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TITLE OF THESIS: Preschoolers' Attitudes toward a Peer Who Uses Alternative and Augmentative Communication

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NUMBER OF PAGES IN THESIS: 58

Dean, College of Graduate and Professional Studies

May, 2012

PRESCHOOLERS' ATTITUDES TOWARD A PEER WHO USES AAC

by

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A thesis submitted to the faculty of Radford University
in partial fulfillment of the requirements for the degree of
Master of Arts in the Department of Communication Sciences and Disorders

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May 2012

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ABSTRACT

Children may begin to develop negative or rejecting attitudes toward individuals with disabilities by four years of age (Gerber, 1977). Unfortunately, children who use AAC may reject their communication systems if they feel the system makes them appear different or if peers display negative attitudes toward them. Without access to AAC, a child may become isolated. There can be detrimental effects on the child's development of language, social relationships with peers, and self-confidence (McCarthy and Light, 2005). The current study was designed to explore issues related to preschoolers' attitudes toward children with disabilities who use AAC. Primarily, the study explored the attitudes that were specifically related to the use of an AAC device. Additionally, the study investigated whether providing a personal experience with the device influenced preschoolers' attitudes. Finally, the study measured the children's performance on a false-belief test to investigate the possible relationship between theory of mind and attitudes toward peers who use AAC. Results suggested that the use of an AAC system did not negatively affect preschoolers' attitudes toward the user. Furthermore, personal experience with the device made the children more aware of the use of the device but did not influence their opinions.

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CHAPTER 1: LITERATURE REVIEW

Introduction

Young children may develop biases as young as four years old toward peers who have disabilities and may or may not use augmentative and alternative communication (AAC; Gerber, 1977; McCarthy & Light, 2005). These biases may exist because of physical disabilities (e.g., drooling, use of a wheelchair), speech impairments (e.g., articulation disorders, dysarthria), language impairments (e.g., decreased comprehension), or the use of AAC systems (e.g., using a computer-based system to communicate). Many children with disabilities have described the effects of these biases (Johnson et al., 2006). In their own words, Clarke, McConachiet, Price, and Wood (2001) reported that many children who need AAC, although they find the device useful, feel ‘uncool’, ‘boring’ and find the device ‘embarrassing’ because it singles them out. When children experience these biases, they may choose to reject using the AAC device. Johnson, Inglebret, Jones, and Ray (2006) reported that children who use AAC will abandon the device (i.e., inappropriately discontinue the use of the system) because they feel the use of the device is not socially acceptable within their peer group. Negative attitudes or biases developed by young children may create barriers that limit AAC users’ communication opportunities and participation in society (McCarthy and Light, 2005). Furthermore, negative attitudes that develop may cause a lack of meaningful social relationships, poor language development, poor academic performance, and discrimination within the workplace against the AAC users (McCarthy and Light, 2005).

The current study explored the attitudes of preschoolers toward a peer who used an AAC device. The child’s speech, language, and physical abilities were not revealed to

the preschoolers in an attempt to narrow down the factors influencing their opinions. There were two main research objectives. The first was to investigate the attitudes of preschoolers toward an unfamiliar child using AAC. The second objective was to determine whether having a personal experience with the AAC system influenced the attitudes of the preschoolers toward the AAC user. The final objective was to examine the performance of the participants in a false-belief task to explore a possible relationship between theory of mind and attitude toward a child who used AAC.

Augmentative and Alternative Communication

According to Beukelman and Mirenda (2005), over 3.5 million Americans have communication disabilities that prevent the use of natural speech to meet their communication needs. Individuals with communication disorders have difficulties in the ability to send, receive, and comprehend verbal, nonverbal and graphic symbols (ASHA, 1993). Individuals may be born with communication impairments, secondary to congenital disorders (e.g., cerebral palsy) or acquired disorders due to acute or chronic disorders (e.g., stroke, amyotrophic lateral sclerosis). Individuals with significant communication impairments may not use communication in the typical way; they may use idiosyncratic methods (e.g., individualized gestures) which may make the message more difficult for the listener to understand (Beck et al., 2000a). To reduce some of the breakdowns faced by individuals with significant communication impairments, the use of AAC may be employed.

The American Speech-Language-Hearing Association (ASHA) refers to AAC as an attempt to compensate for impairments that may limit an individual's participation in

communication activities. Beukelman and Mirenda (2005) described AAC as a means to enable and enhance an individual's ability to communicate and participate in daily conversation when speech and/or language disorders make it difficult. Furthermore, AAC may be critical for individuals who require compensation for limited speech production, as well as comprehension in both spoken and written modalities.

System Abandonment

Due to negative attitudes and biases toward children with disabilities, children may abandon their AAC systems. Johnson et al. (2006) referred to system abandonment as the inappropriate termination of an appropriate AAC device or system. Abandonment of a system may be due to a variety of factors, including lack of opportunities, lack of motivation from communication partners, and feelings that the system was socially unacceptable (Johnson et al., 2006). When AAC users are not provided opportunities to communicate, or when the communication partners feel they can understand the individual without the system, users often abandon the devices. Additionally, users often terminate the use of AAC if they do not experience success with the device and if their communication partners are not encouraging the use of the device (Johnson et al., 2006). They also reported that children who use AAC may abandon their devices due to perceived stigmas that make them appear different or stand out from their peers in a negative way.

Language and Social Development

Most typically developing children find the experience of attending school to be socially motivating. It is often viewed as a time in which they are provided multiple

opportunities to increase learning and development and to build friendships through social interactions (Anderson, Balandin & Clendon, 2011). Early introduction to AAC is critical for children who have significant language disorders so they are able to interact with their peers and participate in school activities (Beukelman and Mirenda, 2005). Quite often, children who use AAC are not provided with opportunities to express the four basic communicative purposes: express wants and needs (e.g., “I want more.”), develop social closeness (e.g., “That’s cool!”), share information (e.g., “The answer is seven.”), and fulfill social etiquette (e.g., “Thanks!”; Light, 1997). Light (1997) reported that most children who use AAC only express wants and needs because the vocabulary are easily programmed, predictable, and do not require significant linguistic demands on the user. By the time children are in preschool, they need to communicate more than their wants and needs; they need to communicate for social closeness and building peer relationships (Light, 1997). Furthermore, school-aged children learn much of their language, specifically pragmatics (i.e., social use of language) and semantics (i.e., vocabulary), from their peers and their environment (Beukelman and Mirenda, 2005). It is imperative that children who use AAC are not isolated from their peers, deprived of social interactions, and put at greater risk for communication impairments.

Sally and Anne False-Belief Test

In addition to negative attitudes toward peers, theory of mind begin to develop at approximately four years of age (Astington and Jenkins, 1999; Frith and Happe, 1999; Gerber, 1977). Theory of mind refers to the child’s ability to attribute mental states and predict someone’s behavior (Frith and Happe, 1999). Frith and Happe (1999) explained

that the development of theory of mind leads to the development of appropriate social interactions. A relationship may exist between children's ability to understand others' beliefs and establishing their own attitudes. In other words, understanding what is accepted by a group may be related to understanding others' beliefs (i.e., theory of mind).

General consensus indicates that most four year old children are able to pass a false-belief test. However, Bloom and German (2000) reported that children who do not pass a false-belief test may still exhibit theory of mind because false-belief tests often require additional linguistic and cognitive abilities. Of note, children who are presented with the "Sally and Anne" false-belief test are required to have well-developed attending skills in order to follow the actions of the characters and understand the linguistic complexity of the question presented (Bloom and German, 2000). Also, false-belief tests place crucial processing demands on the child. Furthermore, Bloom and German (2000) reported that young children may fail false-belief tasks due to the linguistic and cognitive demands, lack of understanding regarding false-belief, or a combination of both. Regardless, they state that children do not necessarily fail because of a lack of theory of mind. Bloom and German (2000) indicate that false-belief tasks should still be used; however, they should be used to assess the difficulty children may have with reasoning via different representations (e.g., beliefs, photographs, drawings) or to diagnose and study older children and adults with linguistic and cognitive impairments. Refer to Appendix A for "Sally and Anne" false-belief test protocol.

