

USING COVERT AUDIO COACHING PROMPTS
TO INCREASE STUDENT PRAGMATIC
CONVERSATION SKILLS

by

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ABSTRACT

The importance of social skills for students with disabilities has given rise to this study. The ability to effectively communicate with family members, peers, and potential co-workers can lead to positive outcomes for individuals with cognitive disabilities. Many students struggle with social interaction and exhibit pragmatic communication behaviors that can disrupt the delivery of verbal and non-verbal messages. The overarching purpose of this study was to examine the effects of using Covert Audio Coaching (CAC) to address specific targeted distracting conversation behaviors that could potentially interfere with an individual's social interaction with others. Individuals were observed during conversation groups conducted in a transition program located on a university campus in the southeastern United States. A multiple baseline design across behaviors was employed in this study. Individuals with varying cognitive disabilities participated in the study based on observations made during group conversations.

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CONTENTS

ABSTRACT	ii
ACKNOWLEDGMENTS	iii
CONTENTS.....	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER I: INTRODUCTION.....	1
Statement of the Problem.....	8
Purpose of the Study	13
Research Question/Theoretical Assumptions	14
Definition of Terms.....	16
Dependent Variables	17
Significance of Study	17
Scope of Study	18
Summary	19
CHAPTER II: LITERATURE REVIEW	20
Social Skills	20
Social Interaction	22
Social Skills Interventions	26
Bug in Ear Prompting Addressing Targeted Behaviors.....	31

Single Subject Research Design	34
Summary	36
CHAPTER III: METHODOLOGY AND PROCEDURES	37
Research Questions	37
Research Design and Procedures	38
Setting	39
Participants	41
David	43
Bruce	44
Sandy	46
Data Collection Procedures	47
Independent Variables	52
Dependent Variables	52
Data Analysis	53
Inter-Observer Reliability	56
Assumptions of the Study	56
Limitations of the Study	57
Summary	57
CHAPTER IV: RESEARCH FINDINGS	58
David	59
Bruce	63
Sandy	65
Summary	67

CHAPTER V: DISCUSSION.....	68
Question 1	70
Question 2	72
Question 3	72
Question 4	73
Limitations	75
Implications for Current Practice.....	76
Implications for Future Research.....	76
Conclusion	77
REFERENCES	78
APPENDICES	86

LIST OF TABLES

1. Participant-observation Meetings with Intervention Prompts	66
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LIST OF FIGURES

1.	Improper Body Language	55
2.	Interrupting Others.....	60
3.	Distracting Body Language	61
4.	Attending to Speaker.....	62
5.	Distracting Body Language	64
6.	Attending to Speaker.....	65

CHAPTER I: INTRODUCTION

The centrality of social skills for adult functioning is agreed upon and well documented in research. According to the National Association of School Psychologists (NASP) (2002), good social skills are critical to successful functioning in life. These skills help us to know what to say, provide insight on how to make good choices based on our interaction with others, and how we should behave in a variety of situations. Gresham, Elliot, Vance, and Cook (2011) have defined social skills as socially acceptable behaviors that allow a person to positively interact with others. According to the authors, deficits in social competence can lead to (a) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers, and (b) the expression of distracting behavior under normal circumstances. Individuals that do not possess some of the basic social skills are likely to experience teacher and peer rejection (Orsmond, 2004). Social interaction plays a primary role in the development of relationships. Many adults with cognitive disabilities encounter difficulties developing relationships due to issues related to various social situations (McLean, Brady, & McLean, 1996).

How children and adolescents develop and possess social skills can influence areas in their lives such as academic performance, social and family relationships, potential employment opportunities, and involvement in extracurricular activities. Navigating the social world is an ongoing learning process; with each new interaction, an individual can add another social tool to their repertoire to be used at another time.

Our ability to create and sustain our social world depends in large measure on how well we communicate. People's social skills are crucial to their well-being individually and collectively. The importance of understanding skillful behavior in all its complexities cannot be overstated. (Wiemann, 2003, p. ix)

While most individuals pick up their positive skills interacting daily with others, it is important that educators and parents play a role in that social development (NASP, 2012). The increasing negative societal influences (i.e., through media outlets) make it imperative that parents and educators collaborate to work through the social learning process of children and adolescents.

For many individuals with a cognitive disability, developing appropriate social skills can be difficult at times; the inability to understand social cues that come easily to others can interfere with their ability to make new friends or feel comfortable in new environments. Furthermore, for young adults with intellectual disabilities, the ability to interact socially with co-workers and members of the community is an important skill students will need if they are to achieve long-term employment and live independently (Wolfe, Boone, & Blanchett, 1998). Developing relationships with others can become difficult when individuals are unable to acquire the necessary communication skills that lead to successful interaction with peers, co-workers, and family.

There are a number of developmental disabilities that are characterized by deficits and/or impairments in the domains of social functioning. For example, autism spectrum disorder (ASD) is characterized by difficulties in social interaction, verbal and nonverbal communication, and repetitive behaviors (Autism Speaks, 2013). Individuals with ASD experience pragmatic language (Bishop, 2000) difficulties that involve the ability to understand the importance of turn taking or how distracting body language can affect the flow of a conversation. Improving the social skills of individuals found on the spectrum and with other developmental disabilities is important because of the affect these skills can have on multiple areas of functioning such as making friends or the ability to handle stressful life situations (Laugeson, Frankel, Gantman, Dillion, & Mogil, 2013). As our school systems become more inclusive, the social demands

placed on individuals with cognitive disabilities increase. Some individuals with ASD have reported that they often felt lonelier and have poorer quality friendships (Capps, Sigman, & Yirmiya, 1997) than their typically developing peers. In 1999, Sigman and Ruskin noted that only 27% of children with ASD in their sampling had a best friend compared to 62% of children without any significant cognitive disability. Fuentes, Bakare, Munir, Aguayo, Gaddour, and Oner (2012) and Hill and Firth (2003) have documented the difficulties experienced by children with ASD when developing friendships and age appropriate peer relationships. The literature appears to indicate that friendships and social interaction among students with and without intellectual disabilities occur more often in elementary school rather than secondary school settings (Carter & Hughes, 2005; McVilly, Stancliffe, Parmenter, & Burton-Smith, 2006). With the current direction towards systematic inclusion of adolescents with ASD or other cognitive disability into the regular classroom, this growing population is in need of evidence based social skills treatment more than ever before (Williams-White, Koenig, & Scahill, 2007).

Lindsay Soloff, Law, Band, and Peacy (2002) reported that children with speech and language impairments represent a significant portion of the population of pupils with special needs with 46% being identified as having speech and language difficulties. Adams and Lloyd (2007) referred to some of the issues as pragmatic language impairments (PLI). Bishop (2000) and Boucher (1998) have suggested that many children with PLI resemble some of the characteristics of individuals with ASD. Characteristics of individuals diagnosed with PLI include 1) difficulties using language for the purposes of communication, 2) difficulty with turn taking, and 3) adhering to conversational topics or talking specifically about their own preoccupations. Issues with topic initiation, use of context, interruptions, eye contact, facial expressions and gestures (Adams, Baxendale, Lloyd, & Aldredge, 2005) are familiar distracting

behaviors identified with autism. While certain aspects of ASD may improve over time with various interventions used, difficulties with social interaction may continue throughout the lifespan of an individual (Orsmond, Krauss, & Seltzer, 2004). Due to these social issues, many adults with ASD and other developmental disabilities lack significant community connections and friendships that may be taken for granted by typically developing peers, which could lead to depression, anxiety, and victimization (Shtayermman, 2007).

While social skills training has increased with the goal of helping individuals adapt to their social environments (Attwood, 2000), a review of the literature on ASD suggests that there are very few evidence-based interventions that are specifically aimed at improving the friendships of adolescents with ASD (Wolfberg & Schuler, 1993). Much of the research reported that interventions focusing on behavioral modeling, coaching, behavioral rehearsing (role playing), and performance feedback conducted in a small group setting (Gresham, Sugai, & Horner, 2001). Research of this nature does not address individuals attending to social stimuli, social responsivity, and interacting with peers (Dawson, Toth, Abbott, Osterling, Munson, & Estes, 2004; Jackson, Fein, Wolf, Jones, Hauck, & Waterhouse, 2003). These are important pragmatic communication skills needed for effective social interaction.

The Individuals with Disabilities Education Act (IDEA) of 1990 and subsequent amendments required public schools to develop transition plans for student's with disabilities in their Individualized Education Plan (IEP) beginning at age 16 or younger if appropriate (20 U.S.C. § 1414[d][1][A][vii][III]). This mandate was initiated because of research from the 1980s showing that adolescents with disabilities were experiencing poor post-school integration, coupled with high drop-out rates, high unemployment, low rates of postsecondary education (PSE), and low quality independent living and community participation outcomes (Blackorby &

Wagner, 1996; Chadsey-Rusch, Rusch, & O'Reilly, 1991). According to IDEA (2004), amendments transition services are defined as a coordinated set of activities for a child with a disability that

1. is designed to be within a results-oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child's movement from school to post-school activities, including postsecondary education, vocational education, integrated employment (including supported employment); continuing and adult education, adult services, independent living, or community participation;
2. is based on the individual child's needs, taking into account the child's strengths, preferences, and interests; and
3. includes instruction, related services, community experiences, the development of employment and other post-school adult living objectives, and, if appropriate, acquisition of daily living skills and functional vocational evaluation. [34 CFR 300.43 (a)] [20 U.S.C. 1401(34)]

Current transition goals to help prepare individuals for adult life generally focus on employment, independent living skills, along with positive social interaction and personal relationships (Bierne-Smith, Ittenbach, & Patton, 2002). General and special education teachers need effective strategies, methods and ideas to teach individuals with cognitive disabilities the skills they will need to successfully transition into adult life (Thoma, Nathanson, Baker, & Tamura, 2002).

Social skills instruction for adolescents ages 18-21 with exceptionalities such as autism, down syndrome, and other cognitive disabilities, has become an important part of the curriculum

for many transition programs which provide students with job skills instruction. Greene (2003) suggested that the appropriateness of secondary programs and transition services should be judged based on how likely they are to promote the students desired post-school outcomes. Individualized Education Programs (IEP) must discuss transition goals beginning in middle school. For youth unable to attend college, vocational training with jobsites outside of the classroom in natural settings serves as the primary source of instruction. Goldstein and Morgan (2002) have suggested that some students need more direct instruction along with opportunities to practice social skills in developmentally appropriate vocational and educational settings. Some of the more relevant predictors of post-school outcomes of students with special needs include employment experiences during high school, self-determination skills, and social skills (Murray & Doren, 2013). Despite the increased realization of the importance of social skills training of individuals with special needs, the National Longitudinal Transition Study-2 (NLTS-2) reported that adolescents with disabilities possess fewer social skills than their same age peers in the general population (Newman, Wagner, Cameto, Knokey, & Shaver, 2010).

Interventions to address some of the social skill issues students face have been met with some success. Video modeling has been used with some degree of success to teach children with autism several adaptive behaviors such as social play, self-care, and academic skills (Maione & Mirenda, 2006). Video modeling allows the student to observe a video of a model engaging in a target behavior then attempt to imitate the behavior in another setting (Charlop-Christy, Loc, & Freeman, 2000). Peer mediated strategies have been used to provide opportunities for students to interact with same-aged peers (Laushey & Heflin, 2000). Social stories were introduced to describe expected social behaviors for students. Computer-based strategies such as the *Behavioral Learning Program* used by Moore and Calvert (2000), the *Language Wizard/Player*

(Bosseler & Massaro, 2003) and *Virtual Environments* (Mitchell, Parsons, & Leonard, 2007), have experienced mixed results because of the difficulty students still experience generalizing these learned skills to other settings (Gresham et al., 2001).

The use of Covert Audio Coaching (CAC), which provides in-time performance feedback, has been used by Bennett (2013) to improve the job performance of students with moderate to severe disabilities. His study used radio buds to deliver prompts to study participants. For this study, CAC involves observing subjects in a natural conversational setting from a remote location via Skype, placing a Bluetooth headpiece on student enabling observer to call student through Bluetooth to provide specific prompts or praise to increase subject performance of a targeted behavior. The results have suggested that CAC can be an effective tool to be used among students with disabilities. Bennett also suggested that future research using CAC will require individualized coaching statements delivered systematically which takes practice to help the coach become proficient in delivering needed prompts and to arrive at brief accurate prompts taught to the student to benefit from CAC.

Using CAC along with video observations of students in conversational settings will allow teachers and social coaches to provide the necessary in time individualized prompts to help facilitate conversations with others based on participants individual conversational need. This research focused on the importance of communication as related to peer interaction, job skills, and how teachers can use CAC technology to help students develop some of the necessary skills to become successful in the workplace and their respective communities.

Statement of Problem

While many strategies have emerged to teach social skills to learners with disabilities and while consensus exists on the need for learning such skills, youth with cognitive disabilities continue to experience significant social skills deficits that have been attributed to serious adverse consequences on their adult outcomes in the areas of interpersonal communication and employment. This study addresses the problems with pragmatic communication skills student encounter during social interaction. The ability to self-regulate some behaviors in the context of social interaction has been difficult for some young adults with cognitive disabilities especially when they find themselves in novel situations to which they are not accustomed.

Over the years, research has been conducted demonstrating that students with high incidence disabilities frequently display behaviors that negatively influence their interactions with others. Howlin (2006) has suggested that many students with severe and multiple disabilities have difficulties establishing peer relationships, engaging in conversation, and using language to express thoughts and feelings. Some students on the autism spectrum and other developmental disabilities demonstrate varying degrees of social difficulty when in the presence of new people, situations, and/or stimuli (Handleman, 1999). The limitations in effectively using various social skills for these students could possibly affect social interaction and social acceptance as well as academic and classroom performance (Shattuck, Orsmond, Wagner, & Cooper, 2011; Wang & Spillane, 2009). For several students their school days are spent in isolation, separated from their peers without disabilities despite the fact they are in the same classes or share the same lunchtime (Carter, Sisco, Brown, Brickman, & Al-Khabbaz, 2008). It has been reported that students with autism are among the most segregated individuals among all the disability groups (U.S. Department of Education, 2010).

