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## The Effects of Interactive Shared Book Reading RECALL Procedures on Preschoolers' Friendship Development

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Dr. Melinda Ault, Director of Graduate Studies

THE EFFECTS OF INTERACTIVE SHARED BOOK READING RECALL  
PROCEDURES ON PRESCHOOLERS' FRIENDSHIP DEVELOPMENT

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THESIS

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A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Science to the  
College of Education  
at the University of Kentucky

By  
Samantha M. McGehee  
Lexington, Kentucky  
Director: Dr. Collin Shepley, Professor of Interdisciplinary and Early Childhood  
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Lexington, Kentucky  
2022

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## ABSTRACT OF THESIS

### THE EFFECTS OF INTERACTIVE SHARED BOOK READING RECALL PROCEDURES ON PRESCHOOLERS' FRIENDSHIP DEVELOPMENT

Developing friendships is an important aspect in the lives of children. Children begin developing friendship related skills in toddlerhood and can begin maintaining these friendships by preschool-age. Few Tier 1 interventions exist to support children in preschool classrooms to develop these critical friendships. Interactive shared book reading is a common practice in early childhood classrooms that involves an adult reading a book to one or more students with embedded questions about the book to increase engagement and understanding with book themes. *Reading to Engage Children with Autism in Language and Learning* (RECALL) is an adaptation of interactive shared book reading which embeds distancing questions which allows students to connect the book themes to their own lives. This study sought to see if interactive shared book reading RECALL procedures with books with friendship themes increased friendship behaviors and perceptions between preschool dyads during play in centers within a single-case design.

KEYWORDS: Friendship, interactive shared book reading, single-case, RECALL, preschoolers

Samantha M. McGehee

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08/03/2022

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Date

THE EFFECTS OF INTERACTIVE SHARED BOOK READING RECALL  
PROCEDURES ON PRESCHOOLERS' FRIENDSHIP DEVELOPMENT

By  
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Dr. Collin Shepley  
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08/03/2022

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## DEDICATION

To those of us who teach children; may we always seek to know better, so that we can do better for our kids.

## ACKNOWLEDGMENTS

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## **Introduction**

Forming friendships is a significant component of children's lives and can have significant short- and long-term effects on social development (Hartup, 1996). Friendship has been defined as "an affective tie between two children which has three components: mutual preference, mutual enjoyment, and the ability to engage in skillful interaction" (Howes & Mueller, 1980, as cited in Howes, 1983 p. 1042). Children begin developing concepts related to friendship in toddlerhood and can maintain friendships by the time they are preschool-aged (Howes et al., 1998; Lindsey, 2002). Sebanc (2003) found that preschoolers who had supportive friendships exhibited behaviors positively correlated with prosocial behavior whereas those who did not were more likely to engage in behaviors of aggression and peer rejection. Research shows that having friendships in early childhood is a predictor for fostering positive friendships later in life (Howes et al., 1998). Additionally, Hartup (1992) found that positive friendship development can play a significant role in the development of other social and interpersonal skills in children such as knowledge about selves and others, emotional and cognitive resources for interactions, and a model for subsequent relationships (Hartup, 1992, as cited in Sebanc, 2003).

Researchers have studied friendships through both direct observations of children's behavior and through children's perceptions of their peers. Howes (1983) used several observable measures of dyadic interactions between preschool-aged peers including the number of interactions involving initiations and corresponding responses to those initiations. Another behavior that has been used to indicate friendship in preschool-aged children, is the type of play children engage in with their peers. Children can engage

in parallel play with awareness, where they indicate an acknowledgement of their peer in play; and children can engage in cooperative play, where they are actively engaging with their peer with shared items—for which both types of play have been identified as indicators of friendship between peers (Chang et al., 2016; Howes, 1983). Lindsey (2002) conducted a study of preschoolers' perceptions of friendship among their peers in terms of mutual friendships and level of acceptance. Mutual friendship occurred when peers mutually identified each other as one of the top three friends they preferred to play with. Level of acceptance was measured by classmates classifying how much they liked playing with that peer. Those identified as someone others wanted to play with often were considered to have high levels of acceptance. The study found that children with at least one mutual friendship were perceived as having a higher social competence by their peers and teachers, than children who had no mutual friendships. Furthermore, children's perceptions were found to be stable and unchanging, even when measured a year later, suggesting that perceptions of social competency are maintained emphasizing the importance of early mediation with those with perceived low social competency.

Interventions aimed at improving the social development of children through friendship formations have mainly focused on reducing antisocial behaviors, such as aggression, which may inhibit friendship development (Johnson, 2003; Ostrov et al., 2015), and supporting children with disabilities by targeting behaviors associated with friendship such as acceptance of difference (English, Goldstein & Kaczmarek, 2005; Frea et al., 1999; Strain & Odom, 1988). A specific focus within the literature is on autism spectrum disorder because the social-communication deficits that are characteristic of the disorder may negatively impact important components to developing and maintaining

friendship such as joint attention, maintaining conversations, and perspective-taking (Sterrett et al., 2017).

As the field of early childhood education transitions to a focus on multi-tiered systems of support (MTSS), new interventions may be warranted to ensure that appropriate supports are available throughout all tiers of support system. MTSS represent a framework designed to deliver data-based interventions of appropriate intensity to match the demonstrated needs of a student (Carta & Young, 2019). There are three tiers of support; Tier 1 targets the entire class; Tier 2 targets a small group of students; and Tier 3 targets one student (Carta & Young, 2019). Typically, interventions to support friendship development are provided at Tier 2 or Tier 3 and include interventions or supports such as peer-mediated interventions, Pivotal Response Treatment, didactic lessons, social scripts, and visual prompts (Sterrett et al., 2017). These interventions directly teach social skills, either to the target student or to their peers, related to friendship development (e.g., social initiations and responses, asking questions, asking peers to join in play). Tier 1 interventions are less common in the research. Ostrov et al. (2015) implemented one example of a Tier 1 intervention as a preventative intervention to reduce forms of aggression and peer victimization and to increase prosocial behavior in an early childhood classroom. The 8-week intervention involved several teaching components and was conducted across 12 classrooms. The results of the study found that the classrooms receiving the intervention showed a decrease across measures of aggression and an increase in prosocial behaviors. However, this study looked at results among entire classrooms, and did not measure the effects on individual students. Based

on my review of the literature, no other study has investigated the effects of a Tier 1 intervention on friendship development in preschool classrooms.

Interactive shared book reading is an example of a Tier 1 recommended practice for early childhood educators that could impact friendship development for preschoolers. Children, beginning in infancy, can learn through observation while the adults in their lives (e.g., parents, educators) read books (National Research Council, 2000). Many early educators use the evidence-based practice of interactive shared book reading to achieve such goals from shared reading (Jackson et al., 2020). Interactive shared book reading involves an adult reading a book with a child or group of children while facilitating questions and dialogue about the theme of the book in a developmentally appropriate and accessible manner (Zucker et al., 2013). Interactive shared book reading is an evidence-based practice for improving receptive language and literacy skills and is used every day in early childhood classrooms and has been shown to promote acceptance among peers (Browne, 1996; Ostrosky et al., 2015). Specifically, skills related to personal and social development can support friendship development and related behaviors such as considering others' perspectives, understanding social relationships, and accepting differences between people (Browne, 1996; Ostrosky et al., 2015). Furthermore, some educators recommend using interactive shared book reading with books that focus on specific themes, such as inclusion of peers with disabilities to support children in developing positive attitudes about diversity among peers (Ostrosky et al., 2015). However, little research has looked specifically at the effectiveness of interactive shared book reading when books include themes about friendship, on changes in children's behaviors that are associated with friendship development. One potential method for



improving the likelihood that interactive shared book reading results in meaningful changes to children's observable friendship behaviors, may be to incorporate specific procedures for asking questions and responding to children's answers. By asking targeted questions and responding in a planned manner, a teacher may have more confidence that observable skills related to friendship are being addressed during the book reading, rather than more general notions of acceptance that have typically been targeted during shared book readings (e.g., Ostrosky et al., 2015). A research-supported method for providing targeted questions and responses during book readings, is through the use of RECALL procedures, which stands for *Reading to Engage Children with Autism in Language and Learning*. RECALL is an adaptation of interaction shared book reading that embeds specific instructional strategies to enhance engagement and discussion about a text (Jackson et al., 2020; Whalon et al., 2015). RECALL is typically used to target skills related to understanding contexts, themes, and improving literary skills through planned questions (i.e., completion, recall, open-ended, wh-questions, and distancing) and instructional scaffolding. These procedures, specifically distancing questions which intend to help students relate story themes to their own lives, may be useful for targeting friendship skills by providing opportunities for students to discuss friendship themes (e.g., sharing, turn-taking, empathy) within the context of their own lives with the support of the adult reader.