Attitudes

According to Triandis, Adamopoulous, and Brinberg (1984), attitudes are learned through direct and indirect experiences within the environment, including people, objects and events. Furthermore, children are highly influenced by their peer group. Gerber (1977) stated that attitudes about people with disabilities form around four years of age. Children as young as preschoolers have been shown to prefer to develop relationships with typically developing peers over children with communication impairments (Gertner et al., 1994). In their study, 31 preschoolers from one class were divided into three groups: typically developing children, children with specific language impairment (SLI), and English as second language learners. Participants were instructed to point to pictures of classmates they would want to play with during ‘dramatic play’ and peers they would not want to play with. Once a picture was selected by a child, the picture was removed so that the same child was not chosen both positively and negatively. Typically developing children were more preferred by their peers, including children with SLI and English as second language learners. Although none of the children in this study used AAC, it suggests that young children may develop peer relationship preferences based on language and communication competence (Gertner et al., 1994).

Similar research has been conducted with children with complex communication needs who require AAC. Since the mid-1990s, a growing body of research focused on the attitudes of school-aged children toward peers who use AAC to communicate. Children who develop negative attitudes toward individuals who use AAC may limit the opportunities for communication and participation by the children with disabilities (McCarthy and Light 2005). Furthermore, McCarthy, Light, and McNaughton (2002)

stated that negative attitudes may inhibit the development of positive peer relationships by individuals who use AAC. Anderson, Balandin and Clendon (2011) reports that typically developing children tend to form relationships with children whose socio-emotional development and communication skills match their own. Consequently, typically developing peers may not initiate interactions or meaningful relationships with children who use AAC because they have inadequately developed communication skills. Anderson et al. (2011) also reported that most typically developing children within their study with positive attitudes toward friends who used AAC had assumed roles that were more characteristic of a supporter or caretaker than a friend.

Factors Influencing Attitudes Toward AAC Users

Multiple factors that may influence attitudes toward individuals who use AAC have been investigated. Some of these factors include age, gender, and length of message used by the AAC user. Gaining a better understanding of children's attitudes toward peers who use AAC can help determine the most effective means to promote positive change (McCarthy and Light 2005).

Age. Age has been shown to be influential in the formation of attitudes toward individuals with disabilities who use AAC. The Assessment of Attitudes Toward Augmentative/Alternative Communication (AATAAC) was developed to assess students' attitudes (Beck et al., 2000a). The AATAAC uses a 5-point Likert scale, strongly agree to strongly disagree. The five point scale is used to respond to questions within three different categories (i.e., cognitive, affective, and behavioral) to determine attitudes of school-aged children toward peers who use AAC. Although results were not statistically

significant, children in the third grade showed somewhat more positive attitudes than first graders; however, students in fifth grade displayed attitudes that were similar to the first graders (Beck et al., 2000a). Most children in the first grade, when asked how they felt when they thought of a child who used AAC, selected the sad face from a set of six emotions (i.e., sad, happy, funny, scared, disgusted, surprised). Beck et al. (2000a) hypothesized the selection of the 'sad' emotion may stem from the children feeling sorry for the AAC user.

Gender. Generally, girls have more positive attitudes towards individuals who use AAC compared to boys (Beck et al., 2000a). A review conducted by McCarthy and Light (2005) identified eight studies that investigated the effect of gender on attitudes toward peers who use AAC. All studies suggested that girls have more positive attitudes toward their peers than boys. Notably, in Beck et al. (2000a), girls in the first grade only, reported less positive attitudes than boys. The researchers measured the attitudes of 128 first, third, and fifth graders toward peers who used AAC. Participants watched a video of a child using AAC interacting with an adult; however, only the hand and forearm of the AAC user was visible. Beck et al. (2000a) attempted to remove biases unrelated to the use of AAC by not showing the gender or physical status of the AAC user. Attitudes were assessed using the Assessment of Attitudes Toward Augmentative/Alternative Communication (AATAAC).

Length of Message. Anderson et al. (2011) stated that children tend to build relationships with peers who have similar communication abilities. Therefore, it is important to look at attitudes based on the length of the message provided by the AAC

user to determine if bias exists. Light (1997) suggested communicative competence was contingent upon successful interactions. If phrase length increases, children may develop more positive attitudes and willingness to interact with peers who use an AAC device. Beck et al. (2000b) investigated whether or not children's attitudes were influenced by the length of message communicated by a child who uses AAC. Message length varied from single words to two to four word phrases. The length of the AAC message did not influence the attitudes of children in the third and fifth grades who were familiar with children with disabilities; they had more positive scores on the AATAAC overall as compared to children who were unfamiliar with disabilities. Participants who were unfamiliar with children with disabilities were influenced by the length of the message; they demonstrated more positive attitudes toward a peer using AAC when the message consisted of a four word phrase as compared to a single word (Beck et al., 2000b). These findings demonstrated the need to provide children experiences with children with disabilities to decrease the stigma and biases surrounding children with disabilities, specifically those who use AAC.

Measurement of Attitudes

Multiple protocols have been developed to measure school-aged children's attitudes toward individuals with disabilities and individuals who use AAC. Favazza and Odom (1997) developed the Acceptance Scale of Kindergartens (ASK) to assess kindergarteners' attitudes toward peers with disabilities. The ASK was revised in 1999 and was used thereafter (Favazza et al., 2000). The Acceptance Scale of Kindergarteners-Revised (ASK-R) includes questions to measure the student's level of acceptance or non-

acceptance of children with disabilities (e.g., “Would you play with a kid, even if he couldn’t walk?”, “Do you play with someone who is handicapped?”). Children responded using a three point scale represented by a line drawing of a happy face (i.e., yes), sad face (i.e., no) and a thinking face (i.e., maybe) to the questions presented. Children marked an “X” on one face. If children were unsure they were instructed to place an “X” on the thinking face to indicate “maybe”.

Beck et al. (2000a) designed the AATAAC to assess the attitudes of elementary aged children toward peers who use AAC. A total of 174 first, third, and fifth graders were studied to develop the AATAAC. A 5-point Likert scale (i.e., strongly agree to strongly disagree) was used to assess attitudes. The assessment included pictures of facial expressions (i.e., happy, sad, funny, surprised, scared, and disgusted) to allow for a nonverbal response. All the children watched a video depicting preschool through high school students using various AAC devices. After watching the video, the children were told to put an ‘X’ through the facial expression they felt corresponded to how they felt when they thought of an individual who used AAC. The AATAAC is divided into three categories of questions: cognitive (e.g., “Children who use AAC really don’t want to talk with other children.”, “Children who use AAC try to talk about what other children want to talk about.”); affective (e.g., “I like children who use AAC.”); and, behavioral (e.g., “I would eat lunch with a child who uses AAC.”).

Both the ASK-R and the AATAAC were deemed valid and reliable for kindergarteners and school-aged children; however, the normative sample does not include preschoolers. Currently, there is no valid and reliable assessment that can be used

with the preschool-age population, despite suggestions that many children, by the age of four years, have already started to develop attitudes and biases toward others with disabilities (Gerber, 1977; McCarthy and Light, 2005). It is important to develop a tool to assess and help combat negative biases or attitudes of preschoolers.

Improvement of Attitudes

Triandis et al. (1984) stated that developing an understanding of people's attitudes toward individuals who use AAC may help establish an appropriate intervention to change attitudes. Additionally, providing positive experiences and interactions with children with disabilities may improve children's attitudes. Favazza and Odom (1997) suggested that intervention and experience at an early age may help reduce negative attitudes that are formed by young children toward individuals with disabilities. Children report more positive attitudes toward a peer who uses AAC if they have prior experience or are familiar with students with disabilities (Beck et al. 2000b). McCarthy and Light (2005) stated that children who attended schools in which typically developing peers were integrated with children with disabilities demonstrated more positive attitudes than students from schools that did not integrate the students. Favazza and Odom (1997) designed interventions to determine if attitudes of students changed toward children with disabilities after exposure to disabilities. Their results suggested that the group who interacted with children with disabilities more often developed more positive attitudes than those who had less interaction. These authors assessed that children who are provided exposure to individuals with disabilities can improve previously formed attitudes (Favazza and Odom, 1997).

