study.

QUANTITATIVE AND
QUALITATIVE
INQUIRY

CHAPTER 1.
INTRODUCTION

PROBLEM

**RESEARCH
OBJECTIVES**
Significance for
Theory & Practice
Rationale
Definition of Terms

QUANT.
Relationships
Outlined

QUAL
Discription
Outlined

CHAPTER 2.
RESEARCH

QUANT.
Prevalence data
Related Literature
AS/HFA
Learning Theory
Video modeling
Social -
Communication

CHAPTER 3.
METHODS

QUANT.
Single Group
Multiple
Probe time-series
Research Design

QUANT.
SCQ questionare
Reliability/ Validity
ASSQ
pre-post

QUAL.
INTERVIEW

CHAPTER 4.
QUANT.
**Quantitative
Results**
Descriptive
Statistical
Analysis

CHAPTER 4.
QUAL.
Qualitative Findings
Quantitative Data
Presented
Research Questions
Answered

CHAPTER 5.
Sumaries of:
Quantitative Results
Qualitative Results
Results in
Comparison to
Literature

CHAPTER 5.
Implications
Limitations
Future Research

Figure 2. Concept map of the overall organization of the study.

Organization of the Research

As a foundation for the study and its findings, an overview of the specific social

deficits of adolescents with HFA/AS and of how researchers have thus far sought to

intervene with these deficits was reviewed in Chapter 2. In concluding Chapter 2, the

findings relative to social skills training and video modeling are linked, proposing a better

fit. By investigating empirically-based practices, options can be explored and new

interventions can be developed. Chapter 3 contains a description of the research design,

sample, instrumentation, data collection methods, and experimental validity. Chapter 4

presents the results of the analysis of data. Chapter 5 contains a summary and discussion

of the findings, implications and recommendations for future research.

CHAPTER 2
REVIEW OF THE LITERATURE

<u>Introduction</u>

Literature reviewed in this section will include prior research pertaining to High

functioning Autism/Aspergers Syndrome (HFA/AS) and the implications of the use of

video modeling (VM) on student success as well as current theory addressing the

effectiveness of instruction in learning strategies. Similar research studies of similar

student populations will also be accessed and evaluated for possible correlation to this

population.

A general keyword search was completed using educational databases over the

last decade, i.e., ERIC, JStore and Education fulltext, and a few social sciences databases

including PsychINFO and Assistive Technology Abstracts. This generated an initial list

of 3,343 social skill articles involving children and adolescents with ASD, AS and HFA.

When two additional search limiters, video modeling and adolescents, were added, the

number of articles generated dropped to 27 and 5 articles respectively. Although an

increasing body of literature has evolved in the social skills literature, a majority of the

research has been focused on children. Clearly, the need for more empirically based

research pertaining to adolescents with HFA/AS exists.

<u>Aspergers Syndrome & High functioning Autism</u>

In 1943, Kanner outlined a condition labeled as early infantile autism. In 1944,

Aspergers, first described Aspergers Syndrome (AS) as including three developmental

deficiencies: social behavior, communicative language and obsessive unpredictable behavior. Paradoxically, a year after Kanner outlined early infantile autism, Asperger's definition of AS paralleled Kanner's findings. Asperger eventually refined his definition of AS as a milder form of autism spectrum disorder. Wing (1981), in his later research, confirmed Asperger's definition.

AS has continued to receive increased recognition since its addition to the International Classification of Diseases and Related Health Problems (lCD-I0; World Health Organization) in 1992 and its inclusion in the fourth revision of *Diagnostic and Statistics Manual of Mental Disorders* (American Psychological Association, 1994).

Wing (1998) outlined additional characteristics of AS. According to Wing (1998), children with AS typically have good use of grammar and a large vocabulary; however, word recognition does not necessarily equate to conceptual understanding. She further described persons with AS as having average to high intelligence with literal and contracted thought processes who relied on rigid logic. Wing's definition of AS coincided with the diagnostic criteria of the American Psychological Association (1994). Individuals with AS are often highly intelligent and verbally skilled. Some have strengths in memory, reasoning, mathematics and computers. Although their other talents vary, they share a common difficulty in understanding social communications. They may take things too literally and have trouble interpreting humor, hints and gestures. They often do not know how to react to praise, laughter or affection. Rather than having a natural sense of social grace, individuals with AS need to learn social rules explicitly (The Pratt Center, 2008).

AS, as distinguished from autism, is a relatively new diagnostic entity. Researchers have had difficulty determining whether the two exceptionalities are separate or fall along the autism spectrum (Ozonoff, Rogers, & Pennington, 1991) and have rarely separated children with AS from those with high-functioning autism (HFA), a population of individuals in the autism spectrum who have developed language and function with average to above-average intelligence.

<center>Adolescents with HFA/AS</center>

Adolescents are very astute in recognizing those who do and do not belong. Often those who do not belong are targeted and labeled. The act of labeling someone else as an outsider is yet another way adolescents demonstrate that they know what is required to belong. Common epithets directed at young people who do not fit the current notion of what is required to belong include: "weirdo," "psycho," "loser," "nerd," "geek," and "gay," and can, at the very least, cause great discomfort at a time when the majority of adolescents are feeling confused and unsure about themselves in relation to their bodies, their emotions, and their place in society. Researchers have shown that full inclusion alone does not guarantee that individuals with AS or HFA will be actively engaged socially with their peers (Myles et al., 1993; Odom & Strain, 1984). Self-initiated social interactions have been identified as a key factor in predicting improvements or general positive outcomes for children with autism (Koegel et al., 1999). This variable assessed whether the number of verbal and non-verbal social initiations that participants made toward their peers increased during the structured intervention activity compared to

baseline levels. An initiation was operationally defined as any verbalization by the adolescent participant that either began a new interaction or changed the direction of an interaction (Koegel et al., 1999; Pierce & Shreibman, 1997). The verbalization should not have been in direct response to a preceding statement by a peer and needed to occur at least three seconds after the previous response to distinguish between ongoing interactions and initiations. Researchers have determined that being socially isolated from one's peer group can negatively affect an adolescent's overall happiness levels and lead to subsequent mood and anxiety disorders (Gillott, Furniss, & Walter, 2001; Headley & Young, 2006).

Individuals with AS/ HFA have typically been isolated from their peer group (Volkmar & Klin, 2000). The primary issue for individuals with HFA/AS has been using inappropriate or awkward strategies while engaging others to interact socially. Consequently, socially counterproductive reactions, such as avoiding social interaction and becoming isolated, may be exhibited by individuals with HFA/AS (Shaked & Yirmiya, 2003). Previous social interaction failures with peer groups may influence the latter response. In general, while individuals with HFA/AS may be able to verbally explain different emotions or social rules, they often appear unable to apply their knowledge in everyday social interactions (Klin, Sparrow, Volkmar, Cicchetti, & Rourke, 1995). A related area of impairment has to do with the content of their conversations. Individuals with HFA/AS usually have a special topic of interest which they repeatedly use in conversations with others. However, as they also have difficulties cueing into the nonverbal signals of other people, an individual with HFA/AS may not know when it is

an appropriate time to stop talking (Volkmar & Klin, 2000). For example, a teenager with HFA/AS, who has difficulty monitoring the reactions of others, may engage a peer in a conversation about a favorite computer operating systems, e.g., Linux. He or she may talk for 30 minutes before noticing that the peer is either extremely bored or no longer engaged in active listening.

Three studies were identified as being conducted since 2000 that were investigations of the social functioning of adolescents with HFA/AS. The first, conducted by Sigman and Ruskin (1999), was a longitudinal investigation of teenagers with HFA who were followed since preschool. Sigman and Ruskin (1999) documented the enduring lack of progress in social competence of this group. Similarly, Bauminger and Kasari, (2000) found that adolescents with HFA/AS lacked an understanding of the emotional aspects surrounding both loneliness and friendship not related to either their intelligence or their language development. The researchers concluded, "Autistic friendships may be of poor quality so that the children in question do not gain the feelings of security or companionship which are required to reduce feelings of loneliness" (p. 453). In the third study, adolescents with AS were compared with a matched group with severe conduct disorders. The adolescents with AS were significantly more socially impaired than their peers with conduct disorders (Green, Gilchrist, Burton, and Cox, 2000).

<p align="center">Peer Interactions.</p>

According to Fuligni, Barber, Eccles, and Clements (2001), as typical children enter adolescence, they begin to spend more time with peers, using them as a source for

support. On average, adolescents spend approximately 20 hours each week interacting with peers (Savin-Williams & Berndt, 1990). Furthermore, unlike younger children whose social interactions generally occur with just one or two other peers, adolescents experience a majority of their social interactions with peers in group contexts (Kennedy, 2002; Sasso, Mundschenk, Melloy, & Casey, 1998). As a result, the time spent interacting with peers increases during adolescence. These interactions also take place in a different context than during childhood. Research on peer interactions for individuals with AS/ HFA, however, indicates that individuals with autism spectrum disorders have fewer peer interactions rather than more (Bauminger, Shulman, & Agam, 2001). Other researchers on social interactions for individuals with ASD found that approximately 50% of the individuals spent no time at all around their peers or involved in peer relationships (Orsmond, Krauss, & Seltzer, 2004).

<u>Group Interactions</u>

The application of groups to a variety of human issues continues to proliferate. Group therapy is seen as an effective force for change in the world of mental health. Meta-analytic studies have shown that group treatment is just as effective as individual treatment, and in some cases, more effective (Burlingame, Fuhriman, & Mosier, 2003; Porter, 1980). A combination of individual and group therapy appears to be beneficial to many clients. Professionals too, can benefit from the use of group treatment in their practices for any number of reasons, including but not limited to: (a) faster patient improvement, (b) possible reduction of therapist burnout--especially when co-leaders are

utilized, (c) greater transference of learning from the interpersonal arena of group to the interpersonal world of relationships, and finally, (d) improvement for personality disorders that appear to improve only in group (Piper, Rosie, Joyce, & Azim, 1996).

Strawser, and Jones (2004) used a group treatment model focusing on key social skills with a sample of 10 High functioning adolescent boys with ASD and reported benefits on a number of quantitative measures. However, differences in pre- and post-intervention parent ratings on social competence were not significant. Solomon, Goodlin-Jones, and Anders (2004) ran psychoeducational groups over a period of 20 weeks for parents of boys 8-12 years of age with HFA/AS and pervasive developmental disorders not otherwise specified (PDD-NOS) as part of a social skills training (SST) program. Improvements in facial expression recognition and problem-solving were reported in comparison with counterparts in a control group.

Effective conversation skills are prerequisites for access to peer groups and leisure activities. Extracurricular activities, both at school and in the community, are other areas for potential interaction with peers. Examples of these activities include: athletics, band, school-based clubs, hobby clubs, and honor societies (Marsh, 1992). Research on extracurricular activities has documented an association between participation in such activities and higher school satisfaction and social self-concept (Eder & Kinney, 1995; Gilman, 2001). As expected, recent studies have demonstrated that adolescents with HFA/AS participate in extracurricular activities at significantly lower rates when contrasted with typical peers and also with peers who have other types of disabilities (Montes & Halterman, 2006).

<center>Generalization</center>

Generalization and maintenance have been defined as "the occurrence of relevant behavior under different non-training conditions, i.e., across subjects, environments, people, behaviors, and or time, without the scheduling of the same events in the same conditions as had been scheduled in the training conditions" (Stokes & Baer, 1977). It is critical that any social-communication model address the issue of generalization of targeted skills to new people, environments, and behaviors. Historically, this has been one of the primary shortcomings to successful interventions for autism overall, especially for the HFA/AS population (Klin & Volkmar, 2000). SST programs also have difficulties with generalization across time. Generalization of learned behaviors and responses can be better accomplished by providing the intervention in the individual's natural environment. For instance, Gresham, Sugai, and Horner (2001) advocated using incidental learning methods to teach new social behaviors in natural settings. In this manner, adolescents can take advantage of the opportunities occurring naturally in their environment to learn or practice new social behaviors (Farmer-Dougan, 1994; Gresham et al., 2001). In addition, generalization can be encouraged by using multiple exemplars to teach new skills or behaviors (Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984). Multiple exemplar training has been shown to be effective. Gaylord-Ross et al. (1984) used multiple peer partners to facilitate social interaction in natural settings for two adolescents with autism. They found that the participants successfully generalized their new social behaviors to other peers and unstructured settings.

A strategy for promoting generalization and maintenance of social interaction with peers has been training using different techniques (Brown & Odom, 1994). The strategy includes training across multiple exemplars, training loosely, and using indiscriminate contingencies. In this study generalization to non-intervention environments was conducted in the last three weeks of the 12-week training program. Generalization to peers who have not been involved in the SST activity and short-term maintenance of social behavior following the termination of intervention have also been reported (McEvoy et al., 1998; Twardosz et al., 1993).

Phase 3 of the present study, concludes with three consecutive weeks of breakout sessions with new peers, neuro-typical adolescents. The addition of new people in SST, and the termination of the independent variable in Phase 3 facilitated maintenance and generalization observation opportunities. The ability of adolescents with HFA/AS to apply conversational skills strategies to new peers was of critical interest to the researcher. The third research question inquiring as to whether increased levels of conversation skills performance of adolescents with HFA/AS generalize to interactions with neuro-typical peers was answered.

Learning Theories

Social Learning Theory

According to Bandura (1977), people learn through observing effective models-- others' behavior, attitudes, and outcomes of those behaviors. Most human behavior is

learned observationally through modeling. From observing others, one forms an idea of

how new behaviors are performed, and on later occasions this coded information serves

as a guide for action (Bandura,1977). Social learning theory explains human behavior in

terms of continuous reciprocal interaction between cognitive, behavioral, and

environmental influences. Furthermore, current video modeling strategies are firmly

rooted in Bandura's seminal work on social learning theory. In his theory, Bandura

(1977) detailed the influence of models on learner perceptions of behavior, and the

interactive role of personal, environmental, and behavioral variables in developing one's

self-efficacy and self regulatory system for motivational perspectives. Additionally,

Gredler (2005) discussed goal orientations, interest, affect attributions of the causes of

outcomes, and other influences on achievement and related behavior. Following are

conditions that were determined by Bandura (1977) to be necessary for effective

modeling:

1. Attention--various factors increase or decrease the amount of attention paid;
   includes distinctiveness, affective valence, prevalence, complexity, functional
   value; one's characteristics, e.g., sensory capacities, arousal level, perceptual
   set, past reinforcement, affect attention.

2. Retention--remembering to what one paid attention; includes symbolic
   coding, mental images, cognitive organization, symbolic rehearsal, motor
   rehearsal.

3. Reproduction-- reproducing the image, including physical capabilities, and
   self-observation of reproduction.

4. Motivation--having a good reason to imitate; includes motives such as a past, i.e., traditional behaviorism, promised (imagined) incentives, and vicarious in which one sees and recalls the reinforced model.

Additionally, models of affective learners that incorporate for motivational construct of self-efficacy, along with goal setting and monitoring and evaluating learning, are considered to be models of self regulated learning. Self regulated learning is an integral part of independent functioning and in generalizing domain knowledge across various settings.

Schema Theory

According to schema theorist, providing conceptual and pedagogical models as a means of making instructional materials meaningful and helping learners access and refine relevant schemata and mental models (Driscoll, 2005).

> As designers, it is our duty to develop systems and instructional materials that aid users to develop more coherent, usable mental models. As teachers, it is our duty to develop conceptual models that will aid. . . developed adequate and appropriate mental models. (Norman, 1982, p. 14)

Conceptual models are models invented by teachers and curriculum designers that help learners comprehend information. For pedagogical or conceptual models to effectively facilitate learning, they should meet three basic criteria: learnability, functionality, and usability (Norman, 1983). In this study, conceptual models are present in: (a) internet-based video models of conversation skills, both examples and non-examples; (b) advanced organizers that accompany the SST; and (c) group based activities, i.e., mock job interviews, after an interviewing skills direct instruction lesson.

Rumelhart's (1994) interactive cognitive based model asserts that information from multiple sources such as word meanings, syntactic relationships, and event sequences are considered simultaneously. The implication is that when information from one source such as syntax is deficient, the reader will rely on information from another source. One example would be contextual clues or previous experience. VM offers learners an opportunity to experience social constructs, albeit visually, which may broaden the frames of reference for adolescents with HFA/AS and improve their future social interactions.

<center>Behaviorism</center>

The behaviorist perspective on learning is that it is more or less a permanent change in behavior that can be detected by observing that organism over a period of time. In behaviorism reinforcement, respondent and operant behavior is the primary focus of research. The response to stimulus framework provides the basis for all operant learning laws. Skinner (1969) referred to the learning principles as contingencies of reinforcement and viewed the contingent stimulus as determining what happens to the response, whether it is reinforced or lost. In other words, behavior or learning is more likely to reoccur when reinforcement is provided (Driscoll, 2005). Furthermore, if stimuli or reinforcement are presented as a consequence of a behavior, but the behavior does not increase, then the stimuli cannot be considered as reinforcement. Conversely, the same principles apply for aversive stimuli and their intended decelerating effects on behavior.

In terms of reinforcement, the primary reinforcer in the present study was video

<center>29</center>

gaming which was scheduled for the last 20 minutes of the SST. In most instances, participants brought their personal video games to play in addition to the ones provided by the researcher. The gaming system used in the study allowed up to four players to play at one time. The majority of the participants indicated a strong interest in video gaming. Additional reinforcers in the study included the following: non instructional videos and movies such as Japanese animation; choice, i.e., planning the next community based group activity; small snacks as prizes for the instructional review games; and verbal praise.

Constructivism

Social learning theory has sometimes been called a bridge between behaviorist and cognitive learning theories because it encompasses attention, memory, and motivation (Driscoll, 2005). Social learning theory is related to Social Development Theory (Vygotsky, 1962, 1978). Vygotsky (1962)focused on the connections between people and the sociocultural context in which they act and interact in shared experiences (Crawford, 1996). According to Vygotsky (1962), humans use tools that develop from a culture, such as speech and writing, to mediate their social environments. Initially adolescents develop these tools to serve solely as social functions, ways to communicate needs. Vygotsky's (1978) constructivist learning theory asserts the internalization of these tools lead to higher order thinking skills. The curriculum for treatment is grounded in both social learning and constructivist learning theory. The intervention facilitates

inter-peer interactions, which plays a fundamental role in the process of cognitive

development (Vygotsky, 1978).

<center>Communities of Practice.</center>

Communities of practice has been defined, in part, as a process of social learning that

occurs when people who have a common interest in a subject or area collaborate over an

extended period of time, sharing ideas and strategies, determine solutions, and build

innovations. According to Lave and Wenger (1998), Communities of Practice are groups

of people who share a concern or a passion for something they do and learn how to do it

better as they interact. People see them as ways of promoting innovation, developing

social capital, facilitating and spreading knowledge within a group, and spreading

existing tacit knowledge (Lave & Wenger, 1998). An example of a community of

practice is the YouTube community. YouTube users rate videos, provide feedback, and

post links to similar content, and grant access to content blogs. Viewing videos and

engaging with the content as commentators and creators, may increase an adolescents'

social networks, or allow them to access desired skills at their convenience.

<center>Video Modeling (VM)</center>

The strategy of VM, utilizes visual learning, which is predictable, accessible and

it is easy to control (Buggey, Toombs, Gardener, and Cervetti, 1999). Charlop-Christy et

al., 2000 compared the effectiveness of video modeling to "in vivo," or live modeling.

Each of the five participants had different target behaviors. For four of the five

<center>31</center>

adolescents, video modeling led to quicker acquisition and better generalization of skills compared to counterparts engaged in in vivo modeling. They added that video modeling was cheaper and less time consuming than in vivo modeling. VM has been used to effectively treat a variety of disorders and problem behaviors ranging from disruptive classroom behaviors (Kehle, Clark, Jenson, & Wampold, 1986; Lonnecker et al., 1994) to academic skills (Schunk & Hanson, 1989).

Researchers investigated the use of VM with children with autism spectrum disorders. In one example, Buggey et al. (1999) conducted a study to see if the use of VM would increase appropriate verbal responding in a sample of three children with autism. They found an increased level of appropriate responding after the VM treatment in all participants. Bellini (2000) used VM with role-playing and training to decode thoughts and emotions to improve the social skills and reduce anxiety and depression in a fourth grade student with PDD-NOS. Post-test measures indicated lower levels of anxiety and depression and increased social interaction in the child diagnosed with a pervasive developmental disorder.

The majority of researchers using VM have indicated that this method was effective in eliciting positive behavioral changes. In most VM studies, positive behavior was achieved quickly and was still evident in follow-up evaluations. In addition, the desired responses were generalized across situations (Buggey, 1999 ;Charlop-Christy et al., 2000). Nikopoulos and Keenan (2004) applied a video modeling procedure to teach reciprocal play and social initiations to three children with autism between the ages of seven and nine. A multiple baseline design across participants was used. During baseline,

the child and the teacher sat in the experimental room with toys on the floor. The video modeling procedure was then introduced. The child watched the video in one room. Social initiations and play were observed and measured in a separate room. In the video, a peer model entered a room with a teacher. Results showed that social initiations and reciprocal play skills increased in all participants after the video modeling procedure was introduced.