### **Research Questions**

Despite establishing the importance of friendship development for preschoolers and supporting the use of interactive shared book reading as a Tier 1 practice to promote the personal and social development of children in early childhood settings, there is little

research on the potential impact of interactive shared book reading related to themes of friendship on the development of friendships between individual preschoolers within a classroom. This study seeks to address this gap in the research by answering the following questions 1) Is interactive shared book reading RECALL procedures with books with themes related to friendship functionally related to friendship development within preschool dyads as measured by increases in a dyad's initiations, responses, and cooperative play during centers? 2) Does interactive shared book reading RECALL procedures with books with themes related to friendship increase preschool dyads' perceptions of friendship in terms of mutual friendship and level of acceptance?

## **Method**

### **Participants**

#### ***Students***

Participants in this study were preschoolers between the ages of 3 and 5 years old in the same private preschool classroom with a 1:4 teacher to child ratio; the first two dyads were in Ms. Carla's class and third dyad was in Ms. Sarah's class. Both head teachers had or were pursuing their Master's in interdisciplinary early childhood education. Ms. Carla was in her 17<sup>th</sup> year of teaching, and Ms. Sarah was in her 5<sup>th</sup> year of teaching. The preschool used the AEPS assessment to guide instruction for individuals and implemented activities based on goals from that assessment. The head classroom teacher provided a report on play behaviors of participants, inferencing abilities, and rates of attendance. Participants were chosen based on teacher report of play behaviors, teacher report on an AEPS measure for inferencing abilities, and participant report of friendship perceptions (discussed in further detail in the Screening section). Additionally, high rates of attendance (i.e., child was present at school for 90% of school days) were considered in selecting participants when applicable. Six participants were paired in dyads according to the procedures outlined in the Screening section below.

The participants in the first dyad were a 3-year-old male, Logan, and a 4-year old female, Merrick. The participants in the second dyad were a 4-year-old male, Paul, and a 4-year old female, Esther. The participants in the third dyad were a 5-year old female, Elise, and a 5-year old female, Abby. Information about participants including age, sex, ethnicity, special education services, and private services can be found in Table 1. Anecdotal notes about the participants' friendship and play skills were observed by the

main researcher in consultation with the head classroom teacher. Logan engaged with friends at school, seemed to want to join in on cooperative play, but often needed teacher assistance to join in play without disrupting the play (e.g., listening to peers, turn-taking). Logan would engage in certain activities independently, especially those involving trucks and blocks. Merrick often engaged in activities independently but would play near friends in the same area. Esther often engaged in activities independently and preferred to be with only one specific friend in her classroom. Paul engaged in play with the same few friends in his classroom and would often choose activities based on what those friends were doing. Elise often engaged with the same few friends in her classroom, in addition to her twin brother who she often played with. Elise would often direct the play amongst her peers. Abby often played independently, choosing activities such as drawing, reading in the library, or independent table activities. Abby would play with one or two other friends during table activities or in dramatic play.

Table 1. Participant Information

Participant Information					
Participant	Age	Sex	Ethnicity	Special Education Services	Private Services
Logan	3	Male	White	Speech	Speech
Merrick	4	Female	White	N/A	N/A
Paul	4	Male	White & Hispanic	Speech	N/A
Esther	4	Female	White	N/A	N/A
Elise	5	Female	White	N/A	N/A

Abby	5	Female	White	N/A	N/A
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***Others***

The primary researcher was a second-year graduate student in pursuit of a Master of Science in applied behavior analysis. The primary researcher had 4 years of experience working with preschool students as an assistant in a tuition-based early care and education center. The primary researcher studied RECALL procedures and received consultation from a doctoral-level professor in an interdisciplinary early childhood education program on RECALL procedures for the study. The primary reliability data collector was a second-year graduate student in pursuit of a Master of Science in interdisciplinary early childhood education.

**Setting and Materials**

Screening sessions occurred in a teacher office in the participants' school. These sessions occurred with the researcher, the participant, and one teaching assistant from the participant's classroom. Distractions were controlled for by ensuring that no distracting items (e.g., toys, tablets, food) were in the room. Probe and maintenance sessions occurred in the participants' classroom, specifically, in the designated block area of the classroom. During these sessions, up to four students were permitted in the area per the classroom rules. Therefore, up to two students in addition to a dyad could be in the area. The other students in the classroom as well as the head teacher and teaching assistants were present in the classroom. Intervention condition sessions occurred in the participants' classroom, in the designated library center of the classroom. During these sessions, only the researcher and the dyad were permitted in the area. The other students

in the classroom as well as the head teacher and teaching assistants were present in the classroom.

The materials and equipment used in this study included the classroom materials in the block center, the books with themes related to friendship, Interval Timer App, iPhone 7, pencil, data collection sheets (e.g., teacher report on play behaviors and attendance, friendship perception report, baseline, intervention, maintenance, reliability, and procedural fidelity).

### **Book Selection**

Books with themes related to friendship were initially chosen from recommendations by Ostrosky et al. (2015), PBS Kids, the National Association for the Education of Young Children (NAEYC), the lead researcher's personal knowledge of early childhood literature based on previous experience in classrooms, and recommendations from an education librarian at the researcher's university. The compiled list of books had a total of 45 books; 4 from Ostrosky et al. (2015); 17 from PBS Kids; 1 from NAEYC; 1 from personal knowledge; and 22 from the education librarian. Once a compiled list of books was created, teachers were also consulted to ensure that the books chosen were appropriate for the children in the classroom (i.e., appropriate comprehension level for the average student in their classroom) and novel for the participants (i.e., the book was not already available in the classroom nor had the teacher recently read that book or was planning on reading that book to the children during the course of the study). The rationale for selecting novel books for the study was first to consider the potential for history effects if the participants were familiar with the books from their classroom, and second, to be potentially more motivating to the

participants and to pique their interests in the book reading sessions with a new book rather than one they were already familiar with. The teachers removed 8 books from the list based on these guidelines. After the classroom teachers were consulted about the book list, the researcher collected all remaining books that were available at the local public library. The researcher then read each book and selected those that were most appropriate to the study in terms of length and relevancy to target friendship themes. In terms of length, the researcher looked for books that could be read with 6 RECALL questions in approximately 10-12 minutes based on developmental appropriateness of activity lengths for preschoolers and for feasibility purposes within the classroom. In terms of relevancy of target friendship themes, the researcher looked for books that emphasized themes related to playing with friends (e.g., participating in activities together, turn-taking, empathy, making friends with peers). Books that focused on other friendship related themes not emphasized in this study such as supporting friends in difficult times, friends over long distances, or friendship with siblings were not included. Additionally, books that focused on adjacent skills to friendship development such as emotional regulation or mindfulness were not included. Eleven books were in the final list, the researcher then selected six books for which they thought best fit the purpose of the study. From those six books, four books were then randomly selected and ordered for use during intervention (See Appendix F for full book list).

