

2008

Increasing the communicative behaviors of children with low levels of communicative initiations in an inclusive preschool classroom

Susanna Melikyan

Louisiana State University and Agricultural and Mechanical College

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_theses



Part of the [Human Ecology Commons](#)

Recommended Citation

Melikyan, Susanna, "Increasing the communicative behaviors of children with low levels of communicative initiations in an inclusive preschool classroom" (2008). *LSU Master's Theses*. 3049.
https://digitalcommons.lsu.edu/gradschool_theses/3049

This Thesis is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Master's Theses by an authorized graduate school editor of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.

**INCREASING THE COMMUNICATIVE BEHAVIORS OF CHILDREN
WITH LOW LEVELS OF COMMUNICATIVE INITIATIONS
IN AN INCLUSIVE PRESCHOOL CLASSROOM**

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Science

in

The School of Human Ecology

by
Susanna Melikyan
B.S., Yerevan Hrachia Acharyan University, 2001
May 2008

TABLE OF CONTENTS

ABSTRACT.....	iv
CHAPTER 1. INTRODUCTION	1
1.1 Statement of Problem.....	1
1.2 Background	1
1.3 Importance of the Area of Research	2
1.4 Purpose of the Study	4
1.5 Research Questions	4
1.6 Conceptual Framework.....	4
1.7 Principles of Reinforcement	4
1.8 Social Cognitive Learning Theory.....	5
1.9 Research Design.....	6
1.10 Summary	7
CHAPTER 2. REVIEW OF LITERATURE	8
2.1 Benefits of Communication in Preschool Children	8
2.2 Definitions of Communication	9
2.3 Interventions to Increase Communication	13
2.4 Teacher Interventions.....	13
2.5 Peer Interventions	16
2.6 Summary and Conclusions	19
CHAPTER 3. METHOD	21
3.1 Setting	21
3.2 Participants.....	21
3.3 Behavior Definitions.....	22
3.4 Observation System	23
3.5 Group Normative Data.....	23
3.6 Interobserver Agreement for Group Normative Data.....	25
3.7 Experimental Conditions	25
3.8 Interobserver Agreement for Baseline and Intervention.....	28
3.9 Fidelity	28
CHAPTER 4. RESULTS	30
4.1 Interobserver Agreement for Applying Verbal, Model, Physical Prompting by the Teacher and Independent Exhibition of Specific Communicative Initiations by the Target Children...	34
CHAPTER 5. DISCUSSION.....	35
5.1 Clinical Implications	36
5.2 Limitations	36
5.3 Future Work	36
REFERENCES	37

APPENDIX A: APPLICATION FOR EXEMPTION FROM INSTITUTIONAL OVERSIGHT	42
APPENDIX B: CONSENT FORM	43
APPENDIX C: DATA SHEET	45
VITA.....	46

ABSTRACT

The purpose of the study was to measure the current level of communicative initiations exhibited by children enrolled in the LSU preschool program. Child communication was categorized as specific, unclear, or negative. These descriptors referred to peers ability to interpret the target child's communication. Additionally, peer responses were recorded as either positive or negative based on their reaction to the target child's communication. Children identified with either low levels of communicative initiation or unclear/negative communications were targeted for the intervention. Single-subject research methods were used to record each child's communicative behaviors. A least-to-most assistive prompting (Horner & Keilitz, 1975) intervention was applied as teacher mediation in the form of coaching. All three children demonstrated an increase in their specific communication toward peers when the LtM teacher prompting intervention was applied; additionally, increases in positive peer responses were also observed.

CHAPTER 1. INTRODUCTION

1.1 Statement of Problem

Research suggests that children's interactions with others begin early in life and play a significant role in the child's social, cognitive, motor, and linguistic development (Rodriguez & Lana, 1996). As children grow and take on more responsibility for social interactions with peers, they need to develop various communication skills (Ghuman, Peebles, & Ghuman, 1998). Studies of language development of typically developing children show that children effectively communicate by using nonlinguistic communicative behaviors (e.g., eye contact, gestures, vocalizations, and combinations) long before producing their first true words (Bates, Camaioni, & Volterra, 1979; Carter, 1978). Through social interactions children learn appropriate social behavior and quickly learn what is socially acceptable and what's not (Campbell, 2002) is. Preschoolers with special needs (i.e., those with developmental, emotional, physical or learning difficulties) sometimes do not have the social and language skills needed to initiate or maintain either verbal or nonlinguistic communicative interactions with peers, a situation that can make children with special needs some of the least preferred play partners of peers. The absence of basic social interaction skills of preschoolers with special needs or with low levels of communicative initiations limits their active participation in peer-group social interaction (Odom, Chandler, Ostrosky, McConnell, & Reaney, 1992). To prevent social isolation from peers, intervention to teach social communication skills to preschoolers with identified disabilities is warranted.

1.2 Background

Communicative initiations play a significant role for the children's development of cognitive and social interactions with peers, and can be exhibited in different ways, such as

verbal and non-verbal behaviors or in some cases combinations of both. Studies that have focused on the peer interactions of preschool children with disabilities have shown that the ability to interact successfully with peers is an important communicative skill that is critical to the establishment and maintenance of healthy relationships (Liiva & Cleave, 2005). Children who have poor social interactions with peers are at greater risk for experiencing loneliness, which is associated with undesired isolation and negative feelings. Adults have the ability to interpret the communicative behavior of young children, even in the presence of social and communicative deficits, whereas peers are usually not able to interpret these communicative behaviors.

1.3 Importance of the Area of Research

The development of appropriate social skills at the preschool level “plays a critical role in a child’s well being and later development” (McGinnis & Goldstein 1990, p. 2). Specifically, increasing the social communicative skills of preschoolers with identified disabilities to a level that is closer to that of peers, in order to increase children’s communicative initiation behavior, may decrease their risk of neglect or isolation from peers. Inadequate social skills are correlated with negative future outcomes for individuals with and without disabilities and have been associated with high school drop-out rates and delinquency (Kupersmidt, Coie, & Dodge, 1990). During the preschool years both parents and teachers are more concerned with the social development of young children with special needs than with their academic development. Children with disabilities were often rejected due to behavioral excesses and deficits, which is a concern for both general and special educators (Kister & Gatlin, 1989). Therefore, the intervention of teachers and the development of methodology to enhance the social relatedness and social competence of people with developmental disabilities need high attention (Breen & Haring, 1991). There have been few studies considering the responsiveness of teachers to the

communicative attempts of children with autism in classroom settings. One study of children with disabilities showed low rates of teacher responses to children's pre-linguistic behaviors, which appeared to reflect the fact that the children's pre-linguistic signals were highly idiosyncratic and subtle (Houghton, Bronicki, & Guess, 1987). There were very few empirical studies that have analyzed optimal instructional contexts for students with moderate and severe disabilities in general education classrooms (Logan & Malone, 1998).

Brady, Steeples, and Fleming (2005) indicate that information about children's pre-linguistic communication development may have a useful role for intervention planning and that intervention aimed at increasing pre-linguistic communication may lead to improved language outcomes. Many children with developmental disabilities rely on pre-linguistic gestures and vocalizations as their primary means of communication well into the toddler and preschool years. Similarly, pre-linguistic children with developmental disabilities frequently produce non-speech vocalizations to communicate, and these vocalizations often accompany gestures. Results from the study indicates that children not only use more basic gestures and vocal skills, and communicate less frequently and for more restricted purposes, but also they appear less adept at understanding the social rules of conversational exchanges. As children become more sophisticated in their pre-linguistic communication development, they are communicating to comment, as well as to request (Brady et al., 2005).

Communication plays an essential role for child's language and cognitive abilities development. Poor or the absence of necessary social interaction skills decrease or limit children's active participation in peer social interaction, which could have an impact on the child's future life. Communicative initiations give children an opportunity to share, to learn new skills, to practice social skills and to behave differently. Using communicative initiations during play time preschool age children learn how to solve problems, make decisions and to take a new

role in the environment in which they live and act. Children are able to develop and apply communicative skills in the new environment and situations.

1.4 Purpose of the Study

The purpose of particular study is to increase the communicative initiation behaviors of preschool children with identified disabilities in order to develop language, social, and cognitive skills. This study had identified the communicative initiation level of children with identified disabilities and the child with the lowest level of communicative initiation. The intervention was applied to develop positive social interaction skills. There is an assumption that appropriate social behavior as defined in the study is a desirable outcome for children with identified disabilities and children who have some difficulties in communicating with peers.

1.5 Research Questions

There are two research questions that guide the current study: 1) How can we increase the communicative initiation behaviors of children with identified disabilities be increased to the level of communicative initiation exhibited by peers; 2) How can the specific (understood) communicative initiation behavior of children with identified disabilities be increased to the level of specific (understood) communicative initiation behavior exhibited by peers.

1.6 Conceptual Framework

The guiding framework for this study is based upon the principles of reinforcement (Skinner, 1978) and social learning theory (Bandura, 1977).

1.7 Principles of Reinforcement

B. F. Skinner conducted pioneering work in psychology and developed his own school of radical behaviorism, which seeks to understand behavior as a function of the environmental histories of reinforcing consequences. Skinner (1974) claimed that if one wants to produce a society in which everyone is happy, then to concern ourselves with the steady and

straightforward control of behavior. Reinforcement is a process of shaping behavior by controlling the consequences of the behavior, using a combination of reinforcers and/or punishers to reinforce desired behavior or to extinguish unwanted behavior (Skinner, 1953). According to Skinner (1978), any behavior that elicits a consequence is called *operant behavior*, because the individual operates on his or her environment. Reinforcement theory concentrates on the relationship between the operant behavior and the associated consequences, and it is sometimes referred to as operant conditioning. He held the idea that reinforcers, which increase the likelihood that a behavior will be repeated, could be positive or negative. An example of how positive reinforcement could be used in study would be to give the child praise for interacting with others, thus increasing the likelihood of future initiations. Praise have been used in this study as the encouragement for further social interactions with peers.