Teaching social skills to students with autism and other exceptionalities to improve their interactions with family, peers, and members of the community becomes paramount because of the difficulties many have with social interaction (Sansosti, 2010). One area that has not been effectively addressed when teaching social skills is how pragmatic language impairments can affect the social interaction of individuals. Things such as improper body language not attending to a speaker or gestures made during conversation can interfere with the interaction between individuals. Nolan (1975) has suggested that nonverbal behavior precedes verbal behaviors in the evolution of communication. The National Joint Committee on the Communicative Needs of Persons with Severe Disabilities in 1992 suggested that any effective intervention for individuals with severe intellectual disabilities should promote communication as a social behavior, understand that communication can be demonstrated in various ways including behavior, and realize that effective intervention takes place in natural interactive settings. Many individuals with disabilities struggle with communication and have developed body movements, facial expressions, and gestures that could be perceived as distracting during conversational settings. Efforts must be made to teach students with autism and/or intellectual disabilities who experience challenges to social interaction how to communicate effectively while providing support and opportunities to practice newly acquired social skills (Kaplan, Boykin, Reilly, Brigham, & Cosgriff, 2012).

No Child Left Behind (NCLB) has made inclusion a focal part of its policy by making a priority of mainstreaming students with special needs into the general education classroom. Policymakers hope that individuals with disabilities will interact with non-disabled peers in and out of the classroom, providing opportunities for social contact that may not have been present before. Students cannot benefit from these opportunities for interaction if they do not possess the

skills necessary to effectively engage others. Engaging in positive social relationships with friends has been identified by individuals with developmental disabilities as one of the key ingredients to social interaction. (Janicki & Ansello, 2000). Unfortunately, many individuals with disabilities are not given the chance to interact socially because of stereotypical beliefs about people with disabilities. Some individuals with disabilities are faced with rejection by peers, isolation within their communities, and limitations in the classroom (Miller, Lane, & Wehby, 2005).

Over the past two decades efforts have been made to improve post-high school outcomes for youth with disabilities. This group continues to experience dismal results including high rates of unemployment (14.1% unemployed with a disability versus 7.1% without a disability) incarceration and financial dependence (Bureau of Labor Statistics, 2013).

In spite of 25 years of transition related legislation, youth with disabilities continue to face an uncertain future as they exit high school (Rusch, Hughes, Agran, Martin, & Johnson, 2009). Most school systems have developed transition programs to assist adolescents in their changeover from high school to college or the workforce. Transition services for students with special needs that focus on employment competence provide opportunities for job training with the goal of permanent employment to support independent living. These services should include a variety of stakeholders from families, schools and the community. Programs designed to allow students to practice social skills in natural settings outside the classroom are key (Wehman, 2012). Historically, one of the problems with transition services is that student goals do not always reflect students' personal interests. In many cases, some of the goals are set by educators who may have their own personal agenda for student development (Rusch et al., 2009). What the author recommends is to reorient and direct the attention of the broader educational community

to the emphasis on choices, placement, and coordinated support with social skills training at the forefront.

Several adolescents with various levels of disabilities have found meaningful employment and experienced positive and desired outcomes in their communities (Rusch et al., 2009). However, far too many have failed to find employment or understand the myriad of factors related to their failure to find or maintain a job; many individuals without special needs have learned these complex skills related to workplace interactions. The ability to pick up on social cues or adapting to a variety of social environments comes through experience with others that some with disabilities have not encountered. Finding a job in America is not easy, as the country struggles to emerge from one of the greatest financial crises in our history with high unemployment, individuals with disabilities are finding it more difficult to find and keep steady employment. Wehman (2012) concurred that in this country people are expected to work and at times are defined by their work.

Social deficits are common areas of delay for youth with ASD. Laushey and Heflin (2000) have discussed that the most profound and defining issues for individuals with ASD are those issues related to poor social functioning. Looking at social communication deficits individuals often perseverate on specific topics of interest resulting in difficulties changing conversational topics (Elder, Caterino, Chao, Shacknai, & DeSimone, 2006), having an inability to carry out two way conversations that includes turn taking (Church, Alisanski, & Amanullah, 2000; Bishop, 2000), and experiencing difficulty with understanding and utilizing humor (Winter, 2003). Some of the suggestions from a meta-analysis conducted by Alwell and Cobb (2009) included 1) there is a need for additional research of the effects of social skills interventions among adolescents with special needs; 2) despite the limited research, social skills

do appear to be associated with adolescents academic, behavioral, and emotional adjustment, transition related skills, and post-school outcomes; and 3) finally, despite the obvious importance of social skills for everyone with or without a disability, these skills may be underdeveloped among students with disabilities. Based on their findings the authors suggest that future research should examine the relationship between adolescents' occupational skills and their long-term outcomes. This comparison is needed to evaluate the extent to which changes in occupational skills while in high school affect the long-term employment-related outcomes of youth.

There has been research suggesting that almost 90% of job loss comes from poor job related social skills (Elksnin & Elksnin, 2001). Findings from research conducted by Murray and Doren (2013) indicate that social skills can be improved overtime through systematic implementation of curricula designed to teach these skills. More acceptable social behavior and communication should result in more natural reinforcers leading to gratification from success with minimal teacher or coach involvement. Observations conducted by this researcher involving instantaneous delivery of prompts suggests cognitive conflict can be minimized in the target subject by offering in-the-moment corrective feedback. Choosing correct actions, leveraged by technology, becomes reinforcing to subjects with cognitive impairments thereby countering constant failure and confusion, which confounds learning and skill use. In the context of a job interview or formal group meeting at work, certain behaviors may be deemed distracting or inappropriate which could lead to someone not getting the job or not becoming an active contributor in a conversation. This research shows how the use of CAC can provide necessary prompts to individuals with disabilities to help overcome some of the conversational issues they face in daily social interactions.

Purpose of the Study

This study looked at a potential intervention strategy available to teach social skills to students with autism and other cognitive impairments using CAC technology. A belief among researchers indicates positive interaction between individuals with and without disabilities can advance acceptance and change attitudes within society (Schlein, Tipton, & Green, 1997; Johnson, Douglas, Bigby, & Iacono, 2012). The benefits of individuals with and without disabilities working together in an integrated community based setting have been proven (Agran, Snow, & Swaner, 1999; Johnson, Stodden, Emanuel, Lucking, & Mack, 2002). Teaching social skills to individuals with special needs is critical; helping them use those skills in a variety of settings is a challenge.

This research project showed the effectiveness of using CAC technology in helping students with special needs develop communication skills that can be effectively used in various social settings, specifically job related interactions. Research has indicated that many students are unable to secure and maintain steady employment due to a lack of appropriate social skills (Murray & Doren, 2013). The inability to make eye contact, not recognizing body and facial gestures, and problems understanding social conventions such as turn taking during conversations or improper non-verbal behaviors are examples of social limitations that can affect social interaction these are also things everyone may struggle with. Helping students develop the necessary skills when interacting with others by asking questions related to their respective job responsibilities and work sites could help with job acquisition and help maintain placement once work is procured. If individuals are given the opportunity for employment, the ability to communicate with co-workers and supervisors are critical parts of the job. Another goal of this study was to prompt teachers and service providers to replicate this effort and possibly confirm

evidence based practice for use in a variety of settings with several students. Instructors are constantly looking for new innovative ways to support student development.

Research Question/Theoretical Assumptions

Bandura's social learning theory (Bandura, 1977) suggests that an individual's new patterns of behavior can be acquired through direct experience or by observing the behavior of others. Individuals are constantly encountering various situations that require some sort of response one way or another. As they go through this process, some of their responses are successful while others are not. This differential reinforcement process helps to reinforce effective behaviors while ineffectual ones are discarded. Based on the difficulties some individuals with disabilities experience with social situations it is theorized that they are unable to effectively select between positive and negative behavior patterns. When individuals are unable to automatically reinforce their own positive behavior patterns, Bandura has postulated that some simple performances can be positively altered to some degree through reinforcement without the awareness of the relationship between one's own actions and their outcomes. It is hypothesized that CAC can provide the reinforcement needed for individuals to respond appropriately in a given situation. The framework of the social learning theory revolves around reinforcement serving as the informative function that can strengthen positive response capabilities. Through the prompts and praise delivered via CAC, students can practice a targeted skill in the moment as a result of the immediacy of the prompt or praise delivered.

Based on Bandura's theory, the research questions for this particular study included the following:

1. Will the participant's use of proper body language increase during group conversations when receiving CAC;

2. Is the participant's attention to speaker increased when CAC is used during group conversations;
3. Is participant's proper covering of the mouth when yawning during conversations increased when CAC is used; and
4. Is the participant's interruption of others while speaking be decreased during group conversations when CAC is used?

This effort investigated the feasibility of using CAC to coach learners with cognitive impairments who struggle to link instruction with targeted skills. Immediate, headset delivered feedback is hypothesized to benefit these learners attempting to acquire novel skills. It is theorized that instruction delivered in an open classroom setting with all students hearing the given verbal prompt leaves too many opportunities for misperception and misdirected information delivered to a learner with cognitive impairment. Utilizing CAC technology can individualize the delivered prompt to the student without interrupting other students in the classroom while personalizing the intervention with a given student.

The integration of CAC for instantaneous coaching is an innovative approach to skill acquisition (Sheeler, Macluckie, & Albright 2010). Using CAC for individual coaching and guidance during social interaction will allow a social coach or teacher to observe and overhear interactions while observing the situation in a remote location. The coach, without being present in the environment, can prompt and guide the individual to decipher the situation and volunteer most appropriate statements and modify body language via predetermined prompts. With the delivery of more acceptable social behavior communication, social situations, learning situations, work situations and recreational situations may be improved. Degrees of coaching can then be faded as natural reinforcements carry the interaction and provide the gratification of success with

limited teacher or coach involvement. This researcher has seen convincing changes in behavior from simpler, limited coaching situations that compact the time between feedback and action, thereby building independence in the learner with special needs.

Definition of Terms

Social skills the specific behaviors used in social situations to produce desirable social outcomes (McFall, 1982).

Social interaction involves sharing time with others through verbal and non-verbal means affording individuals the opportunity to laugh and get to know one another (Johnson, Douglas, Bigby, & Iacono, 2012).

Transition services a coordinate set of activities for a child with a disability designed to promote the well being of that individual based on their own specific goals in post school participation that is results oriented (IDEA, 2004).

Communication is “the act or process of using words, sounds, signs or behaviors to express or exchange information or to express ideas thoughts, feelings, etc, to someone else” (Merriam-Webster, 2014).

Pragmatic language impairment is difficulty with interpersonal use of language verbal and non-verbal in social contexts (Adams et al., 2006).

Headset delivered feedback is technology consisting of an Bluetooth earpiece connected wirelessly to a transmitter that can receive messages delivered from a distance through another phone to provide feedback that only the recipient can hear (Bennett, 2010)

Cognitive disabilities involves impairments of general mental abilities that impact adaptive functioning in the areas of social interaction, academic ability and self-management skills (American Psychiatric Association, 2013)

Dependent Variables

The dependent variables are as follows:

1. Attending to speaker and following the flow of conversation by looking at or in the direction of the person speaking;
2. Poor body language including distracting body posture during conversation, placing hands in front of face or playing with hands or body in a manner that could interfere with the flow of the conversation;
3. Improper yawning or not properly covering mouth when yawning or exaggerated body moves during yawning that could be distracting; and
4. Turn taking or not interrupting others when speaking.

Significance of Study

The ultimate goal of this research project was twofold. First, to provide instruction to students based on their individual needs to increase positive communication skills over time. Adolescents find social interactions in increasingly novel situations to be complex. In order to realize success they must first diagnose the event then match a social skill set to fit that circumstance. CAC prompting aspires to promote new or improved social competence by assisting learners in owning and personalizing social skills. Currently many job skills training programs use job coaches who accompany a individual to the jobsite offering hands on assistance where needed or verbal prompts to assist in skill attainment. The potential use of CAC technology could allow the replacement of onsite job coaching with remote observation affording an individual a sense of independence as they gain confidence in performing specific tasks without onsite coaching. All teachers want to see their students succeed and developing an intervention that could lead to better outcomes is significant in itself. Second, to provide others

in the profession, such as teachers and job coaches, with evidence-based practice that can be used in a variety of settings with multiple students. Instructors are constantly looking for new innovative ways to support student development; it is the hope of this research to fill that need with another avenue to reach the students within this diverse population.

Scope of Study

The focus of this research was to analyze the relationship between verbal prompts delivered via CAC technology and the conversation skills of individuals with developmental disabilities. This study addresses the following question: can student pragmatic communication skills be enhanced using specific interventions to address individual student needs? Classroom and worksite conversations between coworkers and peers with and without disabilities may be affected positively by timely verbal prompts to an individual that struggles with social interaction. There has been a great deal of research conducted regarding the importance of social skill instruction (Alwell & Cobb, 2009; Greene, 2003; Gresham, 1998). It is important that the use of technology-based instruction targeting social skill improvement be investigated to determine feasibility as an instructional tool. Limited research has been conducted regarding the use of CAC feedback with this population. Scheeler (2010) reported research on the effects of immediate feedback delivered by peer tutors on the oral presentation skills of adolescents with learning disabilities. Bennett (2010) looked at the effect of performance feedback using CAC on the job performance of supported employee's with various cognitive disabilities. There have been no studies reporting the use of CAC and it's potential to improve verbal and non-verbal social skills. This study aspires to affect the communication skills of individuals with special needs specifically adolescents in a transition program focusing on social and employment skills as well as independent living skills. It is hoped that this will help students effectively interact

with others when needed in the classroom, in their respective communities or on the job site.

Summary

This chapter has provided an overview of a CAC research that evaluates how social skills may or may not be developed by individuals with developmental disabilities. There is a discussion of interventions used in the past to address social skills noting how these interventions have progressed over time. This research hopefully will provide another evidence-based practice that can be used in a variety of classrooms and job site environments. The use of CAC in this manner has not been extensively researched therefore the hope is to extend the research of Scheeler (2010), who has studied the effects of immediate feedback on pre-service teachers as they deliver instruction in the classroom. Bennett (2013), who looked at the effects of immediate feedback to supported employees, was also reviewed. The next chapter will provide a review of the literature that has guided this research project.

CHAPTER II: LITERATURE REVIEW

The literature used to frame this research project is broken down into four categories to facilitate the search project and to structure the readings to address the key issues involved in this study. The categories are as follows: 1) social skills; 2) social interaction and communication; 3) social skills intervention; and 4) bug in ear prompting addressing targeted behavior. A literature review coding process was used to select the relevant books and articles that could be applied to this study (see Appendix A). Writings were eliminated based on whether or not they addressed two key features of this study: 1) was there a focus on improving targeted skills of a given population; and 2) could there be an impact on future teaching strategies?