### **Dependent Variables**

The dependent variables were initiations, responses, and cooperative play that occurred between a dyad during a 5-min play session. The operational definitions of the dependent variables were adapted from Chang et al. (2016) and Howes (1983). Social

initiations were defined as vocal or non-vocal communication from either peer in the dyad directed to the other peer in the dyad. Examples of social initiations included behaviors such as offering a toy to the peer, greeting the peer, asking to play with the peer, asking to share a toy with the peer, commenting on toy the other peer is engaged with, and asking the peer a question. Nonexamples of social initiations included behaviors such as throwing a toy towards the peer, saying a negative or derogatory statement about or towards the peer (e.g., “I don’t like you,” “go away,” “that is stupid,”), and fighting with the peer (Chang et al., 2016). Social initiations were coded as “+” if an instance occurred during the interval or “-” if an instance did not occur during the interval. Responses to social initiations were defined as the peer of the dyad responding vocally or non-vocally to the communication from the other peer. Examples of responses included engaging in play with the peer, accepting the toy offered by the peer, gesturing towards the peer, and responding to a greeting, question, or comment from the peer. Nonexamples of responses included not responding to the initiation of the peer, refusing the toy offered by the peer, refusing to engage in play with the peer, and responding to the initiation with a negative or derogatory statement about or towards the peer (e.g., “I don’t like you,” “go away,” “that is stupid.”) (Chang et al., 2016). Responses to social initiations were coded as “+” if a response occurred during the interval or “-” if a response did not occur during the interval. Cooperative play was defined as the dyad being engaged with each other in a joint play activity. Examples of cooperative play included behaviors such as both peers sharing the same materials, engaging in the same imaginary play scenario (e.g., playing house, playing restaurant), and engaging in turn-taking with the same materials (e.g., building a tower together, racing cars on a track,



building a train track together). Nonexamples of cooperative play included behaviors such as both peers arguing, fighting, refusing to share materials, playing side-by-side but not interacting (e.g., both building towers but not interacting with each other vocally or non-vocally), playing with different sets of materials unrelated to a joint play activity (e.g., one child playing setting the table for a meal while another child colors on a notepad), and engaging in aggressive behaviors towards one another (Chang et al., 2016; Howes, 1983). Cooperative play was coded as “+” if it occurred at the end of the 20 s interval or “-” if it did not occur at the end of the 20 s interval.

Initiations and responses were measured using a partial interval recording system with a 20 s interval. Cooperative play was measured using a momentary time sampling system with a 20 s interval. The intervals selected for measuring the dependent variables were also informed by Chang et al. (2016). The percentage of intervals in which an initiation, response, and cooperative play all occurred was the primary dependent variable that guided experimental decisions based on previous research (Chang et al., 2016 and Howes, 1983).

### **Experimental Design**

This study utilized a multiple probe across participants single-case experimental design. This design was chosen due to several factors including limited previous research to indicate if initiations, responses, and cooperative play were reversible or irreversible behaviors, and this design functions for both types of behaviors. Additional factors to choosing this design was the need for several participants to demonstrate effect, and the feasibility of data collection with a limited number of researchers. Probe sessions occurred for the dyads during the following times during the study: probes occurred for

all dyads prior to intervention, probes occurred for every dyad before intervention began for a dyad, and probes occurred a minimum of every 8 sessions for each dyad until intervention began. Experimental control was demonstrated in the multiple probe design when threats to internal validity were reasonably controlled for and when behavior change occurred when intervention was introduced only in the tier receiving intervention. Threats to internal validity such as history, maturation, covariation, instrumentation, procedural infidelity, testing, attrition bias, sampling bias, data instability, adaptation, the Hawthorne effect, and cyclical variation were considered and accounted for with various methods (Ledford & Gast, 2018). History was considered by ensuring that the books chosen for the intervention differed than that of the typical curriculum used in the classroom. Maturation and covariation were considered through screening measures that assisted in indicating that the dyads were unlikely to spontaneously begin developing friendships with one another without intervention. Instrumentation was considered by piloting the definitions and recording systems in the classroom prior to the study beginning, training procedural fidelity and reliability observers to fidelity, and discussing discrepancies. Procedural infidelity was considered with the use of a visual aid for the primary researcher during intervention to ensure that all planned questions were asked and addressed as intended during the book reading. Testing was considered within the multiple probe design because testing occurred intermittently to reduce the likelihood that there may be a facilitative or inhibitive effect. Additionally, the probes occurred in a naturalistic setting and manner that was not likely to produce testing effects. Attrition bias was controlled for by including a 90% or higher rate of attendance during screening and recruiting a fourth dyad in case attrition occurred. Researchers intended to consider

sampling bias by randomly selecting dyads that passed screening to be participants, however due feasibility purposes because of the limited number of dyads that returned consent forms, researchers were not able to randomly select participants. Data instability was considered by implementing intervention after stable probe data occurred.

Adaptation and the Hawthorne effect were considered by first, making the researchers familiar personnel within the classroom prior to the study through classroom visits and interactions with the participating classroom unrelated to the study to reduce the likelihood of behavior changes due to novel observers and second, by observing behaviors during probes from a distance to reduce the likelihood of behavior changes due to observation. Lastly, cyclical variation was considered by varying the days of the intervention sessions to ensure that no dyad received intervention across the same 4 days (e.g., dyads did not all receive intervention during the same sequence of days such on Monday, Tuesday, Wednesday, and Thursday).

## **Procedures**

### ***Screening Procedures***

Screening procedures included a teacher report on play behaviors (Appendix A), a teacher report on inferencing ability (Appendix A), a teacher report on attendance (Appendix A), and a participant report on friendship perceptions (Lindsey, 2002) (Appendix B). The teacher report on play behaviors was conducted once at the beginning of the study, and again at the end of the study. The teacher report on attendance and inferencing ability were conducted once at the beginning of the study. Table 2 shows a comprehensive list of measurement reports and when in the study they were conducted.

Table 2. Measurement Reports During Study

<b>Measurement Reports During Study</b>			
	<b>Timeline of Study</b>		
	<i>Yes</i> - Indicates Measure was Completed During Phase of Study <i>N/A</i> - Indicates Measure was not Conducted During Phase of Study		
<b>Measure</b>	<i>Screening</i>	<i>During Study</i>	<i>After Study</i>
Teacher Report on Play Behaviors	Yes	N/A	Yes
Teacher Report on Inferencing Abilities	Yes	N/A	N/A
Teacher Report on Attendance	Yes	N/A	N/A
Participant Report on Friendship Perceptions	Yes	N/A	Yes

For the teacher report on play behaviors, the classroom teacher reported a list of dyads who never or rarely played together and a list of dyads who sometimes or always play together. For the teacher report on attendance, the classroom teacher reported if any of the potential participants listed in the teacher report on play behaviors had a history of poor attendance or any barriers to high rates of attendance known to the teacher.

Participants with a history of consistent attendance (90% or greater) or without barriers to high rates of attendance were prioritized due to the nature of the study. The teacher report

on inferencing ability asked teachers to report whether any students listed in the teacher report of play behaviors would score a 0 on the AEPS 2 E.2 item which states “Child makes statements and appropriately answers questions that require the child to do the following: give reason for inference, make prediction about future or hypothetical event, give possible cause of some event.” A score of 0 would indicate that the child did not have the skill to answer the questions posed during the interactive shared book reading intervention and therefore intervention would not be useful to the child. The teachers were familiar with the AEPS scoring prior to the study. The teacher report on dyads that never or rarely play together, inferencing ability, and rates of attendance were used to create a list of potential dyads for additional screening. The researcher attempted to randomly choose potential dyads that met the above criteria for additional screening. However, due to limited participant consents being returned, the researcher chose dyads based on which teacher-reported pairings both returned consent forms first.