1.8 Social Cognitive Learning Theory

Bandura (1977) in his theory of “Social cognitive learning” emphasizes the importance of observing and modeling the behaviors, attitudes, and emotional reactions of others. Social cognitive learning theory explains human behavior in terms of continuous reciprocal interactions between cognitive, behavioral, and environmental influences. Social cognitive learning theory focuses on the learning that occurs within the *social context*. It considers that people learn from one another, including such concepts as observational learning and modeling. General principles of social learning theory include the following: (a) people can learn by observing the behavior of others and the outcomes of those behaviors, and (b) learning can occur without a change in behavior, that is people can learn through observation alone, although their learning may not necessarily be shown in their performance; (c) cognition plays a very important role in learning. Social cognitive learning theory has become increasingly cognitive in its understanding and interpretation of human learning.

1.9 Research Design

A single-subject research design was used to record each child's communicative initiation prior to and during intervention. In contrast to quantitative studies, which sample large numbers of individuals prior to and following an intervention (Snedecor & Cochran, 1989), single-subject research designs examine the performance of individuals before and during an intervention (Alberto & Troutman, 2006). In this study, communicative initiation (specific, unclear, or negative) and peer responses (positive or negative) were examined before and during the intervention and again during a follow-up probe. In single-subject designs, individuals are compared to themselves instead of to other groups (Alberto & Troutman, 2006). In this study, each child's baseline level of communicative initiation was compared to their level of communicative initiation when the intervention was implemented. Experimental control is demonstrated by implementing the intervention across settings, people, or behavior at different periods in time and receiving the same outcome (Cooper, Heron, & Heward, 1987). This study focused on implementing the intervention across children and looking at its effect on communicative initiation.

Single-subject research designs rely on the demonstration of experimental control and replication of strong/large and consistent effects rather than statistical significance. The results of a study are said to have clinical significance if the intervention of the design shows an enhanced functioning, which is defined as an observable and measurable improvement in functioning for participants (Alberto & Troutman, 2006).

Single-subject research is beneficial because it answers applied research questions and consists of direct observations of performance. Researchers are able to focus on specific behaviors and provide treatment or intervention for the specific behaviors, such as communicative initiation. In single-subject research, experimental control is manipulated by

continuous assessment over time, which can be used to draw inferences about the effects of the intervention. Single-subject designs also evaluate the subject's behavior under different conditions (baseline and intervention), which allows the subject to serve as their own control (Kazdin, 1982). A multiple baseline design (see Kazdin, 1982) was used to measure the intervention across children. The intervention was introduced to each child separately.

1.10 Summary

The purpose of the study was to measure the current level of communicative initiation exhibited by children enrolled in the LSU preschool program. Child communication was categorized as either specific, unclear, or negative. These descriptors refer to a peer's ability to interpret the target child's communication. Additionally, peer responses were recorded as either positive or negative based on their reaction to the target child's communication. Children who were identified with either low levels of communicative initiation or unclear/negative communication were targeted for intervention. Single-subject research methods were used to record child behaviors. Teacher mediation was used as an intervention in the form of using least to most assistive prompting strategy; but it was determined based on the target children's needs identified through the baseline observations.

CHAPTER 2. REVIEW OF LITERATURE

The review of literature consists of an overview of 1) benefits of communication in preschool children, 2) definitions of communication, 3) interventions to increase communication in children with identified disabilities.

2.1 Benefits of Communication in Preschool Children

Haslett and Samter (1997) stated that communication is the context in which language and cognition develop. People need support from others to survive, and this compels us to communicate, to learn language to master the environment and interact with others starting from childhood. Through language and social interaction, children express their desires, explore the world, and help each other. It is believed that communication knowledge and communication skills develop simultaneously during children's interactions. Communication skills enable children to interact with others and especially effective interactions allow children to gain more knowledge and more skills. In typically developing (TD) children, good language skills have been shown to mediate children's facility with a variety of important social tasks, including sharing information, expressing feelings, directing behavior, and negotiating misunderstandings (Fujiki, Brinton, & Todd, 1996). Through the communicative initiation preschool age children share either verbally or nonverbally their ideas or information with others, such as when a child has discovered or found something new on the playground. Moreover, when children are together in the same environment they learn new skills very easily and quickly by imitating, repeating and applying their future actions. Those skills could be usual things that most preschool programs try to teach children such as counting, singing, making patterns and playing. Practicing social skills may include also taking new roles in the group, negotiating problems, turn taking and sharing. Communicative initiation benefits children by helping them develop social, language and cognitive skills. Studies have shown that in most developmentally

appropriate classrooms, children learn to work through conflicts by stating the problem, identifying solutions, and implementing a solution that is agreed upon by all parties (Haslett & Samter, 1997). Children learn to understand others through peer conflict resolution and other interactions. For many young children with disabilities, the absence of basic social interaction skills limit their active participation in peer group social interaction (Odom, Chandler, Ostrosky, McConnell, & Reaney, 1992); therefore, the role of the classroom teacher gains an increasing amount of responsibility for communication and language training with developmentally delayed children (Rhyner, Lehr, & Pudlas, 1990).

Human beings are able to learn language from childhood by interacting, sharing information, establishing new skills and developing these skills during life. Communication initiation has several benefits allowing preschool age children to develop social interactions with peers, verbal and nonverbal language, expression of feelings and cognitive skills.

2.2 Definitions of Communication

There have been various studies conducted in recent decades in order to evaluate, identify and assess the communicative and social initiation behaviors of young children. According to Hauck, Fein, Waterhouse, and Feinstein (1995), the concept of communication initiation was defined as the child beginning a new social sequence, distinguished from a continuation of a previous sequence by a change in partner, a change in activity, or a discontinuation of the previous sequence for at least 5 seconds. Researchers evaluated the communicative and social initiation behaviors of children with autism and cognitive impairment. In this study, thirty-one children with special needs were recruited from special education schools and public school special education classes. They used classroom observations during lunch time and free play time in order to examine the nature, frequency and the relationship of initiations to the child's language, nonverbal reasoning, face and affect discrimination, and functional social

development. Results showed that “frequencies of initiation to adults did not differ between groups, but the children [with cognitive impairment] initiated much more frequently to peers” (p. 579). Children with autism engaged in more ritualized initiations, and the children with mental impairments engaged in more playful initiations. The children with autism monitored the social environment more when forced into proximity with peers, whereas the children with mental impairment initiated more in the unstructured situation. Initiation of children with autism to peers was unrelated to severity of autism, but was related to cognitive skills, including vocabulary and comprehension of affect, whereas initiations of children with mental impairment were unrelated to cognitive level (Hauck et al., 1995). Consequently, if the child does not have autism, we can intervene during an unstructured situation.

As part of communication initiation, Iacono, Carter, and Hook (1998) suggested the idea of intentional communication, which is an event in which a child directs a motor and/or vocal act toward the adult and waits for a response from an adult. Communicative sampling procedures were used to explore how behaviors other than *co-ordinated attention* (that is, the child focuses not only on the object of desire, but co-ordinates attention that shifts between the object and the adult) may signal emerging intentionality (observations of interaction between adult-child dyads engaged in free play) between four young students with severe intellectual and physical disabilities, in addition to sensory deficits. The study indicated that co-ordinated attention was rarely demonstrated, and the lack of clarity in signaling the intentionality of communicative behaviors had serious implications for the assessment and provision of appropriate interventions for individuals with severe and multiple disabilities. Therefore, that has serious implications for the assessment and provision of appropriate interventions for children with identified disabilities.

MacDonald, Anderson, Dube, Geckeler, Green, Holcomb et al. (2006) identified another form of communicative initiation, he called *joint attention* to refer to young children’s use of

“gestures and eye contact to coordinate attention with another person in order to share the experience of an interesting object or event” (p. 138). Twenty-six children diagnosed with autism spectrum disorders and 21 typically developing children, aged two to four years were studied. Children with autism had relatively minor deficits in joint attention responding and more severe deficits in joint attention initiation, relative to typically developing children. Results of this study showed that there are clear differences between the behavior of children with autism and typically developing children in joint attention responding and initiating. Accordingly, children with identified disabilities with low level of initiation usually perform no/few interest in sharing experiences with peers.

In recent years, communicative initiation has been referred to as a *social interaction*, which is defined as a reciprocal process in which children effectively initiate and respond to social stimuli presented by their peers (Bauminger, Shulman, & Agam, 2003). In this study, in order to see differences in the social interaction of the high-functioning children with autism and typically developing children (preadolescents and adolescents), the following methods were used: picture recognition method, social interaction observation, loneliness and loneliness self report. The results indicated that children with autism revealed a good understanding of both social interaction and loneliness, and they demonstrated a high level of social initiation. However, they spent only half the time in social interactions with peers compared with their matched counterparts, and they interacted more often with a typically developing child than with another child with special needs. Despite the differences between the two groups of children in frequency of interaction, a similar distribution of interactions emerged for both groups: mostly positive social behaviors, fewer low-level behaviors, and very infrequent negative behaviors. Children with autism reported higher degrees of loneliness than their typical age-mates and lower association between social interaction and loneliness. This study indicates that children

with disabilities are most likely to be lonely and one of the reasons could be the low level of communication initiation, which is necessary for development of social interaction.