Social Skills

Bandura's (1977) social learning theory suggests that individuals learn from one another through observations, imitation and modeling. "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"(p. number). He called this observational learning. This basic principle of social interaction provides the foundation for the development of social skills and the role it plays in everyday life. He proposed three core concepts of this theory suggesting that people learn through observation, internal mental positions are a critical part of the process, and the recognition that just because something has been learned does not necessarily mean that a change in behavior will occur. Gresham (1998) provided definitions of social competence and gave information on what happens to children who experience social difficulties. A large body of research has been conducted over the last 25 years demonstrating that students with high incidence disabilities

frequently display behaviors that negatively influence their interactions with others (Gresham, 2002; Parker & Asher, 1987). Social skills development has become critical to the success of individuals with or without disabilities. Church, Alisanski, and Amanullah (2000) described the challenges faced by those with ASD when dealing with social interaction. Statistical data from the writings of Elksnin and Elksnin (2001) has suggested that almost 90% of job loss for those with or without special needs is directly related to social skills deficits indicating the importance of training in this area to address those deficits.

Kavale and Mostert (2004) suggested that social skill deficits fall into three general categories: 1) *skill deficit* (the individual has never learned the necessary social or cognitive skill to use in a given situation); 2) *performance deficit* (the individual has learned a social skill but will not use it in a social situation); and 3) *self control* (lack of self-control of negative behaviors can interfere with their ability to acquire or perform necessary skills). Individuals' reactions to social opportunities are defined by how one of the three listed deficits can be resolved to benefit students. It has been suggested that appropriate social skills displayed by adolescents can have an influence on academic performance, behavior, social and family relationships (National Association of School Psychologists, 2002). The article also discussed the consequences of good and poor social skills and their impact on the school environment identifying types of social skills along with their related deficits. The authors also provided a review of social skills interventions and examples of evidence based practices.

With a great deal of media coverage on ASD, Winter (2003) and Elder et al. (2006) offered an overview of ASD characteristics and the associated complexities related to social interaction pointing out various strategies to help individuals succeed over time. In general individuals with autism have difficulty listening to or responding to verbal requests, beginning

and continuing conversations, and maintaining age appropriate friendships (Sansosti, 2010). Duck (2007) discussed the importance of human relationships and how these relationships help develop social skills. One of the concerns when teaching social skills is its social validity; that is, will the selected skill enhance the quality of the individual's life? The ability to acquire and maintain long-term employment is one of the things that can enhance the quality of an individual's life. The targeted skill should be designed to address the behavior difficulty. In *Employment for Persons with Disabilities: Where are We Now and Where Do We Need to Go*, Wehman (2011) referenced the gap between employment numbers for those with disabilities versus those without disabilities attributing the lack of communication for some for this disparity. Findings from the National Longitudinal Transition Study-2 (NLTS-2) reported that individuals with disabilities use fewer social skills versus their same age peers in the general population. The ability to successfully interact with others in the classroom, at home, and on the job can lead to positive outcomes for students when those skills are effectively developed and used.

Social Interaction

Research on employment, independent living, and social outcomes of adolescents with disabilities transitioning from school to adult life by Chadsey-Rusch et al. (1991) found that young adults with special needs become less integrated into employment, residential living, and community activities as they age. Variables such as work experience in the community, good interpersonal skills, family involvement and support of others and how they affect student outcomes were reviewed. McLean, Brady, and McLean (1996) sought to obtain basic descriptive information about the reported expressive communication status and other sensory and behavioral characteristics of four representative samples of individuals with developmental

disabilities. Capps, Sigman, and Yirmiya (1996) investigated the relationship between student perceived self competence, intellectual ability, emotional understanding, and what parents reported as their perception concerning their sons/daughters social adaptation. In 2000, Moore and Calvert studied the impact of computers on the vocabulary acquisition of young children with autism; in this study, children with autism were more attentive, motivated, and learned more vocabulary using the computer than in the behavioral program. In today's age of technology many of our youth's self-competence lies in their ability to effectively maneuver in today's modern tech world. Educators are constantly in search of new and updated strategies to improve the outcomes for all students. Attwood (2000) and Goldstein and Morgan (2002) have provided a basic overview of needed instruction in the area of social integration and talks about strategies being used at the time. Things such as inclusion, expanding the knowledge to better address individual needs, teaching theory of mind skills, and providing social stories related to a targeted behavioral change.

Jackson et al. (2003) reported that children with autism are capable of mastering the more rote and need oriented social skills like simple conversations but may not be able to develop other types of social interaction such as play. This could indicate that with the right support system and teaching strategy students may be able to acquire those needed conversational skills to increase their social interactions with others. Wiemann (2003), in the forward to a book entitled *Handbook of Communication and Social Interactions*, discussed the importance of social skills related to school and employment interactions. Orsmond (2004) has suggested that the characteristics of individuals such as social interaction skills and functional development will determine the participation levels in various activities of adolescents with ASD who live at home. The author stated that social deficits of autism are marked by impairment in the use of

non-verbal behaviors that help regulate social interactions. Shtayermann (2007) used a social experience questionnaire to measure levels of peer victimization that some individuals with special needs are exposed to partially due to their inability to read various social cues and inexperience with social situations. Behaviors such as gestures and eye contact that are critical when developing and maintaining peer relationships cannot always be easily interpreted by some individuals with special needs because of these various deficits. This researcher theorizes that in time prompting via Bluetooth technology provided by an instructor during those difficult interactions could help some individual's work their way through difficult situations possibly developing those skills to be used at other times in other settings.

In a 2004 study conducted by Dawson et al., an attempt was made to clarify the nature of social attention impairments in individuals with autism discussing clues to developmental mechanisms and suggested targets for early intervention. Some individuals are somewhat detached from group conversations if they are not being spoken to directly. One of the goals of using Bluetooth technology is to help individuals attend to whoever is speaking possibly helping them to understand the flow of conversation. Charman and Stone (2006) highlighted the connections between ASD and specific early social communication difficulties that include problems with joint attention, imitation, and play with a focus on what clinicians could potentially do to help. Alwell and Cobb, in 2009, reviewed 30 studies attempting to examine whether social and communications skills interventions helped to improve transition or transition related outcomes in high school aged students with disabilities. Their findings showed limited support for interventions using augmentative and alternative communication strategies and modest support for strategies focused on the acquisition of conversational skills or social skills training. A study conducted by Carter et al. (2008) looked at the extent to which students with

and without disabilities interacted socially indicating their participation varied considerably and was influenced by instructional format and the proximity of general and special education teachers. Peer interactions occurred more often within a small group instructional format when students were not receiving direct support from a paraprofessional or special education teacher. This finding could point to the use of remote prompting such as Bluetooth that may offer students more of a sense of independence.

Data analyzed from the first wave of the National Longitudinal Transition Study (NLTS-2) by Shattuck et al. (2011) offered data that suggests that a large percent of individuals with ASD had limited interactions with others and fewer friends than their non-disabled peers. Conclusions noted significant differences in social participation based on income, a dimension of social context seldom examined in research on ASD. This could possibly suggest that some individuals found in higher-income brackets may have more opportunities to socially interact than others. This study looks to increase social opportunities through the use of morning conversation groups designed to allow students to practice interacting and communicating with same aged peers in various social settings. Johnson, Douglas, Bigby and Iacono (2012) found that hanging out and sharing fun time with co-workers and peers may increase opportunities for social inclusion on the job for people with severe intellectual disabilities. A review of studies to try and identify effective strategies to increase social interaction skills among secondary students with autism and intellectual disabilities with an emphasis on strategies involving peers was conducted by Kaplan et al. (2012); this study allowed the authors to make recommendations for future research and practice.

Social Skills Interventions

Transition programs designed to promote positive post school outcomes for individuals with special needs are consistently seeking effective teaching strategies designed to meet individual student needs. Martin, Marshall, and Maxson (1993) and Johnson et al. (2002) discussed the importance of promoting self-determination and self-advocacy skills in transition programs to improve student's performance in the areas of social skills post-school, employment, and independent living outcomes. In 1995, Wehmeyer introduced the ARC self-determination scale designed to measure levels of independence related to autonomy, self-regulation, psychological empowerment, and self-realization. Related to self-determination, Pierson, Carter, Lane and Glaeser (2008) examined how social skills and problem behaviors contribute to self-determination of 90 high school students with emotional disturbances and learning disabilities. The authors suggested that social skills could be a significant predictor of student's capacity for self-determination. If individuals are to succeed in the workforce and their respective communities while living independently, the ability to make decisions or know who to consult with others when making those decisions revolves around how they can stand-up and speak for themselves. Helping to develop those skills becomes an important part of the educational process specifically in transition related programs. Greene in his 2003 book looked at the emerging field of transition providing information on best practices and transition assessment models that can be used to improve student post-school outcomes. Rusch et al (2009) discussed the importance of teaching students to be self-directed learners before they enter high school to help prevent some of the social isolation and poor employment outcomes many students with disabilities face. The authors indicate that these skill domains will help shape meaningful transition experiences for some individuals with special needs. Research suggests that social skills are associated with

the necessary transition related skills such as self-determination that can help students succeed once they do acquire a job or other post-secondary opportunities (Pierson, Carter, Lane, & Glaeser, 2008).

Agran, Snow, and Swanner (1999) conducted a survey of secondary teachers to gain their opinion on the benefits of community based and inclusive education. Respondents supported both methods; the authors suggested that the increase in inclusive and natural settings teaching strategies requires a reevaluation of educational practices. The use of alternative teaching strategies becomes necessary when students leave the classroom for instruction. Bluetooth technology could provide the link between student mobility and teachable moments in natural settings. Montague and Lund developed a job related social skills curriculum in 1991 to specifically address student work related communication skills. Wolfberg et al. (1993) created a multifaceted intervention model designed to increase social play and eliminate isolated play among three children with autism. In *Life Beyond The Classroom*, Wehman (2012) provided information on up-to-date, evidence-based transition research.

In 1989, Charlop and Milstein evaluated the effects of video modeling on the acquirement and generalization of conversational skills of three boys with autism. The boys were shown two people involved in a conversation about a specific toy. The results suggested that the children did learn through video modeling when used to reinforce targeted skill and were able to generalize those skills to other settings. In their opinion video modeling shows promise as a quick and effective method for teaching difficult verbal skills such as conversational speech. They suggested further research in this area. With the increased use of video modeling as an instructional strategy, Charlop-Christy, Le, and Freeman (2000) conducted a comparative study looking at video modeling versus in vivo modeling. Video modeling involves participants

viewing video of someone performing a targeted skill correctly while in vivo modeling uses a live modeling format where participants actually view someone performing the selected skill. Results from this study suggested that video modeling led to a quicker acquisition of targeted tasks than in vivo modeling and demonstrated some effectiveness in promoting generalization of skills. Scattone (2007) discussed the need for more effective interventions targeting social skills due to the increasing incidence of autism. The author reviewed interventions being used recommending video modeling as a procedure that has been successful in teaching children with autism various social skills including play, social initiations and perspective taking. It was pointed out that a great deal of time is spent on preparing the videos for students to watch. With Bluetooth, feedback is instantaneous allowing participants to receive in the moment feedback to help acquire targeted skill. Wang and Spillane's (2009) meta-analysis provided a synthesis of the research studies of the previous ten years on strategies used to increase social skills for children and adolescents on the autism spectrum. It was reported that social stories, peer mediation, and video modeling all met the criteria for evidence based practices as well as exhibiting high effectiveness as an intervention strategy.

Gresham, Sugai, and Horner (2001) conceptualized social competence as socially important behaviors demonstrated in specific situations that predict critical social outcomes for children and youth. The authors reviewed literature involving social skills training (SST) offering their perception of the effectiveness of this type of training. They reported that SST historically has not created socially important long term or generalized changes in individual's social abilities for those with high incidence disabilities. Possible explanations for this weak effect are offered along with recommendations for designing more effective teaching strategies. Another issue raised involved treatment integrity stating that in some of the studies reviewed the

interventions may not have been delivered with accuracy and consistency. One of the suggestions for future research is to systematically study different levels of intensity in outcomes in SST research with this group. Miller et al. (2005) provided a description of distracting social behaviors while pointing out the limited success stories of some of the social skills interventions suggesting that the limited success was due in part to the absence of systematic assessment procedures to identify skill deficits. This Bluetooth study seeks to address specific skill deficits of an individual seeking specific measurable outcomes. Identification of specific distracting behaviors can lead to individualized teaching strategies to address student needs. Handleman (1994) offered information on autism designed to help facilitate identification, assessment, and interventions in family and school environments.

A multiple baseline study conducted in 2006 by Maione and Miranda attempted to assess the potential effectiveness of video modeling along with video feedback for teaching a child with autism to use their social language when interacting with typically developing peers during play. Their findings offer video modeling as an effective tool in increasing social language skills in two of the three activities, with the other activity requiring video feedback and prompting to achieve targeted skill. This effort to use video feedback and prompting to address a communication issue provided the groundwork for this Bluetooth study. With video feedback, there is a delay between the time the behavior occurred and the corrective prompt. With Bluetooth, the prompt can be immediate in time, which reinforces the targeted skill in a natural setting. With the increased sophistication of web-based instruction Mitchell, Parsons, and Leonard (2007) studied the use of virtual environments as an instructional strategy for teaching social understanding to individuals with ASD. Their results demonstrated some potential for the use of virtual reality for teaching social skills. Bosseler and Massaro (2003) evaluated the use of

an animated tutor to teach vocabulary and grammar for children with autism. One question regarding the use of virtual environments and animation is, will the targeted skill generalize to natural settings? Kavale and Mostert (2004) indicated that a person may have learned the skill but might be unable to use it in the proper context. They reviewed studies that attempted to enhance social functioning through structured training approaches. Their findings showed modest effects on individual functioning based on the strategies they reviewed. In 2010, a literature review was conducted by Wainer and Ingersoll examining studies that used innovative technology like interactive computer programs and virtual environments in order to deliver direct intervention that focused on developing social and communication skills for individuals with ASD. The authors suggested that the available literature at the time was more descriptive and exploratory in nature.