The researcher then conducted a friendship perception report with the potential dyads based on procedures in Lindsey (2002). The friendship perception report was conducted once at the beginning of the study to help identify potential dyads and were repeated at the end of the study as a social validity measure (see Social Validity Procedures section). For this measure, participants met with the researcher and one of the teaching assistants from their classroom in a teacher office space in their school. The researcher explained to the participant that they would be asked questions about their classmates and gained assent from the participant. The researcher presented pictures of all the participant’s classmates to them and asked the participant to identify each of them by name. Then the researcher asked the participant to identify, by pointing to their

pictures, three classmates they most liked to play with. Then the researcher presented three sorting trays of different sizes and colors. The researcher explained to the participant that the smallest bin represented classmates they “did not like to play with at all”, the medium bin represented classmates they “liked to play with only a little or sort of”, and the largest bin represented classmates they “liked to play with a lot”. The researcher then asked the participant to sort the pictures of the classmates into the corresponding bin. During the friendship perception measure, the researcher provided verbal specific praise to the participant for completing the activity. The participants’ answers were recorded. The assistant teacher reported whether the results of the participant were generally accurate based on their observation, this helped researchers to confirm whether or not participants understood the sorting task. Dyads who mutually identified each other as a classmate that was not one of their three classmates they liked to play with and identified each other as a classmate they did not like to play with at all were then selected as a dyad for the study. If one of the participants screened based on teacher recommendations identified the other participant in their dyad as a classmate that was one of their three most liked classmates or identified the other as a classmate they liked to always play with, then they were disqualified as a dyad for the study. One exception was made to this in the case where a teaching assistant reported that the participant did not sort the classmates according to the task directions and confused the “liked to play with a lot” bin and the “did not like to play with at all” bin, and therefore identified the potential classmate as someone they always played with when that was not the observation of the teaching assistant. In this case, the researcher consulted with the head teacher as to whether the participant’s results were accurate, the head teacher

concluded with the teaching assistant that the participant miscategorized the dyad partner. This information was reflected in their observed play behavior during probe sessions and therefore were permitted to continue as participants.

### ***General Procedures***

The objective of this intervention was to see if using the interactive shared book reading RECALL procedure (Jackson et al., 2020; Whalon et al., 2015) with books with themes related to friendship increased friendship development behaviors of initiations, responses, and cooperative play in preschool dyads. All sessions occurred during the classroom's morning or afternoon free play time. The independent variable was the RECALL procedure with books with themes related to friendship. The dependent variables were the percentage of 20 s intervals in which an initiation, response, and cooperative play occurred during a 5-minute free play session in block area. The experimental design was a multiple probe single-case design. For the intervention, the researcher implemented the intervention RECALL procedures with each dyad in the library area and continued collected probe data during the first 5 minutes of play sessions following the intervention session. This process was repeated for each dyad.

### ***Probe Procedures***

Probe sessions were conducted in the participants' classroom for each dyad during their morning or afternoon free play time. Probe sessions continued during the intervention condition, except that the probe sessions occurred after a book reading RECALL session. Each dyad was directed by their classroom teacher to play in the block center for a minimum of 5 min. Block area was chosen as the center because it facilitates interaction between students and the materials rarely change. Other students were

permitted to play in this center at this time, as the classroom rule is a maximum of four students in block area at a time, so in addition to the two participants, another two students could potentially be playing in the area at the same time. The researcher requested that teachers and teaching assistants not facilitate play between students during the play session. During the play session, the researcher observed the first 5 min from the adjacent center within 3 feet of the block center to minimize potential reactivity from being observed. The researcher recorded initiations, responses, and cooperative play between the dyad according to the operational definitions. During data collection, the researcher recorded if an initiation or response occurred from either participant of the dyad during the 20 s interval and if cooperative play was occurring at the end of the 20 s interval. The researcher was notified of the 20 s interval by a vibration from an interval timer set on their watch, therefore undetectable to the participants (See Appendix C for probe sessions data sheet).

### ***Intervention Condition Procedures***

The intervention condition procedures included interactive shared book reading RECALL procedures with books related to themes of friendship. In RECALL, the same book is typically read repeatedly across the span of approximately 4 days per week. Day one of book reading focused on completion and recall questions. Day two of book reading focused on level one questions. Day three focused on level two questions. Day four focused on level three questions. RECALL uses five types of questions: completion, recall, open-ended, wh-questions, and distancing. There are three levels of questions. At level one, wh-questions (e.g., “What is this?” “What does it do?” “What is this part called?”) are asked to introduce vocabulary by teaching names, functions, and attributes.



At level two, open-ended questions (e.g., “What is happening in this picture?” “What do you see here?” “Where would you go to do this?” “When do you do this activity?”) are asked to extend the vocabulary through open-ended questioning. At level three, distancing questions (e.g., “Why is this character doing this? “How would you feel if this happened to you?” “How do you think they are feeling right now? Have you ever felt like that?”) are asked to understand plot elements and relate the story to the child’s experiences. For this study, due to the participants’ demonstrated skills in answering levels one and two questions during typical classroom reading time and demonstrated ability to answer inferencing questions as reported in the teacher report on inferencing abilities, all book reading session involved level three questions related to connecting the story contents to the child’s experiences specifically focused on prosocial questions and friendship related themes. In addition, a new book was read every session, so long as the participants demonstrated 80% or higher correct responding to the RECALL sessions (see Appendix E for RECALL questions corresponding to each book; see Appendix D for intervention sessions data sheet).

Researchers conducted sessions for a minimum of 4 days over the course of 2 weeks with one book reading session occurring a day. The intervention conditions arrangement included one researcher and the two participants of a dyad. Both participants of the dyad had to be present to conduct a session. Each session included a book reading with six RECALL questions and one connecting/discussion question at the end of the book that promoted conversation between the participants (e.g., “Have you ever made a new friend at school? Who was it?”). During the free play time, the researcher directed the dyad of participants to the library center. The researcher began by gaining the

participants' attention, greeting the children, and providing a review of the classroom rules for library center and reading (e.g., keeping hands to themselves, listening to the teacher, raising hands for questions or comments). Then the researcher engaged the children in reading a book together while using pre-established RECALL questions corresponding to the book for that day. The questions were written on sticky-notes and placed on the corresponding page within a book. This provided participants with a visual cue as to when questions would be asked and to which page in the story the question was referencing. The researcher scaffolded answers to questions to support the participants in learning the targeted content per the RECALL procedures. After the book reading session, the researcher thanked participants for their attention and participation. The participants were then directed by the researcher to play in the block area within 10 minutes after the end of the intervention session. The researcher then collected probe data according to probe procedures outlined above.

Each dyad received intervention on four books with themes about friendship. Each book was read to a dyad once a day until the dyad achieved 80% accuracy in responding to RECALL questions. After reaching the 80% criterion, a new book was introduced at the next intervention session. Once a dyad achieved the 80% criterion for each book, the intervention condition ended. The sequence in which books were presented was randomized for each dyad. At minimum, a dyad could participate in four intervention sessions if they answered 80% of the RECALL questions correctly on the first day that each book was read.