Some researchers have investigated methods for improving attitudes toward children with disabilities (e.g., Favazza and Odom, 1997; Favazza et al., 2000). In a study by Favazza and Odom (1997), three different groups were assigned: no contact group, low contact group (i.e., observation without interaction), and a high contact group (i.e., experimental group). In the high contact group, three separate groups were assembled: indirect contact group, direct contact group, and primary social group. In the indirect contact group, children received information about different disabilities through books and exploration of equipment children with disabilities may use. Children in the indirect contact group were not directly exposed to children with disabilities. The books read included children with disabilities and emphasized positive attitudes toward children with disabilities. Following each story, the children were led in a discussion about the similarities and differences between children with and without disabilities. In the direct contact group, small groups of children with and without disabilities participated in a 15 minute structured play activity. The primary social group refers to the interactions children had with their parents. In this group, children took home one of the books they had read in class and parents were instructed to read the books to their children, and they were also provided with discussion questions to use with their child.

Favazza and Odom (1997) suggested that positive attitudes can improve with direct exposure to children with disabilities. Children who were provided direct contact (e.g., play interaction with a child with a disability) were noted to have more positive attitudes both immediately after interaction and five months post interaction, as compared to children in the no contact group or indirect contact group. However, children in the

low contact group demonstrated a slight improvement in attitudes (Favazza and Odom, 1997). This suggests that any amount of exposure to disabilities is beneficial in improving children's attitudes.

In Favazza et al. (2000), an additional "whole intervention" group was included; this group participated in all of the interventions (e.g., indirect contact, direct contact, and the primary social group). The effect of each intervention was compared with a control group which had limited or no contact with children with disabilities. Although children in the direct contact group (i.e., structured play) reported increased level of acceptance, there was no statistically significant difference compared to the indirect contact group (e.g., story time and discussion). 'Whole intervention' was the most effective in increasing positive attitudes toward kindergarteners with disabilities.

Results from both studies suggest that with more awareness and education, attitudes toward peers with disabilities will improve. Favazza et al. (2000) stated that, without interventions to support the integration of typically developing children with peers with disabilities, typically developing children may continue to project low levels of acceptance of children with disabilities.

Research Objectives

One reason that children who require AAC may reject their systems is because of the negative attitudes of their peers. Subsequently, they will have fewer opportunities to interact with their peers. Fewer interactions with peers may lead to poor language and communication development, as well as poor social development. To help decrease negative feelings about using AAC on the part of the AAC user and increase positive

behaviors and attitudes of communication partners, additional research focused on attitudes and intervention to increase positive attitudes is critical. Previous research has focused on attitudes toward individuals who have disabilities and those who use AAC. Research regarding disabilities has included preschoolers (e.g., Gertner et al., 1994) but has not addressed AAC.

The current study was designed to explore issues related to preschoolers' attitudes toward children with disabilities who use AAC. Primarily, the study explored the attitudes of preschoolers that were specifically related to the use of an AAC device. Additionally, the study investigated whether providing children with a personal experience using the device influenced their attitudes. The study measured the children's performance on a false-belief test to investigate the possible relationship between theory of mind and attitudes toward peers who use AAC.

CHAPTER 2: METHOD

Participants

Twenty preschoolers were invited to participate in this study. The inclusion criteria were established so that participants: (a) were native speakers of English; (b) were between the ages of 4:0 and 4:11 years; (c) had age-appropriate speech and language skills, as reported by the classroom teacher; (d) had hearing and vision within normal limits, with or without correction, as reported by the classroom teacher or parent; (e) did not have any prior experience with individuals with disabilities; (f) provided oral assent prior to participation; and, (g) had written parental consent prior to participation.

Preschool personnel in the Charleston, South Carolina area were contacted to determine their interest in the study. Participants were selected from five different classrooms within a preschool. All affected staff members (i.e., preschool director and participant's classroom teachers) were made aware of the procedures involved in the study. Classroom teachers provided additional information about each participant in the areas of speech, language, and hearing. Parental consent forms were sent home with the possible participants who met the inclusion criteria. Once consent forms were returned and assent was obtained, children were able to participate in the study.

Twenty preschoolers between the ages of 4:0 and 4:11 years participated in this study. Although children with disabilities were not enrolled within the preschool classrooms, there was at least one child with a physical and intellectual disability enrolled at the center. The families of the preschoolers reported that they did not have any previous experience with AAC or with children with disabilities, aside from indirect exposure in public and through the media.

Procedures

Participants were randomly assigned to one of two groups. Group One was the control group and Group Two was the treatment group. The average age of the preschoolers in the Group One was 4:5 years and the average age of Group Two was 4:6 years. There were ten participants in each group. Gender was evenly distributed within Group One, with five males between the ages of 4:0 and 4:9 years; and five females between the ages of 4:0 and 4:11 years. Four girls between the ages of 4:3 and 4:11 years and six boys between the ages of 4:0 and 4:11 years were in Group Two. Tables 1 and 2 summarize the demographic characteristics of the twenty participants in Group One and Group Two.

Table 1: Participant Demographics – Group One

Participant Number	Age (years)	Gender	Response to “Sally and Anne” false-belief test	Correct Response
1	4:0	Female	“I don’t know”	
2	4:4	Male	Basket	✓
5	4:10	Female	Box	
7	4:6	Male	Box	
9	4:9	Male	Basket	✓
10	4:11	Female	Box	
13	4:5	Female	Basket	✓
16	4:8	Female	Box	
18	4:0	Male	Box	
19	4:7	Male	Box	

Table 2: Participant Demographics – Group Two

Participant Number	Age (years)	Gender	Response to “Sally and Anne” false-belief test	Correct Response
3	4:10	Male	Box	
4	4:5	Male	Box	
6	4:11	Female	Box	
8	4:11	Female	Box	
11	4:10	Female	Box	
12	4:0	Male	Box	

14	4:11	Male	Box	
15	4:4	Male	Box	
17	4:0	Male	Box	
20	4:3	Female	Box	

Once the participants’ oral assent was obtained, they were asked to complete the “Sally and Anne” false-belief test to provide qualitative information about their ability to take other people’s perspectives (Wimmer and Perner, 1983). This test has traditionally been administered as an evaluation of a child’s theory of mind. The “Sally and Anne” false-belief test was presented orally with a visual support. Refer to Appendix A for the complete script and visual diagram. Participants were read a scenario in which there are two girls (e.g., Sally and Anne). The instructions were as follows:

“Sally places a ball in her basket and then leaves the room. While she is gone, Anne removes the ball and places it in her basket. Sally then returns. Children are asked where Sally will look for her ball.”

If children answer correctly, it is suggested that they demonstrate an understanding of a false-belief, may be able to take on other individuals’ perspectives, and understand that the beliefs held by an individual are separate and sometimes different from their own (i.e., theory of mind; Baron-Cohen, Leslie, Frith, 1985; Frith & Happe, 1999).

All participants, irrespective of their performance on the false-belief test, were included in the study. After completing the “Sally and Anne” false-belief test, children were provided with an introduction to the topics of disabilities and AAC. The script describing a disability and AAC from Beck, Bock, Thompson, and Kosuwan (2002) was adapted for this study. The script was used with both the control and the experimental groups. Refer to Appendix B for the complete procedures followed.

Children in Group One were then asked to play with the researcher. The play activity included materials similar to those shown later in the AAC video (i.e., farm animals). The participants were able to choose which character they wanted to use first. The researcher followed the participants lead during the play activity and the interaction lasted between three and five minutes. Following the completion of the play activity with the researcher, the children in Group One were shown a video of a child using an AAC device (i.e., Dynavox VMax). Participants were then asked to discuss their impressions of the child they viewed in the video. A series of specific questions (e.g., “Will you be his friend? Why/why not?”) was used as a guide for the discussion. See Appendix C for the complete list of questions.

After the discussion of the concepts of disabilities and AAC, Group Two, the treatment group, was introduced to an AAC device (i.e., Dynavox VMax). The children were shown how to use it and then asked to use the device to communicate with the researcher during the same play interaction as the children in Group One. The children in Group Two were asked not to talk during the interaction and to use the AAC device instead. The AAC device was preprogrammed with symbols relating to the play activity materials (i.e., names of farm animals), along with simple conversational comments (e.g., “hi”, “this is fun”). After the children had the opportunity to use the device, they were asked to describe their experiences using the device (e.g., “Did you like it? Why/why not?”). The children in Group Two then watched the same video as the children in Group One and were asked the same list of questions about the video (e.g., “Will you be his

friend?”) to guide their discussion. See Appendix D and E for a detailed description of the procedures and script.