Peer assistance and interactions was reviewed by Laushey and Heflin (2000) as a tool for early interventions addressing social skills using the peer buddy approach. The study goal was to determine if a peer buddy who was trained to interact with selected students would increase non-adult-directed interactions. A summary of research looking at group-based social skills training programs conducted by Williams-White, Koenig, and Schall (2007) reviewed published studies between 1985 and 2006, suggesting that the empirical support for this approach was incomplete. They provided recommendations for intervention strategies to help design future treatment trials and to guide clinical practices over time. Two of the recommendations were 1) increase social initiations by using natural reinforcers to promote those initiations incorporating their interests to promote two-way conversations; and 2) review socially acceptable and unacceptable behaviors within the group via video segments. Due to the pervasiveness of social skills difficulties Sansosti (2010) attempts to lay out a framework for using multiple tiers of instruction to teach

social skills to children with ASD. They anticipate this model may be helpful to educators by addressing issues related to service delivery by individualizing instruction using evidence based practices that focus on individual student needs depending on where a student falls under the tier of instruction. This study of Bluetooth technology uses the Wehmeyer self-determination scale to try and establish some sense of student independence that helps the researcher select participants for this project. The PEERS program as reported by Laugeson et al. (2012) suggested that adolescents receiving their instructional plan significantly improved their social skills in the areas of social knowledge, social responsiveness and overall social skills in the areas of social communication, social cognition and self-awareness. This success according to the authors helped increase the frequency of peer interactions for study participants. In 2013, Murray and Doren investigated the effects of the Working at Gaining Employment Skills (WAGES) curriculum on the social and occupational skills of adolescents with disabilities. Their findings have suggested that the curriculum did help increase student vocational outcome expectations, greater occupational skills and social skills (i.e., empathy, cooperation, and assertiveness).

Bug in Ear Prompting Addressing Targeted Behaviors

A 1976 article by Baum and Jeffery outlined the use of a bug-in-ear system to permit supervisors to communicate with a counselor in training during an actual counseling interview. This article looked at the importance of giving in-time feedback to counselors in live settings to enhance the skills of the selected participants. Again, in 1994, Giebehaus looked at the effects of immediate feedback to elementary school teachers in class during the ongoing teaching/learning process using an experimental design. This was one of the first efforts of using a wireless communication device to provide prompts to student teachers. Martella et al. (2002) compared the effects of immediate feedback and specific praise rendered through a wireless headphone FM

transmission system with the effects of delayed feedback on distracting verbalizations of a 10-year-old boy with ADHD. The results showed a decrease in distracting verbalizations in both conditions; the decrease was larger using the FM transmission system.

Scheeler and Lee (2002) suggested that to improve American education, teacher educators must help educators identify and use evidence based practices. The focus of their study was to examine the effects of immediate corrective feedback on one specific teaching behavior. For this study, immediate feedback versus delayed feedback demonstrated a positive effect on increasing pre-service teachers completion of the targeted behavior. Scheeler, Ruhl, and McAfee (2004) looked through the literature to determine attributes for providing immediate feedback to pre-service teachers on newly acquired as well as ingrained teaching behaviors. Their findings identified promising practices for feedback such as specific, positive, and or corrective feedback to be used during observation of pre-service teachers. The foundation for the Bluetooth research comes from studies providing immediate feedback to teachers using “bug-in-ear technology” as an effective method of peer coaching in inclusion classrooms (Scheeler, Congdon, & Stansbury, 2010). Teams of teachers were selected to observe and provide immediate feedback to their peers during lessons providing prompts to correct ineffective coaching methods. Goodman, Brady, Duffy, Scott, and Pollard (2008) continued this line of investigation by reviewing the effects of immediate feedback to novice teachers through the use of bug-in-ear technology. Their findings again indicates the rate and accuracy of effective teaching behaviors increased when in class feedback was delivered via the electronic bugs. Research is limited on how Bluetooth technology can be used to help individuals with disabilities acquire social skills to better interact socially with others on the job and in the community. Rock, Gregg, Thead, Acker, Gable, and Zigmond (2009) examined the bug in ear technology to determine its effect on increasing

teacher's rates of praise statements and their use of evidence-based practices in the classroom. Improvements were noted in teacher performance as well as an increase in students on task behaviors. Teachers involved suggested this type of technology could be a powerful tool for improving the teaching and learning process suggesting the need for patience and perseverance in both the teachers and supervisors noting a need for constant reassurance for those teachers involved. Nepo (2010) examined the effectiveness of technology on the performance of instructors that worked with adolescents and adults with autism. Results demonstrated that Bluetooth technology could be used as an intervention that includes immediate feedback could improve staff performance across all participants involved in this study.

In 2010, Scheeler conducted another study reviewing the effects of a treatment package using immediate feedback via wireless technology by peer tutors on the oral presentation skills of four high school senior girls with learning disabilities. Findings indicate immediate feedback delivered by peers could be effective in decreasing distracting target behaviors that interfere with student performance.

Bennett (2010) discussed the importance of employment in today's society mentioning that for some maintaining a job over time has been difficult. His study looked at the effects of covert audio coaching (CAC) on the job performance of individuals with special needs that are supported by various forms of job coaches. A multiple baseline across employees and work tasks research design was used. This intervention showed improved performance across subjects with maintenance of skill of four to five weeks after withdrawing the intervention. In 2013, Bennett again looked at improving the job performance skills of individuals with moderate to severe disabilities. All three individuals used in this study showed improvements in their work performance. Bennett suggested that CAC holds promise for improving the necessary skills used

in vocational settings for individuals with special needs, noting that CAC equipment is being used currently in various businesses and schools to help facilitate communication among employees. My study attempted to go a step further using Bluetooth technology to work specifically on individual communication skills, hoping to help individuals develop the necessary social skills to promote independent interaction with co-workers on the job. If individuals are capable of verbally expressing their needs and desire while establishing effective relationships with co-workers, their chances to maintain employment increases over time.

Single Subject Research Design

According to Zhan and Ottenbacher (2001), single subject research designs provide comparisons across different conditions or phases with the intervention being systematically controlled. The authors stated that single subject design represent an effective decision making tool for clinical research. It involves one or a small number of participants observed over time where the treatments and outcome variables are controlled providing a systematic documentation of research outcomes. When a significant change in targeted behaviors occur due to the intervention the study can be replicated across subjects behaviors and settings to strengthen internal and external validity. An ABA design was used where baseline data was collected followed by the implementation of CAC to address targeted behaviors, then withdrawal of the intervention to determine the degree of sustainability of the intervention upon the targeted skill.

It has been suggested by Byiers, Reichle, and Symons (2012) that single-subject designs have been used historically in communication sciences and disorders (Hanson, 1978; Haroldson, Martin & Starr, 1968; Martin & Siegel, 1966; Reed & Godden, 1977). The authors suggested that researchers should understand the application, interpretation and relationship between single subject designs and evidence based practices. *The Council for Exceptional Children* (2014)

published a series of quality indicators that categorizes the evidence base of practices in special education. These indicators follow the principles that guide single subject research. One indicator states that the study should provide sufficient information regarding the important features of the intervention. This is also a critical component of single subject research. Through the most current reauthorizations of IDEA (2004) and the No Child Left Behind Act of 2001 a mandate for the use of evidence based practices (EBP) in the areas of academic and behavioral education became a requirement. With the lack of clear understanding of what EBPs are and the problems finding one to address the specific needs of students, teachers are at times frustrated trying to find effective interventions for their students (Freeman & Sugai, 2013). One of the goals of this research project was to provide an evidence-based practice to address student pragmatic communication needs. The use of a single subject design allows researchers to individualize the intervention strategy to affect individual student needs and provide a framework for analyzing the collected data. In 2010, the What Works Clearing House (WWC) published standards that included criteria for identifying EBPs through the use of single subject research (Krtichwill et al., 2010).

Summary

This chapter has reviewed the literature on social skills, social interaction, social skills intervention, and bug in ear prompting and its relationship to social development of individuals with special needs. Using the framework of Bandura's social learning theory, this review attempts to point out the importance of social skills in everyday life for those with or without special needs then, moving towards social interactions and how that plays a role in social development. The review then turns its attention to various social skills interventions that have been used over time to effect the social development of individuals with disabilities looking at strategies such as video modeling and peer tutoring. The last section of this chapter looks at the various usages of bug in ear technology and what effects it has had on skill development of selected populations. It is the hope of this researcher to use this review as a foundation for developing a research design featuring the use of Bluetooth technology to help develop the social/communication skills of individuals with special needs and see this approach replicated by other professionals seeking to improve the outcomes of individuals with special needs.

CHAPTER III:
METHODOLOGY AND PROCEDURES

This chapter provides a description of the research design for this study. This includes information about the setting, participants, procedures for data collection, specifically Covert Audio Coaching (CAC) and procedures for data analysis.

Research Questions

The overarching purpose of this study was to determine the effect of CAC on group pragmatic conversational behaviors of students with intellectual disabilities. CAC was used during group conversation sessions to remotely provide needed real-time verbal prompts to students with cognitive disabilities addressing individual targeted social behaviors. Specifically four research questions guided this inquiry. They were

1. Is the participant's distracting body language decreased when CAC is used during group conversations;
2. Is the participant's attention to speaker increased when CAC is used during group conversations;
3. Is participant's proper covering of mouth when yawning during conversations increased when CAC is used during group conversations; and
4. Is the participant's interruption of others while they are speaking decreased when CAC is used during group conversations?

Research Design and Procedures

A single subject ABA multiple baseline design across behaviors was used in this study (Kazdin, 2011). According to Kazdin, this design involves introducing the intervention to different target behaviors at different points in time. According to Kratochwill (2010), more valid causal inferences can be made due to the staggering of the intervention sequentially across the three phases of the intervention (i.e., baseline, treatment and return to baseline or withdrawal). Another advantage noted by Kazdin of a multiple baseline design is that once the intervention has been introduced to the first behavior showing improvement in targeted behavior and the baselines remain stable for the other two behaviors during each phase; and a stronger inference can be made that the change in behavior is attributed to the intervention.

In this study, for each of the three participants, baseline data was collected on their three target behaviors. Once the preconditions for baseline were established on the first behavior, intervention was introduced while continuing to collect baseline data on the second and third target behavior. This was followed by the introduction of the intervention for the second target while continuing with intervention for target behavior one and baseline for behavior three. The final step involved the introduction of intervention for target behavior three. The last phase of the study was a return to baseline for all three targeted behaviors for each of the participants. Repeated behavioral changes in response to the application of the intervention indicate that the behavioral changes were attributable to the intervention (Kazdin, 2011).

In this study, CAC was hypothesized to have the effect of reducing distracting conversational behaviors and increasing positive social pragmatic behaviors for students who struggle with social interaction over time. It was hypothesized that once the intervention is withdrawn participants will maintain an increased level of positive behavioral performance

during conversational settings. Previous research using CAC has focused on specific job performance tasks of individuals with disabilities (Bennett, 2010). This study used the ABA design to address specific distracting pragmatic communication behaviors that occur during conversations with the goal of teaching the participants how to self-regulate the targeted behaviors over time.

Setting

The setting of this study was a transition program located on the campus of a large Institution of Higher Education (IHE) located in southeastern United States. The transition program from which participants were drawn provides instruction to adolescents ages 18-21 years in the areas of employment skills, independent self-care and daily living skills, and social skills. Instruction in some functional academics is used as it relates to the self-help skills mentioned. There were 17 students attending the program during the 2013-2014 school year. Students attended the program from Monday through Friday from 8:00am until 2:45pm. The day consisted of on-site job training on and off campus for two hours daily for four days of the days each week. In-class instruction followed the *Life Centered Education* (LCE) Transition Curriculum from the Council for Exceptional Children.

Data for this study was collected during morning conversation groups. Specifically, morning conversation groups comprised of 5-6 CPP transition program participants and campus-wide practicum/volunteers on topics of shared interests that had previously been established through completed interest inventories. Topics included football, movies, jobsites, NASCAR and wrestling, among others. While program participants could change conversation groups, overall group membership tended to follow shared, established interests, which sometimes included those interested in exploring a novel topic. Transition program participants were

divided into three groups. Conversation group moderators were the paraprofessionals who regularly work with the students. This was important for assuring a naturalistic flow of the conversation. There were a total of three groups. Each group consisted of a moderator, one participant and four to five same age peers. Topics varied based upon student personal interests. To assure that topics of conversations were of interest to individual members of each group, an interest inventory (see Appendix B) was completed by each participant to help identify specific topics of interest. The moderator for each group used this information to help maintain participant engagement during the conversation. The peers are students with various disabling conditions who participated in the transition program along with student volunteers, interns and practicum students from the university. However, in this study, data were collected on only three of the transition program participants who had a documented need for conversation-related social skills instruction and gave appropriate consent to participate in the study. Those three participants are described in great detail in the participant's section of this chapter. Each conversation group participated in thirty-minute sessions four times per week over the entire course of the semester. However, data collection for this study was implemented and completed over a period spanning approximately three months.

Conversation groups met at three different locations around the campus. Specifically, conversation groups met in a large classroom that measured 15 x15. Conversation group members utilized one round table allowing students to interact face to face. The second location was a study room located on the second floor of the IHE's main library. The room measured 10 x 30 with a half wall of glass windows serving as a portion of the wall thereby allowing individuals to look outside of the room and into a section of the library. The third location was an accessible common lounge area in the IHE's student union building. This was a large area

measuring approximately 20 x 60 with sofas and lounge chairs arranged to facilitate and maximize conversations or study sessions for several students. This location later became unavailable due to construction that was taking place during the study. The group using this area shared the large classroom area mentioned above. Each participant was assigned to one specific location throughout the study based on criteria outlined in the participant section of this chapter.

Participants

In single subject research designs, a clear description of participant conduct is critical to helping investigators understand outcomes of the study and to utilize interventions in other cases (Murdock, 2007). In order to establish a research base, replication of the findings from a given study is necessary (Horner et al., 2005). Participants for this research were selected based on observational data collected on their performance in conversation groups during daily classroom instruction. Informal observations conducted in class during morning conversation groups showed that the participants displayed specific distracting pragmatic social behaviors that inhibited their full inclusion the conversation groups and impeded social reciprocity of conversations. The conversation group format had been used during the entire school year thus assuring an authentic flow of conversation. Classroom conversation group participants were placed according to their relationship with other peers in the group as well as their interest in the particular conversation topics. To limit the possibility of conflicts among conversation group members, participants either naturally self-selected group membership with friends or teachers avoided recommending group membership where known conflict existed.