## **Modifications**

### ***Positive Reinforcement for Answering Questions***

During the first session with Dyad 1, the participants had difficulty focusing on reading the book and were not attempting to answer questions without scaffolding. The researcher consulted with the classroom teacher to determine that the questions were within the participant's scope of competence, but that the children may need to receive positive reinforcement when being asked to engage in a teacher-directed activity. The classroom teacher recommended implementing positive reinforcement in the forms of stickers with the participants. Beginning in the second intervention session with Dyad 1, and continuing throughout all intervention sessions with all dyads, the participants were given a sticker every time they answered a question. To implement this, the researcher had a bag of individual stickers, and two identical small containers, one for each child. The researcher placed the containers on a shelf in the library out of reach from the participants but within arms-reach of the researcher. The researcher reminded the participants at the beginning of the intervention session that they would get a sticker for every question they answered and that they were going to take turns answering the questions. Once a participant answered the question, regardless of if they needed to be scaffolded to the correct answer, they received a sticker. At the end of the intervention session, the researcher gave the participants their stickers.

### ***Additional Intervention Sessions***

Initially, researchers planned on implementing a minimum of four intervention sessions with dyads, with more intervention sessions being needed if dyads did not reach the minimum 80% correct responding for the planned RECALL questions. However, during intervention in Dyad 1, the percentage of intervals with all dependent variables occurring increased from 0% in session 3 to 90% in session 4. Researchers concluded

that this increase constituted extending intervention sessions until data stabilized. To conduct these additional sessions, the researcher returned to the book list of acceptable books and chose two more additional books using the same guidelines as before. These two books were randomized to be used for the fifth and sixth sessions.

### **Maintenance Procedures**

Planned maintenance procedures followed the guidelines outlined in probe procedures. If maintenance data for participants decreased from intervention data, the dyad received one *booster* intervention session at level three of RECALL questions. The booster session occurred after each tier had completed the intervention condition. Although planned, maintenance procedures were never used for this study.

### **Social Validity Procedures**

#### ***Friendship Perception Report***

The friendship perception measures outlined in the screening procedures were conducted once for every dyad, and twice for two dyads. The first measure occurred during screening procedures, and the second measure occurred at the end of the study. The second friendship perception report was used to see if there were any demonstrated differences in the participant's perception of their dyad classmate throughout the study.

#### ***Teacher Report of Observed Play Behaviors***

A teacher report of observed play behaviors occurred during screening and at the end of the study. The report asked the teacher to identify pairs of students who played together never or rarely, and pairs of students who sometimes or always played together. This teacher report on play behaviors was used to see if there were any differences in the teacher's perceptions of play behaviors both for the dyads in the study and for the other

children in the classroom. This provided information on the teacher's perceptions on the effectiveness of the intervention.

### **Reliability and Fidelity**

Reliability and fidelity data were collected in-vivo by a graduate student pursuing their Master's in interdisciplinary early childhood education. This data collector was trained by the primary researcher with consultation from a doctoral-level professor in an interdisciplinary early childhood education program. Training involved reviewing the operational definitions of target behavior, data sheets, intervention procedures, probe procedures, and practicing data collection with in-vivo rehearsal and feedback with two students in Ms. Carla's class who were disqualified from participating in the study due to being the daughters of the reliability data collector. Reliability and fidelity data collectors demonstrated 90% fidelity in training before the beginning of the study. If agreement fell below 90% agreement during the study, then the operational definitions and procedures were reviewed by the primary researcher and the data collector to mediate any discrepancies for future data collection. No data collectors were masked to the study conditions due to limited resources and the context of the study.

### ***Interobserver Agreement***

Interobserver agreement was calculated using point-by-point method for each session when reliability was collected. Reliability data was collected during the 5 min play session for initiations, responses, and cooperative play. For each 20 s interval, data was coded as either an agreement (e.g., both data collectors coded the same response for the interval) or as a disagreement (e.g., data collectors coded different responses for the

interval). To then calculate a percentage of agreement, the number of agreements was divided by the number of agreements plus disagreements, multiplied by 100.

### ***Procedural Fidelity***

Procedural fidelity was calculated by dividing the number of observed behaviors by the number of planned behaviors multiplied by 100. Procedural variables for probe sessions included (a) did the implementor completely fill out data sheet prior to the start of the probe session (b) was the implementor prepared prior to the start of the probe session? (e.g., sitting in place where they could hear and see participants with all necessary materials including interval timer, data sheet, pencil) (c) did the implementor signal to the teacher that she may indicate to the participants to play in block area (d) did the implementor record data during the 20 s intervals according to procedures (e.g., was the data collector attending for the full 5-minute session and recording data during the 20 s interval) (e) did the implementor record if other students were present in the center and if an adult facilitated during play. Procedural variables for the interaction shared book reading RECALL sessions included (a) did the implementor review the rules for library center with participants (e.g., keeping hands to themselves, listening to the teacher, raising hands for questions or comments) (b) did the implementor read the entire book and ask all planned questions for the designated book (each question was assessed individually) (c) did the implementor scaffold participants' answers appropriately when necessary, and in accordance with the RECALL procedures (d) did the implementor thank participants for their time and attention at the end of the session.

## **Results**

### **Interobserver Agreement**

Interobserver agreement was collected for 40% of probe sessions and 66.6% of intervention sessions in for Dyad 1; 0% of probe sessions and intervention sessions in Dyad 2; and 16.6% of probe sessions in Dyad 3. For Dyad 1, IOA was 100% for each dependent variable of initiations, responses, and cooperative play during probe sessions. For Dyad 1, IOA for the occurrence of all dependent variables in an interval was 100% for probe sessions. For Dyad 1, IOA for initiations was 93% for both intervention sessions. For Dyad 1, IOA for responses averaged 93% (range 86%-100%) for intervention sessions. For Dyad 1, IOA for cooperative play was 93% for both intervention sessions. For Dyad 1, IOA for the occurrence of all dependent variables in an interval averaged 93% (range 86%-100%) for intervention sessions. IOA averaged 96.5% across all dependent variables across all sessions for Dyad 1. IOA was 100% across all dependent variables for Dyad 3. IOA data was not collected for Dyad 2 sessions due to the reliability data collector contracting COVID-19, and due to the limited number of days remaining in the participants' school year.

### **Procedural Fidelity**

Procedural fidelity was collected for 33.3% of intervention sessions in Dyad1; and 0% of intervention sessions in Dyad 2. Procedural fidelity averaged 96.5% (range 93%-100%) for intervention session in Dyad 1. Procedural fidelity data was not collected for Dyad 2 sessions due to the reliability data collector contracting COVID-19 and due to the limited number of days remaining in the participants' school year.

