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Promoting Collaboration and Conversation in Young Students with Academic and Social Delays During Small Group Instruction

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PROMOTING COLLABORATION AND CONVERSATION IN YOUNG STUDENTS
WITH ACADEMIC AND SOCIAL DELAYS DURING SMALL GROUP
INSTRUCTION

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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 in the
College of Education
at the University of Kentucky

By

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Lexington, Kentucky

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Lexington, Kentucky

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ABSTRACT OF THESIS

PROMOTING COLLABORATION AND CONVERSATION IN
YOUNG STUDENTS WITH ACADEMIC AND SOCIAL DELAYS DURING
SMALL GROUP INSTRUCTION

The purpose of this study was to evaluate how to maximize small group academic instruction by including opportunities for children to earn access to preferred items and activities by collaborating with a peer to earn tokens for correct behaviors, as well as opportunities for conversation around preferred items. A multiple probe design across dyads was used to evaluate the effectiveness of a PTD procedure for teaching young children to name novel sight words. In addition, the effects of an SLP procedure on conversation initiations and responses were assessed within the context of A-B designs. The results showed the PTD procedure was effective in teaching participants in Dyad 1 and Dyad 2 to name sight words. The SLP procedure was effective in increasing both conversation initiations and responses between trials for participants with typical social skills. Participants with social delays engaged in few conversation initiations, but displayed a high rate of responding to peer initiations.

Olivia Winstead

November 29, 2016

PROMOTING COLLABORATION AND CONVERSATION IN
YOUNG STUDENTS WITH ACADEMIC AND SOCIAL DELAYS
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Section 1: Introduction

Successful academic and social experiences are likely to promote long-term positive outcomes for children with or at-risk for disabilities (Lane, Stanton-Chapman, Jamison, & Phillips, 2007). Oftentimes, elementary-aged children with typical development learn age-appropriate social behaviors through their day-to-day experiences with same-age peers (e.g., Babcock, Hartle, & Lamme, 1995). In contrast, children with or at-risk for disabilities may have fewer opportunities to practice prosocial behaviors, especially those with social deficits or delays (e.g., children with autism spectrum disorder [ASD] or intellectual disability [ID]). Children with social delays typically require structured opportunities to learn when and how to respond to and initiate interactions with peers (Ledford & Wolery, 2013). Thus, systematic interventions are oftentimes needed to address delays (Hadley & Rice, 1991). Without remediation, social delays can negatively impact a child's social development, as well as his or her long-term academic experiences (Wolery, 2005).

One approach for increasing prosocial behaviors is providing instruction in typical settings with same-age peers who display age-appropriate social skills (Ledford, Lane, Elam, & Wolery, 2012). Over time, the field of special education has transitioned from recommending instruction in a one-to-one arrangement to including children with disabilities in general education settings (Lane et al., 2007; Odom & Wolery, 2003). Although including children with disabilities in general education classrooms provides opportunities for children to observe live models of prosocial behaviors (Bricker, 1978), inclusion alone does not guarantee children will be successful. Thus, current recommendations for children in early childhood settings (preschool – elementary)

indicate a need to provide numerous structured opportunities for interactions among peers (cf., Grisham-Brown, Hemmeter, & Pretti-Frontczak, 2005). Inclusive elementary school classrooms can capitalize on such recommendations by including opportunities for social behaviors among same-age peers with and without disabilities during small group academic instruction. Such an arrangement is referred to as an intersequential group arrangement, where the teacher plans for and creates opportunities for student interaction and collaboration (Wolery, Ault, & Doyle, 1992). This arrangement is especially useful for heterogeneous groups because it allows the teacher to specifically target social behaviors, such as sharing items and conversation between peers (Gast & Wolery, 1990).