There are three main factors that make conversation skills training via digital video ideal for implementation with adolescents with HFA/AS. First, VM may be more effective for adolescents who have limited ability to comprehend verbal descriptions and/or whose visual processing abilities are relatively intact compared to their auditory processing skills (Schreibman et al., 2000; Sherer et al.,2001). Second, VM can be readily infused into almost any treatment model (Alcantara, 1994; Buggey et al., 1999; Thiemann & Goldstein, 2001).

Third, digital video recording and viewing equipment, e.g., internet, ipod/ mp3 players, digital recorders, are increasingly accessible at decreasing cost, and most families and schools consider digital video players to be standard (Schreibman et al., 2000). Despite these advantages, a limited number of studies to date have focused on the evaluation of outcomes of VM procedures for conversation skills for children with HFA/AS and even fewer for adolescents with HFA/AS.

Marriage, Gordon, and Brand (1995) described a SST group for eight boys with AS over 14 weeks. The focus was on conversation, appropriate behavior in public, engaging in activities with peers, and responding appropriately to feedback. Nevertheless,

only a few isolated improvements were reported. Mesibov (1984) worked with 15 adolescents and adults with autism on fostering peer-related social experiences using modeling, coaching, and role play to enhance skills in conversation, meeting others, and expressing emotions. Results were promising but tentative. Furthermore, of the available research with adolescents with HFA/AS, persistent findings of limited generalization have been reported (Taylor et al., 1999). However, a generalization strategy by Stokes and Baer (1977) was found to have the potential to elicit generalizations. Training sufficient exemplars involves providing a sufficient range of models of the desired target behaviors to elicit generalized responding. Several researchers have suggested that sufficient exemplar strategy training seems particularly applicable to interventions designed to promote conversation skill use (Charlop-Christy & Daneshvar, 2003). The withdrawal of the treatment and data collection of conversational skills with unfamiliar neuro- typical peers was used in the present study to investigate the extent to which participants generalized their increased conversational skills.

What is YouTube

YouTube is a video-sharing service that allows users to upload files to YouTube servers, where they are available online. With the exception of content that is offensive or illegal, videos can be animations, footage of public events, personal recordings of friends--virtually anything a user wants to post. Videos can be informational, entertaining, persuasive, or purely personal. One of an emerging class of social applications, YouTube has allowed users to post and tag videos, watch those posted by

others, post comments in a threaded discussion format, search for content by keyword or category, and create and participate in topical groups. YouTube ties into several blogging applications, giving users a quick way to blog about a particular video and include a link to it. Users can view profiles of individuals who have posted or commented on videos, see their favorite videos, and contact them. (www.educause.edu/eli, 2008)

YouTube is free, though people who want to post videos or comments must register with the site, and create a profile. Videos which include tags, a category, and a brief description can be public or restricted to members of specified contact lists. Several tools allow viewers to sort through videos to locate those of interest. Through links, users can share films. The ease of watching and sharing videos, combined with the fact that the site is free, opens the experience of online video to a wide range of users. YouTube offers opportunities for expression through video--a variation on the notion that self-publishing makes content available for anyone interested in consuming it. The social networking tools have further engaged users, drawing them in to an environment that encourages them to meet new people, read and share opinions, and be part of a community. The interactive features have allowed members of communities to increase the size of their social networks. (www.educause.edu/eli, 2008).

<div align="center">Research Problem Restated</div>

Based on this literature review, the social skills deficits of adolescents with HFA/AS have been determined to be primarily related to deficits in the social domain as opposed to the cognitive domain. Although other cognitive impairments may be present,

cognitive impairments are not consistent throughout the HFA/AS range on the spectrum

of autistic disorders. As a result, SST interventions designed for learners with cognitive

impairments or learning disabilities may not address the inherent social deficits that

adolescents with HFA/AS exhibit. In order to contribute to the body of research on

adolescents with HFA/AS, it was imperative to investigate whether multifarious SST

interventions were more effective for teaching social skills to adolescents with HFA/AS.

Corroboration of the systematic 12-week SST and web based VM intervention

technique employed in this study and an analysis of a theoretically grounded intervention

had the potential to be an innovative contribution to the research literature. In addition,

studies that empirically replicate adolescents' response to systematic interventions and

consider the tripartite issues of accessibility, implementation and production cost were

thought to be useful. Conducting research on Social Skills Training, using the SST

program in this study was intended, not only to add to the literature, but to increase

conversation skills for adolescents with HFA/AS.

CHAPTER 3
METHODOLOGY AND PROCEDURES

Introduction

This research study focused on the impact of video modeling and social skills training on the conversation skills on adolescents with HFA/AS. Permission to conduct the study was received from the Institutional Review Board of the University of Central Florida (Appendix A).

The chapter includes detailed information about the research design, methodology and procedures involved in conducting the study. Information as to the setting and participants is provided along with a description of the instrumentation Provided are validity and reliability reports for each instrument used in the investigation including treatment integrity and social validity measures.

Research Design

As metioned in Chapter 1, a simple interrupted time series design was used for this research project. This design of the study was a one-group pre- and post-test design enhanced with multiple equal-interval pre-tests and post-tests. The trend found in multiple pre-tests can be compared to the trend found in multiple post-tests to assess whether visible post-treatment improvement may simply be an extrapolation of a maturation effect which indicates an improving trend.

Additionally, pre-and post-test measures along with qualitative data were used for triangulation purposes. Although triangulation was an important reason to combine

qualitative and quantitative methods in this study, recent authors have suggested

additional reasons (Greene, Caracelli, & Graham,1986; Mathison, 1988, Swanson, 1992).

Green et al. (1989) advanced five purposes for combining methods in a single study: (a)

triangulation in the classic sense of seeking convergence of results, (b) development in

which the first method is used sequentially to inform the second method, (c) initiation

which permits contradictions in fresh perspectives to emerge, and (d) expansion or mixed

method whose scope adds breadth to the study (Cooper et al., 1987).

The design was a flexible one enabling analysis of the effects of the independent

variable across multiple participants without withdrawing the treatment for the single

subject multiple baseline design. Moreover, this design has been found sensitive enough,

according to Aldridge (2000), to differentiate individual abilities and variables and was

especially suited for evaluating whether ability was sustained following periods of no

intervention such as in this study. The flow chart in Figure 4. illustrates the research

design in this study

<u>Pre-Intervention</u>

The baseline phase was divided into two parts. On Day One, participants (eight)

were randomly assigned into two groups, A and B (four participants in each group).

Group A was made up of the participants (Ps) determined by a "heads" result of a coin

flip. Group B was made up of the participants determined by a "tails" result of a coin flip.

Coin flips and assignment were made in pairs separately from the group. Participants did

not know who was in each group prior to choosing heads or tails for themselves. The two

groups were seated 50 feet apart in a semi-circle. Next, the video cameras were turned on and participants were told that the breakout session was starting and a timer was set to alert participants when 15 minutes had expired. Next, a timer was set, and the participants were allowed to play video games for 30 minutes (a planned distracter between conditions).

After the timer rang, the group was randomly assigned to two groups with two neuro-typical peers (NTs) in each group, displacing four participants. The participants that were not assigned to the second breakout session group played video games and later went home. To reduce practice effects, only two breakout sessions (baseline probes) were scheduled per day. The total pre intervention observations consisted of: two 15-minute probes per day across three non-consecutive days, i.e., Monday, Wednesday, Friday, over a two week period. The probes were for PP only and PP/SP group conditions. Figure 3 outlines the experimental design used in the study.
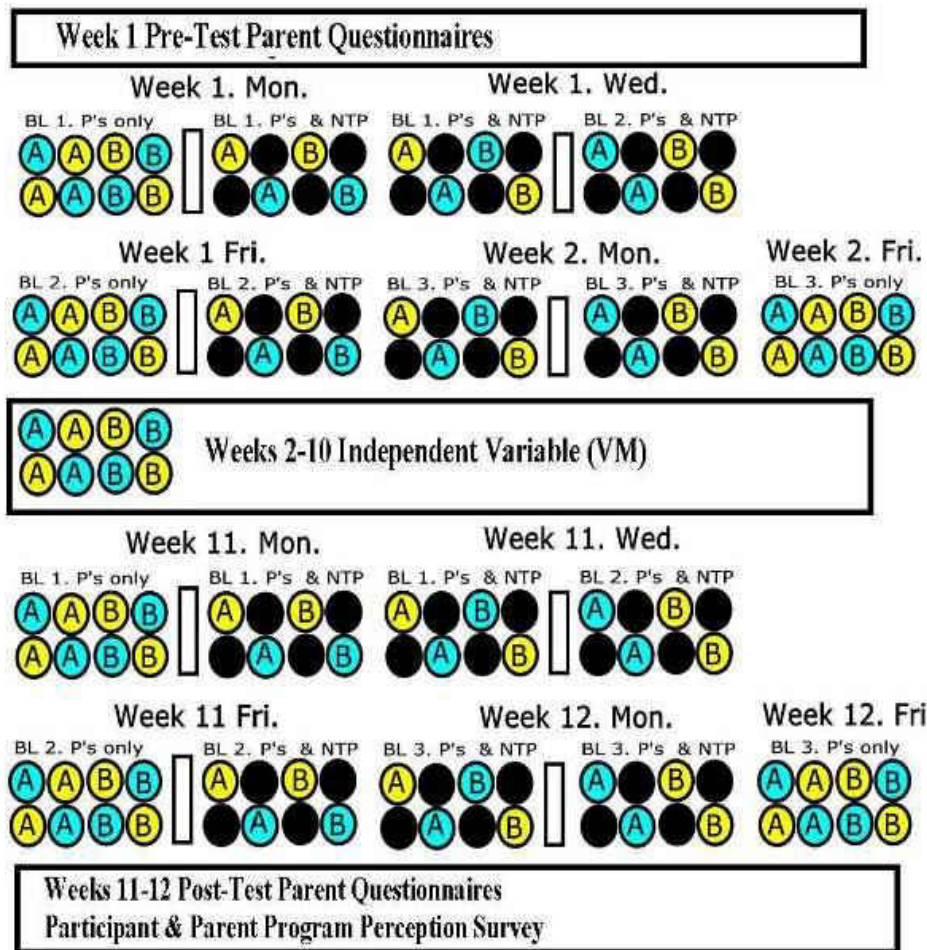
Figure 3. Concept map of the simple interrupted time series design.

<center>Sampling</center>

This study used purposeful sampling. Adolescents with HFA/AS were recruited through the University Of Central Florida Center for Autism Related Disabilities (UCF CARD). A cover letter describing the study was provided to families that contacted CARD, and expressed an interest in their adolescent males participating in a social skills group. This social skills group was held at the Lochhaven Community Center. The community center was a community-based, centrally located meeting facility.

In addition, EA Sports, a video game development company, donated a gaming multimedia room complete with game systems and games to the Lochhaven Center. The participants had weekly access to the multimedia game room during group meeting time. Families interested in the study, contacted the researcher and attended a research group orientation meeting.

<center>Participants</center>

The participants in this study included eight adolescent males with HFA or AS between the ages of 14 and 16 years of age. To be eligible for the study, the adolescents had to meet four criteria. First, the students needed a documented diagnosis of HFA/AS. The diagnosis had to be determined by a multidisciplinary team with experience diagnosing adolescents with ASD. In addition, the diagnosis had to meet criteria under Autism in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IVTR). Second, students had to participate in grade/age level curriculum and/or IQ within average range (70 or above). Third, adolescents could not have any other diagnosis

<center>41</center>

interfering with communication or participation in group activities such as visual

impairment. Finally, no other diagnosis could take priority over the diagnosis of HFA/AS

such as mental health issues that result in maladaptive behavior, e.g., aggression. Once

consent was obtained, a medical record review was conducted to confirm the diagnosis of

HFA/AS. Documents reviewed included standardized protocols such as: the Autism

Diagnostic Observation Schedule (ADOS), medical and school evaluations, as well as

treatment or Individualized Education Plans (IEPs). Data obtained from the record review

included cognitive, language, and behavioral levels. In addition, demographic data such

as the adolescent's age, gender, and date of birth were collected. Table 1 presents a

summary of participants' characteristics. Two PP's did not complete post intervention

measures.

Table 1
Demographic Characteristics of Primary Participants (PP)

Primary Participants	Age	Grade	Diagnosis
PP1	14	9th	HFA
PP2	15	10th	AS
PP3	15	10th	AS
PP4	16	10th	AS
PP5	14	9th	HFA
PP6	16	11th	AS
PP7	16	10th	AS
PP8	14	9th	AS
PP9	15	11th	AS
PP10	15	10th	AS

Neuro-typical peers (NT) were among the secondary participants (SPs) in this study. SP's was paired with a PP's in the study to facilitate socialization opportunities (conversations) with an adolescent peer with HFA/AS. Some SP's participated in multiple PP's since there were more PP's than SP's groups NTs in the study were asked to volunteer their time to participate in a few discussions with study participants. Potential NTs were required to complete an application and participate in an interview facilitated by the principal investigator. NTs accepted into the program and their parents were required to attend orientations and complete the appropriate informed consent documentation. Demographic information on the NTs is presented in Table 2.

Table 2
Demographic Characteristics of Secondary Participants (SP)

Secondary Participants	Age	Grade
SP1	14	9th
SP2	15	10th
SP3	15	10th
SP4	16	10th
SP5	14	9th
SP6	16	11th

Procedures & Setting

The adolescents that participated in this study took part in a 12 week social skills program for 90 minutes at a community-based recreation center. The center was located near downtown Orlando, Florida. When appropriate, the participants received the

intervention individually in a separate area from the general group meeting area during the "Da Dudez reviews" time, the designated video review and feedback session. The intervention program taught adolescents with HFA/AS how to initiate and respond during conversation.

Specifically, the adolescents who participated in this group intervention program were taught strategies to apply specific conversation skills in conversation. The components of conversation behaviors were selected for intervention based on all participants' documented needs as indicated through parent interviews, SST research with conversation skill training, and the National Secondary Transition Technical Center (Cotter, 1997; NTTAC, 2008; Saztmari et al., 1989; Wehmyer, 2007; Lee, 2005; Mesibov, 1984) as well as research identifying weaknesses in this area for adolescents with autism (Dobbinson, Perkins, & Boucher et al., 1998; Myles & Anderson, 2001; Bellini, 2006; Jackson et al., 2003; Tager-Flusberg & Anderson, 1991; Wing, 1981). The adolescents were taught these conversation skills and other social skills over 12 weekly lessons. Appendix B presents the intervention program for each week and the lesson and targeted objective that was taught.

The SST instructional model was grounded in a tripartite theoretical model: (a) social learning theory, (b) behaviorism, and (c) constructivism. Social learning theory refers to mechanisms by which individuals learn from each other, observe a variety of models, experience intrinsic reinforcers with a result of influencing learning (Bandura, 1977). Moreover, social learning theory reminds educators that learning in a media-oriented society extends beyond the classroom (Gredler, 2005). Collaborative learning

methods require learners to develop teamwork skills and to see individual learning as essentially related to the success of group learning. Social constructivist instructional models emphasize higher order goals with the appropriate scaffolding, to support learning through a variety of instructional conditions. Lave and Wenger (1991) asserted that a society's practical knowledge is situated among practitioners, their practice, and the social organization and political economy of communities of practice. Based on this, learning should involve such knowledge and practice (Gredler, 2005; Lave & Wenger, 1991). Social constructivist approaches can include reciprocal teaching, peer collaboration, cognitive apprenticeships, problem-based instruction, webquests, anchored instruction, and other methods that involve learning with others (Shunk, 2000; Vygotsky, 1962).

The social group instructional model used in the present study included both structured skill lessons and time for more "natural" group interactions. The group sessions were organized to maximize learning potential in accordance with social constructivist principles (Brinton, Robinson, & Fujiki, 2004; Lopata, Thomeer, Volker, & Nida, 2006; Mesibov, 1984; Williams, 1989). A uniform model direct teaching format was used across the 12 sessions. Figure 4 displays the schedule of the social group instruction model.
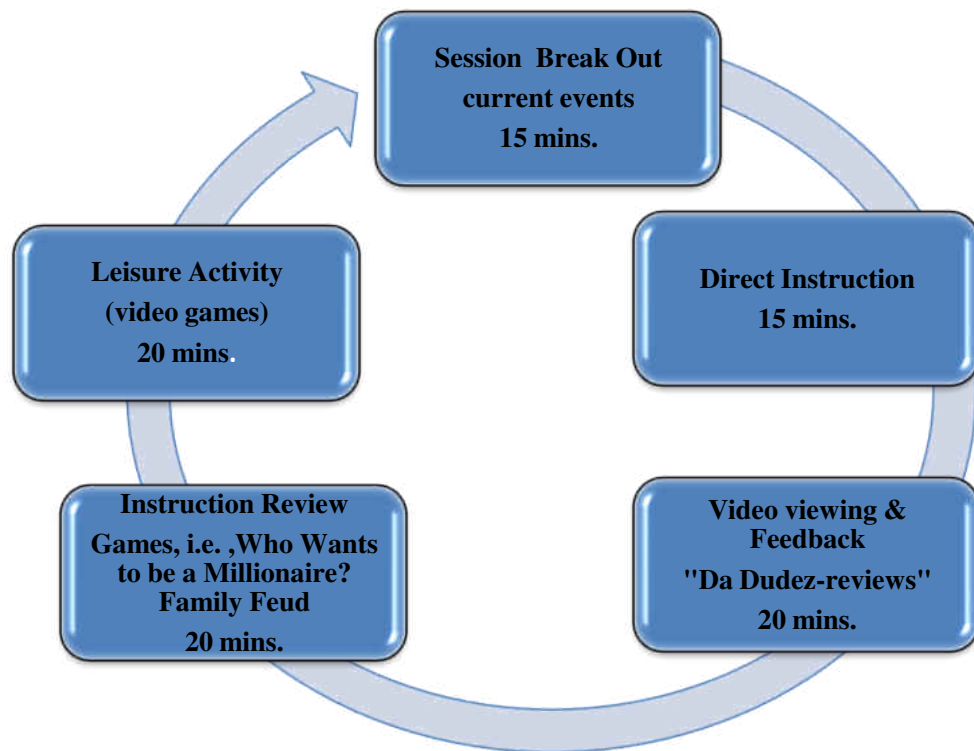
Figure 4. Social group instruction model.

Breakout Sessions

The introductory 15-minute breakout sessions were scheduled at the beginning of

each group meeting to replicate naturalistic social communication opportunities.

Moreover, breakout sessions provided the participants the opportunity to converse

spontaneously and naturally with each other without the influence of adults. Current

event topics were assigned to participants prior to each weekly meeting. Participants were

instructed to summarize and share the information relative to a current interesting event.

The participants in the group voted on what weekly current event topics they would like to discuss. To provide motivation for participation and a contextual frame of reference for the discussions, the researcher created a list of possible event topics based on participants' suggestions (Plines et al.,1987). The researcher and assistants refrained from providing additional prompting or directives to the participants unless directly asked. Guidance on what to say in response to disagreements, i. e., "He cut me off, tell him to stop. . . " was not provided by the researcher during any of the breakout sessions (both pre- and post-baseline conditions) or treatment conditions throughout the study. The general conversation topic of current events and the 15-minute time limits were the only parameters provided during breakout sessions.

Direct Instruction

Introduction of a new skill related to various social skill domains. During direct instruction, the researcher presented (a) the targeted skill, (b) the importance of skill to effective communication, and (c) strategies to implement the skill. A benefit of direct instruction includes delivering large amounts of information in a timely manner. Furthermore, because direct instruction is teacher directed, it lends itself to designing instruction that is developmentally appropriate for students' ages and stages. Direct instruction topics (Appendix A) were supported through the application of the independent variable during the Dudez review component of the program along with rehearsal opportunities that were provided in the instructional review activities.

Dudez Reviews

The Dudez review component of the SST program permitted the application of the independent variable. Laptop computers, with headphones, were used by participants to access the independent variable, YouTube conversational skill videos. After reviewing a video, participants were asked if they needed to view the video again. If they replied "yes," the video was shown a second time. If they replied "no," they were instructed to check off a "Viewed" box next to the corresponding video that they had just watched. The researcher then asked the participants three questions: (a) What was the main idea of the video? (b) What did they like and not like about the video? and (c) Did you find this video helpful to you? Based on responses to these questions the researcher could elaborate on domain specific knowledge or assign homework/advanced organizers for practice and review. Current researchers have indicated that teaching students to generate their own questions stimulates their conferences and explanations about the material, therefore increasing their understanding of the new skill introduce (Dole et al., 1991; King, 1992; Pressley et al., 1992).

Instructional Review

Using a game show format, i.e., Jeopardy, Who Wants to be a Millionaire?, questions were generated regarding the direct instruction lesson. The comprehension check was vital to determine the participants' understanding of the new skill. Rehearsal makes use of associations and images and relates new information to the learners'

48

existing knowledge. These additional connections to material previously learned leads to the construction of elaborate structure in memory (Tulvig & Madigan, 1970).