Data Analysis

The data collected from this study were analyzed qualitatively. All responses provided by the participants were video recorded and transcribed verbatim. Because of the qualitative nature of the study, all responses were coded for analysis. Significant themes and concepts (e.g., positive/negative attitudes, types of interactions) were identified within and between the two groups. The qualitative nature of this study allows for analyzing individual participant’s responses and explanations. The data from each group were compared to determine if there is a change in attitude about the peer using an AAC device.

CHAPTER 3: RESULTS

The results of the study are presented in this section. First, responses to the false-belief test by participants in Group One and Group Two are described. Next, descriptions of the experiences of participants in Group Two using the AAC device while interacting with the researcher are presented. Finally, common themes identified in the participants' responses to watching the child using AAC in the video are discussed.

Sally and Anne False-Belief Test

The "Sally and Anne" false-belief test was administered to all preschoolers in both groups. Three out of the twenty preschoolers answered appropriately and one participant stated she did not know the answer; the remaining 16 participants responded incorrectly. The three children who answered correctly were Participant 2, Participant 9, and Participant 13. The participants were 4:4, 4:9, and 4:5 years, respectively. All three participants who answered correctly had been randomly assigned to Group One. Refer to Tables 1 and 2 for a complete list of the responses to the "Sally and Anne" false-belief test.

Experience with Using the Device

Participants in Group Two were asked to discuss their experiences using the AAC device. Table 3 presents a transcript of their responses. Across all participants in Group Two, three major themes were identified: novelty of using the device to communicate, difficulty in operating the system, and satisfaction in using the device.

Table 3: Experience with AAC

Participant Number	AAC experience	Hard versus Easy	Like versus Dislike
3	“Fun you don’t have to talk with your mouth, it talks for you”	“It was easy, talked for you”	“I liked it, I wished I had one”
4	“It was easy, just had to press it”	“It was easy, talked for you”	“Yes”
6	“I couldn’t talk so I had to use the AAC”	“Easy, it said what I wanted it to”	“Yes, I liked it”
8	“Great, but a little hard finding the buttons”	“It was kinda hard”	“Yeah I liked it, just a little bit hard”
11	“Fun”	“It was easy, not that bad”	“I liked it, it was fun”
12	“It made noise”	“Easy, cause I had the horse”	“Yes, because I like it”
14	“Helped me talk, kinda like a computer”	“Easy, Cause I just pressed a bunch of buttons”	“Yes” (selected from the device)
15	<i>Participant did not respond to question.</i>	“Easy, just had to press buttons”	“Yeah cause you don’t have to talk much”
17	“Not that fun, very hard to find ‘I’m hungry’”	“Hard, cause I couldn’t find I’m hungry”	“Yeah but I didn’t like using it, I didn’t have anything, I wanted to have much more funner but it was so hard.”
20	“It was fun”	“Easy, because I like it, I said ‘No I don’t like it’ (referring to activity).”	“Yes, it was fun”

Novelty of Using the Device to Communicate. Many of the participants talked about the enjoyment of using the system to talk for them instead of having to talk themselves. In fact, six of the ten participants in Group Two, made reference to the device talking for them or making the device talk when they pressed the buttons. Participant 3 stated using the device was, “Fun, you don’t have to talk with your mouth, it

talks for you” and Participant 6 commented that using the device was “Easy, it said what I wanted it to.” Participant 20 made reference to what she said when using the device, “...I said ‘No I don’t like it.’” Like many other participants, Participant 20 appeared to enjoy the novelty of using the device; she repeatedly selected the message “No I don’t like it” and laughed.

Several of the participants in Group Two stated that using the device was fun. Specifically, Participant 3, Participant 11, and Participant 20 all made reference to the device being “fun” to use. Participant 3, who had commented that the device talked for him, also stated that it was fun to use. Participant 11 commented, “I like it, it was fun.”

Difficulty in Operating the System. The second theme identified across participants in Group Two was in reference to the difficulty level they experienced in operating the device. Participant 3, Participant 4, Participant 6, Participant 11, Participant 12, Participant 14, Participant 15, and Participant 20 all stated they found the device easy to use. Participant 11 stated, “It was easy, not that bad” and Participant 3 stated, “It was easy, it talked for you.” Within the eight participants who found the device easy, three participants stated it was easy because they only had to push buttons. These participants included, Participant 4, Participant 14, and Participant 15. Participant 14 stated the device was “Easy, ‘cause I just pressed a bunch of buttons.” Participant 3, Participant 4, Participant 6, and Participant 14 all commented on the ease of using the device and how the device talked for them. Specifically, Participant 6 stated, “I couldn’t talk so I had to use the AAC” and that it was “Easy, it said what I wanted it to.”

Two out of the ten participants stated that it was hard to use the device. Specifically, both participants found it difficult to find a button with the appropriate vocabulary. Participant 17, stated, “[It was] hard, cause I couldn’t find ‘I’m hungry’”, referring to the difficulty he had locating the appropriate buttons during the play interaction. Due to the perceived level of difficulty, Participant 17 also stated he did not enjoy using the device, stating, “...I wanted to have much more funner, but it was so hard.” Participant 8 stated, “It was kinda hard” and it was “...a little hard finding the buttons.” Although Participant 8 stated the device was hard, she also said she liked using the device.

Satisfaction with Using the Device. Overwhelmingly, the participants responded favorably toward the use of the device. Nine out of the ten participants stated they liked using the device. Participant 14 enjoyed the device so much, that he asked to select his answer from the device when he was asked if he liked using the system. Another participant, Participant 3, expressed his satisfaction with the device by stating, “I liked it, I wish I had one.” Only one participant, Participant 17, responded unfavorably to using the device stating, “[it was] not that fun...” and “...I didn’t like using it, I didn’t have anything.”

Perspectives on the Child Using AAC in the Video

After viewing the video, participants were asked to discuss their opinions of the child using AAC to interact with the researcher. Tables 4 and 5 summarize the responses provided by participants in Group One and Group Two, respectively. They were first asked to describe the boy they saw in the video. There were two key themes that

emerged. The first was the focus on the child's play and the second was related to the child's communication.

Table 4: Describing the Child Using AAC: Group One

Participant Number	Group One Responses
1	"He like to play"
2	"He is playing"
5	"He was playing, he had the cow and the pig"
7	"Playing, I don't know, playing with cow, he was eating"
9	"Played with animals that we were, he sounded shy"
10	"He was playing with the cow"
13	"He was playing with animals, like I was and he was playing with you"
16	"Him playing just like us"
18	"I saw a girl and a boy, they were playing animals"
19	"I don't know his name, he was playing, he did that things then he talked" (imitated pushing buttons on the device)

Table 5: Describing the Child Using AAC: Group Two

Participant Number	Group Two Responses
3	"When he was playing farm he was using the thing to talk"
4	"Playing with the cow"
6	"He is using the AAC we used, playing with the animals then time to clean up"
8	"He wasn't talking, used the thing to talk for him"
11	"Doing sign language, learning how to say 'hello'"
12	"He was playing with the pig and horse"
14	"Could he talk? He was using one of those to help him talk"
15	"I don't know him, using a thing to talk"
17	"Playing with toys, putting them away"
20	"I don't know his name, he was playing with animals"

Play. All ten participants in Group One, the control group, mentioned that the child in the video was playing or enjoyed playing. Participant 5 stated, "He was playing, he had the cow and the pig" and Participant 18 stated, "I saw a girl and a boy, they were playing animals." Only Participant 19 mentioned his communication using the device in

addition to discussing his play. He stated, "...he was playing, he did that things, then he talked" imitating the boy in the video pushing buttons on the device.

Participant 16 and Participant 9 were the only children who explicitly related the child in the video to themselves; they made a comparison between the child in the video and the play activity they had participated in. Participant 16 stated, "Him playing just like us." Participant 9 stated, "Played with the animals we were, he sounded shy." It is not clear if Participant 9's reference to the child sounding shy was suggesting that he noticed that he was different because he used the AAC system to communicate. None of the participants in Group One made direct reference to the AAC device (i.e., Dynavox VMax) or the possibility the boy might be different from themselves.