Based upon those observations, several CPP transition program participants were identified as needing specific interventions aimed at increasing their pragmatic social skills in-group conversations as well as promoting social acceptability. Three CPP transition program

participants were invited to participate in this study. Specifically, the targeted students had identified their social behavioral needs through the video self-evaluation process and had expressed a desire to learn strategies to manage those behaviors. The self-evaluation process was two-prong. First, each participant viewed footage of video taken during group conversation. Participants were asked to identify any particular behaviors that they particularly liked about their conversation and social interaction skills. Additionally, they also identified social programmatic behaviors they felt interfered with their social interactions. The second component of this self-evaluation entailed peer-evaluation by members of the class. Class members viewed each other's video footage and gave each other written and verbal feedback on the same dimensions (i.e., things they liked and things they did not like about each other's social communication skills). Overall, participants identified such behaviors as distracting body language, interrupting others, inattentiveness, and others as behaviors that interfered with social communication. Using the self-evaluation data, students who met the criteria of displaying specific distracting pragmatic social behaviors in social conversational contexts and who self-identified those behaviors as problematic and expressed a desire to learn strategies to manage them were invited to participate in the study. As part of the invitation, a variety of evidence-based strategies for teaching self-management within group contexts were discussed. CAC, as a non-invasive socially acceptable and age-appropriate strategy for supporting appropriate social behaviors within groups was presented as well. Students who met the criteria described above were invited to participate in a research study involving CAC in accordance with the guidelines established in the IRB. Three participants were selected to take part in this study. The three participants were David, Bruce, and Sandy. In accord with IRB requirements for confidentiality,

these are participant names are all pseudonyms. In-depth description of each of the participants follows in the section below.

David

David is a 19-year-old black male with a diagnosis of intellectual disability based on the criteria established by his local school district. He lives at home with his mother and younger sister. David loves to talk and is highly social. He enjoys any opportunity to have conversations with others. His strengths lie in his not being afraid to speak or interact with anyone. However, he often interrupts others while they are speaking and tends to talk over his peers. If he is ignored, he will tap the table insistently or grab the person until he is acknowledged or told to stop. His most recent evaluation reports show that his IQ is in severe range. Academic performance is also in the low range according to his most recent Individualized Education Plan IEP. His behavior scale scores, according to the *Vineland Adaptive Behavior Scales*, fall within the clinically significant range, which indicate that David does not always display age-appropriate behaviors. He struggles with various non-verbal, pragmatic communication behaviors, such as interrupting when others are talking, distracting body language, attending to speaker and joint attention issues. It was reported by his high school teacher that his performance with hands on tasks generally improved when he received verbal directions. The knowledge battery assessment from the Life Centered Education curriculum LCE reported a score of 45.9% correct in the category of Self-Determination and Interpersonal Skills for David. Within that domain he had a score of 33% correct in Developing Social Awareness and 55% on Communicating with Others. He has a tendency to talk very fast making it difficult at times to understand what he was saying. Throughout the day he had to be reminded to pay attention, not to interrupt others when talking, and to maintain proper body position during instruction.

David stated that he needed help with not trying to speak when others were talking and sitting still without holding his head down or constantly moving. He could not readily indicate that he did not attend to the speaker during conversations. Proper social demeanor, eye contact, body language are among the topics that have been discussed with the whole class as well as individually with each participant. The ability to identify the targeted behaviors helped the study participants to establish a relationship between the verbal prompt given and the targeted behavior selected for change. Providing an in-time prompt to the participants enabled them to hear then practice the prompt instantly thereby helping to reinforce the positive behavior.

David's conversation group took place in the classroom that measures 15 x15 that was described in the settings section of this chapter. This location was selected due its isolation from the other classrooms, which limited any potential distractions that could unnecessarily lead to participant one losing focus during the conversation. This participant had difficulty staying focused during instruction and attempted to attend to everything going on around him. In this study, David identified interrupting others, distracting body language and inattentiveness as the behaviors that he wanted to focus on in the CAC intervention. David was in his first year in the CPP program.

Bruce

Bruce is a 20-year-old white male diagnosed with autism based on the criteria established by his local school district. He lives at home with his mother and father and younger sister. He enjoys interacting with certain friends but is hesitant to speak to someone he is unfamiliar with. His strengths lie in his ability to express himself when the topic is of interest to him. However, his high school teacher writes in his IEP that he is significantly below his typically developing peers academically and socially. Further, the teacher stated that he benefits from frequent verbal

prompts in order to keep him on task and let him know not to talk to others while they are working.

According to his most recent IEP, Bruce can distinguish between fact and fiction and is able to identify different types of attitudes in role-playing situations. The IEP stated that he loves to talk with friends before, during, and after school, but at times, he invades the personal space of his peers. It recommends that appropriate social skills and behavioral expectations should be discussed with Bruce at the beginning of each school day. Bruce has a problem with wiping his nose correctly using his hand or sleeve rather than tissue. He does not attend to speaker during conversations and had difficulty with poor body posture. He sits with his head in his hands or on the table. When he yawned he did not cover his mouth properly and stretches his body bringing unnecessary attention to himself. He had the opportunity to participate in a school-based work program while in high school where he was able to report to work on his own and complete a given task independently. The LCE knowledge battery reflects a score of 25% in the category of Self-Determination and Interpersonal Skills, and within the domain 11% on Developing Social Awareness and 40% on Communicating with Others. This is his first year in the program.

During whole class instruction, Bruce sometimes stated that he did not know the answer to the question even when he did. He was at times hesitant to respond to others and avoided social interaction with individuals he did not know. Once redirected Bruce demonstrated the ability to respond correctly to questions and talked about topics that he was interested in with others. When asked to identify any conversational behaviors that he needed to work on he stated that he should pay attention more. Bruce stated that he needed help with his body posture during conversations with his peers. When he was shown how the excessive yawning looked he recognized the behavior and it became a non-issue for this study.

Bruce's group sessions were held in the study room of the library as described above. He was not easily distracted therefore this location with its limited traffic did not pose any real distractions. His ability to focus on certain things made the study room location ideal for him.

Sandy

Sandy is a 19-year-old black female diagnosed with a moderate intellectual disability based on the criteria established by her local school district. She lives at home with her mother and twin sister. She is confident in her own abilities, which allows her to take on new challenges without much difficulty. Sandy has great communication skills demonstrating an ability to advocate for her self and express to others when she needs help with something. During conversations, she had some issues with body language and looking at others when speaking. She has a tendency to be loud and overpowers other with her voice. She had a tendency to easily acquiesce to the will of others or to points of view that were not completely hers as way to maintain her role as an agreeable leader. She consistently played with her hair and positioned her hands around her face, which can be distracting to others. Her mother stated that she had trouble with listening to what she had to say and following directions at home. This type of behavior had been observed in the classroom, but she was able to redirect her focus when given the appropriate prompt. Sandy stated that she had trouble remembering things, keeping body still when talking and staying focused. Her IEP states that she needs to work on consistent eye contact. It also says that she struggles with repeating things that have been learned in the past. If prompted with key words, she came up with answers on her own. She was considered a leader among her peers and is always willing to help others when she can. The LCE knowledge battery reflects a score of 71% in the category of Self-Determination and Interpersonal Skills and within

the domain, 55% on developing social awareness and 80% on communicating with others. This is her second year in the program.

She was easily able to identify communicative behaviors such as distracting body language and interrupting others that she needed to work on and stated that she wanted to be perceived in a positive light by others.

Her conversation groups were to take place in the student union building as described above. Due to remodeling of this building her location was changed after three sessions to the two locations used by the other participants. Her ability to adapt and communicate effectively without being distracted in various locations made the change in location a non-factor in this study. She welcomed the opportunity to participate in the study and use the Bluetooth device to address behavior areas that she pointed out when asked.

Data Collection Procedures

Before data collection began, three research assistants were recruited and trained on the procedures for data collections. Research assistants, referred to as observers, had background training in special education and had previously participated in conversation groups. Each observer collected data alongside the principle investigator using the instruments outlined in this chapter. Observers were given a written overview of the research project and copies of the data collection sheets before their first observation session. The use of CAC was explained in detail using video of previous recorded conversation groups. During the collection of baseline data observers used the baseline data collection sheet (see Appendix B) to help identify ways in which participants respond during conversation making notations of any specific behaviors that may need to be addressed based on the research questions of this project. Observers were then given the frequency data sheet (see Appendix C) to identify and code targeted behaviors. The

primary investigator selected the behaviors to be manipulated by the independent variable for each participant. After inter-observer reliability was established the specific prompts to be used during the intervention stage were created for each participant. Observers were then assigned a participant to work with during the intervention phase using the prompt data collection sheet (see Appendix D).

As for the three participants, training on how to use the Bluetooth earpiece devices was provided. Particular emphasis was placed how to answer the phone if the call was dropped or disconnected during a session. For each group, a laptop with camera was placed in the room to enable an observer from a remote location to view via Skype the interaction of the study participants with peers in the group. Baseline data were collected on targeted pragmatic social behaviors during each session. Each observer took notes on participant's interactions with peers and their social skills communication behaviors (see Appendix C). For example, data collected focused on distracting body language, not attending to speaker, problems with turn taking, and inability to stay on topic, joint attention, etc. Specifically, the behaviors selected were those that are deemed to adversely affect social communication of all involved in the conversation group. Moderator was instructed not to correct any behaviors he/she may deem distracting to insure accurate representation of participant behavior.

Each session was video recorded. The principle investigator viewed recorded sessions with the observers to corroborate the data collected during the sessions and to establish inter-observer reliability (Kazdin, 2011). The procedures for establishing inter-observer reliability are described in a later section of this chapter. The three research observers involved in this study viewed the video of participant's sessions to identify the behaviors that should be addressed for each participant. A consensus of targeted behaviors was established between observers using the

inter-observer reliability formula. Observers then used chart (see Appendix D) to measure the frequency of the behavior. This data was used to develop specific corrective behavioral prompts for each participant based on the research questions for this study that focus on increasing or decreasing the presence of the target behavior.

During intervention phase, a Bluetooth earpiece was placed on each selected participant. Prior to entering the session a phone call was made to the participant who had been trained to answer the phone and activate the Bluetooth device enabling a researcher to discreetly and remotely provide the needed prompt individually, without disturbing others involved in the conversational group. One of the targeted behaviors was addressed per participant at the beginning of the intervention phase. Behavior was selected for each participant based on the intensity and frequency of the behavior. For example a participant that struggled with attending to speaker, established attending as the priority behavior that was addressed using CAC. Data collected was monitored for changes, specifically an anticipated increase in attending to speaker. After three or more data points, if there was a continued increase in attending to speaker, but no reduction in distracting body language, prompts were then provided to address both attending to speaker and distracting body language. Again data was collected on the two behaviors while also monitoring the third behavior (i.e., interrupting others while they are talking). There were three targeted behaviors for each participant based on the research questions for this study. The three behaviors varied with each participant. For David, the behaviors were 1) interrupting others; 2) attending to speaker; and 3) distracting body language. For Bruce, the behaviors were 1) attending to the speaker; 2) distracting yawning; and 3) distracting body language. For Sandy, the behaviors were 1) distracting body language; 2) interrupting others; and 3) attending to

speaker. Descriptions of these specific behaviors are outlined in chapter one under the definition of terms section.

Prior to each group session, selected participants had a meeting with observer and researcher. In this meeting, the specific verbal prompts to be used to address targeted behavior were reviewed and discussed to insure participant understood the purpose of the prompt. For example, the participant was told that when he is not attending to the speaker the observer would say, “attention”, indicating that participant should be looking at who is speaking. The observer explained the importance of attending to the speaker to help the participant understand the concept of following the flow of a conversation. For each prompt an explanation of what the prompt means and why the behavior is important was given.

As stated previously, Skype was used as a means to remotely observe the participants’ interactions in conversational group settings. Again, a laptop camera was placed in the room with the participants while researchers monitored conversation from another room, providing real time prompts to participant based on their individual needs, thereby preventing continuous behavioral errors. Additionally, the observer noted the prompt delivered and how the participant responded to the prompt (see Appendix E). Based on the dependent variables for this study, the specific corrective direct verbal prompts that were delivered by observer were the following:

1. Attention, this prompt indicates that participant is not attending to the speaker;
2. Form, this prompt indicates the participant is displaying distracting body language;
3. Manners, this prompt indicates that participant is not covering mouth properly when yawning and is excessively stretching his/her body; and

4. Respect, this prompt indicates participant is speaking when they should be listening and not talking.

According to O'Reilly, Renzaglia, and Lee (1994), it has been demonstrated that immediate feedback to increase desirable behaviors is more effective than delayed feedback. Through the use of CAC, the direct verbal prompts delivered in real-time natural settings adhere to the recommendation made by Rogan, Luecking, and Grossi (2007) that training and support should be delivered as discreetly as possible. Bennett (2010) has indicated that the use of CAC could be a valuable tool when there is a need for direct interventions that should be provided in a way that does not interfere with others in a given setting.

To help reinforce positive behavior during the intervention phase, the observer used praise statements such as *good job*, *good form*, *good respect*, or *good manners* followed by the participant's name when individual performed targeted behavior appropriately without the prompt. During intervention, the prompts were gradually faded and praise was thinned to measure the extent to which the participant will continue to display appropriate behaviors without any feedback from observer. This fading process led to the return to baseline to collect data on participant performance without the intervention. The same data collection instrument was used during the intervention phase to compare against baseline data to note changes in behavioral patterns to indicate the effectiveness of CAC for a given participant.

After a minimum of three data points collected across all behaviors, intervention was removed, followed by collection of additional baseline data. The same instruments used during baseline and intervention phase of the study will be used to note behavior during this phase of the study.

Independent Variables

Using the Bluetooth earpiece, selected verbal prompts and praise were delivered to participants to affect a behavioral change that could improve student social interaction with other individuals in a conversation group. Prior to the intervention, participants were given the opportunity to wear and use the Bluetooth earpiece to determine an acceptable comfort level. Participants were trained on how to answer a call and where to place the phone during the conversation. If call was disconnected, participant understood how to answer the call without causing disruption during the group session. Each phase of the study was explained to participants according to the guidelines established in the IRB protocol approved for this study (see Appendix F). According to Bennett (2013), this pre-coaching stage is a critical part of the study to insure the student is receptive to this form of verbal prompting. One advantage of using a Bluetooth earpiece is that it has become a part of everyday life being worn everywhere and throughout the day, thus making this type of technology socially acceptable and not attracting undue negative attention to anyone wearing the device.

Dependent Variables

The dependent variables are the pragmatic social skills related to communication that could interfere with the quality of social interactions with others. Specific dependent variables for this study are a) poor body language; b) not attending to speaker; c) interrupting conversation without regard for turn taking during conversation; and d) distracting yawning during group conversation. These behaviors are described in chapter one. One of the goals of educators is to help students develop self-determination and self advocate thereby, leading to better social outcomes in the areas of employment, post-secondary education, independent living skills, as well as leisure and recreational opportunities (Wehemeyer, 2013). When communicating with

others, individuals must be mindful of their personal behaviors that may be offensive or distracting to others. This research did not seek to totally eliminate the targeted behaviors. Rather it was the goal of this project to determine if CAC can have an effect on reducing the frequency of distracting behaviors and increasing the rate of appropriate behaviors during conversational settings.