Social interaction, as a form of communication initiation, has been explored by Weisel, Most, and Efron (2005). To explore communication initiation, four children with hearing impairment (ages 33 to 36 months) attending a special early education program or a regular kindergarten were chosen. The children were videotaped during free-play time for 45 minutes in both the special program and the regular program. Results of this study revealed the following: (a) “more initiations in the regular program than in the special program; (b) in the special program, much more successful initiations toward children with hearing impairment than toward hearing children; (c) vocalization as the most frequent strategy used with both hearing and hearing impaired partners; and (d) referential decisions about their initiations even among young children with hearing impairment (made by changing frequencies of various strategies according to a partner’s hearing status)” (p.162). This study indicated that the poor social interactions of children with hearing disabilities often have difficulties mainly because of vocalization. Having hearing impaired children in preschool educational programs that integrate them with hearing peers should consider the level of their communicative skills, which is essential in development of cognitive, verbal and social skills.

The above-mentioned studies have defined communicative initiation as an important component of social interaction, which includes a variety of both verbal and non-verbal behaviors. These skills are often related to a child’s cognitive abilities and verbal abilities. It has been documented in the literature that children with disabilities initiate less than their typically developing counterparts. Lack of communicative initiation/social skills has been shown to be associated with loneliness in children. Therefore, interventions should be designed to increase communicative initiation in young children.

2.3 Interventions to Increase Communication

For many young children with disabilities, the absence of basic social interaction skills limit their active participation in peer group social interaction (Odom, Chandler, Ostrosky, McConnell, & Reaney 1992); therefore, the role of the classroom teacher gains an increasing amount of responsibility for communication and language training with developmentally delayed children. Other studies have examined the use of peers as the intervention tool when attempting to increase the communication skills of children with identified disabilities (Whitaker, 2004). According to Laushey and Heflin (2000), there are two broad categories to promote social interaction. Those two categories are adult-mediated approaches and peer-mediated approaches. In adult-mediated approaches, an adult interacts with the child with the disability in ways designed to increase skills that are useful for peer interactions. This includes prompting, reinforcing, or eliciting the appropriate social behavior. In peer-mediated approaches, typically developing peers are selected and trained to facilitate improved social interaction with children with identified disabilities (Hundert & Haughton, 1992). Overall, effective social communication interventions teach and support target behaviors within situations that are parts of classroom routines and offer opportunities to practice communication and social interaction with peers.

2.4 Teacher Interventions

Based on the literature about importance of contingent responsiveness to successful communication and normal language development, it is clear that the more contingently responsive the teacher is to the child's communicative initiation attempts, the more likely the child will communicate and learn language. Rhyner, Lehr, and Pudlas (1990) research about teacher responsiveness to communicative initiation on developmentally delayed children confirmed the above-mentioned assumption. In this study, four children (ages 25-31 months) were randomly selected from two classrooms in an agency-based early intervention program for

children with identified disabilities. Two classroom teachers in the intervention program also participated as subjects in the study. As an observational method, videotaping was used in the classrooms at various times to record the behaviors of both the teacher and the child. The analysis of the child initiation behaviors showed that the children most frequently used combinations of communicative behavior such as eye contact, gestures (non-linguistic), and vocalizations/verbalizations (linguistic) in order to communicate with teachers. It was expected that the teacher would respond to most of the child's communicative initiations. Therefore, teachers were not very responsive to the child's behavior which may decrease the child's initiation attempts or increase the use of inappropriate behaviors (e.g., screaming, crying, etc.) to initiate communicative interactions.

Keen, Woodyatt, and Sigafos (2002) conducted a study to evaluate teacher's perception of pre-linguistic behavior in children with autism. Eight preschool children with autism and their teachers were interviewed using a structural protocol of Potential Communicative Acts (PCA). PCA has been used to describe behaviors that others might interpret as communicative initiation. From the interview, information was obtained about the child's informal or idiosyncratic behaviors which have been interpreted as the child's attempts to communicate. The study concluded that the teachers interpreted many of the forms of children's behavior, such as gestures, body movements, and facial expressions, as communication. It states that the applied interview protocol may be one way to identify and correctly document the communicative forms and functions of existing prelinguistic behaviors among children with developmental disabilities.

Research conducted by Gena (2006), examined the effects of inclusion on children with disabilities. This study demonstrated that social reinforcement (verbal statements such as "you are doing a great job!" a pat on the back or other forms of social approval) in combination with prompting procedures (verbal prompt or manual guidance to engage the child in interaction with

peers), provided by a shadow teacher, increased the social initiations as well as appropriate responding to peers' initiations of four children with autism during interactions with their classmates in preschool. It is noteworthy that the treatment benefits were obtained in a natural setting, so the initiations and replies were not cliché statements, but involved generalized language used appropriately in addition to use of the social context and generalized to new therapies.

According to Keen, Sigafos and Woodyatt (2005), when the teacher's responses to children's communicative attempts are low, it may have the same negative consequences as when parents do not respond consistently to the child's pre-linguistic communicative attempts (i.e., escalation to problem behavior or passivity due to extinction). However, it is not clear why parents and teachers might not respond consistently to the child's pre-linguistic behaviors. While it might be assumed that this is because the child's acts go unnoticed because they are highly idiosyncratic and subtle, it could also be that these acts are not in fact interpreted as forms of communication by the parent or teacher (Keen et al, 2005). The results of this study showed that teachers did identify a range of behaviors that they interpreted as communicative, but they didn't always respond to these acts when they occurred in classrooms. It is important to recognize and respond to children's communication behaviors in order to develop them and make them active participants in group social interactions.

Video modeling is a promising method for promoting social skills in children with special needs (Nikopoulos & Keenan, 2004). Children who watched the video imitated the observed behavior. The study examined the effects of video modeling on social initiation and reciprocal play of three children (7-9 years old) diagnosed with autism. The researchers used a multiple baseline design across subjects which allowed them to see the results of the changed behaviors. Each child watched a videotape showing a typically developing peer, and the

experimenter engaged in simple social interactive play using one toy. For all children, social initiation and reciprocal play skills were enhanced.

Another study conducted by Duffy and Fuller (2000), showed the effectiveness of music therapy in the social skills development in children with intellectual disabilities. “Music therapy is a goal-directed process in which the therapist helps the client to improve, maintain, or restore a state of well-being, using musical experiences and the relationships that develop through them as dynamic forces of change” (Bruscia, 1987, pg. 5). Two intervention programs (music group and non-music group) were designed in order to develop five target social skills: initiation, turn taking, vocalization, imitation and eye contact. For the music group program they used a cassette tape of pre-recorded classical music and original songs with explanations regarding procedures to be followed during the program, such as singing, playing instruments, dancing accompanied by music. The non-music program was identical to the music program except that particular non-musical activities were substituted for musical elements. This study concluded that music therapy is beneficial in developing social skills of children with special needs in the environment of children of the same age with the appropriate support from the teachers.

2.5 Peer Interventions

Odom, Chandler, Ostrosky, McConnell, and Reaney (1992) conducted a study of social interaction between the teacher and children with delayed development. This study explored the system for fading teacher prompts to children who served as peers in peer initiation intervention for young children with disabilities. The subjects were six preschool children with disabilities, enrolled in two special education classrooms and ten children without disabilities. In this research, peer-initiation intervention was used, where socially competent peers were taught to make specific social initiations to children with disabilities in order to engage them in extended, positive social interactions. The observers recorded the social behaviors of a target child with a

disability toward peers, and the peers' interactions with the target child with the disability in a structured play observation. There were coded categories such as initiation, responses, teacher prompts, teacher praise, and social interaction between the target child with a disability and a peer. The study concluded that peer initiation by the typical children was increased with intervention and subsequently resulted in an increase of social interaction with the children with disabilities (Odom et. al., 1992).

The various studies with children suggest three different types of peer involvement in communication (Laushey & Heflin 2000). According to Odom and Strain (1984) and Roeyers (1996), the first is the proximity approach, where students with disabilities are placed in typical settings in order to learn by watching and interacting with their nondisabled peers. The intervention is dependent upon the natural transmission of social skills from the more socially competent peer to the student with autism (Roeyers, 1996). The second approach is operant training in which the peers are taught to prompt a response from the student with autism and then to reinforce the desired behavior (Odom & Strain , 1984, & Roeyers, 1996), and third approach is a peer-initiated procedure in which the peer tutors are instructed and trained to make social initiations to the target students (Odom, Hoyson, Jamieson, & Strain, 1985). Such an example of peer-mediated approach is peer tutoring. Peer tutoring is a system in which learners help each other learn by teaching each other, and it is a useful educational tool in assisting students with autism that acquire more appropriate skills and behaviors (Laushey & Heflin., 2000).

In a study conducted by Laushey and Heflin (2000) involved two male 5-6 year old students with autism. They were in two separate kindergarten classes each with 20–25 students, a teacher, and two paraprofessionals. A reversal design (Alberto & Troutman, 1999) was employed to assess treatment effects on a percentage of appropriate social skills. This study used an ABAB design to determine if a “peer buddy” approach in which all students were trained to

interact in dyads, would increase non-adult-directed interactions. Results showed that the “peer buddy” approach significantly increased their appropriate social interactions. In inclusive settings, typical peers and peers with autism do not always interact without prompting from an adult (Laushey & Heflin, 2000).

Another peer strategy is the “circle of friends” intervention (Kalyva & Avramidis, 2005). The “circle of friends” is an educational approach that facilitates the inclusion of children with disabilities into the school community by engaging their peer group in supporting the individual proactively. These researchers examine the efficiency of this intervention in improving the communication (and ultimately social) skills of pre-school aged children with autism. This study involved five preschool boys diagnosed with autism, twenty-five of their typically developing peers and five teachers. All children attended a half-day integrated preschool program. Of the children with autism, three children were in the intervention group and two were in the control group. “The “circle of friends” was smaller in size for practical reasons and the teacher was the leader of the circle giving directions to the members. Each child was presented with the same set of objects that the teachers used in order to introduce the activity that the children had to imitate. In order to motivate the children with autism to participate, most of the toys were chosen according to their preference. The teacher encouraged the focus children to participate also in verbal activities or to sing nursery rhymes.” (p. 257). The “circle of friends” intervention was implemented for 30 minutes on a weekly basis at a preschool setting for a period of three months with the active involvement of one teacher and five peers of each of the three children with autism. The effects of the intervention were systematically examined by means of an observation schedule which recorded the number of responses and initiation attempts, both unsuccessful and successful of all participating children with autism during baseline, post-intervention, and at two months following intervention. The results of this study indicate that the approach of “circle of

friends” is a powerful intervention that, if carefully applied, can improve the social skills of children with autism and their ability to communicate, and ultimately facilitate their “inclusion” in mainstream settings.