In the experimental group, Group Two, six of the ten participants mentioned the child's play. Participant 12, commented on the child's play and stated, "He was playing with the pig and horse" and similarly, Participant 17 stated the boy was, "Playing with toys, putting them away." Of the six, four did not mention his communication and solely discussed his play. The remaining two mentioned that the child was using the device to communicate in addition to commenting about his play. Specifically, Participant 3 stated, "When he was playing farm he was using the thing to talk" and Participant 6 stated, "He is using the AAC we used, playing with the animals then time to clean up."

Communication Using the Device. None of the participants in the control group, Group One, mentioned the device. Only Participant 19 referred to the child's use of the system by imitating his movements pressing buttons on the AAC system; he commented that the child would take a turn playing and then communicated after his play turn. He

said, "...he was playing, he did that things and then he talked". It is not clear what he thought about the difference in the mode of communication or what his perspectives on the use of the device.

In contrast, six of the ten participants in the experimental group, Group Two, made reference to the child's communication. Five participants referred to the child's use of the device to help him talk, and one participant, Participant 11, stated he was using sign language to communicate (i.e., "Doing sign language, learning how to say hello"). Participant 8 stated, "He wasn't talking, he used that thing to talk for him", Participant 15 stated, "I don't know him, using a thing to talk", and Participant 14 stated, "Could he talk? He was using one of those to help him talk." Furthermore, one of the five children correctly referred to the system as "AAC" stating, "He is using the AAC we used..." Participant 6, who also referred to correctly referred to the AAC device, was the one of the three participants to refer back to their own experience using the AAC device. Participant 14 and Participant 3 both made mention of the device, and pointed to the device they had used during the play interaction.

Interacting with the Child Using AAC

The participants in each group were asked about whether they would interact with the child they viewed in the video. They were asked some questions to guide their discussion. For example, "Will you play with him?" and "What will you play?" Table 6 summarizes the responses from the participants in Group One and Table 7 summarizes the responses from Group Two. Three common themes were identified within and between Group One and Group Two. These themes include types of play interactions,

perceived friendship or likability of the AAC user, and unfamiliarity toward the AAC user.

Table 6: Group One Responses

Participant Number	Play	Talk	Friend	Share	Circle	Playground	Birthday
1	“Yes, he my best friend, play farm”	“Yes, he is my best friend”	“Yes, cause he is my best friend”	“Yes, cause hims nice”	“Yes, cause I love him”	“Yes, he’s my best friend”	“No, him don’t know my house”
2	“Yes, play toys, lots of toys”	“Yes, like to talk to him”	“Yes, he loves you”	“Yes, I like him”	“Yes, I don’t know”	“Yes, he loves me”	“No, I can’t have one birthday party”
5	“Yes, cause he is nice, play farm”	“Yes, farms, I love farms”	“Yes, because he likes to play with me all the time”	“Yes, share my toys at school, but not at home”	“Yes, cause he likes to sit by me”	“ Yes, play a chasing game”	“Yes, in case he likes to play in my backyard”
7	“Yes, cars”	“Yes, cars, I like cars”	“Yes, hmm, I don’t know”	“Yes, share my toys at school, but not at home”	“Yes, I don’t know”	“Yes, tractors”	“Yes, I don’t remember ”
9	“Yeah, play farm and horse”	“Yeah, I don’t know”	“Maybe ”	“No, we can’t share snack not appropriate at school, I will share my toys because he is	“Maybe, sometimes, now I can’t”	“Sometimes , I have another friend I like to play with”	“No, I don’t know where he lives, can’t invite strangers”

				nice”			
10	“Yes, play horse”	“Yes, ask his name”	“Yes, I don’t know why”	“Yes, cause he is nice”	“Yes, I don’t know why”	“Yes, I don’t know”	“Yes, because he is nice”
13	“Yes, I don’t know, play in the mud”	“Yes, I don’t know”	“Yes, cause I like him”	“Yes, cause he is being friends and being nice”	“Yes, cause he is being friends and being nice”	“Yes, can play on the slides, cause he is my best friend”	“Yes, cause he is my very best friend”
16	“Yes, go play hide and seek”	“I guess so, talk about farm”	“Yes, I don’t know why”	“ Yes, sometimes, share my food at home”	“Yes, we sit boy girl boy girl”	“Yes, play dinosaurs, horses, and swings”	“Yes, Mommy asked me to”
18	“Ok, yeah, play with animals”	“No, because I don’t want to”	“No, because I don’t want to”	“No, because I don’t want to”	“No, because I don’t want to”	“No, because I don’t want to”	“No, because I don’t want to”
19	“Yeah, I don’t know”	“I don’t like to talk like him, no”	“Maybe, maybe not, no I don’t like weird guys”	“Maybe yes, I just like to do that”(share snack)	“No, sometimes you don’t like people and you don’t sit with them”	“Yeah, maybe I like him, maybe I don’t like him”	“No, he doesn’t know where my house is”

Table 7: Group Two Responses

Participants	Play	Talk	Friend	Share	Circle	Playground	Birthday
3	“No, because I don’t know him”	“No, because I don’t know him”	“No, because he is a stranger”	“Yes, I don’t know why”	“No, because I don’t want to”	“No, because he is not my best friend”	“No, because I don’t know him, he is not my best friend”
4	“Yes, play	“Yes, I don’t	“Yes, I don’t	“Yes, because	“Yes, I don’t	“Yes, play basketball”	”I don’t know”

	birdies”	know”	know why”	he has yellow hair like me”	know why”		
6	“Well I don’t know where his house is, we could pay farm’	“Maybe, I don’t know”	“Yeah, we are all friends”	“No, we can’t share snack, I won’t share my toys at home”	“Yes, because it is a girl boy pattern”	“Yes, just the swing”	“No, my mom doesn’t know his name or address”
8	“Yeah, anything he might want”	“Yeah, anything”	“Yeah, I don’t know why”	“Yeah, I share snack with anyone and I have a lot of toys”	“Yeah, we might love each other”	“Yeah, he might be my friend”	“Yeah, cause he is my friend”
11	“Yes, play farmer “	“Yes, talk about school”	“Yes, that’s what God likes”	“Yes, that is what friends do”	“Yes, that is what friends do”	“Yes, that is what friendship is all about”	“Yes, he is my friend”
12	“Yes, cars”	“Yes, about what we are playing”	“Yes, because I like to sit by him”	“Yes, because I like him”	“Yes, because I like him”	“Yes, farmer, because I like him”	“Yes, I want him to skate”
14	“Yes hot wheels”	“Yes, about Christmas, what Santa brought”	“Um, yes, because”	“Yes, I just will”	“Yes, I just will”	“Yes, I just will”	“Yes, he will just get invited”
15	“No, cause I don’t want to”	”No, I don’t want to”	“Mostly not, I wouldn’t like to play with him”	“Not my snack or toys”	“No, I don’t want to”	“No, I don’t want to”	“No, I don’t want to”

17	"Yeah, firefighters"	"Yes, talk about the leprechauns"	"Yes, cause I love him"	"Yes, cause he is my friend"	"Yes, just because"	"Yes, superheroes or farmer, I can't play with him"	"No, he didn't invite me to my birthday party"
20	"I think so, soccer I guess"	"I guess so, rainbows and flowers"	"I guess so, but I don't know him"	"I think so, because I think his name..."	"I would like to sit by him because he is so cute"	"Yeah because he is so intelligent"	"No, it's not a boy girl party, it is a girl party"

Play Interactions. Within Group One, nine of the ten participants stated that they will play with the AAC user. Eight of those participants commented that they will play an activity involving or related to a farm. Participant 5 stated, "Yes, 'cause he is nice, play farm." When asked if they will play with the boy on the playground, Participant 7 stated, "Yes, tractors." Only Participant 19 stated he did not know if he will play with the boy in the video, stating, "Yeah, maybe I like him, maybe I don't like him."