### **Intervention**

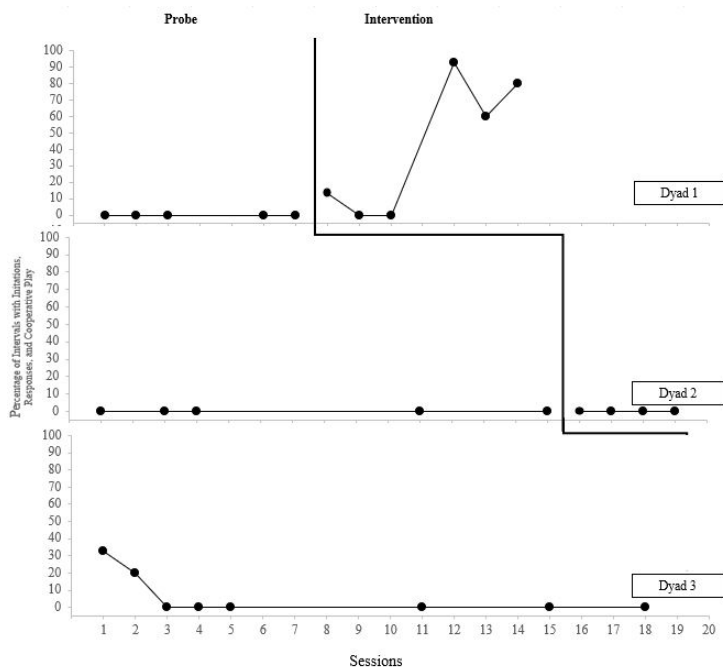


Figure 1. Primary Dependent Variable Results

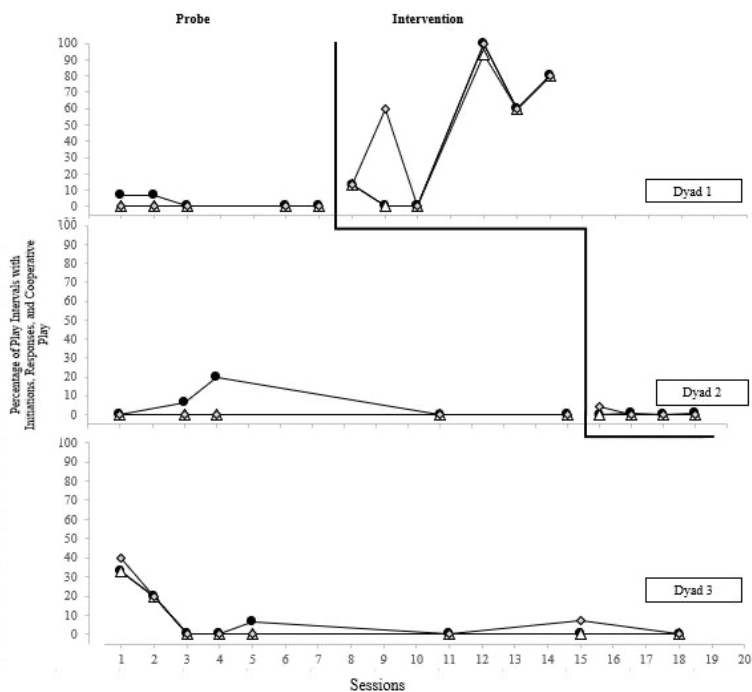


Figure 2. All Dependent Variables Independent Results

Note. Closed circles represent initiations; open triangles represent responses; and open diamonds represent cooperative play.



Results in Figure 1 show the percentage of intervals during play sessions in which the primary dependent variables (i.e., co-occurrence of initiations, responses, and cooperative play in the same 20 s interval). Probe sessions prior to intervention show that the percentage of intervals in which the primary dependent variable occurred were at a relatively low and stable level for all dyads (range 20% - 33%). It should be noted that in Dyad 3 the first two probes were slightly elevated, potentially due to a teaching assistant facilitating play among participants by prompting conversations and cooperative play between the two participants. After these occurrences, the researcher reminded teaching assistants and head teachers to not facilitate play among participants and recorded if facilitation occurred during probe sessions. Following the first two probe sessions in Dyad 3, no adult facilitation occurred, and the percentage of intervals with all the primary dependent variable remained at 0%. Data were stable across all dyads before beginning intervention in Dyad 1. Initially, the first three intervention sessions in Dyad 1 saw minimal changes from probe sessions before intervention. However, during the fourth session in Dyad 1, a significant increase in level occurred from 0% to 90% of intervals with the primary dependent variable. Due to the elevated data point, researchers decided to extend intervention sessions until data stabilized (see Modifications for additional information). Data remained stable between the fourth and sixth play session probes as intervals with occurrences of the primary dependent variable ranged from 60% to 90%. Data in Dyads 2 and 3 remained stable at 0% of intervals with all three dependent variables during intervention in Dyad 1. Data in all three dyads were stable prior to Dyad 2 intervention. During Dyad2 intervention, data remained low with 0% of intervals with occurrences of the primary dependent variable. Data remained stable in Dyad 3 during

intervention in Dyad 2, data was not collected in Dyad 1 during intervention in Dyad 2 due to participant absences. Intervention was not implemented in Dyad 3 due to the preschool’s regular school year ending. Data for each dependent variables is represented independently in Figure 2 for reference (see note for key). As reported in the Procedures section, classroom peers were permitted in the block area during data collection according to the classroom rules. The percentage of session in which other peers were present in the block area for data collection is reported in Table 3. For Dyad 1, session 3 of probe sessions and session 4 of intervention sessions were the two instances in which other peers were not in block area during data collection.

Table 3. Percentage of Sessions in which other Peers were Present in Block Area for Data Collection

Percentage of Sessions in which other Peers were Present in Block Area for Data Collection		
<b>Dyad</b>	<b>Probe Sessions</b>	<b>Intervention Sessions</b>
Dyad 1	80%	83.4%
Dyad 2	100%	100%
Dyad 3	100%	100%

**Social Validity Measures**

***Friendship Report***

For all dyads, pairs were made according to Screening procedures above. The friendship perception measures were repeated at the end of the study for some participants to see if perception changed for any dyads. Dyad 1 were not administered the friendship perception measure at the end of the study due to unforeseen absences. For Dyad 2, during initial screening, Esther listed Paul as a peer she did not play with at all,

and Paul listed Esther as a peer he only played with a little. Neither peer identified the other as one of their three most liked classmates. At the end of the study, Esther listed Paul as one of her three most liked classmates, but still continued to report him as a peer she did not play with at all, and Paul continued to report Esther as a peer he played with a little and did not list Esther as one of his three most liked classmates. For Dyad 3, during initial screening, Elise listed Abby as a peer she played with a lot, however the teaching assistant said this was not an accurate sorting, and Abby listed Elise as a peer she played with a little. Neither peer identified the other as one of their three most liked classmates. At the end of the study, Elise listed Abby as a peer she played with a little, and Abby continued to list Elise as a peer she played with a little. Neither peer identified the other as one of their three most liked classmates.

#### ***Teacher Report on Observed Play Behaviors***

For all dyads, pairs were made according to Screening procedures above. The teacher report on play behaviors was used initially to identify potential pairs, the measure was repeated at the end of the study for Ms. Carla's class to see if the teacher observed any changes in peers' play behaviors. For Dyad 1, who were initially listed as peers who never or rarely played together, at the end of the study the classroom teacher reported that they now sometimes or always played together. For Dyad 2, the teacher did not list the pair in either category.

## Discussion

The goal of this study was to answer the following research questions 1) Is interactive shared book reading RECALL procedures with books with themes related to friendship functionally related to friendship development within preschool dyads as measured by increases in a dyad's initiations, responses, and cooperative play during centers? 2) Does interactive shared book reading RECALL procedures with books with themes related to friendship increase preschool dyads' perceptions of friendship in terms of mutual friendship and level of acceptance? using a multiple-probe single-case design.

To address the first research question above, this study was unable to conclusively address this question as there was only one demonstration of a functional relation between interactive shared book reading RECALL procedures with books with themes related to friendship and dyad's initiations, responses, and cooperative play during centers. To address the second research question above, this study was unable to conclusively address this question as the researcher was unable to collect this measure post-intervention for Dyad 1 which was the only dyad to complete intervention. For Dyad 2, one participant did report the other as one of her most liked peers after the intervention sessions which was a change from her pre-intervention friendship perception, however the other participant did not report the peer as one of his most liked peers after intervention sessions, meaning that they would fail to meet requirements for mutual friendship. The results were not conclusive to suggest that interactive shared book reading RECALL procedures is functionally related to friendship play behaviors or friendship perceptions, suggesting that more research is needed to conclusively address these research questions.