During the instruction review for **"Who wants to be a Millionaire?"**, participants were asked 10-15 multiple choice questions based on the direct instruction lesson. Participants chose the most correct answer of four possible choices provided. Responses to question did not take longer than 45 seconds. Each question had an assigned dollar value that increased from $100 to $1,000,000. There was one lifeline that participants used for assistance during game play. Participants used multiple lifelines to answer any single question; however, each lifeline was used only once. A lifeline was selected if there was one second or more of time remaining on the clock. The game clock was stopped when contestants stated the specific lifeline they wanted to use. If there was only one lifeline remaining, the game clock stopped when contestants stated they wanted to use it. After the completion of a lifeline, the host informed the participant how much time was left on the game clock, and the game clock resumed counting down from the time when it was stopped. Unlike the real game, the researcher adapted the game to have only one lifeline, "Ask the Audience." During Ask the Audience, the participants asked each other which answer they believed correct. Contestants had the choice of selecting an answer, using another available lifeline (if time permitted), or cease playing the game.

"Jeopardy" was another game show that was adapted to review previously discussed social skills. "Jeopardy" was played by three participants in three rounds. In all rounds, money was earned by answering questions based on the direct instruction lesson. The wording was altered so that the "questions" were in answer format, and the

contestants' "answers" were in question format. For simplicity, the terms, "clues" and "responses" were usually used instead of "questions" and "answers."

In the first round, there were three to five categories of five clues each, worth $100 to $500. The round was timed. Play continued until all 15-25 clues were revealed or time ran out. On each turn, the player in control first chose a clue, by announcing a category and dollar amount. At game start, the player at the left had control. The clue was revealed on the monitor, read by the host, then, and only then, the contestants were permitted to ring in using a bell to answer. A correct response earned the value of the clue; an incorrect response subtracted the value of the clue from the player's total and gave the remaining contestants a chance to ring in. On a correct response, that player gained control and was able to select the next clue.

Leisure Activity

This time was used to motivate and reinforcement adolescent participation in the social group. The three primary leisure activities that were requested by the participants were video gaming and digital music sharing and discussion. *Gamepro*, a videogame magazine, and *Wired,* an electronics magazine, were also provided as leisure materials for the participants.

Remediation

During instructional review, if the primary researcher noticed that a participant or participants' did not seem to comprehend the direct instruction lesson, additional

homework was provided. Domain knowledge concepts that appeared to have not been fully comprehended were carried over into the following week's instructional review. In addition, homework assignments were also provided to support daily lessons and were assigned as needed. Homework assignments focused on the skill introduced and included the assigned task for the following week (preparing to discuss a current event). Advanced organizers, such as *"Work sheets for Teaching Social Thinking and Related Skills"* (Winner, 2005), were provided by the primary researcher as a supplement to direct instruction activities. The researcher developed the curriculum for the 12-week social skills program based on peer reviewed research of best practices, consulting with persons with ASD, reviews of published texts, and commercially available programs (Winner, 2005; Bellini, 2000; Gresham, 1995; Gray, 1995, NSTTAC, 2008).

<u>Instrumentation</u>

Autism Spectrum Screening Questionnaire (ASSQ)

Primary participants were assessed both pre- and post-intervention using the Autism Spectrum Screening Questionnaire (ASSQ) (Ehlers, Gilberg, & Wing, 1999) to provide more information on levels of social functioning. It is a 27-item checklist designed for completion by parents and teachers of children and adolescents suspected of manifesting ASD and who have IQs at or above mild mental retardation. A 3-point rating scale results in a total score range between 0 and 54. At the time of its development, the study population included the following subject groups: ASDs, disruptive behavior

disorder (DBD), learning disorders, as well as an AS validation sample. The ASSQ was

successful in distinguishing subjects with ASD from those with DBD. Good test-retest

and inter-rater reliabilities were reported as well as good agreement between parent and

teacher ratings. Cut-off scores of 19 for parents and 21 for teachers resulted in true-

positive and false-positive rates 62% and 70% and 9%, respectively (Zager, 2005).

The Social Responsiveness Scale (SRS)

The Social Responsiveness Scale (SRS) (Constantino & Todd, 2000) measures the

severity of social impairment associated with autism spectrum disorders. This 65-item

rating scale measures the severity of autism spectrum symptoms as they occur in natural

social settings. Completed by a parent or teacher in just 15 to 20 minutes, the SRS

provides a clear picture of a child's social impairments. It assesses social awareness,

social information processing, capacity for reciprocal social communication, social

anxiety/avoidance, and autistic preoccupations and traits. It is appropriate for use with

children from four to 18 years of age. Rather than providing a "yes or no" decision about

the presence of symptom or a given disorder, the SRS measures impairment on a

quantitative scale across a wide range of severity--which is consistent with recent

research indicating that autism is best conceptualized as a spectrum condition rather than

an all-or-nothing diagnosis. This is important because even mild degrees of impairment

can have significant adverse effects on social functioning. In addition to a total score

reflecting severity of social deficits in the autism spectrum, the SRS generates scores for

five treatment subscales: receptive, cognitive, expressive, and motivational aspects of

social behavior, as well as autistic preoccupations. Although not used for screening or diagnosis, these subscale scores are useful in designing and evaluating treatment programs. Parents or guardians of participants in the study completed this form.

<div align="center">Data Collection and Analysis</div>

A coding system defining the conversation skill elements, was developed to facilitate the collection of data. The coding scheme included definitions based on current and past research, conversation skills and appropriateness (Koegel et al., 1999; Pierce & Schreibman, 1995; McTear, 1985). Appendix C contains a definition of these codes.

Since there were ten PP's that and six SP's, (two groups of four) in the group, the structure of turn-taking, initiating, and responding differed compared to the structure of a two-party conversation. According to Sacks, Schegloff and Jefferson (1974), in conversations with four or more individuals, not every listener is responsible for indicating understanding to the current speaker, as in a two-party conversation. In addition, there may be more passive listeners who opt not to select themselves as next speakers and listeners who are more active participants. Contributing relevant and appropriate conversation in one-to-one exchanges, applied to group conversations even though the structure of turn-taking, initiations, and responses were different.

Each weekly lesson was digitally recorded with two digital video hard-disk recorders. The breakout sessions were used to facilitate peer-to-peer communications and were reviewed and used to collect conversation skills data. Breakout time was continuously monitored because it was the least structured time during the weekly lesson.

For SST instruction to be effective, provisions for response opportunities, feedback, and incentive systems in natural settings should be facilitated (Walker, Colvin, & Ramsey, 1995). After the intervention portion of the study was completed, the researcher completed the data collection instrument for each participant, using all of the weekly videos collected during the breakout sessions. The PI edited the video clips into 2 minute and 30 second intervals with titles prompting raters to record now"

Data Collection Instrument

To accurately record the conversation skills of the adolescents participating in this research project, a data collection instrument was developed. This measurement tool captured five conversational skills: (a) joint attention, (b) speech acknowledgers, (c) speech duration, tone and pace (d) non-verbal communication and (e) appropriate disclosure of information. The instrument consisted of six tables with four columns and six rows in each table. Each table represented a 2 ½ minute observation interval. One 8.5 x11 sheet was used to record one participant observation for 15 minutes. Each table consisted of two parts. The five conversation skills (a) joint attention, (b) speech acknowledgers, (c) speech duration, tone and pace (d) non-verbal communication and (e) appropriate disclosure of information were rated as poor, fair, or good. Observers collecting the data marked "X," in the column that best characterized the conversation skill component. This data collection instrument was created specifically for this project, and will require further study to determine its validity and reliability. Appendix C contains all of the materials related to observers' data collection including (a) guidelines

for observers, (b) the conversation skills observer rating protocol, and (c) the

conversation skills observer data collection tool

Data Analysis Procedures

The primary researcher coded the entire sample of the break-out session

observation videos. Next, two trained observers coded a portion (25% each) of the total

sample. Inter-rater reliability was calculated to determine agreement between two raters

(primary researcher and second observer) in coding conversation initiations, responses,

appropriateness, and partner during break-out sessions from 50% of the total video

recorded sample. This sample included a total of 1,440 minutes/24 hours (15 minutes per

session, for each of the eight participants). The two trained observers in this project

reviewed 25% (30 minutes weekly/six hours total) of the sample to total 50%. The 2 ½

minute observation intervals of each participant's previously recorded video was selected

to be viewed and coded by each trained observer. The eight participants were randomly

separated into equal groups every week, and each group was recorded with separate

cameras. Each adolescent served as his own control or comparison. Information

regarding all observational conversation data gathered on the initiations, responses,

appropriateness levels, and partner for each adolescent was entered into SPSS.

Descriptive statistics were then applied to this observational data to identify trends. These

measures included frequency counts, ratios and difference scores. For example,

frequency counts of initiations, responses, appropriate initiations/responses, inappropriate

initiations/response as well as total conversational skill scores were tallied. Data collected

from the breakout sessions were continually collected and recorded. Differences were calculated for all measures of observations. The mean difference score with standard deviation was calculated for the sample for all measures to determine the variability.

<u>Validity</u>

Content Validity

A panel of experts consisting of six university professors, two adolescents without HFA/AS and two coordinators from the University of Central Florida Center for Autism and Related Disabilities (CARD) were assembled to review and evaluate the Youtube videos presented in the study. A second panel of experts consisting of three university professors, and two CARD coordinators reviewed and evaluated the informal measures used in the study. Appendix D contains the Video Review Panel Evaluation Tool and a list of the YouTube videos used in the study.

Internal Validity

As with all quasi-experimental designs, threats to internal validity in this study's experimental design existed. These included: (a) history, (be) maturation, (c) testing, (d) selection of subjects, and (e) experimental mortality. In order to address history, the researcher staggered both the duration and frequency of the probes. As a result, measurements (probes) were spread over a two-week time period with no more than 30 minutes of observation during each day. Although the threat existed for maturation, the brevity of the 12-week SST program (four baseline, eight week treatment) was intended

to minimize the threat of maturation. Observer training and inter-observer agreement measures were used to limit the threat of instrumentation on the findings of the study. Although small sample size did not allow for the separation of treatment and control groups, random group assignment was used during probes. In an attempt to counteract the effects of selection of subject, coin flips were used for the randomization of the assignment of both participant only and neuro-typical peers and participants' mixed groupings. During the orientation, the researcher explained to parents the importance of consistent attendance during the SST program and requested that parents and participants consider their ability to attend the SST program on a consistent basis prior to signing consent forms (Appendix E). Although the mortality threat existed, it was hoped that the briefing of the parents, decreased some of the mortality threats on the study.

<div align="center">External Validity</div>

In reference to external validity, threats for this study included: (a) interaction effects testing, (b) interaction effects of selection biases and experimental variable, (c) reactive effects of experimental arrangements, and (d) multiple treatment inference. To control the interaction effects of testing, pre-test and post-test data along with additional quantitative and qualitative measures were used to triangulate the participants' responsiveness to the independent variable. To minimize the threats of the independent variable, a panel of experts were used to validate the independent variable prior to its implementation. To control the reactive effects of the experimental arrangements, neuro-typical peers were used to measure the participants' ability to generalize the dependent

variable (conversational skills) to their nondisabled peers. During the orientation, interviews were conducted with both parents and participants to assess the likelihood of multiple treatment interference, and its threat on the study.

Follow-up Interviews

At the end of the study, follow-up group interviews were held with the parents of the participants, primary participants, and secondary participants. These informal interviews provided qualitative commentary on the parents' perceptions of their adolescent's experience in the groups and whether they perceived progress in conversation skills in the real-life settings of home and community. Participants' interviews provided qualitative commentary on the SST, video materials used and perception of the progress during the SST program. Secondary participant interviews provided commentary on the experience of participating in the study and perceptions of their peers with HFA/AS (MaCay, Knott, & Dunlop, 2007). Appendix F contains the format used in the informal group interviews.

CHAPTER 4 ANALYSIS OF THE DATA

Introduction

This investigation was conducted using a simple interrupted time series design. This design was a one-group pre-test-post-test design enhanced with multiple equal-interval pre-tests and post-tests. In this design, the trend found in multiple pre-tests can be compared to the trend found in multiple post-tests to assess whether visible post-treatment improvement may simply be an extrapolation of a maturation effect which indicates a positive treatment effect. A treatment effect is demonstrated only if the pattern of post-treatment responses differs from the pattern of pretreatment responses. Furthermore, the interrupted time series design, allows the principal investigator to simultaneously apply the treatment to all primary participants (PPs), which may be a more practical alternative for a 12-week social skills group such as the one in this study. This chapter has been organized around the research questions and presents (a) the results of the intervention, (b) the inter-rater observation correlations on conversation skills, and the (c) pre- and post-test measures as applied to each of the research questions. Additionally, the social validity and reliability measures of the investigation are discussed.

<u>Research Question 1</u>

To what extent did conversation skill video models found on YouTube and social skill training, increase the level of conversation skills ratings of adolescents with HFA/AS?

Six of the eight participants who completed the program showed slight increases in the level of demonstration of their conversation skills ratings after the intervention was implemented. Collectively, based on visual inspection of the data, most participants (six) demonstrated moderate increases in conversation skills ratings. One participant showed no change, and one participant showed a slight regression over time. Two of the participants did complete the post-observations under both PP only and ASD/NT mixed group conditions.

Figures 5 and 6 illustrate the performance of primary participants (PP) over the course of the study. As evidenced by the figures, most participants displayed slight increases or decreases in ratings on specific days. From this visual inspection, the three baseline probes, prior to the treatment phase, were relatively stable for the majority of primary participants. The conversation skills ratings in Figures 5 and 6 present visually differences and trends and establish a basis for discussion of overall conversation skills ratings as well as pertinent PP events that may have occurred during this investigation. Participant skill acquisition and differences in individual conversation skills ratings for particular events are discussed in the following section.
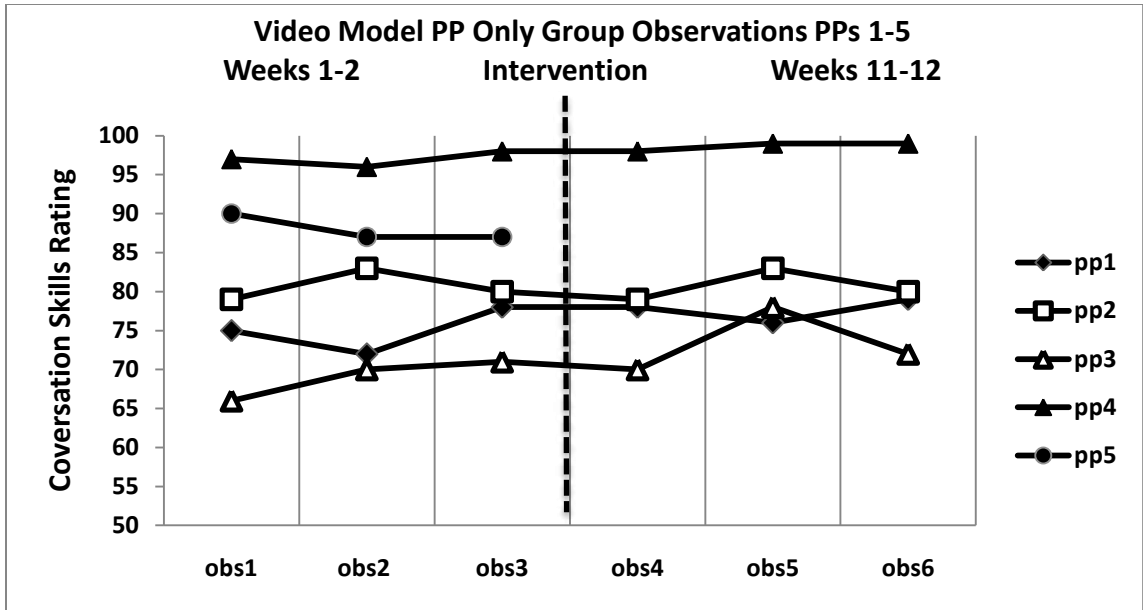
Figure 5.
Participant Only Conversation Skills Probes: Primary Participants (PP) 1-5
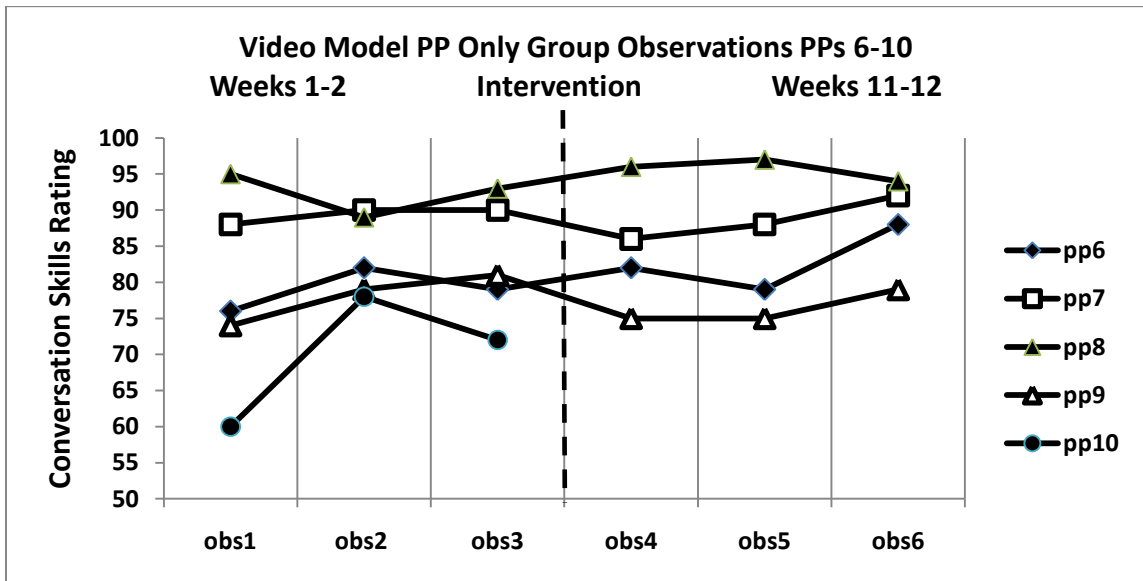
Figure 6.
Participant Only Conversation Skills Probes: Primary Participants (PP) 6-10

<center>Participant Skill Acquisition</center>

Primary Participant 1 Skill Acquisition

During the multiple baseline phase, PP1 demonstrated some variability in his average conversation skills rating (high score = 81, low score = 71) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 5, showed an increase but only by one point. The most specific subset individual gain for PP1, from baseline to post-treatment, was in appropriate disclosures. After the intervention, he consistently scored higher in this subset while maintaining previous subset levels throughout the observations.

Primary Participant 2 Skill Acquisition

During the multiple baseline phase, PP2 demonstrated little variability in his average conversation skills rating (high score = 84, low score = 75) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 5, showed an increase of four points. The subsets of speech duration and tone, and joint attention showed the most variability in subset scores (3-7) for this individual PP from baseline to post-treatment. After the intervention, PP variability in the previously mentioned subsets decreased to (5-7). PP's consistently maintained other subsets levels throughout the observations.

Primary Participant 3 Skill Acquisition

During the multiple baseline phase, PP3 demonstrated some variability in his average conversation skills rating (high score = 74, low score = 72) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 5, showed a minimal increase of one point. The five subsets for PP3, from baseline to post-treatment, remained relatively stable without demonstrating any consistent gains in any of the subset skills. It should be noted that PP3 did have a speech impediment which caused him to significantly stutter at times. Although some of the other PPs had speech issues, PP3's was the most significant in the group. Furthermore, both raters asked the primary investigator (PI) how to factor in PP3's stuttering when scoring him. During the rater training, the PI instructed the raters to refer to the subset definitions, decide for themselves as to how to factor in PP3's stuttering, and apply their perception of his subset performance consistently.

Primary Participant 4 Skill Acquisition

During the multiple baseline phase, PP4 demonstrated little variability in his average conversation skills ratings (high score = 98, low score = 97) and was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 5, showed a minimal increase of one point. PP4 performed extremely well across all subsets and maintained his performance throughout the investigation. PP4 did not receive any scores below (5) indicating all raters consistently scored PP 4 in the fair to good range on the conversation skills rating tool.

<u>Primary Participant 5 Skill Acquisition</u>

During the multiple baseline phase, PP5 demonstrated little variability in his average conversation skills rating (high score = 90, low score = 85) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings data were not available for PP5. Although he attended the majority of the program, he did not return for weeks 11and12 or the makeup session that was offered to him.

<u>Primary Participant 6 Skill Acquisition</u>

During the multiple baseline phase, PP6 demonstrated little variability in his average conversation skills rating (high score = 90, low score = 80) but was stable in his performance during the baseline phase. Like PP4, PP6 performed extremely well across most subsets and maintained his performance throughout the investigation. PP6 did receive a few low scores (3) in the subset of speech duration. The inconsistent scores on speech duration continued throughout all phases, and PP6 scored consistently well in four out of the five subsets.