A number of strategies for promoting social behaviors are available in the literature (cf. Wong et al., 2014). Previous studies have investigated teaching young children with typical social development to engage in conversation with peers with disabilities during play-based activities (e.g., Filla, Wolery, & Anthony, 1999). These interventions oftentimes include response prompting procedures (e.g., progressive time delay [PTD]; system of least prompts [SLP]), which involve introduction and removal of adult prompts in order to ensure children identify and respond to natural cues for behavior in typical environments (Doyle, Wolery, Ault, & Gast, 1988; Wolery et al., 1992). Response prompting procedures are evidence-based strategies that have been used to teach a variety of behaviors across ages, diagnoses, and settings (Wolery & Hemmeter, 2011). Over the last few years a number of studies have targeted academic *and* social behaviors in a small group format, using response prompting procedures (Lane, Gast, Ledford, & Shepley, 2016; Lane, Gast, Shepley, & Ledford, 2015; Ledford & Wolery, 2013; 2015).

Because children with social delays display difficulty empathizing with others, there is a need to develop evidence-based interventions to teach children to engage in pro-social behaviors (Reichow & Volkmar, 2010). Children with social delays and deficits may need assistance recognizing appropriate topics about which to talk with their peers and have difficulty discerning when to initiate a conversation (Guralnick, 1990). Typically developing children naturally discover their peers' interests and learn to talk to them about those topics. Incorporating a peer's preferred items into social instruction for children with social delays can act as a visual prompt for them to ask a question or initiate conversation about topics their peer finds interesting (Lane et al., 2015). Pairing children with social delays with socially competent children who have academic delays can allow them to collaborate on academic tasks (Wolery, Ault, & Doyle, 1992). Additionally, teachers can maximize this instructional time by encouraging students with social delays to learn empathy by attending to their peers' preferred items. Only two studies have considered including peer preference in small group instruction as a method for teaching children to engage in meaningful conversation with same-age peers (Lane et al., 2015; 2016).

The purpose of this study was to evaluate how to maximize small group academic instruction by including opportunities for children to earn access to preferred items and activities by collaborating with a peer to earn tokens for correct behaviors, as well as opportunities for conversation around preferred items. Research questions were as follows:

1. When a PTD procedure that includes an interdependent group contingency is used during small group instruction, will children who are at-risk for academic

failure and those who display social deficits or delays learn to name sight words?

2. When children receive a one-time training on how to reinforce peers with praise plus provide a token (that includes a photograph or picture of their peer's preferred characters or items) for correct responses during instruction, will children independently provide reinforcement in the consequent event?

3. When children provide praise and a token to their peer for correct responses, will they initiate conversation during the inter-trial interval (ITI) by asking their peer a question or making a statement about the preferred character or item on the token, and if they do not, will a system least prompts (SLP) included in the ITI increase initiations?

4. During play-based activities, will children display generalized increases in appropriate social interactions?

Section 2: Method

Participants

Three dyads (six students) were recruited for this study. Students with social deficits or delays were paired with peers who were at-risk for academic failure but displayed typical social behaviors. Inclusion criteria for students with social delays were as follows: (a) currently enrolled in a kindergarten, first, or second grade class (5 – 8 years of age); (b) could sit and attend to an academic task for at least 10 min; (c) followed one-step directions; (d) waited 4 s for adult assistance if they do not know how to respond; (e) verbally imitative; (f) attended school 80% of opportunities within the last two months; (g) individualized education plan (IEP) included goals for improving early reading skills or identified by teacher as performing below grade-level in reading; (h) did not readily initiate conversation or (i) praise peers during academic activities. Inclusion criteria for students at-risk for academic failure were identical to those with social delays or deficits, with the exception of the criterion of not readily initiating conversation. Inclusion criteria were assessed by observations and meeting with the classroom teacher. The investigator was a master's student in applied behavior analysis (ABA) who had training in systematic instruction and special education. Dyads were formed by pairing one student with both a social deficit or delay with a similarly-aged student who was at-risk for academic failure but had no social deficits or delays. This ensured that academic instructional targets were appropriate for both students, as well as provided learners with social delays or deficits peer models for appropriate social behaviors.