The intervention of teachers and interaction with peers is essential in developing social skills. However, according to Laushey (2000), the necessary type of teacher intervention and the type of training for the tutors (children) have not been thoroughly researched, especially with children who are kindergarten age or younger. Odom et al. (1985) indicates that training peers rather than simply placing students with autism in close proximity to peers will facilitate increased demonstration of social skills in the students with autism (Odom & Strain, 1984; Roeyers, 1996). It is mentioned by Strain, Odom, and McConnell (1984) that training an entire class of peers, including those with autism, will assist in the generalization of social skills.

Both teacher interventions (video modeling, music therapy, social reinforcement, prompting) and peer interventions have been used to increase the communication skills of children with identified disabilities. Each methodology is unique, and it is hoped that each will provide children with special needs skills to initiate and communicate with peers in the classroom or on playground. This provides a context for further communication and allows children to share enjoyment (Whitaker, 2004). While both have shown success in increasing social skills of children with identified disabilities, it has been argued that the use of peer training has not been well-researched with children, kindergarten age or younger and in this particular study was used teacher intervention.

2.6 Summary and Conclusions

Communicative initiation has been identified important as a component of social interaction for preschool-aged children. Children with disabilities initiate less than their typically developing counterparts, which limits their interactions with peers. Intervention strategies can be

used to increase communication skills in children with identified disabilities through teacher interventions or peer interventions.

CHAPTER 3. METHOD

3.1 Setting

This study was conducted in an inclusive, four day a week, half-day program that served 18 three- and four-year old children, with equal amounts of males and females. There were 16 typically developing children and two children with identified special needs in the program. The classroom staff included a lead teacher, two graduate assistants, and two student teachers. The program was accredited by the National Association for the Education of Young Children. It was organized into the following nine interest areas: table toys and games, blocks, discovery, reading, art, music, dramatic play, computer, and writing. The classroom used a project approach teaching strategy based on the children's interest. Materials were rotated regularly.

3.2 Participants

Participants were children enrolled in the above-mentioned preschool program. Data were collected on all children enrolled in the program. Group norms were established through the collection of data from the 3- and 4-year olds who attended the program. Children with low-levels of specific communicative initiation toward peers were targeted for intervention. Three children met these criteria. Carrie was 39 months old at the beginning of study. She was functioning within normal limits for her age according to the Ages and Stages Questionnaires (Bricker & Squires, 1999). However, she was observed to use specifically communicative initiations 3% of observed intervals. Wilson was 58 months old at the beginning of the study. He had a diagnosis of Down syndrome and was receiving occupational and speech therapy outside of the classroom. He was observed specifically initiating toward peers 6% of observed intervals. The third participant, Cady was 49 months old at the beginning of the study. She had a diagnosis of developmental delay and was receiving occupational therapy outside of the classroom. She was observed to specifically initiate toward peers 5% of the observed intervals.

3.3 Behavior Definitions

Communicative initiation was defined as the target child's verbal or nonverbal attempt to begin an interaction with a peer when she/he is within arm-reach distance by exhibiting a behavior toward that peer (DiCarlo & Banajee, 2000; Hauck, Fein, Waterhouse & Feinstein, 1995). In the literature, communicative initiation is also called social initiation or social interaction, and is described as the mutual flow of communication, interaction, or contact between the individuals, not just by close proximity (Hedenbro & Liden, 2002). Three subcategories of communicative initiation behaviors were recorded: *specific*, *unclear* or *negative* (DiCarlo & Banajee, 2000). In the literature, similar constructs are used, albeit under different names (*positive social interaction*, *low-level interaction* and *negative social interaction* - Bauminger, Shulman, & Agam, 2003; *positive*, *passive* and *negative behaviors* - Kreimeyer, Anita, Coyner, Eldredge, & Gupta, 1991). *Specific communication behaviors* are defined as communicative responses associated with a clear, distinguishable objective (i.e., the particular intent of the child's communicative act was clear to the observer). *Unclear communicative behaviors* are defined as responses judged to be communicative attempts, but were not clearly or immediately interpretable. *Negative communicative behavior* was defined as child's exhibition of unpleasant social interaction that functions to stop or decrease the likelihood of the development of an adequate social interaction such as physical or verbal aggressiveness (Bauminger, Shulman, & Agam, 2003).

Peer behavior in response to communication from the target child was also recorded if it occurred within 5 seconds of the communicative initiation from the target child. *Positive peer responses* were pleasant interactions resulting from communicative initiation from the target child. Examples of positive peer responses included: peer looking at the child and smiling, offering materials, and/or speaking to the target child where the content is pleasant. *Negative*

peer responses were unpleasant interactions resulting from communicative initiation from the target child. Examples of negative peer responses included: peer pulling away from target child, walking away from target child, making an unpleasant face and/or speaking to the target child where the content is unpleasant. *No response* was recorded if the peer did not exhibit any of the above-mentioned behavior within 5 seconds of the target child's communicative initiation.

3.4 Observation System

Observers were graduate students who were trained using written instructions and practice sessions to eighty percent reliability prior to collecting normative data observations.

Observations were conducted during free play center time or outside play time in the preschool classroom by two graduate students. Data were collected using a partial- interval recording system. According to Cooper, Heron, and Heward (2007) "When using partial-interval recording system, the observer records whether the behavior occurred *at any time* during the interval" (p.92). Specific, negative and unclear communicative initiations of children were recorded in 15-second intervals over a 10 minute period. No response from target child or peer was recorded on a whole interval basis, which is "often used to measure continuous behaviors or behaviors that occur at such high rates that observers have difficulty distinguishing one response from another but can detect whether the behavior is occurring at any given time" (p. 90). Sessions represent 10-minute observation period and depicted chronologically on Figure 1.

3.5 Group Normative Data

Three data points were collected on all children (18 children, 3-year and 4-year olds) enrolled in the above-mentioned preschool. Group norms were established by averaging all children per age category minus the target children. For the 3-year-olds, specific communicative initiation occurred 9% of the observed intervals; for the 4-year olds, specific communicative initiation occurred 16% of the observed intervals (Figure 1). Children with identified disabilities

and with low-levels of specific communication initiation toward peers were not included in the calculation of the group norms.

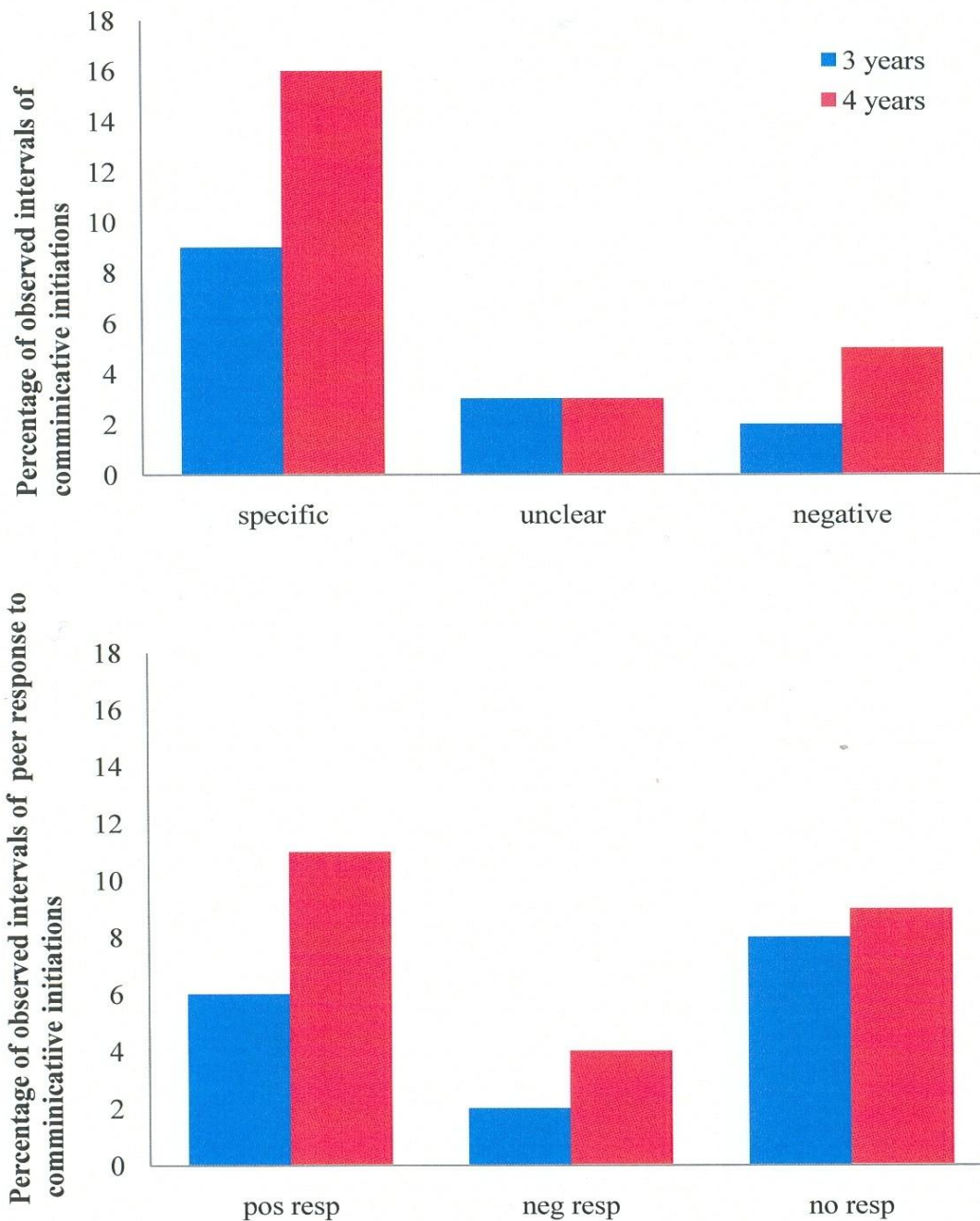


Figure 1. Percentage of Specific, Unclear and Negative Communicative Initiations Made by 3-Year Olds and 4-Year Olds and Positive, Negative, and No Response Made by Peers to Communicative Initiations.