<u>Primary Participant 7 Skill Acquisition</u>

During the multiple baseline phase, PP7 demonstrated little variability in his average conversation skills rating (high score = 95, low score = 89) and was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 6, showed an increase of three points. PP7 performed extremely well across all subsets and increased his performance after

implementation of the treatment. The subset that showed the most gain was joint attention which increased from an average of five "fair" to average of seven "good".

Primary Participant 8 Skill Acquisition

During the multiple baseline phase, PP8 demonstrated little variability in his average conversation skills rating (high score = 81, low score = 74) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 6, showed a minimal decrease of 2 points. Unlike most of the PPs, PP8 demonstrated a slight downward trend after the intervention from a score of 78 to a score of 76. The primary investigator was not able to discern a specific reason as to why PP8 regressed slightly from baseline.

Primary Participant 9 Skill Acquisition

During the multiple baseline phase, PP9 demonstrated some variability in his average conversation skills rating (high score = 82, low score = 76) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 6, showed an increase of four points. PP9 showed specific gains in joint attention and speech acknowledgers from baseline to post-treatment. PP9, who was initially very anxious at the beginning of the group, appeared to be more comfortable each week. This increased comfort may have had had an impact on his performance.

Primary Participant 10 Skill Acquisition

During the multiple baseline phase, PP10 demonstrated some variability in his average conversation skills rating (high score = 78, low score = 70) but was relatively stable in his performance during the baseline phase. PP10 dropped out of the group without notice during week 3.


Research Question 2

To what extent did conversation skill video models found on YouTube, increase the level of conversation skills of adolescents with HFA/AS when grouped with their non-disabled neuro-typical peers?

Four of the eight primary participants (PP) who completed the program showed slight increases in the level of demonstration of their conversation skills ratings after the intervention was implemented. Two PPs showed no change, and the other two PPs showed slight decreases in their conversation skills ratings. Two of the PPs did complete the post-observations under both PP only and ASD/NT mixed group conditions.

Primary Participants'(PP) performance over the course of this study are presented in Figures 7 and 8. These figures present visual representations of differences and trends and establish a basis for discussion of overall conversation skills ratings as well as pertinent PP events that may have occurred during this investigation. Most participants illustrated slight increases or decreases in ratings on specific days. Figures 7 and 8 display the three baseline probes, prior to the treatment phase, and indicate that performance for a majority of PPs, was relatively stable. Individual conversation skills

ratings differences along with particularized events for each primary participant (PP) are

provided in the following section.

Video Model PP/SP Mixed Group Observations PPs 1-5
Weeks 1-2   Intervention   Weeks 11-12
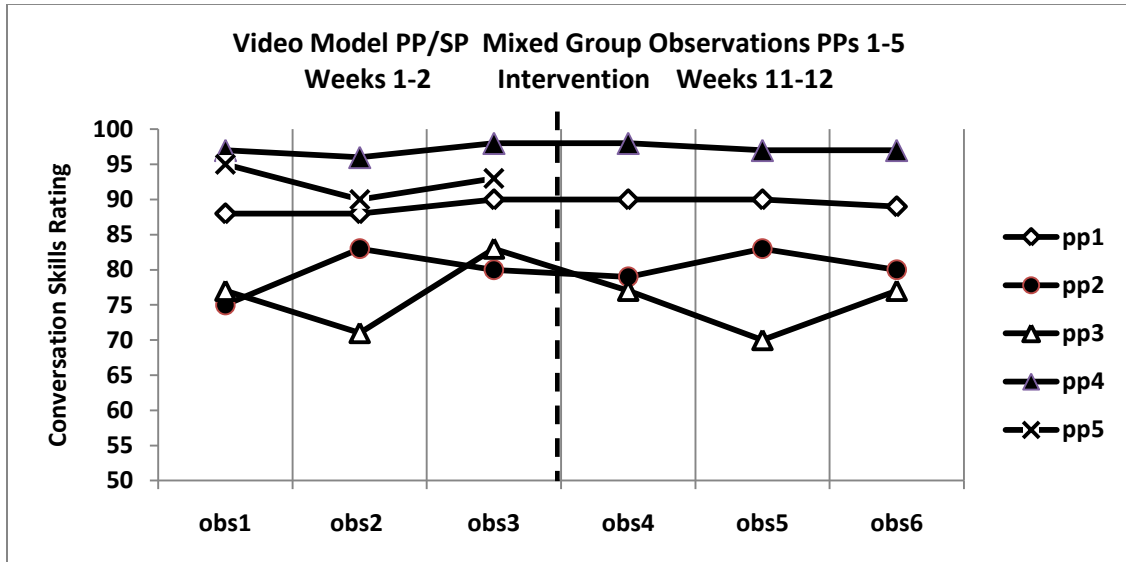
Figure 7. Mixed Group Conversation Skills Probes: Primary Participants (PP) 1-5

Note. SP = Secondary Participants.
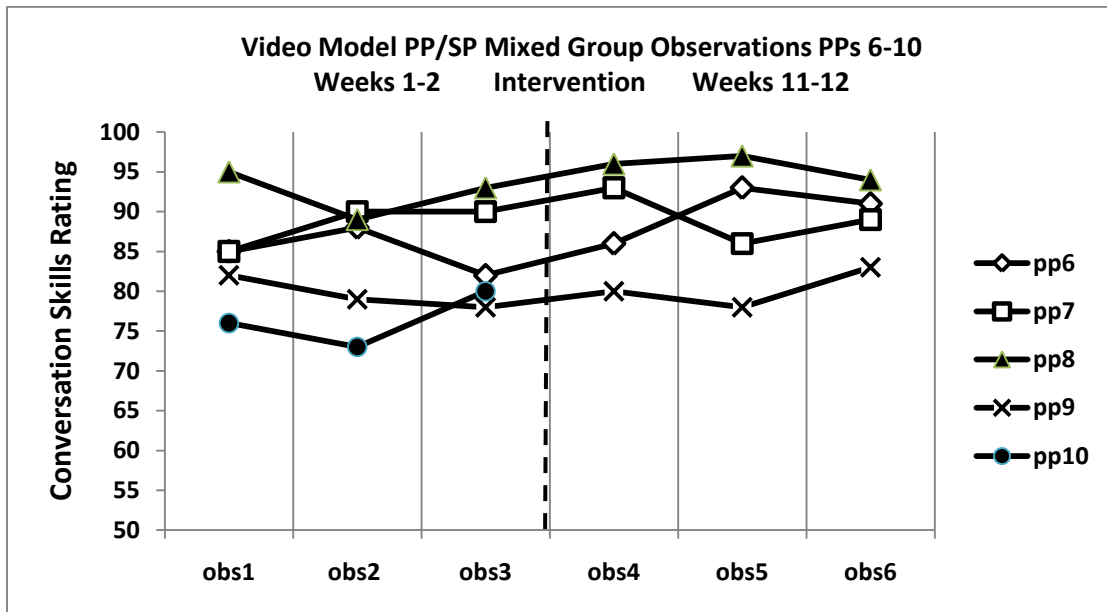
Figure 8. Mixed Group Conversation Skills Probes: Primary Participants 6-10.

Note. SP = Secondary Participants.

Skill Acquisition Using Video Models

Primary Participant 1 Skill Acquisition

During the multiple baseline phase, PP1 demonstrated some variability in his average conversation skills rating (high score = 90, low score = 83) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 7, showed an increase of two points. As in the PP only phase, the most specific subset individual gain for PP1, from baseline to post-treatment, was in appropriate disclosures. The other noticeable subset gain for PP1 was in the non-verbal subset.

68

Primary Participant 2 Skill Acquisition

During the multiple baseline phase, PP2 demonstrated little variability in his average conversation skills rating (high score = 80, low score = 75) but was not very stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 7, showed a decrease of two points. The subsets of speech duration and tone, and joint attention showed a slight downward trend, from baseline to post-treatment. During one of the post-test observations, PP1 unexplainably became agitated. When asked if he would like to leave the discussion activity he replied "Yes" and left. PP1's disposition was apparent during some of the video which may have contributed to his regression in scores.

Primary Participant 3 Skill Acquisition

During the multiple baseline phase, PP3 demonstrated medium variability in his average conversation skills rating (high score = 83, low score = 71) and was moderately stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 5, showed a minimal decrease of two points. As was previously noted, PP3 did have a speech disorder which caused him to significantly stutter at times. In his exit interview, PP3 commented "I feel more nervous with new people and that makes me mess up sometimes when I'm talking." It is not clear why PP3 exhibited regression in conversation skills ratings, but perhaps the ASD/NT mixed group condition could have contributed to his decrease in performance.

Primary Participant 4 Skill Acquisition

During the multiple baseline phase, PP4 demonstrated little variability in his average conversation skills rating (high score = 98, low score = 97) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 7, showed a minimal increase of one point. PP4 performed extremely well across all subsets and maintained his performance throughout the investigation in both group settings.

Primary Participant 5 Skill Acquisition

During the multiple baseline phase, PP5 demonstrated some variability in his average conversation skills rating (high score = 95, low score = 90) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings data were not available for PP7. Although he attended a majority of the program, he did not return for weeks 11 and12 or the makeup session that was offered to him.

Primary Participant 6 Skill Acquisition

During the multiple baseline phase, PP6 demonstrated some variability in his average conversation skills rating (high score = 90,low score = 84) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 8, showed an increase of three points. This increase in conversation skills ratings was consistent with his performance in the first phase, PP only, group scores. PP6 scored well in four of the five subsets.

Primary Participant 7 Skill Acquisition

During the multiple baseline phase, PP4 demonstrated little variability in his average conversation skills rating (high score = 96, low score =93) and was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 8, showed an increase of three points. PP7 performed extremely well across all subsets and increased his performance after implementation of the treatment. PP also performed slightly better in the mixed group phase when compared to the PP only group phase.

Primary Participant 8 Skill Acquisition

During the multiple baseline phase, PP8 demonstrated little variability in his average conversation skills rating (high score = 92, low score = 85) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings, based on a visual inspection of Figure 8, showed an increase of four points. This increase was particularly interesting when compared to his first performance, a minimal decrease of 2 points. PP8 also reversed a previous downward trend in the first phase.

Primary Participant 9 Skill Acquisition

During the multiple baseline phase, PP9 demonstrated little variability in his average conversation skills rating (high score = 82, low score = 78) but was stable in his performance during the baseline phase. After the intervention, conversation skills ratings,

based on a visual inspection of Figure 8, showed no change. PP9 showed no specific gains. Instead, he maintained his averages across all subsets.

Primary Participant 10 Skill Acquisition

    During the multiple baseline phase, PP10 demonstrated some variability in his average conversation skills rating (high score = 78, low score = 70) but was relatively stable in his performance during the baseline phase. PP10 dropped out of the group without notice during week 3.

Conversation Skills Probes

    Conversation Skills probes were completed by the principal investigator and two licensed speech language pathologists who volunteered their time to this research project. Prior to creating a conversation rating score, the primary researcher investigated the ratings of three independent observers across all primary participants. The results of the inter-rater observations are presented in Table 3.

Table 3

Pre- and Post-Intervention Observations: Paired Sample Correlations and T-Tests

Paired Sample Correlations	N	Correlation	Mean	Standard. Deviation.	t	df	Sig. (2 tailed)
Pre-intervention probes							
Pair 1: Pre R1 & Pre R2	10	0.945	-3.2	5	-2.021	9	0.074
Pair 2: Pre R2 & Pre R3	10	0.895	1.1	4	0.855	9	0.415
Pair 3: Pre R1 & Pre R3	10	0.914	-2.1	4.6	1.450	9	0.181
Post-intervention Probes							
Pair 1: Post R1 & Pre R2	10	0.941	-2.5	3.5	-2.236	9	0.052
Pair 2: Post R2 & Pre R3	10	0.802	0.5	5.6	0.280	9	0.786
Pair 3: Post R1 & Pre R3	10	0.85	-2	5.4	-1.177	9	0.269

Note. R1=Rater 1, R2= Rater 2, R3=Rater3

The Majority of the inter-rater observations did not indicate significant differences between each independent rater. The total mean for all combined rater observations was 89%. Although some variability was found to exist between raters, combined rater mean was above 85%.

The intra class correlation coefficient is an index of the reliability of the ratings for a typical, single judge. This coefficient is used when collecting most of the data using only one judge's score, but it has been used with two or more judges on a subset of the data for purposes of estimating inter-rater reliability. SPSS calls this statistic the single measure intra class correlation. To investigate the reliability for all judges combined, the Spearman-Brown correction was applied. The resulting statistic is called the average measure intra-class correlation in SPSS and is presented in Table 4.

Table 4

Intra-Class Correlation Coefficient (N = 3)

Intra-Class Correlation	Coefficient	Lower	Cronbach's Alpha .953		
			Upper	df1	df2
Single measures	.854ᵇ	0.642	0.957	9	18
Average measures	0.946	0.883	0.985	9	18

Note. a=type a intra class correlation coefficients using an absolute agreement definition.
b= The estimator is the same, whether the interaction effect is present or not.

According to Howell (2009) and MacLennon (1993), the intra-class correlation coefficient is an omega-squared like statistic that estimates the proportion of variance in the data that is due to differences in the subjects rather than differences in the judges (Judge x Subject interaction, or error). The intra-class coefficient for the raters in this research project was .85 on single measures and .95 on average measures. These coefficients scores indicated good inter-rater reliability and that the primary researcher's ratings were highly correlated with those of the other two raters.

The primary purpose of the conversation skills probes was to evaluate the impact of the intervention on the primary participants (PPs). The secondary purpose of the conversation skills probes was to evaluate the impact of the intervention on PPs by observing them in six pre- and post-intervention probes with a group of secondary participants comprised of non-disabled, neuro-typical peers (NTs). During the six PP and NT mixed group phase, conversation skills rating data were collected only for primary participants.

The conversation skills probes for Condition #1 and Condition #2 are displayed in Tables 5 and 6, respectively. They were completed at the beginning and end of the investigation. The conversation skills probes were recorded by the researcher over a series of observations during the 15-minute current events groups which were held at the beginning of all social skill group meetings during this investigation.

As noted in Table 5 and 6, there was little difference in the level of demonstration of the social skills for any of the individual PPs according to the social skills probes. The social skills probes provided opportunities for the secondary participants to rate the five social skills that were the focus of this intervention. A 3-point Likert-type scale was used in rating observations of the five conversation skill subsets with scores ranging from 3 = Poor to 7 = Good. The maximum score for each probe was 35. The researcher investigated the means for the probes for each primary participant for differences. These results are presented in Table 7.

Table 5
Total Conversation Skills Ratings and Group Mean Scores for Primary Participants (PP): Condition #1

Observations	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10	Mean
Pre rater1	75	79	66	97	90	76	88	95	74	60	80.00
Pre rater 2	72	83	70	96	87	82	90	89	79	78	82.60
Pre rater 3	78	80	71	98	87	79	90	93	81	72	82.90
Post rater 1	78	79	70	98	*90	82	86	96	75	*60	83.00
Post rater 2	76	83	78	99	*87	89	88	97	75	*78	85.63
Post rater 3	79	80	72	99	*87	88	92	94	79	*72	85.38

Table 6
Total Conversation Skills Ratings and Group Mean Scores for Primary Participants (PP):
Condition #2

Pre- and Post-Test s	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10	Mean
Pre PP/SP1	88	75	77	97	95	85	85	95	82	76	85.50
Pre PP/SP2	88	83	71	96	90	88	90	89	79	73	84.70
Pre PP/SP3	90	80	83	98	93	82	90	93	78	80	86.70
Post PP/SP1	90	79	77	98	*95	86	93	96	80	*76	87.38
Post PP/SP2	90	83	70	97	*90	93	86	97	78	*73	86.75
Post PP/SP3	89	80	77	97	*93	91	89	94	83	*80	87.50

Note. SP = Secondary Participant; *indicates pre-test score was used for post-test score (PP5 and PP10 did not participate in post-test) to include all 10 PPs in analysis

Table 7
Primary Participants' (PP) Conversation Skills Ratings Mean Scores: All Conditions

Participants	Conversation Skills Ratings Mean Scores			
	Pre PP	Post PP	Pre PP/NT	Post PP/NT
PP1	75.00	77.67	88.67	89.67
PP2	80.67	80.67	79.33	80.67
PP3	69.00	73.33	77.00	74.67
PP4	97.00	98.67	97.00	97.33
PP5	88.00	*	88.00	*
PP6	79.00	86.33	85.00	90.00
PP7	89.33	88.67	88.33	89.33
PP8	92.33	95.67	92.33	95.67
PP9	78.00	76.33	79.67	80.33
PP10	78.00	*	76.33	*

Note. NT = neuro-typical peers. *indicates no post-test score was available (PP5 and PP10 did not participate in post-test).

Summary for Research Questions 1 and 2

Research Question 1 addressed the extent to which conversation skill video models found on YouTube and social skills training increased the level of conversation skills ratings of adolescents with HFA/AS? The visual inspection of the data revealed that some PPs showed increases in social skills (PP1, PP2, PP3, PP4, PP9); one PP showed no change (PP6); and one showed slight regression (PP8). Overall, Figures 5 and 6 showed minor increases in conversation skills achievement for the group as a whole.

Research Question 2 addressed the extent to which conversation skills video models found on YouTube increased the level of conversation skills of adolescents with HFA/AS when grouped with their non-disabled neuro-typical peers The visual inspection of the data indicated that some PPs showed increases in social skills (PP1, PP6, PP7); three PPs showed no change (PP2, PP3, PP8), and one showed slight regression (PP8). As indicated in Figure 7, the results overall showed minor increases in conversation skills achievement with a few of the PPs showing no change and an approximately equal number showing a slight decrease in level of conversation skills.

Research Question 3

What was the specific impact in social functioning as a result of video models found on YouTube and social skills training of conversation skills for adolescents with HFA/AS, as measured by the Autism Spectrum Screening Questionnaire (ASSQ)?

The ASSQ was administered to provide additional information in regard to changes in social functioning for each of the PPs. One reason for the development of the ASSQ was to provide practitioners with a rating scale that could be used as a pre- and post-test measure. The ASSQ consists of 27 items rated on a 3-point scale of 0, 1 and 2 where 0 = normality, 1= some abnormality, and 2 = definite abnormality. This scale was considered to best reflect behavioral characteristics of Aspergers syndrome in children 7 to 16 years of age. Eleven of the items were related to the social interaction domain, 6 addressed communication problems, and 5 referred to restricted and repetitive behaviors. Table 8, displays the ASSQ results.

Table 8

Pre- and Post-test Scores: Autism Spectrum Screening Questionnaire (ASSQ)

Scores	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10
Pre-test	28	58	47	27	31	47	27	50	42	28
Post-test	26	58	47	21	0	29	25	48	42	0

Note. PP = Primary Participant.

For PP1, the pre- and post-test scores for the ASSQ were within a 2-point range with a low score of 26 and a high score of 28. When considering each individual question, the pre- and post-test ratings for each question for PP1 varied in that the

statements referring to a lack empathy were "yes" as opposed to earlier ratings of "somewhat" by parent. The pre- and post-test scores are greater than 20 which was a possible indication of an autism spectrum disorder.

Primary Participant 2 had the highest scores in the group as rated by his parents. PP2 scored a 58 in both pre- and post-conditions. In an item analysis, there were no changes in the ratings. The pre- and post-scores were greater than 20 which was a possible indication of an autism spectrum disorder.

Primary Participant 3 was rated with scores of 47 on both pre- and post-tests indicating no positive increases had occurred during the research project for PP3. The pre- and post-scores were greater than 20 which was a possible indication of an autism spectrum disorder.

Primary Participant 4 was rated with scores within a 6-point range with a higher pre-test score of 27 and a lower post-test score of 21. An item analysis of the ASSQ completed for PP3 revealed changes in "lacks common sense" and "has different voice or speech," both changing from yes ratings to somewhat. A small positive change was observed for PP4. The pre- and post-scores are greater than 20 which is a possible indication of an autism spectrum disorder.

Primary Participant 5 was rated with a pre-test score of 31. No follow up data was available for PP5. The pre- test score was greater than 20 which was a possible indication of an autism spectrum disorder.

Primary Participant 6 had the highest variability in scores with a higher pre-test score of 47 and a lower post-test score of 29, a decline of 18 points. The researcher cannot account for the significant change from pre-test to post-test parent ratings.

Primary Participant 7 was rated with scores within a 2-point range with a higher pre-test score of 27 and a lower post-test score of 25. An item analysis of the ASSQ completed for PP7 revealed one positive increase in lacks best friend from a "yes" to "somewhat" as rated by PP7's parent. The PP's pre- and post-test scores were greater than 20 which was a possible indication of an autism spectrum disorder.

Primary Participant 8 was rated with a higher pre-test score of 50 and a lower post-test score of 48. An item analysis of the ASSQ completed for PP8 did not reveal any positive increases in ASSQ scores. The PP's pre and post-test scores are greater than 20 which is a possible an indication of an autism spectrum disorder.

Primary Participant 9 also was rated with pre-test and post-test scores of 42, indicating no change occurred during the research project. An item analysis of the ASSQ completed for PP9 did not reveal any positive increases in ASSQ scores. The PP's pre and post-test scores were greater than 20 which was a possible indication of an autism spectrum disorder.