Unlike in Group One, in which eight of the ten participants commented they will play a farm activity with the boy and nine of the ten participants stated they will play with him, only four participants in Group Two stated they will play farm-like activities. However, eight of the ten participants stated they will play with him, some indicated a specific activity like Participant 12, "Yes, cars" while others like Participant 8 stated she will play "...anything he might want." Participant 17 stated he will play farm "Yes, superheroes or farmer", but he "Can't play with him [AAC user]." The remaining six participants commented on a variety of play activities. Participant 8 stated she will play,

“...Anything he might want.” Participant 20 stated she will play soccer with the boy and also stated she will play on the playground because, “...he is so intelligent.”

Friendship/Likability toward the AAC User. Participants in Group One displayed overwhelmingly positive attitudes toward the AAC user. Not only did eight of the ten participants respond favorably to majority of the questions presented, but five out of the ten participants also made reference to being friends with the boy or that he was nice. Participant 13 responded, “Yes, we can play on the slides, cause he is my best friend.” Participant 2 stated, “Yes, I like him” when he was asked if he will share his snack with the boy.

The majority of the children in Group Two were also positive. Six of the ten participants answered positively to questions; they explained they will interact with the boy because he is their friend or he is nice. Participant 4 and Participant 14 indicated they will interact with the AAC user; however, they did not explain why and commented, “I don’t know why” or “I just will” when asked why they will play or interact with the boy. When Participant 11 was asked if she will sit next to him during circle, she stated, “Yes, that is what friends do.” Although Participant 17 stated that he will not invite the boy to his birthday or play with him on the playground, he did state, “Yes, cause he is my friend” in response to if he will share his snack or toys.

Unfamiliarity with the AAC User. In Group One, the control group, three participants, who had responded positively to previous questions about the child in the video, responded negatively when they were asked if they will invite the boy to their birthday party. Participant 1 had stated that she will play with the AAC user because he

was her 'best friend'; however, when asked if she will invite him to her birthday she stated, "No, him don't know my house." Participant 9 who had also said he will play with the boy stated, "No, I don't know where he lives, can't invite strangers." Participant 19, who had responded negatively to all the previous questions, also stated "No, he doesn't know where my house is" when he was asked if he will invite him to his birthday party.

Similarly, the participants in Group Two, who generally responded favorably, did not when they were asked if they will invite the boy to their birthday. Participant 6, who said that she will play farm with him, stated "No, my mom doesn't know his name or his address" when she was asked if she will invite him to her birthday. Participant 20, who had stated she will play and sit next to the boy because he was "so cute" and "so intelligent", stated she will not invite the boy to her birthday because "It's not a boy girl party, it is a girl, girl party."

Negative Attitudes toward AAC User

Although the majority of participants in Group One demonstrated positive attitudes, two participants responded negatively to all questions and one participant responded negatively to five of the seven questions. Participant 18 and Participant 19 both responded negatively to all questions. Participant 18 did not provide any explanations to why he did not want to interact with the boy, other than stating, "I don't want to." Participant 19 was the only individual, in Group One, who made reference to the boy using an AAC device to communicate in the video; he said, "I don't know his name, he was playing, he did that things then he talked." When asked if he will be the boy's friend, Participant 19 stated, "Maybe, maybe not, no, I don't like weird guys." He

also stated, “No I don’t like to talk like him, no” when he was asked if he will talk to the AAC user.

In Group Two, two of the ten participants responded unfavorably to all interactions with the AAC user. Participant 3 responded unfavorably because he did not know the boy and stated, “No, because I don’t know him” when asked if he will play with the boy and “No, because he is a stranger” when he was asked if he will be his friend. Participant 15 responded similarly to Participant 18, in Group One, stating he did not want to interact with the boy, “Mostly not, I wouldn’t want to play with him.”

Although he responded negatively to all of the questions presented, he did not provide an explanation. It is unknown if his negative attitudes are related to the boy’s difference in communication style or his unfamiliarity with the child.

CHAPTER 4: DISCUSSION

The purpose of this research was to explore issues specifically related to the attitudes of preschool-aged children toward a peer who uses an AAC device to communicate and the potential effect of a personal experience with an AAC device on their attitudes. Additionally, the study measured the children's performance on a false-belief test to investigate the possible relationship between theory of mind and attitudes toward peers who use AAC. Overall results indicate that preschoolers responded positively to a peer using an AAC system and were not negatively affected by the use of the AAC system. In addition, when provided a personal experience with the device, children's attitudes were not negatively influenced; however, they were more aware of the device the boy was using.

Children begin to develop negative or rejecting attitudes toward individuals with disabilities by four years of age (Gerber 1977). Unfortunately, because of the negative attitudes and biases children who use AAC may reject their communication systems if they feel the systems makes them appear different. Rejection of their communication systems may be influenced by a variety of factors, including the lack of opportunities, lack of motivation from communication partners, and feelings that the system was socially unaccepted (e.g., reported as “uncool” or “embarrassing”; Johnson et al., 2006). Johnson et al. (2006) also reported that AAC users may reject their communication systems if communication partners are not encouraging the use of the system. Children are more likely to reject or abandon their systems due to perceived stigmas that make them appear different and make them stand out from their peers in negative ways

(Johnson et al., 2006). Without access to AAC, children may become isolated, and there can be detrimental effects on the child's development of language, social relationships with peers, and self-confidence (McCarthy and Light, 2005).

The current study is an exploration into the attitudes and biases preschoolers have toward a peer who uses an AAC device. There were two main research objectives. The first was to investigate the attitudes of preschoolers toward an unfamiliar child using AAC. The second objective was to determine whether or not having a personal experience with the AAC system influenced the attitudes of the preschoolers toward the AAC user. Finally, a false-belief test was included to explore a possible relationship between theory of mind and attitudes toward a child who used AAC was also evaluated.

Sally and Anne Interpretation

Many researchers have used the "Sally and Anne" false-belief test to assess whether or not a child demonstrates theory of mind (Frith and Happe, 1999). The "Sally and Anne" false-belief test is used to determine if children around the age of four are able to take the perspectives of others. The purpose of this test was to determine if children, at four years, were able to take the perspective and understand the beliefs of the boy in the video. Only three out of the twenty participants answered the false-belief question correctly. The three participants who answered correctly were Participant 2, Participant 9, and Participant 13, and they were in Group One. The participants were ages, 4:4, 4:9, and 4:5, respectively. Given the small sample size in this study (i.e., 20 participants), it is not possible to determine whether these results represent the larger population of children 4:0-4:11

In agreement with Bloom and German (2000), the “Sally and Anne” false-belief test proved to be difficult for most of the participants in this current study. Bloom and German (2000) reported that false-belief tasks require much higher cognitive and linguistic skills than theory of mind alone. Individuals must have adequate auditory and visual memory along with highly developed language processing skills to “pass” a false-belief test (Bloom and German, 2000). It would be beneficial to study multiple measures of false-belief and theory of mind with this population to assess the validity of the measures and their relationship to attitudes toward peers.

Attitudes toward a Child Using AAC

It has been reported that children around the age of four begin to develop attitudes and biases towards individuals with disabilities (Gerber, 1977; Gertner et al., 1994; McCarthy & Light, 2005). Furthermore, children in preschool prefer to develop friendships and relationships with peers who are typically developing over peers who present with communication impairments (Gertner et al., 1994). Gertner et al. (1994) reported that typically developing children were preferred by their peers and children with SLI and English as second language learners were not. This study indicated that children may select and develop relationships based on language and communication competence (Gertner et al., 1994).

Children may present with negative biases toward a peer with a disability because of multiple factors, including physical disabilities (e.g., drooling, use of a wheelchair), speech impairments (e.g., articulation disorders, dysarthria), language impairments (e.g., decreased comprehension), or the use of AAC systems (e.g., using a computer-based

system to communicate). The present study was designed to control factors related to biases toward disabilities, except the use of an AAC system.

Nine of the ten participants in Group One stated they will play with the boy, while eight of the ten participants in Group Two stated they will play with him. The children in both groups appeared to react positively toward the child using AAC in the video.

Although research suggests that children develop biases against peers with disabilities, the participants in this study did not appear to respond negatively. This may have been the result of focusing the children's attention on the use of the AAC system and not on a physical, speech, and/or language impairment. Children's biases may be independent of the use of AAC and more directed toward the physical appearance or skill level of a peer.