3.6 Interobserver Agreement for Group Normative Data

Interobserver agreement was calculated on 20% of all observation sessions (Kazdin, 1982). Reliability was calculated on a minute-by-minute basis using the formula $\text{agreement} / (\text{agreement} + \text{disagreement}) \times 100\%$. For specific communicative behavior, overall reliability was 96% (range, 78-100); for unclear communicative behavior, overall reliability was 99% (range, 95-100); for negative communicative behavior, overall reliability was 100%. For peer responses, for positive peer response, overall reliability was 96% (range, 91-100); for negative peer response, overall reliability was 99% (range, 98-100); and for no peer response, overall reliability was 99% (range, 93-100).

3.7 Experimental Conditions

Baseline. Communicative initiations were recorded using the above-mentioned categories during free choice center time and outside free play time. No instructions were given to teachers and children regarding their behavior. Baseline data was used to identify the level of communicative initiations of children with low levels of communicative initiation or unclear/negative communication. Percentages were calculated by dividing the number of each communicative initiation (Specific, Unclear, and Negative) and peer response (Positive, Negative, and No response) by the total number of events and multiplied by 100.

Intervention. In the literature, researchers have found that teacher interventions have been effective in increasing the social behavior of young children (Gena, 2006; Rhyner, Lehr, & Pudlas, 1990; Keen, Woodyatt, & Sigafoos, 2002; Nikopoulos & Keenan, 2004; Duffy & Fuller, 2000). Therefore, the proposed study will use a teacher intervention to assist the target children in increasing positive communicative initiations toward peers at a rate observed in peers in this environment. This study builds on the current literature base by using prompting, specifically the least-to-most assistive prompt hierarchy (LtM) (first described by Horner & Keilitz, 1975), with

the additional requirement of teacher-child proximity and teacher-child eye level prior to beginning the prompt sequence. These two additional requirements are consistent with recommended practice in early childhood education (Bredekamp & Copple, 1997). A prompting schedule was formulated from the group normative data. This data indicated that on average, 3 year olds initiated toward peers, 14% of the observed intervals during free play and 4 year olds initiated toward peers 24 % of the observed intervals. These percentages represented the average of each group's specific communicative initiations, unclear communicative initiation, and negative communicative initiations. Teachers provided prompting to 3 year olds to initiate to peers every 1.5 minutes, and will prompt 4 year olds to initiate to peers every 45 seconds to approximate the initiation behavior of peers. After completion of directives the teacher praised verbally for successful specific communicative initiation with peer. Consistent with guidelines for least-to-most prompting, teachers allowed a wait time (Snell & Brown, 2000; Wilder & Atwell, 2006; DiCarlo, Reid, & Stricklin, 2003) of 3-5 seconds between each level of prompting.

The least-to-most assistive teacher prompting intervention(LtM) consisted of the following 7 steps sequence: (a) prompting (if no materials are in front of the child give a child a material and wait 3-5 seconds for the communicative initiation of the child with peers); (b) adult tells a child to give the material to peer; (c) waits 3-5 seconds, if child does not communicate with others; (d) adult tells a child to give the material to peer by showing how to do ("like this",which is verbal request paired with a model); (e) waits 3-5 seconds; (f) adult takes child's hand and tells a child to give material to peer; (g) adult issues specific praise statement.

Teacher-child proximity (arm-reach distance) and teacher-child eye level conditions were added and applied before the first step, because each is considered a recommended early childhood practice by the NAEYC (Bredekamp & Copple, 1997; Ourso, DiCarlo, Pierce, & Benedict, 2007).

Table 1.

Steps in the LtM Teacher Prompting Intervention

Teacher-child proximity and teacher-child eye level
(a) material prompting
(b) issue a verbal request
(c) wait 3-5 seconds for a response
(d) if not completed, issue the verbal request again paired with a model
(e) wait 3-5 seconds for a response
(f) if not completed, issue the verbal request again paired with physical assistance to task completion
(g) praise completion

In LtM teacher prompting intervention *teacher prompt* were presented as the teacher's verbal, model, or physical cue given to a child to complete a task related to interacting or specifically initiating with peers. A *verbal prompt* was defined as any directive statement told to the child by the teacher. An example of a verbal prompt was the teacher telling a child, "Give this missing piece of the puzzle to X and ask if needs help to complete it (a child sitting next to him)." A *model prompt* was defined as the teacher demonstrating the desired behavior. An example of a model prompt from the above-mentioned verbal directives was for the teacher to model giving the piece of the puzzle to X and give the phrase statement for help. When it was not appropriate or possible for the teacher to model the desired behavior, the teacher proceeded from a verbal prompt directly to a physical prompt. A *physical prompt* was defined as the teacher physically helping the child complete the task, in particular situation the teacher physically assists the child to give a puzzle to the peer. At the end of every successful communicative

initiation with peers teacher praised, which was defined as any encouraging statement that acknowledged the child's completed directive. An example of a praise statement was the teacher telling a child (after completing a directive), "Thank you for helping X, together you can easily complete the puzzle." Teachers were given the instructions of the intervention in the written form; the example scenarios were discussed prior to implementing the intervention. An additional component of the data collection system during the intervention was the notation of which level of prompt was required by the teacher for the target child to complete the specific communicative behavior. The responses from peers also were recorded during intervention sessions.

3.8 Interobserver Agreement for Baseline and Intervention

Interobserver agreement was calculated on 20% of all observation sessions (Kazdin, 1982). Reliability was calculated on a minute-by-minute basis using the formula $\text{agreement} / (\text{agreement} + \text{disagreement})$, multiplied by 100%. For specific communicative behavior, overall reliability was 100% (range, 98-100); for unclear communicative behavior, overall reliability was 100% (range, 98-100); for negative communicative behavior, overall reliability was 100%. For peer responses, for positive peer response, overall reliability was 100% (range, 98-100); for negative peer response, overall reliability was 100% (range, 98-100); and for no peer response, overall reliability was 99% (range, 98-100).

3.9 Fidelity

Fidelity checks were conducted to ensure that the steps of the least-to most assistive teacher prompting intervention were correctly implemented (see the box in Appendix C). For Carrie, the teachers' implemented the LtM teacher prompting intervention with an average of 90% fidelity; for Wilson, teachers' implemented the LtM teacher intervention with an average of

91% fidelity; and for Cady, teachers' implemented the LtM teacher intervention with an average of 100% fidelity.

CHAPTER 4. RESULTS

This study examined the effects of LtM teacher prompting intervention on the communicative behavior of children with low levels of communicative initiations toward peers. The aim of this study was to increase the specific communicative behaviors of target children, which should, in turn, increase the amount of positive peer responses to those children. Results suggest that the intervention produced an increase in the specific communication skills of all 3 of the target children. Additionally, increases in the percentage of positive peer responses were noted for all 3 children (see Figure 2).

While all children experienced low levels of specific communicative initiations toward peers during baseline observations, each child's communicative behavior looked different (see Table 2). Carrie predominately engaged in unclear communicative behavior toward peers; Wilson engaged consistently across specific communication, unclear communication, and negative communication; and Cady was predominately communicating either specifically or unclearly toward peers. The responses the target children received as a result of their communicative initiations during baseline varied as well (Table 3). Carrie received primarily positive responses from peers or no response from peers as a result of her communicative initiations; Wilson and Cady received primarily no response from peers as a result of his communicative initiations.

When the least-to-most assistive teacher prompting intervention was implemented, three target children showed an increase in both their specific communicative initiations toward peers and positive responses by peers (Figure 2). There was also a decrease of unclear communicative behaviors for Carrie and Wilson. During baseline, Carrie's *specific communicative initiation* averaged 4 % of observed intervals (range, 0-5%), and children's *positive response* averaged 5% (range, 0-15 %) of observation intervals.