Data Analysis

Single subject researchers generally use visual analysis of the data to determine a relationship between an independent variable and an outcome variable. This analysis also helps to determine the strength of that relationship (Kratochwill et al., 2010). Using the baseline data collected in a particular study establishes a benchmark against which the student's behavior in subsequent conditions can be compared (Byiers, Reichle, & Symons, 2012). The authors suggested that baseline data should have the quality of stability; meaning that it shows limited variability. Stability helps make future data points predictable when analyzed. Next, there should be a trend of data points showing a lack of improvement in targeted behaviors during baseline (Kazdin, 2011).

According to Kazdin, a minimum of three baseline data points are required to establish stability. For this study a minimum of five data points were used to establish a stable baseline. After the data from all conditions have been collected they were reviewed for changes in level, trend, variability, immediacy of effect, overlap and consistency of data patterns across similar phases (Kennedy, 2005; Morgan & Morgan, 2009). Levels pertain to the mean performance during a given phase (Byiers et al., 2012). It is hypothesized that after the introduction of CAC there will be a significant positive change in levels of the targeted behaviors. Trends refer to the direction of change, such as an increase in positive behaviors coupled with a decrease in negative

behaviors. Variability accounts for the irregularity of the behavior. That refers to how wide the differences are in behavior during baseline versus the intervention phase. Immediacy of the effect looks at the change in data points from the last phase and the change in data points from the first data points in the next phase (Kratohwill, 2010). If the change in behavior occurs rapidly from one phase to the next, it could be postulated more convincingly that the manipulation of the independent variable caused the change in behavior. Consistency of data in similar phases looks at the consistency in data patterns from one phase to the next that involve the same conditions. The goal of this study was to help students establish a consistent range of positive behaviors over time in a given setting.

The four steps to the analysis of the data for this study are as follows (Kratohwill et al., 2010). Determine whether the data in baseline document the presence of a problem behavior that occurs frequently. Specifically, within this study, this step entailed daily graphing the baseline data to determine the trend and direction of the documented behavior. To document the presence of a problem behavior, the trend was an upward trend in the undesired target behavior, with followed a counter-therapeutic direction and a trend was established after five data points in the counter-therapeutic direction. Thus, baseline data was viewed as indicating the existence of a problem behavior.

Second, assess the level, trend, and variability of the data along each phase to observe the pattern of the data. For this study the change in mean levels of performance was noted as the targeted behaviors were reduced where appropriate or increased where needed. The variability during baseline phase was extreme noting an inconsistent pattern of behavior. For the intervention phase the range of data points was minimized demonstrating a more consistent

pattern of performance. When comparing data points across phases it is obvious that there was a significant difference in variability between baseline intervention and return to baseline.

After looking at level, trend and variability the immediacy of effect was reviewed which demonstrated a substantial positive change in performance once the intervention was introduced. Over the three phases of the study there was a systematic change in performance that resulted in a significant change in data points.

The final step was to combine the information from each phase and make comparisons to determine whether the data shows an effect on behavior at four different points during each phase. After viewing each phase of the study it was determined that the targeted behaviors addressed points to the implementation of CAC as a function of the change that took place. In single subject research, a claim of functionality can be made when three demonstrations of effect of intervention can be shown at different points in time. The following graph illustrates the visual representation of two phases of the study. This graph focuses only on one behavior and one participant of this study. The y-axis represents the number of occurrences student distracting body language and the x-axis represents the number of observations.

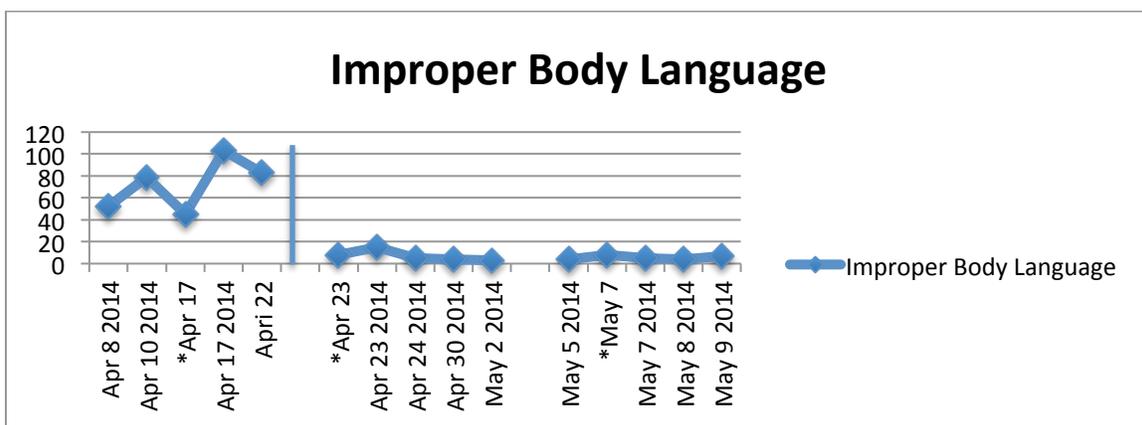


Figure 1. Improper body language.

Inter-Observer Reliability

Inter-observer reliability refers to the level of agreement between multiple raters using a particular instrument on the same group of participants (Kazdin, 2011). The likelihood of multiple observers producing the same results while observing the same participants using the same data collection instrument is important to help establish the reliability of the tool (Stemler, 2004). The point-by-point agreement method will be used (Kazdin, 2011), comparing observer results to establish inter-observer reliability. This format refers to instances when both observers agree on the occurrence of the behavior within a given interval. Disagreements occur when one observer scored the behavior and the other did not. The ratios were calculated by totaling the agreements between observers then dividing by the sum of agreements and disagreements. These quotients will be multiplied by 100 converting the value to a percentage of agreement. The allowed margin of error is 20% for observer agreement. Thus inter-observer reliability was set at 80%.

Assumptions of the Study

The important assumption of this study is that individuals with cognitive disabilities can benefit from timely verbal prompts via CAC during their conversations with others. Because some individuals struggle with social communication and are unable at times to follow the flow of the conversation, or have inappropriate behaviors that can be distracting to themselves and others, CAC can be used to help students develop the necessary skills to remain involved in group conversations and offer valuable input into the conversation. Effective interaction with others requires the use of positive pragmatic skills such as attending to the speaker, proper body language and understanding the importance of turn taking during conversations. It was hypothesized that the use of CAC led to increased positive social interactions among youth with

intellectual disabilities while simultaneously reducing distracting behaviors during group conversations.

Limitations of the Study

One of the limitations will be the difficulty to generalize findings to a larger population. The intervention is designed to address specific student needs that may vary from participant to participant. If there is sufficient replication of this study across subjects, participants, and clinicians, the ability to establish generalization of treatment increases (Zhan & Ottenbacher, 2001). Another limitation may stem from the inconsistency at times of visual analysis of the data. Inter-observer reliability helps establish some form of consistency in analysis, but it does not completely eliminate personal differences between observers.

Summary

This chapter provided details about the study design and methodology. A description of participants, settings, instrumentation, data collection, and training of observers was provided. Independent and dependent variables were noted along with the assumptions and limitations of this study. Findings for this study will be presented in the next chapter.

CHAPTER IV: RESEARCH FINDINGS

This study was designed to determine if Covert Audio Coaching (CAC) could improve the pragmatic communication behaviors of individuals with special needs. Providing selected prompts to address targeted behaviors that will help participants self regulate their own behavior was one of the goals of this study. There were three participants for this research project. A multiple baseline across behaviors design was used to test the hypothesis. Each participant began with three targeted behaviors to be improved using CAC. During the intervention phase, provided specific one word prompts to reinforce participant's use of positive behavior. Researcher did not encounter any issues implementing the study as outlined in Chapter III. Each participant attended his or her respective sessions without any unexpected absences. Sessions were 30 minutes in length. Each group session involved five or six students plus the moderator. The flow of the conversation was maintained by the moderator for each group using topics from interest inventory sheets completed by each student. There were times when the subjects or peers would offer topics of discussion based on their personal interest or an activity they may have been involved in during the day or week. Recording and collection of data as well as connecting to each group session via Skype occurred free of any interference from technology issues. During the study no classroom instruction was delivered in the area of pragmatic communication skills.

Inter-rater reliability was established between the three observers prior to baseline data collected. Video from a randomly selected conversation session was viewed and rated by the observers. Results from each observer were calculated using the point-by-point agreement method (Kazdin, 2011) described in Chapter III. Inter-rater reliability for this study was 84%. On

three occasions during the intervention phase of this study, the primary researcher observed and collected behavior data with the other two observers during a conversation session with David. The inter-rater reliability for the three sessions was 89%. Results for each participant follow.

David

The behaviors that were selected for participant one were interrupting others, distracting body language, and attending to speaker. The verbal prompt provided to address the targeted behaviors were a) respect for not interrupting others; b) form to address distracting body language, and c) attention for attending to speaker. David was a member of 25 conversation group sessions where baseline, intervention, and return to baseline observations were conducted. Baseline data demonstrated a pattern of behavior involving the three variables that could potentially interfere with subject participation in a conversational setting.

Interrupting others was the first behavior that received CAC. For this study interrupting others is defined as speaking or making distracting gestures while someone else is talking. For this participant, interrupting others was a significant problem. David did not acknowledge someone else talking when he had something he wanted to say. He will interrupt or tap on the table raising his hand to get someone's attention. He did not understand the concept of turn taking during a conversation. During baseline, moderator had to ask him to be quiet because of his constant interruption of others to the extent no one else could talk. Baseline mean was 70.8 occurrences over five, 30-minute conversation sessions. Following CAC intervention, mean dropped to 9.6 occurrences over 15 conversation sessions. Return to baseline mean was 27 occurrences over five conversation sessions. Figure 2 displays the data from initial baseline, intervention, and return to baseline phases. The 84-occurrence drop from the last session in

baseline to the first session of the intervention demonstrates immediacy of change in behavior. This suggests that the intervention was responsible for the change in behavior.

During the intervention phase there were no overlapping data points indicating the levels of behavior during intervention never reached the same levels found from initial baseline. To measure variability, which refers to how spread out a group of data points are, this study looked at the range of data points by subtracting the lowest data point from the highest data point. The range of data points for David for interrupting others is 87 during baseline, 17 during the intervention, and 25 during the return to baseline. With the decrease in range during intervention and return to baseline, the intervention created a more consistent pattern of behavior overtime during the study.

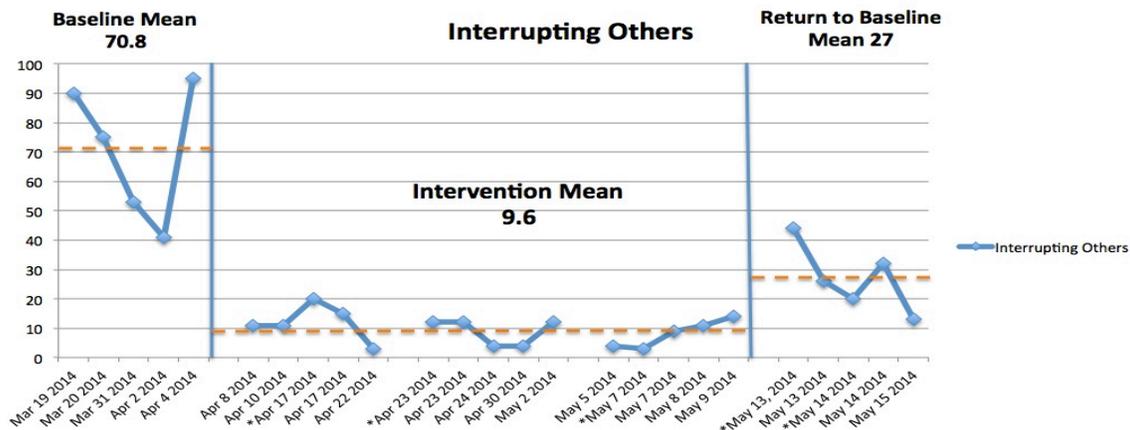


Figure 2. Interrupting others.

Distracting body language was the next behavior addressed for David. Distracting body language is extreme body movements or positions, such as placement of hands covering face, sitting with head on table, or excessive rocking of chair during conversation sessions. Body language was distracting, especially when he positioned his hands covering his face or laid his head down on the table. At times he placed his hands over his mouth while talking. The participant rocked back and forth in his chair sometimes lifting the front of the chair off the floor

making a noise as the chair hit the floor when he let it go. He sometime slouched with his hands folded on top of his head when attempting to listen to others. On occasions his peers asked him to sit still or not talk so much. He tapped his fingers on the table often then began playing with his watch or his clothes. Baseline mean for this behavior was 64.7 occurrences over 10, 30-minute conversation sessions. Intervention mean was 6.3 occurrences over 10 conversation sessions. Return to baseline mean was 23.4 occurrences over five conversational sessions. Figure 3 displays data from all three phases of the study for this participant. Again the immediacy of change in behavior from the last data point of baseline and the first data point in return to baseline shows a decrease in occurrence of 55 indicating that the intervention is what led to the reduction in occurrences. Ranges of data points are 91 for baseline, 12 for intervention, and 25 for return to baseline.

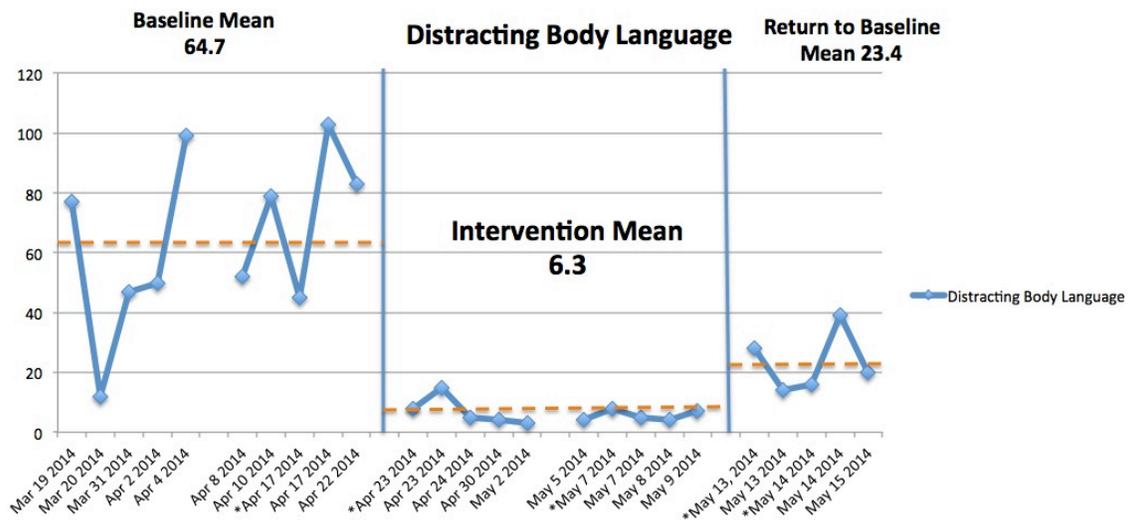


Figure 3. Distracting body language.