The participants in the study were provided with an explanation that children with disabilities who cannot talk may use AAC; however, this did not seem to influence their opinions of the child using the device in the video. One participant in Group Two, Participant 19, made two comments indicating he would not interact with the boy potentially due to his perceived disability, stating, "I don't like to talk like him, no" and "Maybe, maybe not, no I don't like weird guys." His comments were the exception, as none of the other participants in either group made negative comments about the boy's potential disability.

Influence of Personal Experience using AAC

Overwhelmingly, children in Group Two described their experiences using the device as positive. Children enjoyed the novelty of using the device to talk, felt it was

easy to use, and were satisfied with the device. Two participants experienced frustration with locating vocabulary on the device to interact with the researcher.

Previous research suggested that attitudes toward a child with a disability improve following education about disabilities, experience with devices (e.g., wheelchairs, AAC systems), and exposure to children with disabilities (Favazza and Odom, 1997). Children who do not have experience with disabilities have been shown to have less positive attitudes toward peers who have a disability or use AAC (Favazza and Odom, 1997; Favazza et al., 2000; Light and McCarthy, 2005). As such, it would be logical to expect that the children in the current study who had a hands-on experience with the device would have a more positive attitude toward the child using the device in the video. The anticipated results were not obtained. This was because participants with and without the personal experience with AAC responded positively to the peer.

Of note, children without the AAC experience (i.e., Group One) did not seem to notice the child's use of the AAC system. They commented about the child's play when asked to describe him. Only one child, Participant 19, referred to the use of the system using gestures. He stated, "I don't know his name, he was playing, he did that things then he talked" as he imitated pushing buttons on the device. While the participants in Group Two were also positive in their responses about the child using the device in the video throughout the interview, when asked to describe the child they viewed, four of the ten made comments only about his play, two made comments about his play and his communication, and four made comments only about his communication. The children in Group Two appeared to be more aware that the child did not use speech to communicate

and that he relied on the AAC device; however, their attitudes toward the child remained overwhelmingly positive.

Negative Responses

Although the participants' attitudes toward the child who used AAC was overwhelmingly positive, there were a few negative responses. Participant 19, the only child in Group One who appeared to notice that the child in the video used the device to communicate, stated that he didn't know if he would play with the child in the video, he said, he didn't "like to talk like him" and he didn't "like weird guys". Although many of his responses were noncommittal (e.g., "maybe", "I don't know"), his responses were overwhelming more negative compared to other participants. His responses may have been more typical of what research has suggested about children's attitudes toward peers with disabilities. A larger sample size may reveal more children with similar to Participant 19.

Two other participants exhibited some negative responses. Participant 3 responded negatively to interacting with the child in the video, primarily because the child was unfamiliar (e.g., "No, because I don't know him"). Participant 15 said, "I don't want to", five times when talking about interacting with the child in the video. He didn't elaborate, so his responses are difficult to interpret.

Influence of Gender

Results of this current study support Beck et al. (2000a) which stated that girls generally have more positive attitudes than boys toward peers who use AAC. In the current study, two boys in Group One and two boys in Group Two displayed negative

attitudes toward the boy in the video. Participant 19, in Group One, when asked, “Will you be his friend?” stated, “Maybe not, no, I don’t like weird guys.” However, Participant 3, in Group Two, stated he would not play with him or be his friend, because he did not know him. Whereas four out of eleven boys in the study displayed negative attitudes toward the peer, none of the nine girls participating in the study revealed any negative attitudes. However, one female, Participant 6, responded “no” when she was asked if she would invite him to her birthday party and if she would share her snack with him. Her explanation however, demonstrated she was aware she was not allowed to share her snack at school, and the peer could not come to her birthday party because her mother did not “know his name or address.”

Limitations and Directions for Future Research

In general, the results of the study demonstrate that the preschool participants displayed overwhelmingly positive attitudes toward a peer who used AAC to communicate, with or without personal experience using the AAC device. Several factors may have influenced the positive attitudes across the two groups. These factors include the lack of an obvious disability (e.g., drooling, use of a wheelchair, speech/language impairment), unfamiliarity with the child using AAC, difficulty with taking others’ perspectives, and task complexity. It is important to continue to investigate these factors to determine their influence on attitudes toward children who use AAC.

Lack of an Obvious Disability. The video shown to all participants presented a boy who did not speak and used an AAC device to communicate during a play interaction with an adult. Although he used the AAC device to communicate and the children were

provided with education about AAC and disabilities, he did not present with any other characteristics that may indicate he had a disability (e.g., use of a wheelchair, physical characteristics). The boy in the video did not present with a physical disability, so participants might focus on the use of the AAC device and not on the physical characteristics of the individual. The participants, especially those in Group Two, may have thought he was just pretending he could not talk, like they had been asked to do. McCarthy and Light (2005) stated research videos used in other studies have included individuals with and without disabilities and some studies have only included partial photographs of the individual using AAC (e.g., an individual's hand was shown). Future research to compare attitudes toward a child with, and without, a physical disability that uses an AAC device may be beneficial to determine what has an impact on the preschoolers' attitudes toward a peer who uses AAC. Research addressing other possible biases toward children with disabilities also needs to be addressed (e.g., children with speech impairments; dysarthria and other language impairments).

Questions Complexity. Although most of the children did not appear to have any difficulty answering the questions, a few children evidenced contradictions within their answers. They may not have fully understood the question or were unaware of how to appropriately respond. In Group One, Participant 1 often stated the boy was her “best friend” or that she loved him; however, when she was asked about inviting him to her birthday, she stated, “No, him don’t know my house.” Although she seemed to be aware she did not know the boy, when she stated he didn’t know where her house was, she also stated they were best friends. Of note, another participant, Participant 17, stated that he

will be friends with the boy because “I love him”, although he stated he will not invite him to his birthday.

Sample Size. The current study included twenty participants, divided evenly between Group One and Group Two. The total number of participants is too small to generalize the results of this study to all preschool-aged children. Future studies should include a larger sample size.

Demographics. All participants attended the same preschool in a predominately middle-class, suburban community. The preschool was affiliated with a church, in which the belief system may have been influential in the development of these particular preschoolers’ attitudes and biases. Due to limited diversity amongst participants, results may not be able to be generalized an entire population of preschoolers or preschoolers in different settings.

Sally and Anne False-Belief Test. The preschoolers demonstrated difficulty with the ability to take others’ perspectives or beliefs (i.e., theory of mind), as evidenced by responses to the “Sally and Anne” false-belief test. More empirical data on this and other false-belief measures are imperative, to determine if there is a valid way to truly assess preschoolers’ ability to take others’ perspectives. In summary, the “Sally and Anne” false-belief test was not an adequate measure to assess the participants’ theory of mind development.

Familiarity with the AAC user. Many of the participants, when they commented they would not interact with the boy explained it was because they were unfamiliar with where he lived, they didn’t know his name, or that they knew he was a stranger. When

presented with the question, “Will you invite him to your birthday?” half the participants in both groups said they would not, although many of them said he was their friend and that they would play with him. In future research, it may be beneficial to remove the question about whether or not children will invite the peer to their birthday parties, as the responses did not reflect the positive responses made about the boy in other questions. Furthermore, it may be beneficial for the participants to have a live interaction with a peer using AAC, as it may reveal for a greater influence on the children’s attitudes toward the peer, either negative or positive.

Summary

This study demonstrated that the preschool children in the study have not formed negative biases toward a peer who uses AAC to communicate. Results may have varied if other factors have been included (e.g., physical disability); however, it was imperative to control for all other potential biases to isolate the preschooler’s attitudes and biases specifically toward the use of AAC. Participants in both groups, control and experimental, exhibited positive attitudes toward a peer who used AAC. Due to the overwhelmingly positive attitudes, it is difficult to determine how much of an effect the AAC system played in the children’s attitudes. However, most children who were provided a personal experience with the system, participants in Group Two, appeared to enjoy using the system. Subsequent to personal experience with the AAC device, participants in Group Two commented on the boy’s play and referenced the system he was using. While almost all children commented about the boy’s play activity, none of the participants in Group One commented on the use of the system. Further research is

needed in this area to determine if these results can be generalized to a larger population of preschoolers.