Dyad 1. Zaire was an 8-year-old African-American male diagnosed with ASD and ID. Zaire received special education services for reading and math in a self-contained

classroom that served students with moderate to severe disabilities (MSD) classroom and received speech and language therapy once a week. Math instruction focused on rote counting (to five) and the concept of less or more (using object). Zaire had the ability to communicate verbally using one to two word phrases to request preferred foods, items, and activities, but used augmentative and alternative communication (AAC) device during reading instruction. In addition to sight words, he used AAC to communicate personal information, request preferred items and activities, and provide academic responses. He often verbally requested specific YouTube videos during break time by telling paraprofessionals the names of the video he wanted to watch. He occasionally watched videos with another student in the class who shared his interest in movies, but did not socially interact with this student. During breaks, he also displayed emerging symbolic play (e.g., assigning absent attributes to objects). Zaire often engaged in delayed echolalia, reciting lines and corresponding actions across the school day; he often had to be redirected to an academic task or more appropriate play activity.

Mariana was a 7-year-old Hispanic female who was enrolled in a general education classroom, but received small group instruction on reading with other students who required remediation or additional instruction in reading. Mariana displayed difficulty with decoding, fluency, and comprehension in reading. Her teacher indicated that her performance in other subjects was commensurate to her same-age peers. Mariana frequently initiated conversation with her peers and her teacher reported that she had "many friends at school".

Dyad 2. Christopher was a 7-year-old African-American male diagnosed with ASD. He received special education services for reading and math in a self-contained

MSD classroom and received speech and language therapy once a week. Math instruction focused on addition and reading instruction on spelling and comprehension. Christopher spoke in complete sentences to request preferred items, answer questions from teachers, and to protest non-preferred academic activities. He often used the same rote phrases to answer questions and protest (e.g. "I don't know and don't ask me again!" and "Oh, no, not this again!"). He also frequently recited lines from video games, movies, and television shows, during preferred and non-preferred activities, which was ignored by the classroom teacher. When watching videos during free-play, he called paraprofessionals over to his computer to show them characters and scenes from videos. Christopher did not initiate conversation or play with same-age peers, but he displayed interest in his classmates by drawing pictures of them and showing these to paraprofessionals.

Logan was a Caucasian male who was enrolled in a general education classroom, but received small group instruction on reading with other students who required remediation or additional instruction in reading. Logan displayed difficulty with decoding, fluency, and comprehension in reading. His performance in math is above grade level and his performance in other subjects is commensurate to his same-age peers. Logan was relatively quiet and did not frequently initiate conversation with unfamiliar peers, but would engage in conversation with peers in his class.

Dyad 3. Jabari was a 7-year-old African-American male diagnosed with ASD. He received special education services for reading and math in a self-contained MSD classroom and went to speech therapy once a week. Math instruction focused on addition and subtraction and reading instruction on fluency and comprehension. Jabari typically spoke in two to three word phrases to request preferred items, comment on others

behavior, and answer academic questions. During free-play, he paced around the room reciting lines from movies and television shows. During structured academic activities, he complied with teacher instructions and participated by answering questions and commenting about the activity. Jabari did not initiate conversation or play with same-age peers, but would interact with adults (e.g., comment about what other students were doing) to paraprofessionals.

Evan was a 7-year-old African-American male diagnosed with an emotional/behavioral disorder (EBD). A token economy was used to prevent problem behaviors including talking out, being out of area, and refusal to do work. Evan also participated in a daily reading small group with other students who required remediation or additional instruction in reading. Evan displayed difficulty with decoding, fluency, and comprehension in reading. His performance in other subjects is commensurate with same-age peers. Evan frequently initiated conversation with her peers and her teacher reported that she had "many friends at school".

Setting, Instructional Arrangements, and Materials

All instructional sessions took place in a resource special education classroom while the resource teacher taught reading to a small group. The general education teacher did not conduct small group instruction and indicated that such sessions could be disruptive in a general education setting. Probe sessions occurred in a one-to-one arrangement with the participant seated at a table facing the investigator. During small group instruction, participants were seated next to one another at a table facing the investigator. Other students in the classroom were supervised by the resource teacher, engaging in scheduled classroom activities. Generalization was assessed during "break

times" that occurred immediately following instruction. Participants were seated at a table or on the floor near one another with their preferred items. E

Materials required for the study included unlined index cards (7.62 cm x 12.72 cm), tokens that included pictures or photographs of preferred characters or items (4 cm x 4 cm), laminated token boards (12 cm x 16 cm), edible reinforcers, and data collection forms. Tokens with preferred characters or items and reinforcers were identified by observing participants during free play and asking the student and the teacher to identify preferred characters, items, or activities. Reinforcers were items present in the classroom or brought to the classroom by the investigator. Sight words were hand-written on index cards using black ink.