The final behavior for David was attending to speaker. He had a problem being distracted easily, many times found looking around the room rather than focusing on who might be talking. At times he closed his eyes and nodded his head as if listening to music during the conversation.

Baseline mean was 20.6 minutes over 15 conversation sessions. Intervention mean increased to 27.2 minutes over five conversation sessions for an increase in mean of 6.6 minutes. Return to baseline mean was 25.2 minutes. Immediacy of change for attending to speaker from the last data point in baseline and the first data point in the intervention shows a seven-minute increase. Range numbers were 10 for baseline, 2 for intervention, and 4 for return to baseline.

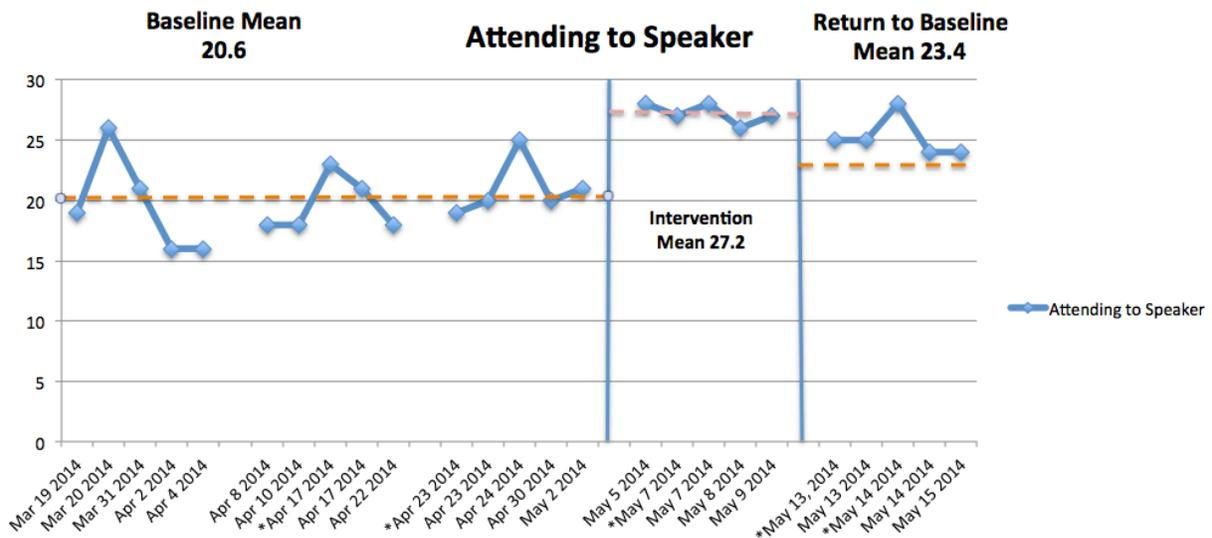


Figure 4. Attending to speaker.

The results for David strongly suggest that CAC was an effective intervention tool. As the intervention was used on the first behavior the remaining two behaviors continued to be an issue for him. Once intervention was introduced to the next behavior, number of occurrences dropped immediately. Using visual inspection of the data, significant improvement was made in the areas of interrupting others, distracting body language, and attending to speaker. The immediacy of change in behavior indicates that CAC was responsible for the change. Kratochwill (2010) stated that the effect of the intervention is clear when systematic change occurs in behavior during each phase in which the intervention is withdrawn or present. During the intervention there were no overlapping data points between the baseline and intervention

phase. In other words during intervention, occurrences of interrupting others and distracting body language never reached the levels present during baseline.

Bruce

Targeted behaviors for Bruce were distracting body language, distracting yawning, and attending to speaker. The prompts for these behaviors were a) form, for distracting body language, b) manners for yawning, and c) attention for attending to speaker. He was a part of 20 conversation sessions during the study. After observing baseline data and two-intervention session, it became apparent that the distracting yawning was no longer an issue. During the first observer-participant meeting to describe distracting body language prompts, participant was able to describe how distracting yawning looked. At this point in the study, this behavior was no longer an issue for this participant. Results will not be reported on yawning.

The first behavior addressed for this participant was distracting body language. He was constantly touched and picked his face, or placed his hands in front of it blocking his face completely at times. On occasion he would use the sleeve of his shirt to wipe his nose. Another behavior deterring from his acceptance was to use his hands to prop his head up as he slumped down in his seat, especially when his attention was not directed towards the person speaking. He would stretch his body and arms in an exaggerated fashion sometimes causing the person next to him to move so that his stretching would not bump them. Other disruptions include shaking his feet or tapping his fingers on the table. He shrugs his shoulders as a response in place of verbal communication. Mean occurrences during baseline were 44 over five sessions, during intervention 12.1 over 10 sessions, and return to baseline 16 over 5 sessions. The immediacy of effect from the last data point of baseline and the first data point of intervention showed a drop in occurrences of 28. This reduction in occurrences of distracting body language is proof of

intervention creating a change in behavior. The range of data points that measures variability of the data was 25 for baseline, 23 for the intervention phase, and 23 for return to baseline.

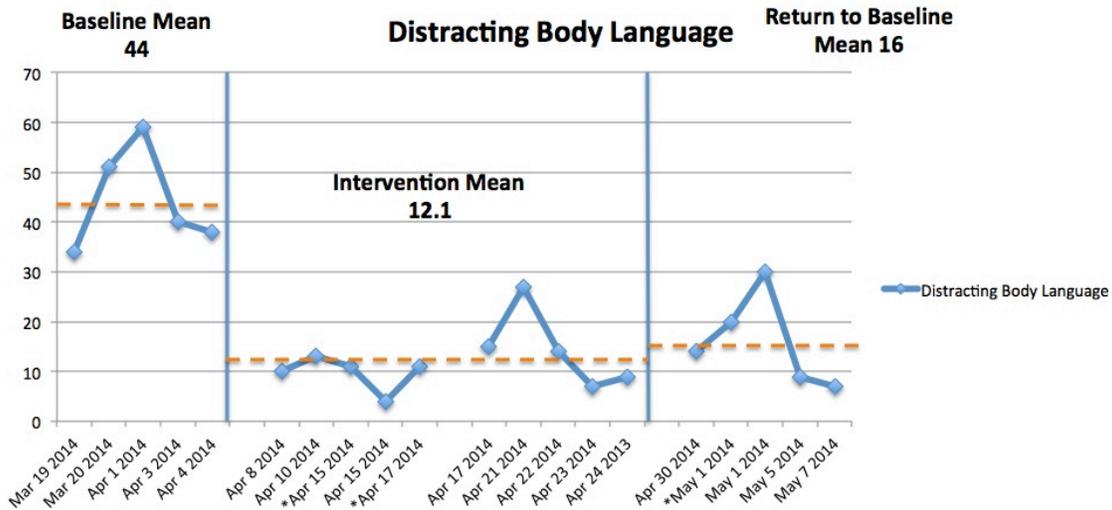


Figure 5. Distracting body language.

The second targeted behavior was attending to speaker. Bruce would often stare aimlessly at the walls or down at the table not looking at anyone speaking. Baseline mean was 13.4 minutes over ten sessions, intervention mean was 27 minutes over five sessions, and return to baseline mean was 22.8 minutes over five sessions. Immediacy of effect from last data point of baseline to the first data point of the intervention shows an increase of 13 minutes in attending to speaker. The ranges of data points were 10 for baseline, 2 for intervention, and 10 for return to baseline as depicted

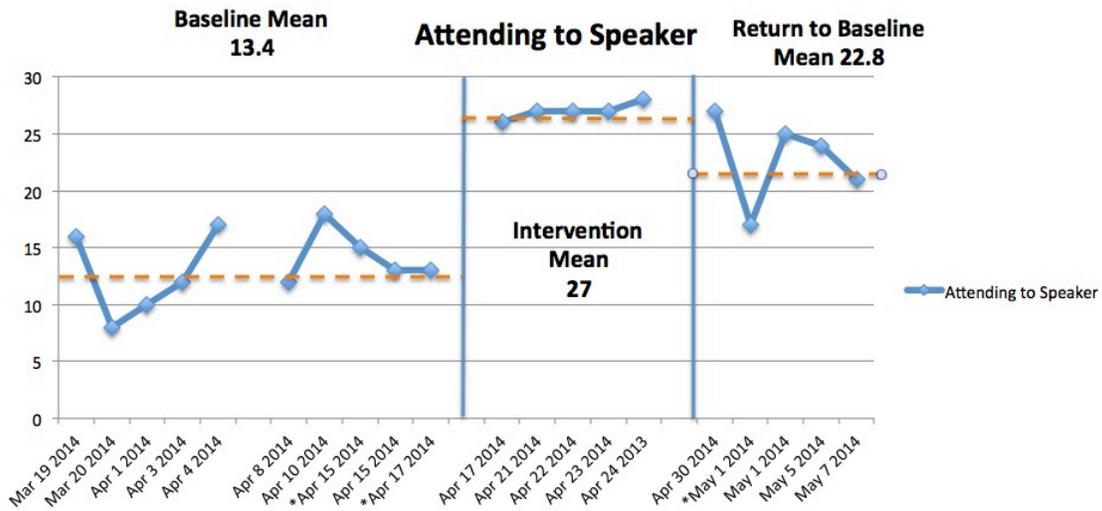


Figure 6. Attending to speaker.

in figure 6. Bruce’s data indicates CAC was responsible for the change in behavior during intervention and return to baseline. Visual inspection of the measures reveals a significant reduction in distracting body language and an increase in attending to speaker.

Sandy

For Sandy the targeted behaviors were distracting body language, interrupting others, and attending to speaker. During baseline observations and coding, the data provided a pattern of behavior in the context of a conversation group that could interfere with the flow of conversation for her self and others as demonstrated in Figure 7.

Table 1

Participant-observation Meetings with Intervention Prompts

	March 19, 2014	March 20, 2014	April 1, 2014	April 3, 2014	April 7, 2014	Mean
Distracting Body Language	20	44	56	17	81	43.6
Interrupting Others	37	39	35	30	32	34.6
Attending to Speaker	10	13	13	16	15	13.4

From the data shown in Table 1 intervention prompts were developed to address the participant’s three behaviors. During the first participant-observer meeting the discussion about conversational behaviors prompted the participant to say, “I do not want to be perceived negatively by anyone during our conversations.” During intervention and return to baseline, which totaled 15 conversation sessions there were only four occurrences of any of the targeted behaviors. Observer stated that during intervention phase only three prompts were given to address any behavior. Based on this change it is concluded that participant three self-regulated her own behavior without the help of CAC. Baseline data helped identify areas targeted for improvement, this participant was able to cognitively make the necessary changes on her own. The pre-session meetings that were held for each participant prior to the intervention were not held for participant three, yet her behaviors in all three areas improved dramatically due to her ability to self-regulate. Surprisingly after limitations were, brought to her attention, improvements occurred in the context of the conversation groups. Observer did provide praise during the intervention phase to help reinforce her behavior for each session.

Based on the data collected on David and Bruce, it has been concluded that CAC is an effective intervention tool useful for correcting selected student behaviors related to pragmatic

communication skills. With such a dramatic change in measures this researcher concludes that the change in behavior was not due to chance fluctuations in performance. The immediacy of change as reflected in the mean scores of the two participants suggests that CAC was responsible for the change. Kazdin (2011) stated that through visual inspection of the data the potent effect of the intervention becomes more obvious through mere inspection. Providing individuals with “in the moment” prompts to correct behavior affords opportunity for practicing learned skill in a natural setting resulting in positive natural reinforcement from other members of the group. The idea of student self-monitoring their own behaviors is a critical component of any instructional strategy that is designed to prepare individuals for interactions with others in their respective communities, the workplace, and their educational environments. CAC allows individuals to receive prompts without interrupting others involved in the conversation. Results from this study compliment the work of Bennett (2013) on improving the vocational skills of individuals with disabilities. His study using CAC increased the task completion of selected students without the presence of a job coach. For this study, CAC helped improve the conversational behaviors of two out of the three subjects of this study.

Summary

This chapter has provided a description of the results of this study based on the data collected on each participant. It has been concluded that CAC has the potential to be an effective intervention tool to address specific individual behaviors that can interfere with participant involvement in a conversational setting for two of the three participants. The following chapter will offer a discussion of these results and implications for further research in this area.

CHAPTER V: DISCUSSION

The goal of this research project was to determine if Covert Audio Coaching could improve the pragmatic communication skills of individuals with disabilities. CAC integrates Bluetooth technology to deliver explicit prompts to an individual from a remote location. This study demonstrated that behaviors for the selected participants significantly improved during conversation sessions held with peers. These findings suggest that CAC can be effectively used with a variety of students to address individual student needs in the area of pragmatic communication skills. Empirical literature on the use of CAC has focused on vocational task completion for individuals with special needs (Bennett, 2013) and improving teaching skills for pre-service teachers (Scheeler, 2002). The ability to effectively communicate in the context of a group conversation or interview is an important component of social interaction for individuals with special needs seeking levels of independence in their everyday lives. Behaviors that could potentially interfere with the communication process were addressed in this study. This chapter will synthesize the research findings to answer the overarching question of the influence of CAC to improve the pragmatic communication skills of individuals with special needs. Limitations of the study will be discussed along with recommendations for future research.

There were four specific research questions that guided this study. They were

1. Is the participant's distracting body language decreased when CAC is used during group conversations;
2. Is the participant's attention to speaker increased when CAC is used during group conversations;
3. Is participant's proper covering of mouth when yawning during conversations

increased when CAC is used during group conversations; and

4. Is the participant's interruption of others while they are speaking decreased when CAC is used during group conversations?