Primary Participant 10 was rated with a pre-test score of 28. No follow up data were available for PP10. The pre-test score was greater than 20 which was a possible indication of an autism spectrum disorder.

<u>Summary for Research Question 3</u>

Research Question 3 addressed the extent of the impact in social functioning as a result of video models found on YouTube and social skills training of conversation skills for adolescents with HFA/AS, as measured by the Autism Spectrum Screening Questionnaire (ASSQ)? While all participants showed increases in social skills, PP4 and PP6 from visual inspection of the data showed stronger increases in ASSQ scores.

<u>Research Question 4</u>

What was the specific impact in social functioning as a result of video models found on YouTube and social skills training of conversation skills for adolescents with HFA/AS as measured by the Social Responsiveness Scale (SRS)?

The Social Responsiveness Scale (SRS) is a 65-item rating scale that measures the severity of autism spectrum symptoms as they occur in natural social settings. Completed by a parent or a teacher in just 15 to 20 minutes, the SRS provides a clear picture of a child's social impairments, assessing social awareness, social information processing, capacity for reciprocal social communication, social anxiety/avoidance, and autistic preoccupations and traits. The SRS was administered to provide additional information about any observed changes in social skill functioning for each of the PPs. Three levels of ratings exist on the SRS: (a) severe autism, (b) mild to moderate autism, and (c) normal ranges of social functioning. The pre- and post-test scores for the Social Responsiveness Scales are presented in Table 9. No major gain in social functioning was demonstrated by the participants.

Table 9

Pre- and Post-test Social Responsiveness Scale (SRS) Scores

Scores	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10
Pre-test	141	167	137	170	140	120	143	166	160	139
Post-test	143	164	136	164	0	116	141	161	154	0

Primary Participant 1 was rated by his parent for both the pre- and post-test of the SRS. The scores for PP1 were within a 2-point range with a higher post-test score of 143 and a lower pre-test score of 141. All scores for PP1 placed him in the severe range of the SRS regarding social skills impairment.

Primary Participant 2 was rated by his parents for both the pre- and post-test of the SRS. The scores for PP2 were within a 3-point range with a higher pre-test score of 167 and a lower post-test score of 164. All scores for PP2 placed him in the severe range of the SRS regarding social skill impairment.

Primary Participant 3 was rated by his parent for both the pre- and post-test of the SRS. The scores for PP3 were within a 2-point range with a higher pre-test score of 137 and a lower post-test score of 135. All scores for PP3 placed him in the severe range of the SRS regarding social skill impairment.

Primary Participant 4 was rated by his parent for both the pre- and post-test of the SRS. The scores for PP4 were within a 6-point range with a higher pre-test score of 170 and a lower post-test score of 164. All scores for PP4 placed him in the severe range of the SRS regarding social skill impairment.

Primary Participant 5 was rated by his parent for the pre-test of the SRS. The pre-test score for PP5 was 140. No other data were available for PP5

Primary Participant 6 was rated by his parent for both the pre- and post-test of the SRS. The scores for PP6 were within a 4-point range with a higher pre-test score of 120 and a lower post-test score of 116. All scores for PP6 placed him in the severe range of the SRS regarding social skill impairment.

Primary Participant 7 was rated by his parent for both the pre- and post-test of the SRS. The scores for PP7 were within a 2-point range with a higher pre-test score of 143 and a lower post-test score of 141. All scores for PP1 placed him in the severe range of the SRS regarding social skill impairment.

Primary Participant 8 was rated by his parent for both the pre- and post-test of the SRS. The scores for PP8 were within a 5-point range with a higher pre-test score of 166 and a lower post-test score of 161. All scores for PP8 placed him in the severe range of the SRS regarding social skill impairment.

Primary Participant 9 was rated by his parent for both the pre- and post-test of the SRS. The scores for PP1 were within a 6-point range with a higher pre-test score of 160 and a lower post-test score of 154. All scores for PP1 placed him in the severe range of the SRS regarding social skill impairment.

Primary Participant 10 was rated by his parent for the pre-test of the SRS. The pre-test score for PP10 was 139. No other data were available for PP10.

Summary for Research Question 4

The fourth research question addressed any specific impact in social functioning that might have occurred as a result of video models found on YouTube and social skill training of conversation skills for adolescents with HFA/AS as measured by the Social Responsiveness Scale (SRS). Overall the group little showed small l increases is SRS scores for specifically for (PP2, PP4, PP6,PP8, PP9). Visual inspection of the data does not reveal any major gains is SRS scores.

Social Validity

The researcher conducted interviews to better understand and further explain the quantitative results of the study. The interviews involved three groups: (a) eight primary participants, (b) six secondary participants, and (c) five parents of primary participants. The groups were asked three to four open-ended questions regarding their participation in the SST 12 week program. The participants were drawn from a convenience sample based on respondents that agreed to participate in the exit interview. The responses of participants and some representative quotations from group members are presented in the following paragraphs. A listing of the questions posed to the three groups are contained in Appendix F.

Interview Questions and Responses

<u>Participants</u>

Participants were asked if they liked participating in the social skills program. Most of the participants reported that they enjoyed their participation and had been enthusiastic about attending. Below is a common response that was nicely summarized by one of the participants.

> The videos we watched were cool and making our own videos was really fun. The games we played were also cool but the video game time ruled. I actually felt like I met some nice guys with similar interest as mine

When responding to the second question as to their specific likes and dislikes about learning social skills, most of the participants reported that they liked the YouTube videos along with the videos that they had made during the SST program. Others said that they felt the group had a relaxed atmosphere. One participant's comment was especially poignant about his experience in the group.

> I liked the fact that I didn't feel preached to or told what we must do in a conversation. Instead you [the PI] asked us for our opinions' about social skills and answered our question about conversation skills.

Only four of the eight participants respond as to their dislikes in the SST program. Two participants made similar comments regarding the video game choices. One participant disliked the group playing Rock Band (a multiplayer game) and stated that he would have preferred to play Guitar Hero (a single player game). Another dislike that was expressed by a few of the participants is highlighted in the following participant's comment.

> I found some of the younger kids in this group a distraction. You [the PI] had to repeatedly tell some of the guys to chill out or stop horse playing. Some of guys were a bit silly you know what I mean

When offering their opinions about the videos they watched, some of the participants reported that they liked being able to see what skills were being talked about via the videos. Others reported that the examples and non examples were easy to understand. Some participants commented that they were already YouTube users and never thought about looking for social skill "stuff" on YouTube. Others said that they felt the group had a relaxed atmosphere. Two participants' comments were especially insightful about their experiences in the group.

> Most of the videos were dead on, especially " Aspergers and Me", that guy's explanation of AS was perfect and I totally could relate to it. Plus his animations of how his brain works were so right on.

> I like most of the videos most were helpful, however the on video "Aspergers and Me" I agreed with almost everything he said except for the part about not having many friends because I have lots of friends: friends in college, friends in high school friends online friend in my neighborhood, friends out of state.

In response to their likes and dislikes in regard to having non-group peers in the discussion groups, many of the participants seemed indifferent to the neuro-typical peers (SPs) in the current events portion of the SST program. Those participants that had opinions about the SPs revolved around finding out that they went to the same high schools, or their video gaming skill levels. Two of the PPs who were in Reserve Officer Training Corps (ROTC) at their high school were delighted to discover that two of the secondary participants were ROTC members at their schools as well.

Secondary Participants (SPs)

Four of the secondary participants, i.e., neuro-typical peers, participated in the exit interview conducted by the researcher. In responding to the first question as to their enjoyment in being part of the investigation, all four reported enjoyed their participation in the study and stated that they would participate in future activities with the group.

In regard to what they did and did not like most about being a conversation partner, the enjoyment of the video gaming was mentioned. Two SPs commented on enjoying video gaming with some of the PPs after the discussion group. Another commented that he did not realize that one of the PPs attended his school and would try to make contact with him at school. The last SP said, "It was a cool experience." One SP reported the following dislike:

> Knowing that we were being videotaped was a little weird, I was like looking at the camera a lot. So I guess I would have been more at ease without feeling like I was on a reality show but it's cool.

When responding to the last question as to the impact of working with participants on perceptions of peers with HFA/AS, most of the SPs did not elaborate very much other than reporting that it was a "cool experience" or stating, "I liked meeting the guys in the group." None of the SPs specifically described any significant impacts on their views towards their peers with AS. An important attribute of the SPs who participated in the exit interview, was that three of the four participating SPs had a sibling with ASD and thus had prior experience with persons with ASD. None of the SPs, however, knew any of the PPs prior to their participation in this study.

<u>Parents of the Primary Participant Responses</u>

Five of the eight parents, who had children that were PPs and completed the study, participated in the exit interview. Parents were queried as to whether their children had prior experience with an intervention for social skills that utilized video modeling. None of the parents of the PPs reported participating in any social skills group that had used video modeling. Two parents reported that their children had participated in social summer camps during elementary school. One parent reported that his son had just completed participating in a research study at the University of Central Florida in the anxiety clinic. The other two parents reported that their children had never been in any social skills groups.

When responding to the second question as to the benefits of participating in the research study, all parent respondents reported that their boys had benefitted from participating in the group. Some of the specific comments were, "He is so excited about coming to the group." Another parent said "All he [her son] does is go on and on about how fun the group is." A third parent reported that her son "instructed me to go to YouTube and watch some of the videos he had bookmarked."

In response to the final request to describe any benefits, a few parents did note some specific improvements in their children as a result of their participation the study. One parent commented, "I see an improvement in his [her son] conversational skills. He is actually attempting to slow down at times and pace himself during our conversation." Another parent said "Now he is texting two of the guys in group, and they are planning to

do something together." Finally, one parent said, "He just seems to have more confidence socially."

In summary, the qualitative follow-up interview summaries provided a richer description of the quantitative findings by explaining the perceptions of participants and their parents of the 12-week SST program. Chapter 5 contains discusses these results and relates the findings to previous research. Additionally, implications of the study as well as recommendations for further study will be discussed.

Summary

In summary, only minor gains across conversation skill ratings, ASSQ scores, and SRS scores were revealed in this research. The results of the investigation, however, provided rich information as to the importance of the skills being targeted. Although the results were not definitive, they provide strong initial steps towards consideration for new ways to provide social skills instruction and specifically conversation skills instruction and video modeling for adolescents with HFA/AS. The results of this investigation provide an array of information to consider in further investigations of conversation skills instruction and data collection methods for adolescents boys who are 14 to 16 years of age with HFA/AS.

CHAPTER 5
SUMMARY, DISCUSSION AND RECOMMENDATIONS

Introduction

The purpose of this chapter is to discuss the relationship between the results of the current investigation and the existing literature on conversation skills instruction for adolescents with HFA/AS utilizing video modeling and social skill training. This chapter contains a summary and discussion of the findings and implications as they relate to the literature review and to future research possibilities. Additionally, recommendations for further research in the area of video modeling and social communication instruction, using video models found on YouTube and a 12- week social skill training program, are presented. Lastly, the limitations of the investigation are discussed

The present study explored the effects of video models found on YouTube and a 12-week social skills training program, on the conversation skills ratings of adolescent males with HFA/AS, in a community based 12-week social skills group. This project included two separate but related conditions. Therefore, the major findings for the two conditions are presented. Condition #1 examined to what extent did conversation skill video models found on YouTube and social skill training, increase the level of conversation ratings of adolescents with HFA/AS? Pre- and post- observation revealed variable trends: slight increase, no change, and slight decrease in conversation skills ratings across participants, at post observation. Condition #2 examined to what extent did conversation skill video models found on YouTube, increase the level of conversation ratings of adolescents with HFA/AS when grouped with their non-disabled neuro-typical

peers? Like Condition #1, pre- and post- observations for Condition #2 revealed variable

trends: slight increase, no change, slight decrease in conversation skills ratings across

participants at post observation. Next, the three social validity measures, the ASSQ, SRS

and exit interview findings are described. Finally, implications, limitations and future

research directions are presented.

<u>Summary and Discussion of Findings for Condition #1</u>

HFA/AS Only Discussion Groups

The researcher examined the level of conversation skills ratings of adolescents

with HFA/AS after participating in a 12-week group social skills training program. Pre-

and post- observation of adolescents' conversation skills during weekly current event

discussion groups, revealed various trends across participants. Overall increases in

conversation skills ratings, albeit minimal, were observed in six of eight participants'

who completed the SST program at post intervention compared to pre intervention. Two

participants did not complete the SST program. One participant did not return after

attending the first two group meetings during the baseline phase. The other participant

remained in the research project until the final two weeks then did not return.

Condition #1 Summary of Findings

As a group, participants' pre-test conversation skills rating ($M = 80.6$, $SD =$

10.92) and post-test conversation skills ratings ($M = 82.2$, $SD = 10.1$) revealed a mean

difference of 1.6. Some participants demonstrated small increases in the conversation

skills ratings and others showed no change. One participant demonstrated a small decrease in his conversation skills rating. These small changes, however, were important to note and discuss. The current finding adds to the prior body of evidence (Charlop & Milstein 1989, Buggey et al., 1999; Sherer et al. 2001; Thiemann & Goldstein, 2001; Nikopoulos & Keenan 2003, 2004; Buggey, 2005; Apple et al., 2005) of video modeling and social communication instruction. Previous researchers have used parent and teacher interviews, data collection rubrics and dichotomous rating scales to establish change in social communication skills after the intervention. The present study differed from previous social communication research in three ways: (a) An interrupted-time series research design was used, (b) the study targeted adolescent males between 14 years old and 16 years of age with HFA/AS, and (c) the 12-week SST program utilized video models found on YouTube. A data collection rubric was used that quantified conversational skills with five subsets of communication behaviors based on the National Secondary Transition Technical Assistance Center's (NSTTAC) research to practice standards (Pilenis et al., 1987). Although some researchers have strongly suggested that visual analysis was not the best method for measuring discreet human behaviors (Parsonson & Baer, 1992; Wampold & Worsham, 1986), visual analysis was one integral element of the tripartite of measures used to triangulate the observed changes at post observation. Visual observations were completed by three independent observers. By using specific subset measures and multiple observations, six for each probe, more explicit and detailed information was provided regarding change in conversation skills. The measure described in the present study may be helpful in future research for

determining sample size, and data collection methods. Three possible explanations may account for the minimal gains and decreases in conversation ratings and parent social skill surveys: (a) intervention, (b) environment and (c) chance.

<div align="center">Intervention</div>

Overall, the present study demonstrated slight increases in participants' conversation ratings at post observation. Individual and group PP means for the five conversation skill subset behaviors during Condition #1 are displayed in Table 10.

Three of the PPs showed slight regression with their mean scores at post observation. For most PPs, the presentation of appropriate peer models via YouTube videos or the physical presence of proficient PPs in the area of Joint Attention did not appear to influence their performance at post observation. Some researchers have suggested that individuals with autism may be able to demonstrate a conceptual understanding of *Joint Attention* and *Non-verbal Communication*; however at times they may not apply this understanding for the social purpose of *Joint Attention* with others (Jones & Carr, 2004; Goodhart & Baron-Cohen, 1993; Loveland, Landry, Hughes, Hall & McEvoy,1988). Interestingly, in this project the subset of *Non-verbal Communication* showed the most significant increases for the PPs who demonstrated gains in the study. This finding is important because it was inconsistent with previous parallel correlations in the areas of joint attention and *Non-verbal Communication* observed in the social communication literature (Mundy, Sigman, & Kasari, 1994;1990).

Table 10

Condition #1: Five Subsets of Conversation Skills Behaviors Observed

Participants	JA Pre	JA Post	SA Pre	SA Post	DT Pre	DT Post	AD Pre	AD Post	NVC* Pre	NVC* Post
PP1	38	40	34	34	34	34	32	34	24	22
PP2	28	34	36	40	34	30	42	34	18	28
PP3	24	30	34	42	28	42	34	38	18	28
PP4	42	40	42	42	42	42	40	40	38	42
PP5	38	38**	42	38**	42	42**	38	38**	28	28**
PP6	30	30	34	36	42	42	42	38	20	26
PP7	38	38	42	42	32	34	42	38	30	28
PP8	42	42	42	42	40	40	42	40	34	38
PP9	28	30	30	40	36	22	36	38	26	24
PP10	22	22**	38	38**	34	34**	36	36**	18	18**
Group M	33.0	34.4	37.4	39.8	36.4	36.2	38.4	37.4	25.4	28.2

Note. JA = Joint Attention, SA = Speech Acknowledgers, DT = Duration & Tone, AD = Appropriate Disclosures, NVC = Non-verbal Communication.
**= PPs 5 and 10 did not complete study. Pre-test scores were used for post test scores; no changes as a result of treatment was assumed.

In the subset area of *Non-verbal Communication*, there was a trend showing an increase for five of the eight PPs who completed the program. Both as a group and individually, PPs generally maintained their mean subset scores showing minimal or no increase in the subset areas of *Speech Acknowledgers and Appropriate Disclosures*. A potential influence on these subset scores was the observed attention-seeking behaviors of some of the PPs.

For example, one PP burped loudly during group which gained him attention from another PP, who said "Gross--at least cover your mouth." A few minutes later, the same PP that burped earlier, quietly passed gas then while laughing said, "Sorry I just laid a stink bomb. I can't help it--flatulence runs in my family." Again, PP received negative attention for his announcement via peer delivered social censures by some PPs. In relation to *Appropriate Disclosures,* this PP may have been scored "poor" by the observer. The question remains as to whether the prior inappropriate disclosure evidence of a conversation skill deficit or an adolescents' attempt at humor.

Another potential influence for the slight change in ratings at post observation may be related to the treatment. In particular, eight lessons during the SST program focused on social communication activities and video models that demonstrated both examples and non-examples of the five targeted subset conversation behaviors. These lessons directed participants to evaluate the communication intent and strategies employed in the YouTube videos presented by the primary investigator (PI). The PI would ask the PPs to rate the videos based on five questions and explain their answers. The general questions were: (a) What was the purpose of this video? (b) Was the video's author successful in communication their idea? (c) What part(s) of the video did you like or agree with the author? Please explain you answer. (d)What part(s) of the video did you dislike or disagree with the author? Please explain you answer, and (e) If you were making your own video what would you do differently to communicate the same message idea as the video you watched?

In addition, participants practiced initiating and maintaining a shared topic by participating in the 15-minute current event discussion at the beginning of each group meeting. Activities during the intervention focused on general expectations of social communication and group input on effective strategies they employed during a conversation. This focus may have contributed to participants' overall conversational behavior knowledge and, therefore, may have contributed to slight changes in conversation ratings. Additionally, the naturally occurring intra-peer social censures may have mediated some of the participants' responses. Further inspection of discussion group videos indicated that the majority of the social censures such as, "Dude, chill out you're being silly," would come from the 16-year-old PPs directed towards the 14 year old PPs. Some PPs who appeared to be quite reserved or anxious at the beginning of the group, appeared to be more social and vocal as the weeks passed which may also relate to the minimal gains in conversation ratings. During the pre observation, some participants tended to rate poor on speech duration (talking excessively about a particular topic) during conversations. This observation is consistent with previous findings of one-sided conversational behavior in children with HFA/AS (Adams et al., 2002; Klin et al., 2005; Tager-Flusberg & Anderson, 1991).

HFA/AS and Neuro-Typical Peers Mixed Discussion Groups

The research project examined the level of conversation skills ratings of

adolescents with HFA/AS and their neuro-typical peers after participating in a 12-week

group social skills training program. As a group, minimal increases in conversation skills

ratings were observed in Condition #2. Increases with individual PP ratings, were less

apparent due to inconsistent performance from pre- to at post-intervention observations.

In Condition #2 none of the PPs showed gains across all five conversation skill subsets.

PP1 showed gains in three of five conversational subsets, whereas the rest of the group

showed gains in a maximum of two subsets. Two participants did not complete the SST

program. One participant did not return after attending the first two group meetings

during the baseline phase. The other participant remained in the research project until the

final two weeks and did not return.

Condition #2 Findings

As a group, participants' conversation skills pre-test ($M = 84.10$, $SD = 6.7$) and

post-test ($M = 85.5$, $SD = 8.34$) ratings differed by 1.4 points. One participant, PP1,

demonstrated small increases in the conversation skills ratings, and others showed no

change or slight regression. These small changes, however, were important to note and

discuss. The current finding adds to the prior body of evidence of generalization in video

modeling and social communication instruction (Hansen et al., 1990; Kelly, Furman, Phillips, Hathorn, & Wilson, 1979; Plienis et al., 1987).

<center>Intervention</center>

Overall, slight increases were noted in participants' conversation ratings at post observation in Condition #2. Individual and group PP means for the five conversation skill subset behaviors during Condition #2 are displayed in Table 11.

In the subset area of *Joint Attention*, PP 2 and PP4 both showed minimal post mean increases of two and four respectively. The rest of the group generally demonstrated inconsistent ratings from pre observation to post observation. More specifically, all PPs had some regression within conversation skill subsets in Condition #2. Unlike Condition #1, where slight increases were observed across most subsets for most PPs, Condition #2 demonstrated the mixed post-test ratings across all PPs.