Response Definitions and Data Collection

Academic behaviors. During probe and PTD instructional sessions the target behavior was naming the corresponding stimuli when it was presented on an index card and the investigator asked, "What word?". For probe sessions, three types of responses were possible: (a) unprompted corrects – the participant named the target word within 4 s of the question; (b) unprompted errors – the participant said any other verbalization other than the target word within 4 s of the question; (c) no response – the participant did not respond within 4 s of the question. For instructional sessions, five types of response were possible: (a) unprompted corrects – the participant named the target word within 1, 2, or 4s of the question; (b) unprompted errors – the participant incorrectly named the target word within 1, 2, or 4 s of the question; (c) prompted corrects – the participant verbally imitated the target word within 4 s of the investigator's model of the target word; (d) prompted errors – the participant incorrectly said the target word after the verbal model;

(e) no response – the participant did not respond to the question or imitate the verbal model within the allotted time.

      Social behaviors. During PTD instructional sessions, three types of social behaviors were assessed in the consequent event of trials or during the ITI for academic trials: (a) praise statements; (b) token reinforcement; (c) conversation initiations. A praise statement referred to the participant verbally acknowledging his or her peer's unprompted or prompted correct responses during instructional trials (e.g., "Great job reading the word!") within 2 s of the investigator's praise statement for unprompted or prompted correct responses. Token reinforcement was defined as the participant giving his or her peer a token for unprompted or prompted correct responses in conjunction with the praise statement or within 4 s of providing praise. In addition, the investigator monitored if participants responded to praise statements or token reinforcement from peers by saying "thank you" or some variation of the phrase within 4 s of receiving the praise or token. Providing praise and a token to a group mate for a prompted or unprompted correct response provided an opportunity for conversation initiations, which was defined as the student who provided reinforcement asking a question or making a comment about his or her peers preferred characters or items within 4 s of providing reinforcement. If participants did not initiate conversation within 4 s, the investigator provided an intermediate or controlling prompt. A prompted conversation referred to the participant responding to an indirect prompt (reminder to ask a question or make a comment) or imitating a verbal model of question or comment within 4 s of the adult model. An error was recorded if participants did not respond or engaged in inappropriate conversations following the prompt. During generalization sessions, the investigator assessed if

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participants displayed increases in conversations during play-based activities. Identical to instructional sessions, conversation initiations were recorded, as well as if peers responded to questions or statements within 4 s with a related statement, question, or expatiation on the topic.

Screening

The investigator worked with the classroom teacher to compile a list of 20 unknown 2nd and 3rd grade sight words (targeting words that would be taught later in the school year). All 20 words were presented to each participant and the investigator asked, "What word?" and recorded whether the participant knew or did not know each word. Participants were paired based on which words they did not know; in order for participants to be paired, they needed to have at least six words in common that were unknown. Both participants in each dyad were taught the same six words. Words were grouped for each dyad based on similarities in regards to number of letters and with consideration of beginning, medial, and ending sounds to avoid potential challenges related to discriminating between words during instruction. Once the six words were selected for each dyad, the investigator presented the words again and asked, "What word?" to ensure all words were unknown. Participants received a token and verbal praise for each correct response. Six tokens were required to fill the token board. Tokens were redeemed at the end of each session for a reinforcer. Attending behaviors such as looking at the sight words, staying seated, and not talking while the instructor was talking were reinforced using a variable-ratio-3 (VR-3) schedule of reinforcement.