To answer these questions a single subject, multiple baselines across behaviors, ABA design was used. Single subject research design is used to determine whether there is a casual relationship between the introduction of an independent variable and a change in the dependent variable. Multiple baseline research gives the investigator a systematic view of behavior as the intervention is implemented and withdrawn. According to Kratchowell (2010), this design meets the criterion to be considered as an evidence-based practice in instructional strategies for individuals with special needs. The Council for Exceptional Children states that a study is considered as evidence-based when a single subject multiple baseline design is used. Further a functional relationship between the independent variable and the dependent variable must be established that results in a meaningful therapeutic change in the targeted dependent variable due to the manipulation of the independent variable. For this study the relationship between CAC and the selected target behaviors was established; once the intervention was implemented a dramatic change in behavior occurred for David and Bruce. Replication of this study is necessary to confirm meeting of established evidence-based standards. Examples of the criteria include systematic manipulation of the independent variable; outcome variables measured over-time (at least 3 data points), and established criteria for inter-rater reliability. An important part of this study was participant's practice of learned skill in natural settings as a critical element of evidence-based practices. Threats to internal validity of this study are addressed through the systematic replication of the effect within the duration of the experiment. The process for each conversation setting was consistent for each observer.

Three participants were placed in separate conversation groups consisting of five to six same aged peers and a moderator. Participant performances were monitored from a remote location via Skype by selected observers to deliver prompts during the intervention phase using Bluetooth technology to address targeted behaviors. As described in Chapter III, participants had the opportunity to identify for him or herself which behavior would be addressed before the intervention was implemented. Results from the study strongly suggest that CAC can be used as an effective tool to improve individual performance in the context of a conversation group.

The following section provides discussion of the findings by participant and links them to previous studies.

Question 1

Is the participant's distracting body language decreased when CAC is used during group conversations? This question investigated the effect of CAC on participants distracting body language. According to the definition of terms, distracting body language was defined as extreme body movements or positions, such as placement of hands covering face, sitting with head on table, or excessive rocking of chair during conversation sessions. Distracting body language was evidenced in all three participants: David, Bruce, and Sandy. David had the tendency to position his hands covering his face or laid his head down on the table. At times he placed his hands over his mouth while talking. The participant rocked back and forth in his chair sometimes lifting the front of the chair off the floor making a noise as the chair hit the floor when he let it go. He sometime slouched with his hands folded on top of his head when attempting to listen to others. On occasions his peers asked him to sit still or not talk so much. He tapped his fingers on the table often then began playing with his watch or his clothes.

On the other hand Bruce constantly touched and picked his face, or placed his hands in

front of it blocking his face completely at times. On occasion he would use the sleeve of his shirt to wipe his nose. Another behavior deterring from his acceptance was to use his hands to prop his head up as he slumped down in his seat, especially when his attention was not directed towards the person speaking. Sandy's distracting body language comprised of consistently playing with her hair or clothes, she frequently positioned her hands around her face, which was distracting to others. She consistently leaned over with her head sometimes touching the table. She would abruptly jerk her body backward or forward in response to some things that were said during the conversation. However, following the debriefing prior to implementing the intervention, Sandy stated that she did not wish to be perceived negatively by peers. Subsequently, the distracting body language disappeared from Sandy's inappropriate pragmatic behavior repertoire.

Other factors beside CAC enabled Sandy to self-regulate her behavior during this study. She is confident in her own abilities, which allows her to take on new challenges without much difficulty. Sandy has great communication skills demonstrating an ability to self advocate and express to others when she needs help with something. During conversations, she had some issues with body language and looking at others when speaking. She has a tendency to be loud and overpowers other with her voice. She was considered a leader among her peers and is always willing to help others when she can. She had a tendency to easily acquiesce to the will of others or to points of view that were not completely hers as way to maintain her role as an agreeable leader. Her decision making skills helped her make a change in her distracting behavior once it was made important to her as a part of this study.

Results from the implementation of CAC, shows that distracting body language decreased significantly in David and Bruce. Charlop and Milstein (1987) had positive results

using video modeling to teach children with autism conversational speech. Charlop-Christy et al. (2000) compared video modeling with in vivo modeling for teaching children with autism. The National Association of School Psychologists in 2002 discussed the influence of social skills on academic performance. The ability to effectively communicate with others is a key component of this interaction according to the authors.

Question 2

Is the participant's attention to speaker increased when CAC is used during group conversations? This question examined the affect of CAC on participants attending to speaker. This behavior is defined as following the flow of conversation by looking at or in the direction of the person speaking. This behavior was a target for all three participants. David had a problem being distracted easily, many times found looking around the room rather than focusing on who might be talking. At times he closed his eyes and nodded his head as if listening to music during the conversation. Bruce would often stare aimlessly at the walls or down at the table not looking at anyone speaking. For Sandy she would speak but not look directly at the person. Instead she would look down at the table or up in the air when speaking. With the implementation of CAC David and Bruce attending to speaker increased, while this behavior for Sandy became a non-issue for her throughout the rest of the study due to her ability to self-regulate this behavior.

Question 3

Is participant's proper covering of mouth when yawning during conversations increased when CAC is used during group conversations? This behavior was a target for Bruce only. When he needed to yawn it was extreme stretching his hands wide enough to hit someone sitting next to him. After viewing video of himself and describing what the yawn looked like, Bruce was able to self-regulate his own behavior.

Question 4

Is the participant's interruption of others while they are speaking decreased when CAC is used during group conversations? For David and Sandy, interrupting others were targeted for CAC. This behavior is defined as turn taking, understanding the concept of a two-way conversation. For David interrupting others was a significant problem. He did not acknowledge someone else talking when he had something he wanted to say. He interrupted or tapped on the table raising his hand to get someone's attention. He did not understand the concept of turn taking during a conversation. During baseline, moderator had to ask him to be quiet because of his constant interruption of others to the extent no one else could talk. Sandy consistently made noises indicating disgust with something someone had said while they were speaking. She would blurt out responses while others were talking speaking louder when she felt it was necessary to make sure she was heard. As mentioned before, Sandy possessed the ability to self regulate her behavior while the data confirms that CAC had a positive affect on David's performance.

For David all three of the targeted behaviors showed improvement in performance during the intervention and return to baseline phases. Those behaviors were a) interrupting others, b) distracting body language, and c) attending to speaker. The results outlined in Chapter IV for David demonstrated that CAC had an immediate effect on his performance during the intervention and during return to baseline phases. Bruce improved performance in two of the three behaviors using CAC. The two behaviors were a) distracting body language and b) attending to speaker. Bruce showed consistent improvement in the two behaviors that were addressed using CAC, while he was able to self-regulate and change distracting yawning on his own. The ability of individuals to self-regulate and monitor their own behavior plays a major role when seeking and maintaining long-term employment. During the interview process, potential

job candidates attempt to present themselves in a positive light to help employers make a decision whether they should hire a person or not. Behaviors such as distracting body language, interrupting others, and not attending to a speaker could influence an interviewer in a negative manner causing someone not to get the job they are interested in. Once a job is acquired, the ability to interact socially with co-workers during meetings or other conversational settings becomes important in helping an individual maintain the job long-term. Behaviors that could interfere with social interaction between individuals should be addressed to help increase the positive interaction with others. Current literature suggests that one of the biggest factors in loss of jobs is the inability to effectively interact socially with co-workers and supervisors. Society continues to make efforts to become more inclusive, opening opportunities for all to succeed despite the physical or cognitive limitations that have hindered individuals in the past. Interventions designed to help individuals participate in novel social interactions can help facilitate the idea of mainstreaming. It is the belief of this researcher based on the data from this study, that CAC can help individuals self regulate their behaviors in certain settings beyond the conversation group. Transition programs providing instruction in employment and social skills training could potentially use CAC on a job site. On site job coaches could be replaced with CAC giving students a sense of independence while still being observed from a remote location.

The use of Bluetooth technology has become commonplace in today's society. This intervention tool is non-intrusive meaning there is no inherent harm to participants during the study. For the participants it did not bring any undue attention as they wore the device during the intervention phase. Using this technology in other settings such as job sites or community activities can assist individuals in adjusting to new environments and situations they may find themselves in with limited preparation. This research has demonstrated that the use of CAC can

help some individuals self regulate their own behaviors by first bringing these issues to their attention then providing opportunities to practice the skills in natural settings. The use of specific prompts during the intervention phase rather than telling the individual specifically allowed participants to cognitively make a relationship between the prompt given and the behavior to be changed. The significant change in behaviors during the intervention and return to baseline phase points to the effectiveness of CAC for two of the participants involved in this study.

Results for Sandy revealed the ability to self regulate her behavior without CAC. As baseline data was gathered, there were noticeable behaviors that this researcher identified as areas targeted for improvement. Once these behaviors were brought to her attention, performance changed immediately. Sandy is an outgoing person who responds well to social stimuli. She has the ability to self-advocate for herself asking relevant questions where needed. She is conscious of her surroundings noting the presence of others in novel situations. Her ability to reason and analyze various situations could account for ability to change her behaviors without the use of CAC. Martin et al. (1993) and Wehmeyer (2010) discussed the importance of instruction in the areas of self determined behavior. It is therefore concluded that the process of observations during baseline used in this study can benefit individuals by bringing to their attention issues that could possibly interfere with effective conversation. The role CAC occurs when an individual has difficulty to self-regulate his or her own behaviors.

Limitations

The results provide data on behavior specific to that individual making it difficult to generalize these findings to a large sample size. Single subject research is about what happened to the participants. What the study has done is help identify some of the characteristics that may be present in students who could benefit from CAC as an instructional tool. Another factor stems

from the inability to identify specific triggers for the behaviors of the three participants. CAC had an impact on changing the targeted behaviors but it may not have been the only reason why there was a change. Further research is needed in this area to try and identify what may have contributed to the changes noted in this study.

Implications for Current Practice

The use of CAC as an evidence-based practice could provide professionals with an effective tool to address individual student needs. The importance of providing corrective behavioral prompts to individuals without disrupting others is one of the benefits of using CAC. The selected participant potentially would not be embarrassed by corrective prompts being delivered from the observer. CAC can also be used to address verbal communications of individuals with special needs who at times struggle with talking to others.

CAC can also be used in other settings such as employment sites where individuals have difficulties asking peers or supervisors questions. Observers from remote locations may be able to clarify for a participant what question should be asked and how to respond to the information received. The opportunity for the three observers to use this tool has shed light on other potential uses with other students. The results of this study demonstrate a highly promising practice of precise teacher prompting/coaching in a socially unobtrusive manner.

Implications for Future Research

Research using CAC to improve communication skills for individuals with special needs is limited. More studies are needed, first to replicate the procedures and findings of this study, then to expand its use to address other individual behaviors in contexts outside of conversation groups. Generalizability measures are needed to expand the research parameters of CAC. Future

studies with multiple subjects will benefit from trained observers who possess an understanding of the research protocol.

Conclusion

This study measured the effect of CAC on the pragmatic communication skills of individuals with special needs. The project differed from other studies that used CAC focusing on communication skills rather than various task completions as related to vocational skills. The results of this initial analysis indicate the need for replication of this study. Instructors and staff involved in the transition program where the study took place witnessed an increase in confidence level of participants once CAC was implemented. Participants adapted well to the use of the Bluetooth earpiece and the delivery of prompts from observer. Establishing a comfort level with participants was an important part of this study. It is critical that we prepare individuals with disabilities for the inclusive environments that they are being placed in due to mainstreaming. It is the hope of this researcher that CAC can be identified as an evidence-based practice that can be used in a variety of settings to improve individual's performance in the area of social interaction.

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Appendix A

Literature Review Coding

Type:

- Book
- Journal Article
- Official Publication
- Statistical Data

Citation Information:

Authors:

Title:

Year Published:

Search Method: Electronic Search Reference List

Categories:

- Social Skills
- Social Interaction/Communication
- Social Skills Intervention
- Bug in ear prompting addressing targeted behaviors

Evaluation Methods:***Non-comparative studies***

- Narrative
- Observation
- Survey
- Historical

Comparative Studies:

- Cross Sectional
- Single group Studies
- Cohort Studies
- Trials

Data Collection Methods:

- Interview
- Observations
- Questionnaire

Expected Learning Outcomes of Intervention or Approach:

- Instructional strategies
- Appropriate decision making of targeted population
- Affect student developmental skills of target population
- Informational

Context:

- Number of subjects
- Location of study
- Duration of exposure

Stated aim of study:

Impact of Intervention:

- Modification of knowledge skills
- Behavioral change
- Change in practice
- Benefit to student

Documented improvement in learning/performance:

- Improvement in targeted skill
- Impact on future teaching strategies

Appendix B

Name: _____ Date: _____

Interest Inventory

Please fill in the blanks with your most honest answers.

1. When you have an hour or two to spend as you please, what do you like to do?

2. What games do you like to play? _____
3. What things have you made? _____
4. What tools or playthings do you have? _____
5. What do you collect? _____
6. What are your hobbies? _____
7. If you could have one wish that might come true, what would it be? _____

8. What is your favorite TV program? _____
9. Which movie have you liked best? _____
10. What is the best book you have ever read? _____
11. What kind of books do you like best? _____
12. What magazines do you read? _____
13. Have you read books or stories about the kind of work you want to do when you finish school? Name them: _____

14. Have you seen anyone on television or in the movies who does the kind of work you want to do? _____
15. What school subject do you like best? _____
16. What school subject do you like least? _____

Source: *Connections: A Transition Curriculum for Grades 3 Through 6*, by Jefferson County Public Schools, n.d., Denver, CO: Author. Copyright by Jefferson County Public Schools. Reprinted with permission.

Appendix C

Student Name: _____

Date: _____

Baseline

Time: _____

Opportunities to Respond	Setting	Initiated Conversation	Answer Y/N	Notes	Moderator
1 st					
2 nd					
3 rd					
4 th					
5 th					
6 th					
7 th					
8 th					
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11 th					
12 th					
13 th					
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15 th					
16 th					
17 th					
18 th					
19 th					
20 th					

Appendix E

Praise	What was said	Prompt	What was said	Notes
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2				
3				
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11				
12				
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14				
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Appendix F

August 12, 2013

Office for Research
Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

Jim Siders, Ed.D.
SPEMA
College of Education
The University of Alabama

Re: IRB # 11-OR-253-R1 "BlueTooth and Observation for Social Skills (BOSS)"

Dear Dr. Siders:

The University of Alabama Institutional Review Board has granted approval for your renewal application.

Your renewal application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on August 11, 2014. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Please use reproductions of the IRB approved informed consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,



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