In the subset area of *Non-Verbal Communication*, there was a trend showing a slight increase for three of the eight PPs who completed the program. Two of the PPs showed slight regression with their mean scores at post observation, and three showed no change. In the subset area of *Joint Attention*, only two PPs demonstrated a slight increase at post-observation, five of the PPs showed no change, and one showed slight regression. For most PPs, the physical presence of their non-disabled neuro-typical peers did not appear to positively influence their performance at post observation. This is an important finding since some researchers have suggested that the most effective models tend to be individuals close to the observers age who function slightly better than the observer

<center>98</center>

(Bandura, 1997) Other investigations demonstrated the positive impact of peers with elementary school children (Guevremont, MacMillan, Shawchuck, & Hansen, 1989; Smith, Hansen, & MacMillan, 1988). Moreover, peer models have also shown promise with adolescents (Bierman & Furman, 1984; Hansen et al., 1990).

Table 11.
Condition #2. The Five Subsets of Conversation Skill Behaviors Observed Participants & Group

	JA		SA		DT		AD		NVC*	
Participants	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
PP1	36	36	42	42	36	42	34	38	26	32
PP2	32	34	42	34	34	32	30	34	24	24
PP3	28	26	30	42	42	32	30	38	24	24
PP4	38	42	42	42	42	42	42	42	38	38
PP5	42	42**	42	42**	42	42**	40	40**	34	34**
PP6	38	38	42	42	36	32	38	38	28	30
PP7	38	38	42	42	32	42	38	38	28	36
PP8	38	38	42	42	42	42	40	42	34	36
PP9	38	28	42	42	26	30	36	38	26	29
PP10	30	30**	42	42**	26	26**	38	38**	24	24**
Group M	35.80	35.2	40.8	41.2	35.8	36.2	36.6	38.6	28.6	30.7

Note. JA = Joint Attention, SA = Speech Acknowledgers, DT = Duration & Tone, AD = Appropriate Disclosures, NVC = Non-verbal Communication.
**= PPs 5 and 10 did not complete study. Pre-test scores were used for post test scores; no changes as a result of treatment was assumed.

In the subset area of *Appropriate Disclosures*, five of the eight PPs showed slight increases in this subset. As a group, this subset showed the most gains for the majority of the PPs. This finding was significant in this study because in Condition #1 at post observation, *Appropriate Disclosures* remained unchanged or showed slight regression. Furthermore, increased rates of social censures by PPs necessitating redirection by the PI related to *Appropriate Disclosures* was observed. Stokes and Osnes (1989) noted that contacting natural contingencies and consequences is helpful because generalization is enhanced "by providing the least artificial, least cumbersome, and most natural positive consequences in programming interventions. Such programming most closely matches naturally occurring consequences and their entrapment potential" (p. 341). Conversely in Condition #2, five of eight PPs showed small increases in *Appropriate Disclosures,* and no social censures were exhibited by either PPs or secondary participants during Condition # 2.

In the subset area of *Speech Acknowledgers*, only one of the eight PPs showed a slight increase in this subset. As a group, this subset did show gains for the majority of the group. In the subset area of *Duration and Tone*, four of the eight PPs showed slight increases in this subset. For this subset, small gains were displayed by half of the group. The contradictory performance observed in Condition #2 is consistent with some of the research that suggests that individuals with ASD, in many instances, lack the ability to read the social cues and perspectives of others in addition to their problems formulating appropriate responses in social situations (Attwood, 2000; Baron-Chen, 1995). Other researchers have suggested that one of the components of the social communication

deficits in autism is peculiar attentional behavior. Individuals with autism show attentional preference for objects over people and a lack of drive to communicate (Swettenham et al., 1998), and there appears to be a striking dissociation between the sensory (normal) and attentional (impaired) processing of speech sounds in high-functioning children with autism (Ceponiene et al., 2003).

Environment

Next, environment may have affected the minimal changes observed in PPs' conversation skills levels and parental ratings. Environment includes the physical setting, primary participants, and concrete objects such as the video cameras and video games in the research space. Variations in any of these environmental elements can affect PPs' conversational ratings (McTear, 1985). In particular, for the primary participants, YouTube videos along with group activities in this study may have had an influence on PPs' slight gains at post-observation.

The behavior of communication partners invariably impacts an individual's conversation responses (Bellon-Harn & Harn, 2006). Consequently, one reason why participants may have had slightly higher responses at post observation could be due to a familiarity effect of communication partners. During the generalization phase (Condition#2), the PPs were introduced to new neuro-typical peers in both pre- and post-observation. At pre observation, all PPs met each other for the first time. Therefore, the slightly lower scores at pre observation in Condition1 and pre- and post- observation during Condition # 2 may have been to due to unfamiliarity among the PPs and the initial

101

anxiety and shy behavior demonstrated during the baseline phase. Currently there is little research available regarding anxiety related to social interaction and relationships (Bellini, 2004).

Materials in the environment also impact conversational behavior (Miles, Chapman, & Sindberg, 2006). In this study, video games, YouTube videos, and animation were the most common topics of discussion. Therefore, one potential explanation for the minor changes in PPs' conversation skills ratings included the resources present or absent during pre- and post-observations. This may be particularly true for PP1 & PP4, who asked numerous questions about video game activity during group discussion time. Examples were: "Can I go first?" "How long can each player play today?" "Can I use the Rock band guitar instead of the world tour guitar when we start gaming?" Additionally, the sound of others in the group playing games, during small group activities rotation, appeared to distract some of the PPs. The slight regression observed in some PPs may have been due to the delay in access to reinforcement, e.g. video games or PPs submitted YouTube videos of the week. Thus, the variable increases and decreases in the conversation ratings at post observation may be attributed to the materials present in the environment.

<div align="center">Chance</div>

Finally, any observed change in responsiveness occurring at the conclusion of treatment may be due to chance. In Condition #1, slight increases and decreases in conversation ratings were observed in this sample at post observation. In Condition #2,

slight increases and decreases in conversation ratings were observed; however, for individuals, the ratings were varied with mixed trends across all subsets. Under both conditions in this study, PPs were at times inconsistent within subset and in mean scores, indicating that there was a small degree of variability in this measure. This variability must be taken into account in designing future studies with enough subjects to hold the risk of committing a Type II error to $\leq 5\%$.

<center>Implications</center>

Although influences such as intervention, environment and chance impact the current findings, three implications may nonetheless be drawn from this intervention study. First, descriptive evidence from this investigation indicated that a 12-week SST program using video models found on YouTube in a community based setting, slightly increased or decreased conversation skills ratings in some adolescents with HFA/AS. Most of the PPs demonstrated small gains at post observation and two PPs showed minimal decreases. However, none of the observed changes were significant.

Second, although overall conversation skills ratings increased slightly in Condition #1 and Condition #2. the overall increases in ratings in Condition #2 were less than in Condition #1. Therefore, a stimulus generalization effect of the conversation skills ratings of adolescents with HFA/AS and their non-disabled peers was not evident in this investigation.

<center>103</center>

Third, in the exit interview, PPs were asked to indicate specifically which they would choose to access for social skill information (of books, audio tapes, or video). All but one PP, who stated a preference for books, answered videos.

Fourth, two of the PPs who completed this study averaged 96% at pre- and post-observation. Even though the parents of all PPs rated their children as having deficits in social conversation, three independent observers rated two PPs consistently with "good" in most of the five conversation skill subsets. Furthermore, two PPs averaged 85% in pre- and post-observation and scored consistently in "Good" to "Fair" range. This finding may guide other researchers to focus on individual initial assessment prior to treatment as opposed to a deficit model perspective. Morton (2004) and Frith (2003) have postulated that multiple cognitive deficits may be needed to account for all the features of a complex behavioral disorder such as autism (Pennington, 2006). Moreover, the deficit model provides a good explanation of the problems in social interaction but may fail to explain some of the social strengths found in autism as evidenced in this study.

The present study did not provide support for the effectiveness of the 12-week SST program. Nonetheless, as suggested by the small increases by most PPs in conversation skills ratings following the treatment, some PPs did show some signs of conversation skills improvement. Furthermore, the small increases reported after only eight weeks of treatment during the 12-week SST program suggested that intervention may still be a viable resource for social skills instruction for adolescents with HFA/AS in small group settings. The results of the present study should encourage researchers to continue studying the effects of video modeling and SST interventions for adolescents in

community based settings with a larger number of participants and longer duration of therapy. Despite the minimal increases observed for conversation skills ratings, some PPs in the present study experienced no change and even a decrease in their ratings of conversation skills suggesting no effect for the intervention. The video modeling and SST treatment may not be an appropriate therapeutic strategy for all adolescents diagnosed with HFA/AS or for those adolescents with particular characteristics such as significant speech disorders. The effect of an individual's speech disorders, e.g., significant stuttering and speech delays, may confound an observer's ratings of conversational skills.

In summary, the findings in the present study did not provide statistical support for the effectiveness of the intervention in increasing the conversation skills ratings of adolescent males with HFA/AS. The descriptive information acquired from this study suggests that for adolescents with HFA/AS in a SST program, using YouTube videos may be a useful component for increasing some conversation behaviors but only in terms of small increases over an eight-week program.

The current research findings did not provide statistical support for the effectiveness of the intervention at increasing the conversation skills ratings of adolescent males with HFA/AS when grouped with their neuro-typical peers. The descriptive information acquired from this study suggested that for adolescents with HFA/AS in a SST program, using YouTube videos may be useful component for increasing some conversation behaviors, but only in terms of small increases over an eight-week program. In addition, video analysis was useful in making it possible to observe and rate conversation skills during conversation in a more natural environment such as a

community based SST program. Clearly, the implications from this study should be interpreted with caution given the potential impact of the intervention, environment, and chance on the results.

<center>Limitations</center>

Several factors limited the interpretation of this study's findings. Limitations of this research project included a small sample size, tardiness and absenteeism, limited number of observations, use of quantitative and qualitative data, and short duration of the intervention.

The present study included 10 adolescents diagnosed with HFA/AS, and the findings cannot be generalized beyond this sample. Two PPs dropped out of the study prior to the collection of follow-up data, and this resulted in missing data. The reduced sample size limited the choices of appropriate statistical procedures to extrapolate more detailed information on variables, trends and the effectiveness of the intervention.

Tardiness was also a common occurrence during this study. All participants did not attend an equal number of sessions. Four of the eight remaining PPs missed one or two sessions and were given make-up sessions and homework. In the orientation conducted for the research study, the researcher informed potential participants and their families that no more than two days could be missed during this project. Homework and arriving 30 minutes early to review the previous week's videos were prescribed for PPs who were absent. Tardiness of 10-30 minutes was a constant issue during this research for some PPs. Friday night rush-hour traffic, PPs being sick, and spending alternating

<center>106</center>

weeks or days between separated or divorced parents were common reasons for tardiness and absenteeism.

Six observations per PP during pre treatment and post-treatments phases were conducted by the primary investigator, and two trained observers were built into the study design. With the exception of the two highest scoring PPs, examination of all six observations in each of the subsets for most PPs revealed some inconsistency within subset scores. Therefore, there was some variability both within each observation and with pre- and post-treatment scores regarding the five discreet conversation subset behaviors. The methodology for quantitative analysis should be validated by other researchers to demonstrate the efficacy of the pre- and post-video observation procedures used in this study.

Though small but generally positive trends were found in this study in conversation ratings, the eight-week intervention may not have provided an adequate amount of time to refine and further develop the conversation skills of adolescent males with HFA/AS. Therefore a treatment over a longer period of time may impact the effect of intervention.

Recommendations for Future Research

The prospective for further research in this area is immense, as there are still many opportunities for research in the understanding of social skill instruction for persons with HFA/AS. In future studies, it would be beneficial to examine the differences between the different age groups of adolescents. Moreover, it would be very interesting

to examine the differences in conversation skills ratings between neuro-typical adolescents and adolescents with HFA/AS. The limitations of this study indicated the need for further investigations examining the effectiveness of video models found on YouTube and 12-week STT program for 14-16 year adolescents with HFA/AS. Future researchers may want to include a larger sample size for the control group, multiple observations including during treatment, longer duration of intervention and content analysis. Further research should focus on social skills instruction in order to create effective teaching strategies and supports

The sample in the present study represented a small size for determining statistically significant results. Therefore, future studies should include a larger number of adolescents to determine the effectiveness of conversation skills interventions. Comparison groups such as a sample of adolescents with HFA/AS not receiving treatment should be matched to the treatment group on important co-variates such as age or IQ to see if observed changes in conversation skills ratings are more likely the result of treatment or occurred by chance.

In the present study, the researcher attempted to control for setting by conducting observations during the same activity (15-minute discussion groups) and at the same time (first 15 minutes of each group). Consequently, multiple observations (pre, during and post-treatment) averaged together might provide a more accurate and stable picture of adolescents' conversation skills. The interrupted time series design used in this study is appropriate for within treatment measures and longitudinal research. Furthermore, observations in the current study occurred during the opening discussion group with the

assumption that PPs would converse more freely in a minimally structured environment. For PPs who demonstrated little to no change, the minimally structured environment, with several potential conversation partners, may have lacked in motivating some PPs or have been too stressful for others. Therefore, future researchers might consider using probes to determine any change in conversation when more structure is provided. As well as examining the effect of the reinforcers (video games and videos) ensuring that reinforcers are effective at providing reinforcement and not a distraction for the PPs during group. History could have been another factor that threatened validity since some of the PPs became more familiar with each other during the study. The PPs may have developed a relationship with their peer which may have affected the conversation skills ratings.

Testing may also have been a threat to internal validity. The study included two instruments measuring social skills. Although the instruments were completed in the same setting, some of the questions may have been similar. Therefore, the effects of answering the questions from the first instrument may have affected the outcomes of the second instrument.

Finally, the present study included eight weeks of intervention and 4 weeks of data collection. Future studies may want to consider the impact of a longer intervention phase on conversation skills interventions. For instance, researchers may want to conduct a study including two groups of adolescents diagnosed with HFA/AS, one receiving the intervention for eight weeks and the second receiving a 16-week intervention. Using curriculum similar to this study, and the same quantitative and qualitative data analysis,

researchers could compare the results of both groups to determine the influence of the intervention on conversation skills ratings.

The ceiling effect that was evidenced in this research project should be a concern for future researchers that work with individuals with autism spectrum disorders. The various levels of conversational skills displayed by the participants in this research project were not an anomaly but a representation of the dynamic nature population. Even the best attempts at creating a homogenous group i.e. similar ASD diagnosis, age or gender will not ensure that the participants will exhibit the same level of social skill competency. More specifically, if you've met one person with autism you have met one person with autism. One strategy to address the gamut of social skill competency within the ASD population is pre-intervention assessment. Assessing a group of participants' skill levels prior to the assignment of treatment may one reduce the likelihood of the ceiling effect and too ensure that only individuals who stand to gain the most from social skill intervention receive treatment.

Another concern for researchers, who wish to work with adolescents with ASD, should be age and the developmental stage of the participants. The two-year age difference between the participants in this research project produced significantly different levels of maturity between 14 years old and 16 years old adolescents. It is obvious that chronological age alone cannot definitively predict an adolescent's behavior; however researchers may want to consider reducing the age difference of research participants to one year as opposed to two years.

An additional variable for researchers working with adolescents with HFA/AS is the role of parents or guardians and how they influence participant in attendance and participation. Understanding that adolescents are dependent on parental consent and in most cases transportation, the PI facilitated an orientation to outline the requirements for participation in the research project. During the orientation the PI identified the attendance policy (not missing more than two days) and the days that attendance was mandatory to remain in the research project (pre-and post assessment phases). Furthermore, a memorandum of understanding was signed by both parents and PP's during the orientation. A PP reporting that he missed a critical post intervention assessment data collection day to watch a 24-hour cartoon marathon or another PP reporting that "I forgot to come group", illustrates the dynamic nature of working with families and their adolescents with ASD.

An additional critical issue for researchers working with adolescents with HFA/AS is intrinsic motivation. The two primary influences on motivating participation for adolescents with HFA/AS in research projects are reinforcers and environment. The PI attributes the community based social skill group (environment) along with video games (reinforcers) for the relatively high level of participation by the PP's in this research project. However at times, the environment and reinforcers used in this study were also distractions for some of the PP's. For example, PP's playing videogames in one room at times caused PP's receiving direct instruction in another room, to be unfocused during instruction. Future researchers may want to consider how to better manage reinforcers and instruction especially in non-clinical group settings.

Finally, the most significant finding of this research study was the relationship between conceptual knowledge and self regulation. The PI consciously attempted to embed conversational skills strategies within the activities and instruction during the 12-week SST program. It objective was to ensure that PP's did not merely memorize the answers conversational skill questions or provide the PI with a desirable response. As a result, open-ended questions such as, "what do you think was the purpose of the video you just watch?" were used to evaluate knowledge transfer. Interestingly, most of the PP's were able to glean the conversational strategies via the video models and programmatic activities. During the existing video interviews nearly all of the PP's were able to state the importance of various types of conversational skills component i.e. eye contact, interest and attention, pace and duration and speech acknowledgers. Conversely, during the post intervention assessment phase it was also apparent that some PP's did not exhibit the ability to regulate their own conversational skill behaviors during group discussions. Future researchers must be cautious to discriminate between an adolescent's ability to conceptually understand the components of conversational skills and their ability to self-regulate their conversational skill behaviors. Increasing individuals with ASD ability to self regulate their own social skill behaviors should be the ultimate measure of successful social skill intervention research. Furthermore, social skill researchers must also ensure that learned social skill strategies and self-regulation by individuals with ASD can be generalized to their neuro- typical peers. The ultimate indicator of successful social skill programming for individuals with ASD must be the individual's ability to access the community at large.

112

Content Analysis of Data

This study sought to identify trends in the conversation skills ratings after taking part in a 12-week SST training program. Quantitative and qualitative approaches to data analysis most suited the purposes of the present study and were employed by the researcher. Determining frequencies, means and standard deviations provided quantitative information regarding change in PPs conversation skills ratings. Exit interviews to determine perceptions about participating in the research study provided qualitative information about the experience of PPs, SPs, and the parents of the PPs. Future researchers may wish to consider content analysis to explore how participants' conversation skills changed throughout the intervention. Observation data, surveys and interviews with the participants as well as their parents might enable researchers to triangulate social skills instruction outcomes. Consequently, using both quantitative and qualitative techniques to study conversation skills interventions may yield the most conclusive information regarding their efficacy and social validity.

Additional Findings

During this investigation other important findings were revealed. These findings included an updated perception of adolescents with HFA/AS, additional questions about self regulation and social skill training, and the difficulty of finding homogenous groups in research on persons with HFA/AS.

Much of the literature about HFA/AS that was reviewed highlighted many of the deficits in persons with HFA/AS. Some of these highlights include deficits with: independent functioning (Howlin, Goode, Hutton, J, & Rutter, 2004), motor planning (Rinehart et al., 2006), impairments in cognitive flexibility (Solomon, Ozonoff, Cummings, & Cartera, 2007), lack of responsiveness to environmental stimuli (Koegel and Koegel, 1988), learned helplessness (Goodson et al., 2007). About half of the PPs in this study did not exhibit many of the social skill deficits that the literature outlined as being attributed to adolescents with HFA/AS. The conversional skills, ability to interpret humor and emotion demonstrated by the PPs in this study was surprising. Most of the PPs were avid users of YouTube, and other social media such as Facebook and Myspace. Social media such as YouTube provides access to numerous examples of discreet behaviors, terminology, exemplars and direct instruction that many adolescents with HFA/AS already access. As a result, many adolescents with HFA/AS can and do, access the internet for deeper understanding of unclear social concepts. The digital savvy adolescent with HFA/AS who independently uses the internet for social skills development, may require less social skill support than previously assumed in the social skills literature. The issue of varying skill levels with adolescents with HFA/AS mandates that researchers conduct thorough assessments prior to prescribing social skills strategies for adolescents with HFA/AS. Working solely for a deficit model perception will discourage social skill training participation by those whose could truly benefit from social skill support.

One of the activities conducted by the PI was an exit video interview. When asked the question "In your opinion was the purpose of this group?", almost all PPs were able to repeat the core themes of conversations skills, e.g., eye contact, pace and tone, body language. It was clear that the core concepts of the SST program were transferred to the PPs. What was also apparent was that some of the PPs understood conversational "do's" and "don'ts." However, they did not necessarily apply them during their conversations. Knowledge transfer did not dictate self regulation. Therefore, strategies to support self-regulation must be interwoven into social skills training interventions. Teaching persons with ASD to "read others" in social situations is only part of the puzzle confounding adolescents' with HFA/AS social interactions. The literature indicated that video modeling may by an effective strategy to support the self-regulatory skills and pragmatics (Loftin, Odom, & Lantz, 2008; Apple et al, 2005; Koegel et al., 1992).