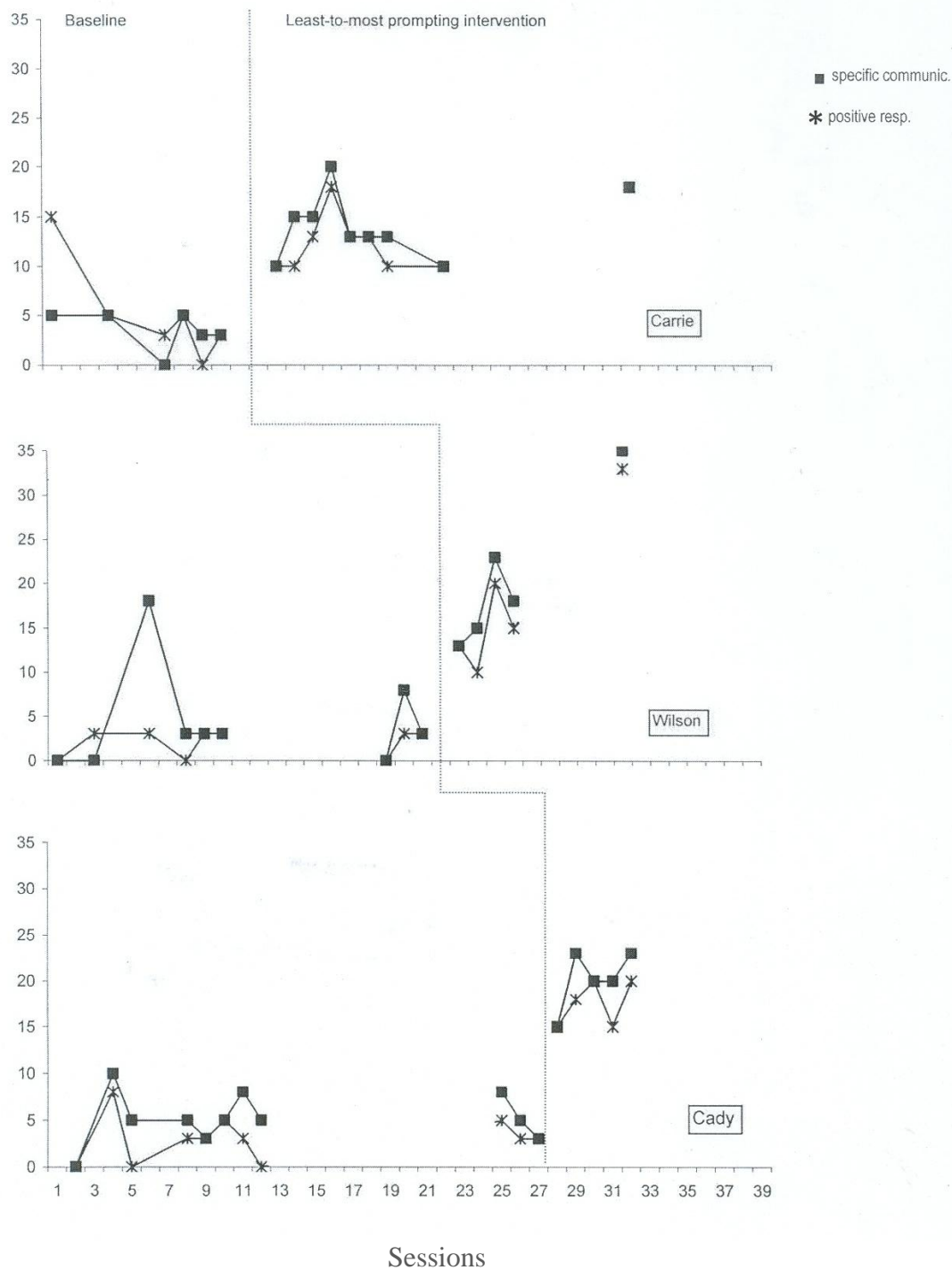


Figure 2. Percent of Sessions Observed with Specific Communicative Initiations and Peers Positive Response across Baseline and Intervention.

During intervention, Carrie's *specific communicative initiation* increased to 14% (range, 10-20%), which was a 10% increase; children's *positive response* averaged 13 % (range, 10-18%), which was 8% increase. During baseline, Wilson's *specific communicative initiation* averaged 4 % (range, 0-16%), and children's *positive response* averaged 2% (range, 0-3%) of observation intervals. During intervention, Wilson's *specific communicative initiation* averaged 21% (range, 13-35%), which was a 17% increase; children's *positive response* increased to 18% (range, 10-33%), which was a 16% increase.

During baseline, Cady's *specific communicative initiation* averaged 5 % (range, 0-10%), and children's *positive response* averaged 3% (range, 0-8%) of observation intervals. During intervention, Cady's *specific communicative initiation* averaged 20% (range, 15-23%), which was a 15% increase; children's *positive response* increased to 18 % (range, 15-20 %), which was a 15% increase.

Table 2. Average Percentage of Target Child's Communication toward Peers across Baseline and Intervention

	Target Child Communication					
	Specific Communic.		Unclear Communic.		Negative Communic.	
	Baseline	Intervent.	Baseline	Intervent.	Baseline	Intervent.
Carrie	4%	14%	6%	2%	0%	0%
Range	(0-5%)	(10-20%)	(0-18%)	(0-5%)	0%	0%
Wilson	4%	21%	5%	3%	4%	6%
Range	(0-18%)	(13-35%)	(0-13%)	(0-5%)	(0-10%)	(0-5%)
Cady	5%	20%	4%	4%	1%	1%
Range	(0-10%)	(15-23%)	(0-8%)	(0-9%)	(0-8%)	(0-3%)

Table 3. Average Percentage of Peer's Responses to Target Child across Baseline and Intervention

	Peer Response					
	Positive response		Negative response		No response	
	Baseline	Intervention	Baseline	Intervention	Baseline	Intervention
Carrie	5%	13%	1%	0%	4%	3%
Range	(0-15%)	(10-18%)	(0-3%)	0%	(3-8%)	(0-8%)
Wilson	2%	18%	3%	2%	7%	8%
Range	(0-3%)	(10-33%)	(0-8%)	(0-5%)	(3-13%)	(5-13%)
Cady	3%	18%	0%	1%	6%	5%
Range	(0-8%)	(15-20%)	0%	(0-3%)	(3-13%)	(3-10%)

Data were also collected on the level of prompting within the LtM teacher prompting intervention that was required for the target child to complete the communicative behavior (see Table 4). During LtM teacher prompting intervention, Carrie completed the communicative behavior toward a peer when the teacher used verbal prompting 85 % of the observed sessions. She did not appear to need modeling, and only required physical prompting from the teacher 2 % of the observed sessions. Additionally, when the LtM teacher prompting intervention was in place, Carrie was observed to independently use specific communicative behavior toward peers 23 % of the observed sessions. Wilson completed communicative behavior toward a peer when the teacher used verbal prompting 30 % of the observed sessions. He required teacher modeling 14 % of the observed sessions, and required physical prompting from the teacher 16 % of the observed sessions. Additionally, when the LtM teacher prompting intervention was in place, Wilson was observed to independently use specific communication toward a peer 33 % of the observed sessions. Cady completed communicative behavior toward a peer when the teacher used verbal prompting 64 % of the observed sessions. She required teacher modeling 6% of the

observed sessions, and physical prompting from the teacher 2 % of the observed sessions.

Additionally, when the LtM teacher prompting intervention was in place, Cady was observed to independently use specific communication behavior toward a peer 14% of the observed sessions.

4.1 Interobserver Agreement for Applying Verbal, Model, Physical Prompting by the Teacher and Independent Exhibition of Specific Communicative Initiations by the Target Children

Interobserver agreement checks were conducted on 20% of intervention sessions using a minute-by-minute agreement ratio assessing whether there was an agreement on each instance of the particular prompting. For verbal prompting, overall reliability was 100% (range, 100-100%); for model prompting, overall reliability was 100%; and for physical prompting, overall reliability was 94% (range, 62-100%), for the independent exhibition of specific communicative initiations by the target children, overall reliability was 98% (range, 89-100%).

Table 4. Average Percentage of Applying Verbal, Model, Physical Prompting by the Teacher and Independent Specific Communicative Initiation by the Children

	Verbal	Model	Physical	Independent
Carrie	85%	0%	2%	23%
Wilson	30%	14%	16%	33%
Cady	64%	6%	2%	14%

CHAPTER 5. DISCUSSION

Peer interactions are essential to the child's construction of social and moral feelings, values, social and intellectual competence (DeVries & Zan, 1994). Studies have shown that social skill deficits which appear in the early years of childhood tend to become weaker or more obvious without active intervention (Strain, 1981).

LtM teacher prompting intervention used in this study was successful in increasing the specific communicative initiations and peer's positive responses to children with low level of communicative initiation. This is consisted with previous research that recommends using a system of least-to-most assistive prompts to teach specific behaviors to varying ages of individuals (Horner & Keilitz, 1975; Ourso, DiCarlo, Pierce, & Benedict, 2007; Wayne, DiCarlo, Burts, & Benedict, 2007; Woley & Gast, 1984). Results of this study suggest that this intervention may be a useful tool that teachers can use to encourage children to increase their communication toward peers. In general, it appears that the specific communicative initiations correlated to positive social responses from peers.

It is interesting to note that during the least-to-most assistive prompts teacher intervention, an increase of independent specific communicative initiation toward peers was observed. This would seem to indicate that the strategy of offering a material to a peer as a specific or understood form of communication was learned by each of the target children. In the absence of prompting, all 3 children increased their independently initiated specific communication toward a peer (see Tables 2 and 4). Table 2 shows the baseline levels of specific communicative initiations toward peers; due to the nature of the behavior definitions, these figures represent unprompted initiations made by the target child toward a peer; in the Table 4 the category of "independent" represents the percentage of observed intervals during intervention when the child exhibited specific communication toward a peer in the absence of teacher

prompting. Carrie increased from a baseline level of 4% of specific communicative initiation to 14% specific communicative initiation; Wilson increased from a baseline level of 4% of specific communicative initiation to 21% specific communicative initiation; and Cady increased from a baseline level of 5% to 20% specific communicative initiation.

5.1 Clinical Implications

Results of the current study suggest that the use of LtM teacher prompting intervention can assist in increasing the level of specific communicative initiation of children who have limited or low level of communicative interactions with peers. The use of this strategy not only increased the level of specific communicative initiations, but also increased the response from a peer, which has positive long term effects. Eventually, teachers do not have to increase the amount of prompting, but teachers should use LtM teacher prompting intervention as one strategy to motivate children to communicate with peers as frequently as the children of their age communicate in the same environment.

5.2 Limitations

- The data measures only normative development, and doesn't measure individual differences.
- Generalization to the other children
- Anything that could account for the increased communicative behavior other than teacher's prompts.