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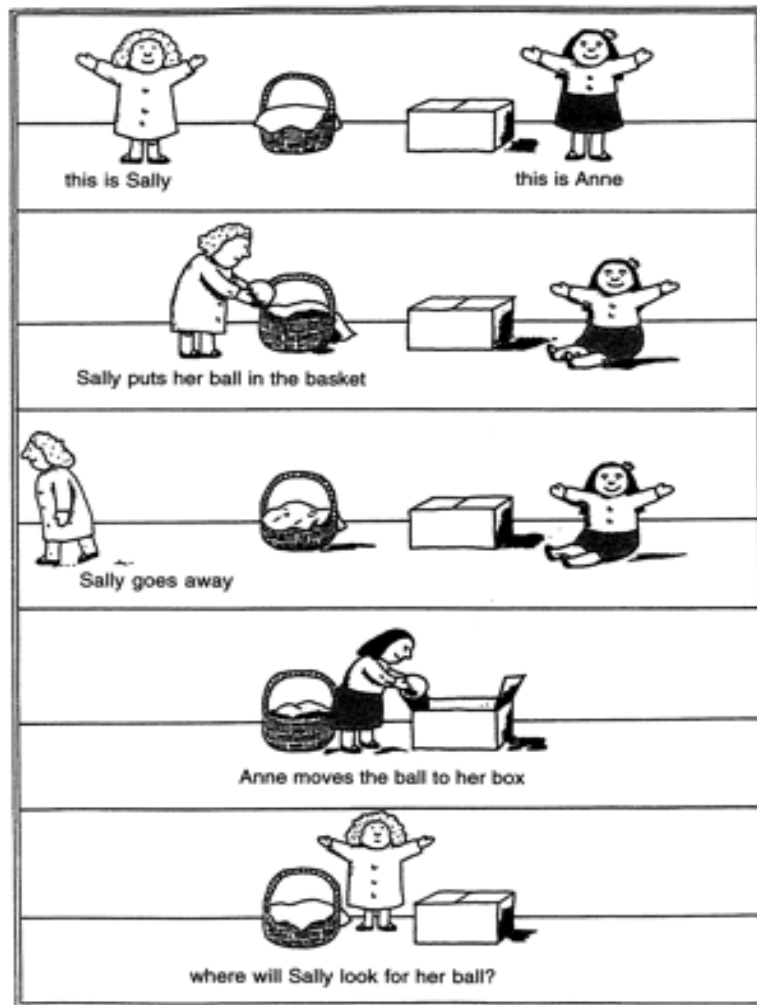
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APPENDIX A: STEP 1 – SALLY AND ANNE THEORY OF MIND SCRIPT:

Adapted from Baron-Cohen, Leslie, and Frith (1985)

Group One and Two:

“I am going to read you a short story. Listen carefully ok. I am going to ask you a question about it. Ready?”



APPENDIX B: STEP 2 – INTRODUCTION

The researcher will read the following script to participants in Groups One and Two to introduce the concepts of disabilities and AAC.

Disability:

“A disability is something that keeps you from doing something that other people can do. Some children can’t see like you do and they may need glasses. Some children can’t hear like you do and they need hearing aids. Some kids can’t walk like you so they may need crutches or a wheelchair. Some children can’t talk like you and they need to use sign language or a computer to help them talk.”

AAC:

“AAC, can you say that? That’s right; AAC is something a person uses to help them talk if they can’t. Some children who can’t talk like you can and may use sign language to help them talk. Other children who can’t talk may use a computer to help them talk with people.”

APPENDIX C: STEP 3 – PLAY ACTIVITY WITH OR WITHOUT AAC DEVICE

Group One- Control Group

The researcher will read the following.

“I brought some toys today. Let’s play for a few minutes, and then I am going to show you a video. I have farm animals. I think I will be the farmer. Why don’t you pick an animal?”

The researcher will play with the child for a total of five minutes, and then she will begin Step 2.

Group Two- Experimental Group

The researcher will read the following.

“Let me show you the AAC device I was talking about. This is what some children use to talk. You can press these buttons and it will say words for you. I will let you try it out for a couple of minutes.”

The child is given two minutes to explore the AAC device. Then, the researcher will read the following.

“I brought some toys today. Let’s play for a few minutes, and then I am going to show you a video. I have farm animals. I think I will be the farmer. Why don’t you pick an animal? I know, how about if you try using the AAC device to talk instead of using your mouth! Let’s see if you can pretend you can’t talk and push the buttons on the AAC device to talk. Let’s play!”

Interview Questions following play activity

1. What was it like to use the AAC device to talk?
2. Was it easy or hard?
 - a. Why?
3. Did you like using it?
 - a. Why/why not?

APPENDIX D: STEP 4 – VIDEO

The researcher will show the children in Groups One and Two the video of a child using an AAC device to communicate while playing with farm animals. The researcher will read the following.

“We are going to watch a video. In this video a boy is using AAC to talk. I want you to watch the video with me.”

The researcher shows the child the video. The following is a transcript from the video.

Researcher: *Hi! How are you today?*

1. Child: *Good.*

Researcher: *Did you have fun at school?*

2. Child: *Yes!*

Researcher: *What did you do?*

3. Child: *Played and painted!*

Researcher: *You painted? Oh, what did you paint?*

4. Child: *A picture*

Researcher: *A picture? Hmm, let me guess. Did you paint flowers?*

5. Child: *No*

Researcher: *Did you paint animals?*

6. Child: *(Yes and Dad.) No, my mom*

Researcher: *You painted your mom? Wow!*

7. Child: *Yes and Dad!*

Researcher: *Did you paint your brothers too?*

8. Child: *Yes and my dog!*

Researcher: *Wow! That sounds like a very cool picture!*

Are you ready to play?

9. Child: *Yeah*

Researcher: *Alright. What animal do you want to be?*

10. Child: *The cow*

Researcher: *Here is the cow for you. I think I'm gonna be the horse.*

11. Child: *Moo!*

Researcher: *Neigh! I'm thirsty!*

12. Child: *Moo, me too!*

Researcher: *Come this way cow!*

13. *Yeah.*

Researcher: *Come this way with me.*

14. Child: *Wait for me.*

Researcher: *Mmm this is good water.*

15. Child: *The pig is thirsty too*

Researcher: *Oh, do you want the pig?*

16. Child: *Yeah, he's thirsty*

Researcher: *Oh, here you go!*

Research: *I want to play too!*

17. Child: *Come on horse!*

Researcher: *I'm coming!*

18. Child: *Playing in the mud!*

Researcher: *Aww, yuck!*

19. Child: *Come on, it's fun! I don't want to play in the mud! I don't want to play in the mud that's gross.*

Researcher: *No!*

Researcher: *What are you animals doing?*

20. Child: *No!! Run!!*

Researcher: *You're all gonna have to get baths!*

Researcher: *Where are you going?*

22. Child: *Swimming!*

Researcher: *You're going swimming? You better hurry up; it's almost time for dinner!*

23. Child: *Aww, not yet!*

Researcher: *A few more minutes then it will be time to eat*

24. Child: *OK! We're coming (with cow and pig)*

Researcher: *Alright, are you guys hungry? Let's go!*

Researcher: *Here's the food*

25. Child: *Yummy!*

Researcher: (horse) *Ugh, I'm getting so full!*

26. Child: *Me too!*

Researcher: (as herself) *All right we have to start to clean up! Can you help me?*

27. Child: *Yeah*

Researcher: *Here put the animals in the bucket.*

28. Child: *Bye animals.*

Researcher: *We'll play again tomorrow!*

APPENDIX E: STEP 5 – INTERVIEW

After the video is finished, the researcher will read the following to assess the child's attitude toward the child in the video.

“Ok, now I am going to ask you some questions about the video you watched. I want you to answer them the best that you can.

1. Tell me about the boy you just saw in the video.
2. Will you play with him?
 - a. Why not?
 - b. What will you play?
3. Will you talk to him?
 - a. Why not?
 - b. What will you talk about?
4. Will you be his friend?
 - a. Why/ why not?
5. Will you share your toys or snack with him?
 - a. Why? Why not?
6. Will you sit with him during circle?
 - a. Why/why not?
7. Will you play with____ at recess/on the playground?
 - a. Why/why not?
8. Will you invite him to your birthday party?
 - a. Why/why not?