If interactive shared book reading RECALL procedures had been shown to be an effective intervention, it would have provided preschool classroom teachers a simple and feasible way to foster friendship development amongst their students. With little research reviewing potential Tier 1 interventions, the researcher decided to use interactive shared book reading because of its standard use in most early education classrooms already. If this intervention had been effective, it would have been an intervention in which teachers could make low-effort modifications to the interactive shared book already taking place in their classroom and could improve friendship between students within their classroom. If this intervention had conclusively been shown to not be an effective intervention, it would have provided information that more research needs to be done to find more intensive interventions that would foster friendship development amongst preschool students and that interactive shared book reading RECALL procedures as conducted in this study was not enough to improve friendships as defined by this study.

Upon review of prior research, no research had attempted to use a single-case design to evaluate the effectiveness of interventions aimed at further developing friendships between preschool students. However, this study does support the need for further research into the impact of interactive shared book reading with children in fostering friendships amongst their classmates, as Dyad 1 saw potentially promising results behaviorally. In terms of prior research results on interactive shared book reading, this study aligned with prior research in terms of being a developmentally appropriate practice for preschool-aged students as participants were able to participate in the intervention in a socially appropriate manner. Additionally, the RECALL questions with scaffolding allowed students to answer all planned distancing questions. In terms of the

friendship perception measures from Lindsey (2002), results from the student report and the teacher report aligned and were then reflected in baseline results with all unfacilitated play amongst all dyads showing 0% of occurrences of the primary dependent variable. These results suggest that the Linsey (2002) measures accurately reflected play behaviors between dyads for baseline measures for this study.

This study encountered many difficulties due to its nature as applied research in a classroom and therefore has several notable limitations. The first limitation is the rigor of data collection in terms of procedural fidelity and interobserver agreement in Dyads 2 and 3. As this was a master's level thesis with limited resources, there was only one primary data collector and one reliability data collector. At the end of the study, the reliability data collector and her family contracted COVID-19 and was therefore unable to collect data for the last 2 weeks of the study. An additional limitation is the lack of continued intervention data in the second and third tiers. Due to time constraints because of the participants' school year ending, researchers were unable to continue the intervention sessions in Dyad 2 or begin intervention sessions in Dyad 3. Additionally, due to unforeseen absences of the participants in Dyad 1, researchers were unable to collect maintenance probes and friendship perception report data following intervention.

The intervention in this study was at least temporarily effective for Dyad 1, suggesting that future research is needed to see if results would generalize across more dyads and if they would have sustaining effects. Anecdotally, the classroom teacher reported that she observed the pair of students engaging in play with each other after intervention session 4 more than they had in the previous school year. Additionally, future research should consider measuring participants' motivation to expand their

friendships and should continue including behavioral and perceptual measure of friendship. Anecdotally, the researcher and classroom teacher noticed that one participant in Dyad 2 did not seem to want to have more friends than the main peer she interacted with regularly in the classroom. During probe sessions she rejected nearly all initiations at play from her dyad peer but then listed him as one of her favorite peers in the friendship perception report at the end of the study. It is possible that for some individuals expanding their friendships in terms of who they play with is not a high priority, thus highlighting the importance of measuring the participant's motivation to expand their friendships. It is also possible that for some individuals who they play with is not directly related with who they consider a friend, thus highlighting the importance to have both behavioral and perceptual measures in a study such as this. Lastly, future research may investigate the potential different effects of choosing novel books for intervention compared to choosing books that participants are already familiar with. For this study, the researcher selected novel books in attempt to pique the interest of participants by making the book reading sessions more motivating as they were exposed to novel stories. However, it is possible that results may have varied depending on the familiarity with the books and perhaps future research may address if how familiar the participants are with the selected books plays a role in their level of application of friendship themes from the book into their play skills.

Results of this study were not able to conclusively determine the effects of interactive shared book reading RECALL procedures with books with themes related to friendship on the development of preschoolers' friendships due to several limitations. However, this study was able to see some notable changes in observed play behaviors

and peer and teacher perceptions of friendship behaviors that suggest that future research would be valuable to continuing answering these questions regarding supporting preschoolers' friendship development.



## Appendices

### Appendix A. Director Report

#### Director Report on Play Behaviors, Attendance, and AEPS Inferencing Ability

##### Play Behaviors

Please identify pairs of students who rarely or never play together and those that sometimes or always play together.

*Example:*

*Never/Rarely*

\_\_\_\_\_ *Jane* \_\_\_\_\_ & \_\_\_\_\_ *Joe* \_\_\_\_\_

Never/Rarely Play Together	Sometimes/Always Play Together
1. _____ & _____	1. _____ & _____
2. _____ & _____	2. _____ & _____
3. _____ & _____	3. _____ & _____
4. _____ & _____	4. _____ & _____
5. _____ & _____	5. _____ & _____
6. _____ & _____	6. _____ & _____
7. _____ & _____	7. _____ & _____
8. _____ & _____	8. _____ & _____
9. _____ & _____	9. _____ & _____
10. _____ & _____	10. _____ & _____

##### Attendance

Please identify if any of the students listed above have low rates of attendance (less than 90%) or may have barriers to attendance that you are aware of (e.g., moving schools in March, extended family vacation lasting more than 1-week, chronic health conditions.) Please **DO NOT** provide the specific barrier. This will help inform us when choosing participants as it is important that students be present as much as possible to receive the intervention.

##### AEPS Inferencing Abilities

*Please note if any of the students listed above would NOT score a 1 or a 2 on the skill listed below.*

**2. Makes statements and appropriately answers questions that require reasoning about objects, situations, or people**  
**[NJ]**

*Child makes statements and appropriately answers questions that require the child to do the following: give reason for inference, make prediction about future or hypothetical event, give possible cause of some event. Note: If a child's performance on all objectives was scored with a 2, then the goal is scored 2. If a child's performance on the objectives was scored with any combination of a 0, 1, and 2, then the goal is scored 1. If a child's performance on all objectives was scored with a 0, then the goal is scored 0.*

## Appendix B. Friendship Report

Friendship Perception Report Adapted from Lindsey (2002)

Student Initials:

Three friends' initials:

Not at all play with Initials:

Only a little or sort of play with Initials:

A lot play with Initials:

Did they identify their potential dyad partner as one of their three friends? \_\_\_\_\_

Did they identify their potential dyad partner as one someone they play with not at all or only a little? \_\_\_\_\_

---

Student Initials:

Three friends' initials:

Not at all play with Initials:

Only a little or sort of play with Initials:

A lot play with Initials:

Did they identify their potential dyad partner as one of their three friends? \_\_\_\_\_

Did they identify their potential dyad partner as one someone they play with not at all or only a little? \_\_\_\_\_

---

Student Initials:

Three friends' initials:

Not at all play with Initials:

Only a little or sort of play with Initials:

A lot play with Initials:

Did they identify their potential dyad partner as one of their three friends? \_\_\_\_\_

Did they identify their potential dyad partner as one someone they play with not at all or only a little? \_\_\_\_\_

## Appendix C. Procedural Fidelity for Interactive Shared Book RECALL Sessions

Procedural Fidelity for Interactive Shared Book Reading RECALL Sessions

Date:

Time:

Data Collector:

Main Reliability

Dyad Initials:

Session: Intervention

Specific Session #:

Step	Did this behavior occur? (+ Yes, - No)			
Did the data collector review the rules for library center with participants? (e.g., keeping hands to themselves, listening to the teacher, raising hands for questions or comments.)				
Did the data collector read and ask all planned questions for the designated book?	Did this behavior occur (+ Yes, - No)	Did the student answer this question correctly? (+ Yes, - No)	If no, did the data collector scaffold the answer appropriately? (+ Yes, - No, N/A)	If scaffolded, did the student answer correctly?
1.				
2.				
3.				
4.				
5.				
6.				
Connecting/Discussion Question				
Did the data collector thank participants for their time and attention at the end of the session?				