5.3 Future Work

Although the current study suggests that the LtM teacher prompting intervention was successful in increasing the specific communication behavior of the target children, more research is needed to document the effectiveness of this intervention over time; specifically, are they able to generalize the skills learned in this intervention to new situations?

REFERENCES

- Alberto, P. A., & Troutman, A. C. (1999). *Applied behavior analysis for teachers (5th ed.)*. Upper Saddle River, NJ: Merrill.
- Alberto, P. A., & Troutman, A. C. (2006). *Applied behavior analysis for teachers (7th ed.)*. Upper Saddle River, NJ: Pearson Education, Inc.
- Bandura, A. (1977). *Social Learning Theory*. New York: General Learning Press.
- Bauminger, N., Shulman, C., & Agam, G. (2003). Peer interaction and loneliness in high-functioning children with Autism. *Journal of Autism and Developmental Disorders*, 33(5), 489-506.
- Bates, E., Camaioni, L., & Volterra, V. (1979). The acquisition of performatives prior to speech. *Developmental pragmatics*. New York: Academic Press.
- Brady, C. N., Steeples T., & Fleming, K. (2005). Communication levels on initiation and repair of communication in children with disabilities. *Language, Speech, and Hearing Research*, 48, 1098-1113.
- Bredenkamp, S., & Copple, C. (1997). *Developmentally appropriate practice in early childhood programs (revised edition)*. Washington, D.C.: National Association for the Education of Young Children.
- Breen, C. G., & Haring, T. G. (1991). Effects of contextual competence on social initiations. *Journal of Applied Behavior Analysis*, 24, 337-347.
- Bricker, D., & Squires, J. (1999). *Ages and Stages Questionnaires. A parent-completed, child-monitoring system*. Second edition.
- Bruscia, K. E., (1987). *Improvisational models of music therapy*. Springfield, IL, Charles C Thomas.
- Carter, A. L. (1978). From sensori-motor vocalizations to words: A case study of the evolution of attention-directing communication in the second year. *Action, gesture and symbol; The emergence of language*. London: Academic Press.
- Campbell, S. (2002). *Behavior problems in Preschool Children: Clinical and Developmental Issues (2nd ed.)*. The Guilford Press.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (1987). *Applied behavior analysis*. Upper Saddle River, NJ; Merrill.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis*. Second Edition. Upper Saddle River, NJ; Columbus, Ohio.

- DiCarlo, C. F., Reid, D. H., Stricklin, S. B. (2003). Increasing toy play among toddlers with disabilities in an inclusive setting: A more-to-less, child-directed intervention continuum. *Research in Developmental Disabilities*, 24, 195-209.
- DiCarlo, C. F., & Benajee, M. (2000). Using voice output devices to increase initiations of young children with disabilities. *Journal of Early Intervention*, 23(3), 191-199.
- DeVries R. & Zan B. (1994). *Moral Classrooms, Moral Children: Creating a Constructivist Atmosphere in Early Education*. New York: Teacher's College Press.
- Duffy, B., & Fuller, R. (2000). Role of music therapy in social skills development in children with moderate intellectual disability. *Journal of applied research in intellectual disabilities*, 13, 77-89.
- Erwin, E. J., Alimaras, E., & Price, N. (1999). A qualitative study of social dynamics in an inclusive preschool. *Journal of Research in Childhood Education*, 14, 56-67.
- Fujiki, M., Brinton, B., & Todd, C. M. (1996). Social skills of children with specific language impairment. *Language, Speech, and Hearing Services in Schools*, 27, 195-201.
- Gena, A. (2006). The effects of prompting and social reinforcement on establishing social interactions with peers during the inclusion of four children with autism in preschool. *International Journal of Psychology*, 41 (6), 541-554.
- Ghuman, J. K., Peebles, C. D., & Ghuman, H. S. (1998). Review of social interaction measures in infants and preschool children. *Infants and Young Children*, 11, 21-44.
- Harding, C. (1984). Acting with intention: A framework for examining the intention to communicate. *The origins and growth of communication*, 123-135.
- Hart, C. H., Burts, D. C., & Charlesworth, R. (1997). *Integrated curriculum and developmentally appropriate practice: Birth to age eight*. New York: State University of New York Press.
- Haslett, B. B., & Samter, W. (1997). *Children Communicating: The First 5 Years*. Lawrence Erlbaum Associates. Mahwah, New Jersey London.
- Hauck, M., Fein, D., Waterhouse, L., & Feinstein, C. (1995). Social initiation by autistic children to adults and other children. *Journal of autism and developmental disorder*, 25 (6), 579-595.
- Houghton, J., Bronicki, G. J., & Guess, D. (1987). Opportunities to express preferences and make choices among students with severe disabilities in classroom settings. *JASH, Persons Severe Handicaps*, 12, 18-27.
- Horner, R., D., & Keilitz, I. (1975). Training mentally retarded adolescents to brush their teeth. *Journal of Applied Behavior Analysis*, 8, 301-309.

- Hedenbro, M. & Lidén, A. (2002). Child and parent's interaction coding system in dyads and triads. *Acta Paediatrica. International Journal of Paediatrics*, 91, 440.
- Hundert, J., & Haughton, A. (1992). Promoting social interaction of children with disabilities in integrated preschools: A failure to generalize. *Exceptional Children*, 58, 311–320.
- Iacono, T., Carter, M., & Hook, J. (1998). Identification of intentional communication in students with severe and multiple disabilities. *AAC Augmentative and Alternative Communication*, 14, 102-114.
- Kalyva, E., & Avramidis, E. (2005). Improving communication between children with Autism and their peers through the "Circle of Friends": A small-scale intervention study. *Journal of Applied Research in Intellectual Disabilities*, 18, 253–261.
- Kazdin, A. E. (1982). *Single-case research designs: Methods for clinical and applied settings*. New York: Oxford University Press.
- Keen, D., Sigafoos, J., & Woodyatt, G. (2005). Teacher responses to the communicative attempts of children with Autism. *Journal of Developmental and Physical Disabilities*, 17 (1), 19-33.
- Keen, D., Woodyatt, G., & Sigafoos, J. (2002). Verifying teacher perceptions of the potential communicative acts of children with autism. *Communication Disorders Quarterly*, 23 (3), 133-142.
- Kreimeyer, K., Antia, S., Coyner, L., Eldredge, N., & Gupta, A. (1991). *Social interaction observation system: Project interact*. Tucson, AZ: University of Arizona.
- Kister, J. A., & Gatlin, D. (1989). Correlates of peer rejection among children with learning disabilities. *Learning Disabilities Quarterly*, 12, 122-40.
- Kupersmidt, J. B., Coie, J. D., & Dodge, K. A. (1990). Predicting disorders from peer social problems. In S.R. Asher & J.D. Coie (Eds.). *Peer rejection in childhood*. New York: Cambridge University Press.
- Laushey, K. M., & Heflin, L. J. (2000). Enhancing social skills of kindergarten children with autism through the training of multiple peers as tutors. *Journal of Autism and Developmental Disorders*, 30 (3), 183-193.
- Liiva, C.A., & Cleave, P.L. (2005). Roles of initiation and responsiveness in access and participation for children with specific language impairment. *Journal Of Speech, Language, and Hearing Research*, 48, 868-883.
- Logan, K. R., & Malone, D. M. (1998). Instructional contexts for students with moderate, severe, and profound intellectual disabilities in general educational elementary classrooms.

- Education and Training in Mental Retardation and Developmental Disabilities*, 33, 62-75.
- MacDonald, R., Anderson, J., Dube, W. V., Geckeler, A., Green, G., Holcomb, W., et al. (2006). Behavioral assessment of joint attention: A methodological report. *Research in Developmental Disabilities*, (27), 138-150.
- McGinnis, E. & Goldstein, A. P. (1990). Skill streaming in early childhood: Teaching prosocial skills to the preschool and kindergarten child. Champaign, IL: Research Press.
- Nikopoulos, K. C., & Keenan, M. (2004). Effects of video modeling on social initiations by children with autism. *Journal of applied behavior analysis*, 37, 93-96.
- Odom, S. L., & Strain, P. S. (1984). Peer-mediated approaches to promoting children's social interaction: A review. *American Journal of Orthopsychiatry*, 54, 544-557.
- Odom, S. L., Hoyson, M., Jamieson, B., & Strain, P. S. (1985). Increasing handicapped preschoolers peer social interactions: Cross setting and component analysis. *Journal of Applied Behavior Analysis*. 18: 3-16.
- Odom, S. L., Chandler, L. K., Ostrosky, M., McConnell, S. R., & Reaney, S. (1992). Fading teacher prompts from peer-initiation interventions for young children with disabilities. *Journal of Applied Behavior Analysis*, 25 (2), 307-317.
- Ourso, J., DiCarlo, C.F., Pierce, S., & Benedict, J. (2007). Using least-to-most assistive prompt hierarchy to increase child compliance with directives in an inclusive preschool classroom. Unpublished Master's thesis, Louisiana State University, Louisiana.
- Rhyner, P. M., Lehr, D. H., & Pudlas, K. A. (1990). An analysis of teacher responsiveness to communicative initiations of preschool children with handicaps. *Language, Speech, and Hearing Services in Schools*, 21, 91-97.
- Rodriguez, M. S., & Lana, E. T. (1996). Dyadic interactions between deaf children and their communication partners. *American Annals of the Deaf*, 141, 245-251.
- Roeyers, H. (1996). The influence of nonhandicapped peers on the social interactions of children with a pervasive developmental disorder. *Journal of Autism and Developmental Disorders*, 26, 303-320.
- Scoville, R. (1984). Development of the intention to communicate. *The origins and growth of communication*, 109-122.
- Skinner, B. F. (1953). *Science and Human Behavior*. New York: Macmillan.
- Skinner, B. F. (1974). *About behaviorism*. New York: New York University Press.
- Skinner, B. F. (1978). *Reflections on behaviorism and society*. Englewood Cliffs, N.J: Prentice-Hall.