The variability within the spectrum of ASD also makes it difficult to have truly matched groups in research such as the present study. The within-group variability is more than a threat to experimental control; the variability poses a threat to the social dynamics and cohesion of the group. During this study, some of the PPs had to be redirected from focusing on the differences or deficits of others in the group. One PP's comment, " I see why those guys[pointing to room next door where the group was video gaming] needed this group, but for me it was redundant," exemplifies the challenges of working with adolescents with HFA/AS. More importantly, the PP who made that comment had some of the most significant conversation issues in the research group.

<u>Concluding Comments</u>

Research describing adolescents with HFA/AS indicated significant weaknesses in conversation skills. Social interactions and peer to peer relationships during adolescence become increasingly dynamic, especially when more time is spent with peers (Firth, 1989; Wellman, 1990; Ozonoff and Miller 1995). Moreover, the emotional and physical changes associated with puberty, in conjunction with social cognitive and verbal abilities, impact the adolescent's interactions with both peers and adults (Hansen, Nangle & Myer, 1998; Bierman & Montminy, 1993; Kelly & Hansen,1987). These impairments impact social relationships and friendships (Baron-Cohen & Wheelwright, 2004) with others and contribute to internalized co-morbid conditions such as depression or anxiety (Christoff, Scott, Kelley, Schlundt, Baer, & Kelly, 1985; Platt, Spivack, Altman; Sarason & Sarason, 1984). As a result, it is important to target conversation skills through evidenced based interventions. The results of this investigation indicated slight trends of improvement for some adolescents with HFA/AS in conversation skills ratings. It is clear that future research is needed to investigate the relationship between video modeling and pragmatic acquisition. Further research comparing the generalization effects of conversation skills of adolescents with HFA/AS to other adolescents with HFA/AS and their neuro-typical peers critical is also needed. Effective reciprocal communication and comprehension continue to be primary barriers to friendship, employment, self-advocacy, and community engagement for adolescents with HFA/AS. The possibility of applying both quantitative and qualitative measures to specific components of conversation has

been explored in this study and may facilitate future research of video modeling and SST

interventions.

APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL

University of Central Florida

Approval of Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Bruce Blake**

Date: **September 21, 2009**

Dear Researcher:

On 9/18/2009, the IRB approved the following modifications/human participant research until 9/17/2010 inclusive:

Type of Review:	Submission Response for UCF Initial Review Submission Form
Project Title:	The Effect of Video Modeling on Conversation Skills of Adolescents with High Function Autism and Asperger Syndrome: Are YouTube Videos Effective?
Investigator:	Bruce Blake
IRB Number:	SBE-09-06379
Funding Agency:	
Grant Title:	
Research ID:	N/A

The Continuing Review Progress Report must be submitted 2 – 4 weeks prior to the expiration date for studies that were previously expedited, and 8 weeks prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu .

If continuing review approval is not granted before the expiration date of 9/17/2010, approval of this research expires on that date.

Use of the approved, stamped consent document(s) is required. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a signed copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 09/21/2009 10:38:11 AM EDT

Joanne Muratori

IRB Coordinator

Page 1 of 1

119

APPENDIX B
SOCIAL SKILL TRAINING PROGRAM LESSON PLANS

Title of study: *Effects of a Video Modeling of Conversation Skills on Adolescents with High functioning Autism and Aspergers Syndrome. Do YouTube Videos increase Conversation Skills?*

Lesson Plan Based on: Plienis, A. J., Hansen, D. J., Ford, F., & Smith, S. (1987). Behavioral small group training to improve the social skills of emotionally disordered adolescents. *Behavior Therapy*, 12, 17-32.

Objective: To teach students everyday conversational skills

Setting and Materials:
Setting: Social Meeting space in community center.
Material: Two video cameras (Data collection), digital video projector, laptop computer with dvd player, digital video proxima to project PowerPoint presentations (the format of the rehearsal games) video gaming system, i.e., The Playstation 2, folders with home work for each lesson.

Introduction: Begin the group instruction by identifying the skill aspect that will be addressed in the session by instructing the students in its use and rationale

1. Model the skill by role-playing a short interaction and have the students note when the targeted skill is being exhibited.

2. Have the students rehearse the same behavior by verbalizing or role-playing.

3. Along with the other group members, offer feedback, suggestions, and reinforcement.

4.. When students become proficient in correctly exhibiting the skills, prompt them to identify situations in school and the community in which he or she could converse with others.

5. Reinforce successful skill use and discuss difficulties applying skills as a group.

6. Encourage students to raise actual life problems they had encountered and teach them to apply their newly-acquired problem-solving skills to those difficulties.

Lesson 1: Week 2
Topic: Appropriate questioning in conversation
   a) Breakout session
   b) Direct Instruction: Team activity-create 5 good question for conversation and 5 questions to avoid
   c) Dudez Reviews: watch YouTube video #1 & #2 and give feedback
   d) Instructional Review: Who wants to be a millionaire? (Theme: appropriate questioning discrimination.)
   e) Leisure Activity

Lesson 2: *Week 3*

Topic: Conveying verbal and nonverbal interest and attention in to a partner
   a) Breakout session
   b) Direct Instruction: Role play- Ways to communicate without words
   c) Dudez Reviews: watch YouTube video #3 and give feedback
   d) Instructional Review: Who wants to be a millionaire? (Theme: Now That's Good Body Language)
   e) Leisure Activity

Lesson 3: *Week 4*

Topic: Disclosing appropriate information about one's own interests
   a) Breakout session
   b) Direct Instruction: Role play Mock Interviews for jobs or volunteering opportunities
   c) Dudez Reviews: watch YouTube video #4 give feedback
   d) Instructional Review: Jeopardy ? (Theme: Public vs. Private events)
   e) Leisure Activity

Lesson 4: *Week 5*

Topic: Indirect Language
   a) Breakout session
   b) Direct Instruction: Instructor presents a chart of indirect language and it's literal meanings
   c) Dudez Reviews: watch YouTube video #5 and give feedback
   d) Instructional Review: Who wants to be a millionaire? (Theme: So What You're really Saying Is…)
   e) Leisure Activity

Lesson 5: *Week 6*

Topic: Pacing one's style or flow of conversation in an appropriate manner
   a) Breakout session
   b) Direct Instruction: Role play with examples and non-examples
   c) Dudez Reviews: watch YouTube video #6 and give feedback
   d) Instructional Review: Who wants to be a millionaire? (Theme: Do you get that?)
   e) Leisure Activity

Lesson 6: *Week 7*

Topic: Using Language to Get What You Want
   a) Breakout session
   b) Direct Instruction: what you want and what to do about it worksheet
   c) Dudez Reviews: watch YouTube video #6 and give feedback
   d) Instructional Review: Who wants to be a millionaire? (Theme: 10 tips to persuade others)
   e) Leisure Activity

Lesson 7: *Week 8*

Topic: Point of View

    a) Breakout session
    b) Direct Instruction: Parent vs. your points of view worksheet
    c) Dudez Reviews: watch YouTube video #6 and give feedback
    d) Instructional Review: Who wants to be a millionaire? (theme: Do you get that?)
    e) Leisure Activity

Lesson 8: *Week 9*

Topic: Keeping and losing Friends

    a) Breakout session
    b) Direct Instruction: A worksheet to organize ways to keeps friends and ways to lose friends
    c) Dudez Reviews: watch YouTube video #6 and give feedback
    d) Instructional Review: Who wants to be a millionaire? (Theme: Peer interaction Do's' and Don'ts)
    e) Leisure Activity

APPENDIX C
CONVERSATION SKILLS OBSERVER FORMS AND GUIDELINES

CONVERSATION SKILLS OBSERVER RATING PROTOCOL

Conversation Skills ↓	Ratings **Good=** Participant **Always** exhibits the accurately skill. *(e.g., consistently employs appropriate voice intonation--* **Fair=** Participant **Sometimes** exhibits the accurately skill. *(e.g., y employs appropriate voice intonation--* **Poor=** Participant **Never** exhibits skill. *(e.g., employs appropriate voice intonation)*	Good	Fair	Poor
Joint Attention • **Considers viewpoint of peers** (ask probing questions of others) • **stays on topic** • **makes eye contact or faces** speaker when initiating and respond **Speech acknowledgers** • **Responds to partner's question or statement** with relevant statement or answer, • **Takes turns** • **Uses Regulators**-shows continued interest in a conversation (e.g. "yes" "I agree.." that's. cool", please repeat that…") controls back and forth speaking and listening			
Non verbal communication • **Facial expressions that communicate** *Happiness,* -smiles, round eyes, raised cheeks *Surprise/excited*-raised eyebrow, wide open eyes, open mouth, *Concerned/Disapproval*- lower eyebrow, stare intensely • **Illustrators-** accent emphasis and reinforce words "the model was this big" • **Appropriate posture and body positioning**(maintain good "social distance" approximately 4-6 feet social distance for this study is defined as impersonal, business social gatherings			

Appropriate disclosures of information • **Communicates thoughts, feeling, and failures** in relative context.(responds to question that elicit self-disclosure • **Withholds information when appropriate** (i.e. Q: What is your social security number? A: "That's private and I can't share that information. Or What are your religious beliefs? (i.e. mock interview) "That is not relative to this job interview" • **Expresses choice and preferences** appropriately(request another turn during game time, in place of complaining or tantrums)			
Speech duration, Tone and Pace • **Allows conversation partner chance to respond** • **Speech volume** is commensurate with setting (loud enough to be heard but perceived to be yelling) • **Communicates at a reasonable pace**(not to slow to lose partner interest or, too fast to be understood) • **Expounds on open-ended questions**(responds with more than one word utterances)			

DATA COLLECTION GUIDELINES FOR OBSERVERS

You will be given four folders; each folder will contain one data collection sheet in the participants' name that you will be observing.

1. Sign your name and date the sheet.
2. Use the participant photo and name guide provided to identify the participant you will be observing.
3. Set your timer for two minutes and thirty seconds.
4. Click the mouse pad to start the video. Try your best to focus solely on the participant who you are currently assigned to observe. Remember that the conversational skills that you will be observing may be reciprocal, therefore conversation initiation is not a requirement for all behaviors to be exhibited, i.e., "Joint Attention." If you begin a video, and the participant you are observing is paying attention, i.e., eye contact, assuring head nod, then you can rate their performance.
5. Each box on the data recording sheet represents a 2½-minute interval. If "joint attention" has been exhibited by you, you should not change, or rescore the skill until after the timer beeps.
6. Write "**NR"** if there is no response. Cross out a box when one conversation ends to indicate the start of another.
7. When the timer beeps, start collecting data in the adjacent box. Repeat these steps six times, for each 15-minute participant observation interval.

Additional Questions

Q; What if the behavior I'm observing crosses over into the next interval, for instance inappropriate nonverbal communication?

A: Each 2 minute and 30 second interval is a new occurrence, thus, you should view your ratings of consecutive intervals as independent of the first.

Q: What if during my observation interval the participant turns his back away or makes no attempt to communicate at all, is that (no response) "NR", or poor "Non-verbal communication"?

A: A rating of "poor" implies that a behavior was exhibited however it was not appropriate, e.g., employs appropriate voice intonation. A rating of "NR" implies no communicative behavior was exhibited (participant walked away or fell asleep)

DATA COLLECTION INSTRUMENT

Participants' Name: _____ **Date:** _____

Directions: Record the behavior of the participant on a continuous 2 minute and 30 seconds interval schedule. The total observation is 15 minutes (6 intervals per observation). (*1*) Rate participant performance across 5 Domains check placing an "x" in the corresponding column: **Good**= Always demonstrated **Fair**=Sometimes demonstrated **Poor**= skill **never** demonstrated

Observer Rating	Poor	Fair	Good
Conversation skill			
Joint Attention			
Speech Acknowledgers			
Speech Duration, Tone, and Pace			
Appropriate Disclosures of Information			
Non-verbal Communication			

Observer rating	Poor	Fair	Good
Conversation skill			
Joint Attention			
Speech Acknowledgers			
Speech Duration, Tone, and Pace			
Appropriate disclosures of information			
Non-verbal Communication			

Observer Rating	Poor	Fair	Good
Conversation skill			
Joint Attention			
Speech Acknowledgers			
Speech Duration, Tone, and Pace			
Appropriate Disclosures of Information			
Non-verbal Communication			

Observer rating	Poor	Fair	Good
Conversation skill			
Joint Attention			
Speech Acknowledgers			
Speech Duration, Tone, and Pace			
Appropriate Disclosures of Information			
Non-verbal Communication			

Observer Rating	Poor	Fair	Good
Conversation skill			
Joint Attention			
Speech Acknowledgers			
Speech Duration, Tone, and Pace			
Appropriate Disclosures of Information			
Non-verbal Communication			

Observer rating	Poor	Fair	Good
Conversation skill			
Joint Attention			
Speech acknowledgers			
Speech Duration, Tone, and Pace			
Appropriate Disclosures of Information			
Non-verbal Communication			

3

APPENDIX D
VIDEO REVIEW PANEL EVALUATION FORM AND VIDEOS

VIDEO REVIEW PANEL EVALUATION TOOL

Video Title: _____Date Viewed:_____

Name of Evaluator: _____

Please rate the video according to the following quality indicators by CIRCLING one response for each item (1 = Poor and 5 = Exceptional).

	Poor			Exceptional		
1. Accurate	1	2	3	4	5	
Was the content of the video accurate and up-to-date? If not, then the video is not ideally suitable for learning. Where there portions of the content that should NOT be used as well as sections that are usable? Please note unusable content on a separate attachment. *See page 2*						
2. Useful	1	2	3	4	5	
Was the content of the video generally useful? The video should stimulate, motivate and inform the learner to act on the information that was being presented. Will you incorporate the ideas presented into your life?						
3. Bias-Free	1	2	3	4	5	
Was the video bias-free, including stereotyping with regard to age, sex, ethnicity, race, physical impairment, values, dress, language, or social class?						
4. Content Presentation	1	2	3	4	5	
Was the content detail controlled to promote understanding? Did the video simplify complex tasks and avoid introducing extraneous information? Did it try to cover too much material or introduce too much detail?						
5. Learner Application	1	2	3	4	5	
Did the video suggest methods for the learner to apply the newly acquired knowledge? Were suggestions for practice of what's being discussed considered?						
6. Met the Objectives						
Did the video meet the learning objectives and needs of the learner? Did what was being visually depicted fit the learning objectives?						
7.Integration into the Learning Environment	1	2	3	4	5	
Can the video be easily integrated into the learning environment by adding emphasis to or supplementing more traditional methods? Did the video bring remote experiences and places to the learner?						
Total (Sum the Scores, 35 Max.)	⟶					

This YouTube evaluation scale is based in part on the Instructional Video Evaluation Instrument developed by (Beaudin, 1996)

LIST OF YOUTUBE VIDEOS USED IN THE STUDY

Title of video:	Links to video
Aspergers and Me	http://www.youtube.com/watch?v=DO1yFm-7Wow&feature=related A girl 's one sided conversion and the effect others(3:41)
Nathanael Wassmann and Aspergers Syndrome	http://www.youtube.com/watch?v=ceuQpZeGO3w&fe A Personal Description of AS: A man talking (6:37)
Aspergers Syndrome - What it means for me	http://www.youtube.com/watch?v=nKSuYKfhj1I&feature=related Self-disclosure What it means for me: A boy talking (8:27)
Disclosing that you are autistic or Aspie to others	http://www.youtube.com/watch?v=adW0h_FFzzo Self-disclosure a one woman's having AS (10:04)
Classmate with AS	http://www.youtube.com/watch?v=0mQDF6R_cHk&feature=related AS adolescents tell about themselves and what people should know about them (1:14)
Speech Durations bad example	http://www.youtube.com/watch?v=ef0wjnGMsHQ A girl talks to a woman in the office (1:57)
Speech Durations good example	http://www.youtube.com/watch?v=c3F_tJJgdJo&NR=1 A girl talks to a woman in the office (0:46)
Communication skills "parody"	http://www.youtube.com/watch?v=DIsMJnOa8wc&feature=related A boy and girl play "social skills comedy"(5:20)
How to Hold a conversation	http://www.youtube.com/watch?v=mnCtXTJUDzI&feature=related A guy gives tips of a good conversation skills(4:50)******
How to Be Social	http://www.youtube.com/watch?v=6eN6eZXwdBQ A girls tries to become social (2:40)
Non verbal communication "Lady shopper"	http://www.youtube.com/watch?v=wEBZZNs6pNE&feature=related A man and woman communicate without words (1:19)
Non-verbal communication Movie clips	http://www.youtube.com/watch?v=VfDWQG47pAQ&feature=related Popular movie clips to demonstrate Non-verbal communication.(2:57)
Non-verbal emotion mirror	http://www.youtube.com/watch?v=M1WgnisIyPQ&feature=related Facial expressions of emotions with CG(0:42)
Listening vs. Hearing	http://www.youtube.com/watch?v=Y_TrUJfNinc&feature=related A lady "Listening" (2:29)

APPENDIX E
INFORMED CONSENT AND PERMISSION FORMS

INFORMED CONSENT

1. Informed consent will be accomplished in a UCF CARD center: I will advise participants that they may participate in a research project by completing a survey at their convenience. (During group time or someplace else after group). The instructor will describe the research project. An IRB-approved consent form document will be passed out to students in the group. A waiver of documentation of consent is being requested, therefore, no signatures will be obtained

2. The PI facilitates a social support group. After obtaining permission from the participant or guardians The PI will assent all children who are allowed to participate. The PI will administer the short questionnaire to the adolescents who agree to participate.

3. Participants will be invited fill out a survey via phone in person to. Prior to beginning the survey, they will "agree" to participate by reading a consent document and sign to confirm their agreement. No identifying information will be collected on the survey. Participants will be informed that they do not have to answer any question they wish not to.

PARENTAL PERMISSION FORM FOR PARTICIPATION OF A CHILD IN A RESEARCH STUDY

The Effect of Video Modeling and Social Skill Instruction Social Skills of Adolescents with High functioning Autism and Aspergers Syndrome: Are YouTube Videos Effective?

Description of the research and your participation

You child is invited to participate in a research study conducted by Bruce Blake. The purpose of this research is to better understand the effect of video models on social skills of adolescents with Aspergers syndrome or High functioning autism.

Your participation will involve attending a 12 week social group. The Weekly group meetings are ninety minutes long. Some meetings will be thirty minutes, and sixty minutes long depending on the schedule for that day. You will also be completing two short questionnaires that assess your personal opinions at the beginning and end of the study.

Risks and discomforts

There are no known risks associated with this research. Your answers on the questionnaires will be used to compare your answers with other studies involving adolescents. A potential discomforts may be the video recording of some of the social group discussions.

Potential benefits

There are no known benefits to you that would result from your participation in this research. However, your participation may offer a better understanding of the interaction of video media and adolescents which may improve interventions and instruction for adolescents.

Protection of confidentiality

I will do everything I can to protect your privacy. Your identity will not be revealed in any publication that might result from this study. All of your questionnaires answers will be coded so that you identity will not be compromised. In rare cases, a research study will be evaluated by an oversight agency, such as the University of Central Florida Review Board or the federal Office for Human Research Protections that would require that we share the information we collect from you. If this happens, the information would only be used to determine if we conducted this study properly and adequately protected your rights as a participant.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Possible Dismissal from Study

Termination of participation by the investigator: circumstances under which the participant's participation may be terminated by the investigator without regard to the participant's consent for physical or verbal abuse, threats, or bullying of participants.

Contact Information

If you have any questions or concerns about this study or if any problems arise, please contact Bruce Blake at UCF CARD 407-718-3510 If you have any questions or concerns about your rights as a research participant, please contact the
UCF IRB
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, FL 32826-3246

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant's signature: _____ Date: _____

PARTICIPANT CONSENT FORM FOR PARTICIPATION IN A RESEARCH STUDY

University of Central Florida
The Effect of Video Modeling and social skill on Social Skills of Adolescents with High functioning Autism and Aspergers Syndrome: Are YouTube Videos Effective?

Description of the research and your participation

You are invited to participate in a research study conducted by Bruce Blake. The purpose of this research is to better understand the perception of adolescents with Aspergers syndrome or High functioning autism.

Your participation will involve attending a 12 week social group. The Weekly group meetings are ninety minutes long. Some meetings will be thirty minutes, and sixty minutes long depending on the schedule for that day. You will also be completing two short questionnaires that assess your personal opinions at the beginning and end of the study.

Risks and discomforts

There are no known risks associated with this research. Your answers on the questionnaires will be used to compare your answers with other studies involving adolescents. A potential discomforts may be the video recording of some of the social group discussions.

Potential benefits

There are no known benefits to you that would result from your participation in this research. However, your participation may offer a better understanding of the interaction of video media and adolescents which may improve interventions and instruction for adolescents.

Protection of confidentiality

I will do everything I can to protect your privacy. Your identity will not be revealed in any publication that might result from this study. All of your questionnaires answers will be coded so that you identity will not be compromised. In rare cases, a research study will be evaluated by an oversight agency, such as the University of Central Florida Review Board or the federal Office for Human Research Protections that would require that we share the information we collect from you. If this happens, the information would only be used to determine if we conducted this study properly and adequately protected your rights as a participant.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Possible Dismissal from Study

Termination of participation by the investigator: circumstances under which the participant's participation may be terminated by the investigator without regard to the participant's consent for physical or verbal abuse, threats, or bullying of participants.