Notes:

Procedural Fidelity Score (Observed/Planned Behaviors):

## Appendix D. Data collection for Initiations, Responses, Cooperative Play

Data Collection for Initiations, Responses, Cooperative Play (Used for Main and Reliability Data Collection)

Date:

Time:

Data Collector: Main Reliability

Dyad Initials:

Session: Baseline Probe Intervention Maintenance

Specific Session #:

If Reliability or Procedural Fidelity collected on this session, which one? Reliability Procedural Fidelity

Step	Did this behavior occur? (+ Yes, - No)
Did data collector completely fill out data sheet prior to the start of the probe session?	
Was the data collector prepared prior to the start of the probe session? (e.g., sitting in place where they could hear and see participants with all necessary materials including interval timer, data sheet, pencil)	
Did the data collector signal to the teacher that she may indicate to the participants to play in block area?	
Did the data collector record data during the 20 s intervals according to procedures? (e.g., was the data collector attending for the full 5-minute session and recording data during the 20 s interval)	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Intervals 20 s	0-20	20-40	40-60	0-20	20-40	40-60	0-20	20-40	40-60	0-20	20-40	40-60	0-20	20-40	40-60
Initiation (+, -)															
Response (+, -)															
Cooperative Play (+, -)															

Key: Initiations and responses: + occurred during interval, - did not occur during interval  
Cooperative play: + occurring at end of interval, - not occurring at end of interval

Note: Did a peer(s) join the center, if so, mark which interval:

Note: Did an adult (teacher) facilitate during the data collection?

Notes:

If reliability collected (agreements/ agreements + disagreements X 100) score:

Operational definitions

**Social initiations** were defined as vocal or non-vocal communication from either peer in the dyad directed to the other peer in the dyad. Examples of social initiations included behaviors such as offering a toy to the peer, greeting the peer, asking to play with the peer, asking to share a toy with the peer, commenting on toy the other peer is engaged with, and asking the peer a question. Nonexamples of social initiations included behaviors such as throwing a toy towards the peer, saying a negative or derogatory statement about or towards the peer (e.g., “I don’t like you,” “go away,” “that is stupid,”), and fighting with the peer.

**Responses to social initiations** were defined as the peer of the dyad responding vocally or non-vocally to the communication from the other peer. Examples of responses included engaging in play with the peer, accepting the toy offered by the peer, gesturing towards the peer, and responding to a greeting, question, or comment from the peer. Nonexamples of responses included not responding to the initiation of the peer, refusing the toy offered by the peer, refusing to engage in play with the peer, and responding to the initiation with a negative or derogatory statement about or towards the peer (e.g., “I don’t like you,” “go away,” “that is stupid.”).

**Cooperative play** was defined as the dyad being engaged with each other in a joint play activity. Examples of cooperative play included behaviors such as both peers sharing the same materials, engaging in the same imaginary play scenario (e.g., playing house, playing restaurant), and engaging in turn-taking with the same materials (e.g., building a tower together, racing cars on a track, building a train track together). Nonexamples of cooperative play included behaviors such as both peers arguing, fighting, refusing to share materials, playing side-by-side but not interacting (e.g., both building towers but

not interacting with each other vocally or non-vocally), playing with different sets of materials unrelated to a joint play activity (e.g., one child playing setting the table for a meal while another child colors on a notepad), and engaging in aggressive behaviors towards one another.

## Appendix E. Book RECALL Questions

### Book RECALL Questions

#### Be Kind

- 1) How do you think Tanisha feels?
- 2) How might you help your friends?
- 3) How might you pay attention to your friends?
- 4) What does it mean to be patient when you're playing with a friend?
- 5) How is she being a good friend here?
- 6) How do you think Tanisha feels?

Connecting/Discussion Question: How can a friend make you feel better if you're feeling sad?

#### A Friend for Henry

- 1) Have you ever looked for a friend in your classroom?
- 2) Henry says: "A friend listens." Do you like it when your friends listen to you?
- 3) How do you think Katie felt when Henry asked her to play blocks with him?
- 4) Do you like building block towers with your friends like Henry and Katie?
- 5) Do you think Henry and Katie took turns when they were building their block tower together?
- 6) How do you know that Henry and Katie are friends?

Connecting/Discussion Question: What are things you like to play with in the classroom with your friends?

#### Danbi Leads the School Parade

- 1) How do you think Danbi feels after she accidentally knocked over the tower?
- 2) How do you think Danbi feels that no one played with her?
- 3) Why do you think Danbi shared with the girl?
- 4) When the girl didn't know how to use the chopsticks what did Danbi do?
- 5) How do you know that Danbi and Kelly are friends now?
- 6) How do you think Danbi feels now that she made a new friend?

Connecting/Discussion Question: What are some things you can do to make new friends in your classroom?

#### How to Lose All Your Friends

- 1) How do you think these friends feel when he doesn't share his toys?
- 2) What could he have done if his friends started using toys he was playing with instead of throwing a tantrum?
- 3) How would you feel if someone pushed you?
- 4) Would you want to play a game with someone if they were being mean to you?
- 5) How do you think she feels now that she has no friends?
- 6) What does she do to make friends?

Connecting/Discussion Question: What are some things you like your friends to share with you?

#### Goodbye, Friend! Hello, Friend!

- 1) Name one thing you see the girls doing in this picture?



- 2) Would you like to do this (whatever child before answered to question 1) with a friend?
- 3) How do you think she feels in this picture?
- 4) How is she making her feel better?
- 5) What activity or game might you ask a friend to join in on at school?
- 6) What did she do to be a good friend in this picture?

Connecting/Discussion question: Have you ever made a new friend at school? If so, who was it?

#### My Friend Maggie

- 1) How do you think Maggie feels in this picture?
- 2) Are they being good friends and including Maggie?
- 3) How would you feel in your friend pretended not to see you?
- 4) How would you feel if someone made fun of you?
- 5) What is Maggie doing in this picture that is being a good friend?
- 6) What do you think is happening in this picture?

Connecting/Discussion question: Have you ever had a friend stick up for you?

## Appendix F. Book List

### Book List

Source	Book	If excluded, why? T-Theme C-Classroom Teacher Excluded L-Length A-Unavailable at Local Library at the Time of Search
Ostrosky et al., (2015)	Andy and His Yellow Frisbee	A
	Be Quiet, Marina!	A
	Friends at School	A
	My Friend Isabelle	A
Education Librarian	Daisy	A
	Hold Hands	A
	What's the Difference	A
	I'm Sticking with You	A
	Stick and Stone	C
	Two	A
	My Friend Maggie	
	Hello, My Name is Ruby	
	The Friend	
	Strictly No Elephants	C
	Do You Want to be my Friend?	
	Will you be my Friend?	C
	My New Friend is So Fun?	
	Danbi Leads the School Parade	
	Maybe Tomorrow	T
	What Happened to You?	A
	Goodbye, Friend! Hello, Friend!	
	Soaked	T
	A Tiger Called Tomas	T
	Felipe and Claudette	T
	A Friend for Henry	
	Tiny T. Rex and the Impossible Hug	C
PBS Kids	Boband Otta	A

	Enemy Pie	A
	Friends are the Best	A
	Frog and Toad are Friends	L
	George and Martha	T
	How to Lose All Your Friends	
	Leonardo, the Terrible Monster	C
	Little Blue and Little Yellow	C
	Little Blue Truck	C
	My Friend Bear	
	My Friend is Sad	
	My Friends	A
	The Giving Tree	L
	The Rainbow Fish	C
	The Selfish Crocodile	A
	The Way Back Home	A
	Toot and Puddle	A
NAEYC	Kind	A
Personal	Be Kind	

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