- Snedecor, G., & Cochran, W., D. (1989). *Statistical Methods* (8th edition). The Iowa State University Press.
- Snell, M. E., & Brown, F. (2000). *Instruction of Students with Severe Disabilities* (5th edition). Upper Saddle River, NJ: Merrill-Prentice Hall.
- Strain, P. S. (1981). Peer-mediated treatment of exceptional children's social withdrawal. *Exceptional Education Quarterly*, 1, 83-95.
- Strain, P. S., Odom, S. L., & McConnell, S. (1984). Promoting social reciprocity of exceptional children: Identification, target behavior selection and intervention. *Remedial and Special Education*, 5 (1), 21-28.
- Weisel, A., F. (2005). Initiations of social interactions by young hearing impaired preschoolers. *Journal of Deaf Studies and Deaf Education*, 10 (2), 161-170.
- Whitaker, P. (2004). Fostering communication and shared play between mainstream peers and children with autism: approaches, outcomes and experiences. *British Journal of Special Education*, 31 (4), 215-222.
- Wilder, D., & Atwell, J. (2006). Evaluation of a guided compliance procedure to reduce noncompliance among preschool children. *Behavioral Interventions*, 21 (4), 265-272.

APPENDIX A: APPLICATION FOR EXEMPTION FROM INSTITUTIONAL OVERSIGHT

Application for Exemption from Institutional Oversight

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/projects using living humans as subjects, or samples or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.



Institutional Review Board
Dr. Robert Mathews, Chair
203 B-1 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.6792
irb@lsu.edu | lsu.edu/irb

- Applicant, Please fill out the application in its entirety and include the completed application as well as parts A-E, listed below, when submitting to the IRB. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the Human Subjects Screening Committee. Members of this committee can be found at [http://appl003.lsu.edu/osp/osp.nsf/\\$Content/Humans+Subject+Committee?OpenDocument](http://appl003.lsu.edu/osp/osp.nsf/$Content/Humans+Subject+Committee?OpenDocument)
 - A Complete Application Includes All of the Following:
 - (A) Two copies of this completed form and two copies of parts B thru E.
 - (B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1 & 2)
 - (C) Copies of all instruments to be used.
 - If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.
 - (D) The consent form that you will use in the study (see part 3 for more information.)
 - (E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB.
- Training link: (<http://cme.cancer.gov/clinicaltrials/learning/humanparticipant-protections.asp>)

1) Principal Investigator: <u>Dr. Cynthia DiCarlo</u> Rank: <u>Assistant Professor</u> Student? Y/N <u>Y</u>		Study Exempted By: Dr. Robert C. Mathews, Chairman Institutional Review Board Louisiana State University 203 B-1 David Boyd Hall Baton Rouge, LA 70803 Phone: 225-578-8692 www.lsu.edu/irb Exemption Expires: 11-4-2010
Dept.: <u>Human Ecology</u> Ph: <u>225-578-7005</u> E-mail: <u>cdicar2@lsu.edu</u>		
2) Co Investigator(s): please include department, rank and e-mail for each If student, please identify and name supervising professor in this space <u>Susanna Melikyan, KUSC, Student, smelik1@lsu.edu</u> Supervising Professor-Dr. Cynthia DiCarlo (Assistant Professor), <u>cdicar2@lsu.edu</u>		
3) Project Title: <u>Increasing Communicative Initiation in Preschool Children</u>		
4) LSU Proposal? (yes or no) <u>YES</u> If Yes, LSU Proposal Number <u>N/A</u>		
Also, if YES, either <input type="radio"/> This application completely matches the scope of work in the grant OR <input checked="" type="radio"/> More IRB Applications will be filed later		
5) Subject pool (e.g. Psychology Students) <u>Children < 18</u> • Circle any "vulnerable populations" to be used: (children < 18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.		
6) PI Signature <u>[Signature]</u> ** Date <u>10-25-07</u> (no per signatures) **I certify my responses are accurate and complete. If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time the consent forms should be preserved in the Departmental Office.		
Effective August 1, 2007, all Exemptions will expire three years from date of approval, unless a continuation report, found on our website, is filed prior to expiration date		
Screening Committee Action: Exempted <input checked="" type="checkbox"/> Not Exempted <input type="checkbox"/> Category/Paragraph _____ Reviewer <u>Michael Keenan</u> Signature <u>[Signature]</u> Date <u>11-5-07</u>		

APPENDIX B: CONSENT FORM

1

Consent Form

1. **Study Title:**
Increasing Communicative Initiation in Preschool Children
2. **Performance Sites:**
Louisiana State University Human Ecology Laboratory Preschool
3. **Contacts:**
Susanna Melikyan, Graduate Student
(225)933-6521 M-F 8:30 a.m. - 4:30 p.m.
Dr. Cynthia DiCarlo, Assistant Professor
(225)578-7005 M-F 8:30 a.m. - 3:00 p.m.
4. **Purpose of the Study:**
The purpose of the study is to examine the communicative initiation of preschool children.
5. **Subjects:**
 - A. **Inclusion Criteria**
Preschool students, ages 3 to 5, who are enrolled at the LSU Human Ecology Child Development Laboratory Preschool.
 - B. **Exclusion Criteria**
Children not enrolled in the LSU Human Ecology Child Development Laboratory Preschool.
 - C. **Maximum number of subjects:** 19
6. **Study Procedures:**

The researcher will observe the communicative initiation of children in the preschool classroom. Teachers will use guidance strategies to increase children's positive communicative initiation. Data will then be collected in order to determine the effects of the teacher guidance strategies.
7. **Benefits:**
After intervention, students may show an increase in communicative initiation.
8. **Risks/Discomforts:**
There are no known risks for participation in this study.
9. **Measures taken to reduce risk**
There are no known risks for participation in this study.
10. **Right to Refuse:**
Participation in the study is voluntary and that subjects may change their mind and withdraw from the study at any time without penalty or loss of any benefit to which they may otherwise be entitled.
11. **Privacy:**

This study is confidential. Results of the study may be publicly presented for educational purposes and no identifying information will be included in the presentation. Information will only be shared with a child's parent(s), the child's teacher(s), and the director of the preschool. Specific information concerning a child other than their own, will not be shared with parents.

12. Financial Information:

Any compensation for participating and any uncompensated costs incurred by subjects are specified. No incentives will be delivered.

13. Withdrawal:

Subjects may withdraw at any time.

14. Removal:

Individuals will be removed from the study if they withdraw from the LSU Human Ecology Laboratory Preschool.

15. Signatures:

'The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigators. If I have questions about subjects' rights or other concerns, I can contact Robert C. Mathews, Chairman, LSU Institutional Review Board, (225)578-8692. I agree to participate in the study described above and acknowledge the researchers' obligation to provide me with a copy of this consent form if signed by me.'

My child, _____, has permission to participate in the "Increasing Communicative Initiation in Preschool Children" study.

Parent Signature _____
Date _____

16. Child Assent:

A researcher will read the following statement:

"Someone will watch you during interest areas, or outdoor play to see how you play with your friends and your teachers. Is it okay if we watch how you play with your friends and your teachers?"

Subject Signature _____
Date _____

Study Exempted By:
Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
203 B-1 David Boyd Hall
225-578-8692 | www.lsu.edu/irb
Exemption Expires: 11-4-2010

APPENDIX C: DATA SHEET

Child's Name: _____

Date: _____

Time: _____

Data Collector: _____

	:00	:15	:30	:45																							
1 MIN	S	U	N	S	U	N	S	U	N	S	U	N	<u>SUMMARY</u> % S _____ % U _____ % N _____ % + _____ % - _____ % NR _____														
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
2 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
3 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
4 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
5 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
6 MIN	S	U	N	S	U	N	S	U	N	S	U	N	<u>FIDELITY</u> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>(1) Prompt (3-5 s.)</td><td></td></tr> <tr><td>(2) Verbal prompt</td><td></td></tr> <tr><td>(3) 3-5 sec.</td><td></td></tr> <tr><td>(4) Modeling</td><td></td></tr> <tr><td>(5) 3-5 sec.</td><td></td></tr> <tr><td>(6) Physical prompt</td><td></td></tr> <tr><td>(7) Praise</td><td></td></tr> </table> % Fidelity _____	(1) Prompt (3-5 s.)		(2) Verbal prompt		(3) 3-5 sec.		(4) Modeling		(5) 3-5 sec.		(6) Physical prompt		(7) Praise	
	(1) Prompt (3-5 s.)																										
(2) Verbal prompt																											
(3) 3-5 sec.																											
(4) Modeling																											
(5) 3-5 sec.																											
(6) Physical prompt																											
(7) Praise																											
+	-	NR	+	-	NR	+	-	NR	+	-	NR																
7 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
8 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
9 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															
10 MIN	S	U	N	S	U	N	S	U	N	S	U	N															
	+	-	NR	+	-	NR	+	-	NR	+	-	NR															

VITA

Susanna Melikyan was born to Volodya and Raisa Melikyan in Yerevan, Armenia. In May of 1997, she graduated with honor from #141 “Grigor Bagyan” High school in Yerevan, Armenia. In May of 2001, she earned a degree of Bachelor of Science (with honor) in Special Education and Speech Therapy in Yerevan Hrachia Acharyan University, Armenia. Susanna received her Master of Science in human ecology with a concentration in family, child, and consumer sciences: early childhood intervention in 2008.

Susanna’s work experiences include teaching as a special education teacher two years in Republican Pediatric Rehabilitation Center, Yerevan, from 2002-2004. As a graduate student, she worked in the Louisiana State University Child Development Laboratory Preschool where she taught three and four year old children.