11

<div align="center">Contact information</div>

If you have any questions or concerns about this study or if any problems arise, please contact Bruce Blake at UCF CARD 407-718-3510 If you have any questions or concerns about your rights as a research participant, please contact:

UCF IRB
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, FL 32826-3246

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant's signature: _____ Date: _____

A copy of this consent form should be given to you.

APPENDIX F
FOLLOW-UP GROUP INTERVIEWS

INTERVIEW QUESTIONS FOR FOLLOW-UP GROUP INTERVIEWS

Three independent focus group interviews ,were conducted in the following order: (a) participants, (b) Neuro typical peers, (c) parents of the primary participants.

PARTICIPANTS

1. Did you like participating in the SST program?

2. What did you like/not like about learning the social skills?

3. What is your opinion about videos you watched? What parts of the video did you find helpful/and what parts were not helpful or useful?

4. What did you like/ not like about having non- group peers in your discussion groups?

NEURO-TYPICAL PEERS

1. Did you like being part of this investigation?

2. What did you like / not like about being a conversation partner?

3. Describe the impact of working with participants' on your perception of your peers with HFA/AS?

PARENTS OF THE PRIMARY PARTICIPANTS

1. Has your adolescent participated in an intervention for social skills before that utilized video modeling ?

2. Do you believe your child has benefited from participating in this research study?

3. Can you describe any specific improvements you feel your adolescent received from participating in this study?

LIST OF REFERENCES

Alcantara, P. R. (1994). Effects of videotape instructional package on purchasing skills of children with autism. . *Exceptional Children, 61*, 40-45.

Alwell, M., & Cobb, B. (2006) *Career development for exceptional individuals*, *29*, 3-26. APA (2004) The American Psychological Association www.apa.org/monitor/mar04/graduate.aspx

Apple, A. L., Billingsley, F., & Schwartz, I. S**.** (2005). Effects of video modeling alone and with self-management on compliment-giving behaviors or children with high functioning ASD. Journal of Positive Behavior Interventions, 7, 33-46.

Aronson, S., & Schiedlinger, S. (2002). *Group treatment of adolescents in context*. Madison, CT: International Universities Press.

Attwood, T. (1998). *Asperger's Syndrome: A guide for parents and professionals*. Philadelphia, PA: Jessica Kingsley Publishers.

Baker, L. J., & Welkowitiz, L. A. (2005). *Asperger's syndrome: Intervening in schools, clinics, and communities*, New York, NY: Routledge.

Bandura, A. (1977). *Social learning theory*. New York, NY: General Learning Press.

Barlow, S. H. (2008). Group psychotherapy specialty practice. *Professional Psychology: Research and Practice, 39*(2), 240-244.

Barlow, S. H., Fuhriman, A. J., & Burlingame, G. M. (2004). *The history of group counseling and psychotherapy.* Thousand Oaks, CA: Sage.

Barnhill, G. 2001. "What Is Asperger Syndrome?" *Intervention in School and Clinic* 36: 259-265.

Barnhill, D. R., Hagiwara, B. S. Myles, and Simpson, R. L. (2000) "Asperger Syndrome: A study of the cognitive profiles of 37 children and adolescents." *Focus on Autism and Other Developmental Disabilities* 15: 146-153.

Bauminger, N., Shulman, C., & Agam, G. (2001). Peer interaction and loneliness in high functioning children with autism. *Journal of Autism and Developmental Disorders, 33*, 489-507.

Bellini, S. C. (2000). Social skills training: A summary of a program designed for a child with autism spectrum disorders. *Indiana Resource Center for Autism Reporter, 6*, 19-27.

Bellini, S. C., Akullian, J., & Hopf, A. (2007). Increasing social engagement in young children with autism spectrum disorders using video self-modeling. *School Psychology Review:* 36, 1

Bellini, S. C. (2006). *Building social relationships: A systematic approach to teaching social interaction skills to children and adolescents with autism spectrum disorders and other social difficulties*. Shawnee Mission, KS: Autism Asperger Publishing.

Bellon-Harn, M. L., & Harn, W. (2006). Profiles of social communicative competence in middle school children with Asperger syndrome: Two case studies. Child Language Teaching and Therapy, 22, 1-26.

Brinton, B., Robinson, L., & Fujiki, M. (2004). Description of a social language intervention:"If you have a conversation, You can have a relationship." *Language, Speech and Hearing Services in Schools, 35*, 283-290.

Brown, B. B. (1990). Peer groups and peer cultures. In S. S. Feldman and G. R. Elliott (Eds.), *At the threshold: The developing adolescent* (pp. 171-196). Cambridge, MA: Harvard University Press.

Brown, W. H., & Odom, S. L. (1994). Strategies and tactics for promoting generalization and maintainance of young children's social behavior. *Research In Developmental Disabilities, 15*, 99-118.

Brown, W. H., & Odom, S. L. (1995). Naturalistic peer interventions for promoting children's social interactions. *Preventing School Failure 39,* 38-43.

Buggey, T., Toombs, K., Gardener, P., & Cervetti, M. (1999). Training responding behaviors in students with autism: Using videotaped self-modeling. *Journal of Positive Behavioral Interventions, 1*, 205-214.

Frith, U. (1991). *Autism and Asperger Syndrome.* New York, NY: Cambridge University

Goodson, J and Sigafoos, J and O'Reilly, M and Cannella, H and Lancioni, GE (2007) *Evaluation of a video-based error correction procedure for teaching a domestic skill to individuals with developmental disabilities.* Research in Developmental Disabilities, 28 (5). pp. 458-4

Howlin P. Goode, S Hutton, J, Rutter, M. (2004) Adult outcomes for children with autism. Journal of Child Psychology and Psychiatry 45, 212-229

Charlop-Christy, M. H., & & Daneshvar, S. (2003). Using video modeling to teach perspective taking to children with autism

Journal of Positive Behavior Interventions, 5(12-21).

Charlop-Christy, M. H., Le, L., & Freeman, K. A. (2000). A comparison of video modeling with in-vivo modeling for teaching children with autism. *Journal of Autism and Developmental Disorders, 30*, 537-552.

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

Church, C., Alisanski, S., & Amanullah, S. (2000). The social, behavioral, and academic experiences of children with Asperger syndrome. *Focus on Autism and Other Developmental Disabilities, 15*, 12-20.

Cook, T.D., & Campbell, D.T. (1979). *Quasi-experimentation: Design and analysis for field settings*. Rand McNally, Chicago, Illinois

Cooper, J. O., Heron, T. E., & Heward, W. L. (1987). *Applied behavior analysis.* Upper Saddle River, NJ: Pearson-Hall.

Dermer, M. L., & Hoch, T. A. (1999). Improving descriptions of single-subject experiments in research texts written for undergraduates. *Psychological Record, 49*(1), 49-66.

Dobbinson, S., Perkins, M. R., & Boucher, J. (1998). Structural Pattern in converstaion with a Woman Who Has Autism. *Special Issuse: Autism: New perspectives on Assesssment and Intervention, 31*(2), 113-134.

Dole, J. A., Duffy, G., Roehler, L. R., & Perseon, P. D. (1991). Moving from the old to the new: Reserh on reading comprehension instruction. *Review of Educational Research, 61`*(2), 239-264.

Downing, J.E. (2005). Inclusive education for high school students with severe intellectual disabilities: Supporting cCommunication *Augmentative and Alternative Communication, 21*(2), 132-148.

Dowrick, P. W. (1999). A review of self modeling and related interventions. *Applied & Preventive Psychology, 8*, 23-39.

Eder, D., & Kinney, D. A. (1995). The Effect of Middle school Extracurricular Activities on Adolescents' popularity anf Peer Status. *Youth and Society, 26*(298-324).

Ehlers S., Gillberg, C., Wing, L. A (1999). Screening questionnaire for Asperger syndrome and other high-functioning autism spectrum disorders in school age children. *Journal of Autism Developmental Disorders*, *29*, 129-41.

Farmer-Dougan, V. (1994). Increasing Request by Adults with Developmental Disabilities Using Incidental Teaching By Peers. *Journal of Applied Behavior Analysis, 27*, 533-544.

Fuligni, A. J., Barber, B. L., Eccles, J. S., & Clements, P. (2001). Early adolescent Peer Orientation and Adjustment during High School. *Developmental Pyschology, 37*, 28-36.

Gay, L. R., & Airasian, P. (2000). *Educational research competencies for analysis and application (6th ed.)*. Upper Saddle River, NJ: Prentice Hall.

Gaylord-Ross, R. J., Haring, T. G., Breen, C., & Pitts-Conway, V. (1984). The Training and Generalization of social interaction skills with Autistic Youth. *Journal of Applied Behavior Analysis, 17*, 229-247.

Gillott, A., Furniss, F., & Walter, A. (2001). Anxitety in High-Functioing Chidren With Autism. *Autism, 5*, 277-286.

Good, J. M. (2000). Evaluating developmental education programs by measuring literacy growth *Journal of Developmental Education. 24(1), 30-36., 24*(1), 30-36.

Goodson, J., Sigafoos, J., O' Reilly, M., Cannella, H., & Lancioni, G. (2007). Evaluation of a video-based error correction procedure for teaching a domestic skill to individuals with developmental disabilities. Research in Developmental Disabilities, 28, 458–467.

Gray, C. A. (1995). *Teaching children with autism to read social situations. Teaching Children with Autism: Strategies to Enhance Communication and Socialization*. New York, NY: Delmar.

Gredler, M. E. (2005). *Learning and instruction: Theory into practice (5th ed). .* Upper Saddle River, NJ: Prentice-Hall.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward The Conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis 11*(3), 255-274.

Gresham, F. M. (1995). *Best Practices in Social Skills Training. , Best Practices in School Psychology.* Washington, DC: National Association of School Pyschologist.

Gresham, F. M., & Elliott, S. N. (1990). *Social Skills Rating System Manual*

Circle Pines: American Guidance Service.

Gresham, F. M., Sugai, G., & Horner, R. H. (2001). Interpreting Outcomes of Social Skills Training for Students with High-Incidence Disabilities. *Exceptional Children, 67*, 331-344.

Gullotta, T., Adams, G. R., & Ramos, J. M. (2005). *Handbook of Adolescent Behavioral Problems: Evidence-based Approaches to Prevention and Treatment*. New York, NY: Springer.

Gutstein, S. E., & Whitney, T. (2002). Asperger Syndrome and the Development of Social Competence. *Focus on Autism & Other Developmental Disabilities, 17*(3), 161-172.

Headley, D., & Young, R. (2006). Social Comparison Processes and Dipressive Sumtoms in Children and Adolescents with Asperger Syndrome. *Autism, 10*(2), 139-153.

Hillier, A., Fish, T., Cloppert, P., & Beversdorf, D. Q. (2007). Outcomes of a social and vocational skills support group for adolescents and young adults on the autism spectrum. *Focus on Autism and Other Developmental Disabilities, 22*(3), 107-115.

Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2004). Adult outcomes for children with autism. Journal of Child Psychologyand Psychiatry, 45, 212–229

Kazdin, A. (1973). Methodological and assessment considerations in evaluating reinforcement programs in applied settings. . *Journal of Applied Behavior Analysis, 6*(3), 517-531.

Kazdin, A., & Weisz, J. (2003). *Evidence-Based Psychoterapies for Children and Adolescents*. New York, NY: The Guilford Press.

Kehle, T. J., Clark, E., Jenson, W. R., & Wampold, B. R. (1986). Effectiveness of self-observation with behavior disordered elementary school children. . *School Psychology Review, 15, 289-295., 15*, 289-295.

Kenndy, C. H. (2002). *Promoting Social-Communocative Interactions in Adolescents*. Baltimore: Pual H. Brookes Publishing Co.

King, A. (1992). Comparison of self questionng, summerizing and notetaking review as strategies for learning from lectures. *American Educational Research Journal, 29*(2), 311-323.

Klin, J. A., Szatmari, P., Bryson, S., Streiner, D. L., & Wilson, F. J. (2000). The Prevalence of Anxiety and Mood Problems among Children with Autism and Aspger Syndrome. *Autism, 4*, 117-132.

Klin, J. A., & Volkmar, F. R. (2000). *Treatment and Intervention Guidelines for Individuals with Asperger Syndrome*. New York: Guilford Press.

Koegel, L. K., Koegel, R. L., Shoshan, Y., & McNerney, E. (1999). Pivitol response intervention II: Preliminary long-term outcome data. . *Journal of Association for Persons with Severe Handicaps, 24*(3), 186-198.

Lave, J., & Wenger, E. . (1991). *Situated learning: Legitimate peripheral participation. .* Cambridge, UK Cambridge University Press.

Lee, W. (2005). *Encyclopedia of School Pyschology*. Thosand Oaks, CA: Sage.

Lonnecker, C., Brady, M. P., McPherson, R., & Hawkins, J. (1994). Video self-modeling and cooperative classroom behavior in children with learning and behavior problems: Training and generalization effects. *Behavioral Disorders, 20*, 24-34.

Loftin, R. L., Odom, S. L., & Lantz, J. F. (2008). Social interaction and repetitive motor behavior. Journal of Autism and Developmental Disorders, 38, 1124–1135

Lopata, C., Thomeer, M., Volker, M., & Nida, R. (2006). Effectiveness of Cognitive-Behavioral Treatment on the Social Behaviors of Children with Asperger Disorder. *Foucus on Autism and Other Developmental Disabilities, 21*(4), 237-244.

MaCay, T., Knott, F., & Dunlop, A. L. (2007). Developing social interaction and understanding in individuals with autism spectrum disorder: A groupwork intervention. *Journal of Intellectual & Developmental Disability, 32*(4), 279-290.

Marriage, K. J., Gordon, V., & Brand, L. (1995). A Social Skills Group for Boys With Asperger Syndrome. *Australian and New Zealand Journal of Psychaitry, 29*, 58-62.

Marsh, H. W. (1992). Extracurricular Activities: Beneficial Extention of The Traditional Curriculm or Subversion of Academic Goals? *Journal of Educational Psychology, 84*, 553-562.

Mathison, S. (1988). Why Triangulate. *Educational Researcher, 17*(2), 13-17.

McGee, G. G., Krantz, P. J., & McClannahan, L. E. (1984). Conversation Skills for Autistic Adolescents: Teaching assertiveness in Naturalistic Game Settings. *Journal of Applied Behavior Analysis, 25*, 117-126.

McTear, M. (1985). *Children's Conversations*. Oxford, England: Blackwell.

Mesibov, G. B. (1984). Social skills training with verbal autisic adolescents: A program model. *Journal of Autism and Developmental Disabilities, 14*, 395-404.

Montes, G., & Halterman, J. S. (2006). Charcteristics og School-Aged Children with Autism. *Developmental and Behavioral Pediatrics, 27*, 379-385.

Myles, B. S., & Anderson, D. (2001). *Asperger Syndrome and Adolescence: Practical soultions for School Success*. Shawnee Mission, KS: Autism AspergerAspergers Publishing Company.

Myles, B. S., Simpson, R. L., Ormsbee, C. K., & Erickson, C. (1993). Intergrating Pre-School Children with Autism with Their Normally Developing Peers: Reserach Finding and Best Practices Reccomendations. *Foucus on Autisc Behavior, 8*, 1-18.

Neuman, S. B., & McCormick, S. (1995). *Single-subject experimental research: Application for literacy*. Newark, DE: International Reading Association.

Orsmand, G. I., Krauss, M. W., & Seltzer, M. M. (2004). Peer Relationships and Socail and Recreational Activities Among Adolescents and Adults with Autism. *Journal of autism and Developmental Disorders, 34*, 245-256.

Piper, W., Rosie, J., Joyce, A., & Azim, H. (1996). *Time-limited day treatment for personality disorders: Integration of research and practicein a group program. .* Washington, DC: American Psychological Association.

Pirerce, K., & Schreibman, L. (1995). Increasing Complex Social Behaviors in Children with Autism: A review. *Journal of Applied Behavior Analysis, 28*, 285-295.

Plienis, A. J., Hansen, D. J., Ford, F., Smith, S., Stark, L. J., & Kelly, J. A. (1987). Behavior Small Group Training to Improve the Socail Skills of Emotionally-Disordered Adolescents. *Behaviory Therapy, 18,* 17-32.

Poling, A., & Grossett, G. (1986). *Basic research designs in applied behavior analysis. Research methods in applied behavior analysis: Issues and advances* New York: Plenum Press. .

Pressley, M., Wood, E., Woloshyn, V., Martin, V., King, A., & Menke, D. (1992). Encouragaing mindful use of prior knowledge: Attempting to construct explanatory answers facilitates learning. *Educational Pyschologist, 27*(1), 91-109.

Rinehart, N., Bellgrove, M., Tonge, B., Brereton, A., Howells-Rankin, D., & Bradshaw, J. (2006). An examination of movement kinematics in young people with high-

functioning autism and Asperger's disorder: Further evidence for a motor planning deficit. Journal of Autism and Developmental Disorders, 36, 757–767.

Rumelheart, D. E., Windrow, B., Leher, M.A. (1994) The Basic Ideas in Neural Networks communication of the ACM 37 (3), 87-92

Sacks, H., Schegloff, E., & Jefforson, G. (1974). A Simplilest Systematics for the Organization of Turn Taking for Conversation. *Language, 50*, 696-735.

Sasso, G. M., Mundscheneck, N. A., Melloy, K. J., & Casey, S. D. (1998). A Comparison of the Effects of Organismic and Setting Variablews on the Socail Interaction Behavior of Children with Developmental Disabilities and Autism. *Foucus on Autism and Other Developmental Disabilities, 13*, 2-16.

Savin-Williams, R. C., & Berndt, T. J. (1990). *Friedship and peer Relations*. Cambridge: Harvard University Press.

Schreibman, L. (1994). *General principles of behavior management. .* New York, NY: Plenum Press. .

Schunk, D. H., & Hanson, A. R. (1989). Self-modeling and children's cognitive skill learning. *. Journal of Educational Psychology, 81*, 115-163.

Schwartz, I., Carta, J., & Grant, S. (1996). Exanining The Use of Reccomended Laguage Intervention Practices in Early Childood Special Education. *Early Childhood Special Education, 16*, 251-272.

Shaked, M., & Yirmiya, N. (2003). *Understanding Social Difficulties*. New York, NY: Guilford Press.

Shirberg, E., Stolcke, A., & Baron, D. (2001). *Can Prosody Aid the Automatic Processing of Multi-party Meetings? Evidence from Predicting Punctuation and Overlapping Speech*. Paper presented at the Conference Name|. Retrieved Access Date|. from URL|.

Shunk, D. H. (2000). *Learning Theories: An Educational perspective(3rd. ed).* Upper Saddle River, NJ: Pentice-Hall.

Solomon, M., Ozonoff, S., Cummings, N., & Cartera, C. (2007). Cognitive control in autism spectrum disorders. International Journal of Developmental Neuroscience, 26, 239–247

Stokes, T., & Baer, D. (1977). An Implicit Technology of Generalization. *Journal of Applied Behavior Analysis, 10*, 349-367.

Swanson, S. (1992). *Mixed Method Triangulation: Theory and Practice Compared*. Paper presented at the Conference Name|. Retrieved Access Date|. from URL|.

Szatmari, P., Barolucci, G., Bond, S., & Rich, S. (1989). A Follow Up Study of High Functioning Autistic Children. *Journal of Autism and Developmental Disabilities, 19*, 213-225.

Tager-Flusberg, H., & Anderson, M. (1991). The Development of Contingent Discourse Ability in Autistic Children. *Journal of Psychology and Psychiatry and Allied Disciplines, 32*(7), 1123-1134.

Tulving, E., & Madigan, S. A. (1970). Memory and Verbal learning. . *Annual Review of Psychology, 21*, 437-484.

Vockell, E. L. (1983). *Educational Research*. New York, NY: Macmillan Publishing Co., Inc.

Vygotsky, L. (1962). *Thought and Language*. Cambridge,MA: MIT Press.

Vygotsky, L. (1978). *Mind in Society*. London: Harvard University Press.

Walker, H. M., Colvin, G., & Ramsey, E. (1995). *Antisocial behavior in the school:Strategies and best practices*. Pacific Grove, CA: Brooks Cole Publishing.

Wehmeyer, M. L. (2007). *Promoting Self-Determination in Students with Developmental Disabilities*: Guildford Press.

Willams, T. I. (1989). A social skills group for Autisc Children. *Journal of Autism and Developmental Disoders, 19*(1), 143-155.

Winner, M. G. (2005). *Worksheets for Teaching Social Thinking and Related Skills*. San Jose:CA: M. Winner.

Wolery, M., & Gast, D. (2000). Classroom research for young children with disabilities: Assumptions that guided the conduct of research. . *Topics in Early Childhood Special Education, 20*(1), 49-55.

Zager, D. B. (2005). *Autism Spectrum Disorders: Identification, Education, and Treatment*, NY: Routledge.