Experimental Design

A multiple probe design across dyads was used to evaluate the effectiveness of a PTD procedure for teaching young children to name novel sight words. A multiple probe design across dyads was selected because participants were not expected to learn the novel sight words prior to receiving instruction. In addition, social behaviors were assessed within the context of A-B designs; this design did not allow for assessment of a functional relation between the SLP procedure and conversation initiations and responses, but changes in target behaviors were attributed to the intervention if changes in the target behavior occurred only when the intervention was introduced. Also, providing praise and tokens to peers were collected within the context of a multiple probe design, but decisions about when to introduce the intervention to the next tier was based academic responses. Generalization was collected using a pre-test and post-test design.

General Procedures

PTD instructional sessions occurred one to three times per day, five days per week. At least 45 min elapsed between sessions. The investigator assisted participants in transitioning to the table for small group instruction; both participants had to be present in order to conduct a session. At the beginning of each session, each participant selected a reinforcer from a reinforcer menu and was reminded to remember to praise his or her peer and provide a token after he or she responded correctly and was praised by the instructor. Prior to each trial, the investigator provided a general attending cue to both participants and then asked one participant to name the target sight word. Each session was approximately 10 – 15 min with 12 instructional trials conducted per session (6 per participant). Each participant received one trial per word per session. The investigator

randomly alternated the order of trials, with no more than two consecutive trials per participant. In addition, each participant had opportunities to initiate conversations in the ITI, with an SLP procedure implemented during the ITI for participants who did not initiate conversation.

Probe procedures. Prior to beginning academic instruction, probe sessions were conducted with each participant in a one-on-one arrangement to establish a stable pattern of responding prior to beginning PTD instruction in a small group. A trial consisted of the investigator presenting a sight word and asking, "What word?" and waiting 4 s for a response. Probe sessions consisted of 12 trials—1 for each target word for each student. Students were praised for each unprompted correct response. Appropriate attending behaviors were reinforced (verbal praise and a token) on a VR-3 schedule. Once a stable pattern of responding was established, the investigator moved to PTD instruction in a small group.

Dyad training. Following probe sessions and immediately before beginning PTD instruction, each dyad was trained to provide praise and a token for unprompted and prompted correct responses. The investigator began the training by explaining to each dyad why each should praise his or her peer and provide a token for correct responses. The investigator then described when to provide praise and a token and modeled how to engage in the target behaviors. The investigator then conducted a practice session with known sight words to provide an opportunity for participants to display the target behaviors and receive feedback. Training was complete when each participant independently responded to the investigator's praise statement by providing praise and a token for correct responses during 83% of opportunities.

PTD instructional sessions. The independent variable for teaching sight words was a 0-4 s PTD procedure. The investigator began each session by securing the attention of both participants using a general attending cue ("It's time to get started" or some variation). The expected response was for participants to orient to the materials or verbally indicate they were ready to begin instruction. Prior to beginning sight word instruction, the investigator provided each participant with a clear bag that contained tokens of his or her peer's preferred characters or items and token boards. Participants were reminded to provide praise and tokens when the investigator praised a student for a correct response. Initially, 0 s prompt delay sessions were conducted. During these sessions, the investigator presented an attending cue to both participants, ensured an attending response, and then presented a participant with an index card with a target sight word and asked, "What word?". Following the question, the investigator immediately provided a verbal model of the correct response. The participant then had 4 s to imitate the investigator's verbal model. If participants did not respond to the investigator's model or provided an incorrect response, the investigator removed the materials and waited 4 s before beginning the next trial. Following each prompted correct response, the investigator provided behavior specific verbal praise, which served as a cue for the peer to provide praise and a token. If one or both participants required reminders to praise and provide a token to his or her peer for 50% or more opportunities for three consecutive sessions, the investigator provided a review session immediately before the next instructional session. Once both participants responded to the controlling prompt 100% of opportunities for one sessions during 0 s delay, the investigator delayed the prompt by 1 second.

Prompt delay trials were identical to 0 s delay trials, with the exception of allowing participants time to respond independently to the target stimulus. The prompt delay doubled from 1 to 2 s, then 2 to 4 s, when participants displayed 100% unprompted or prompted correct responding for at least one session per delay. The mastery criterion was each participant independently naming sight words 100% of opportunities for two consecutive sessions on a continuous reinforcement schedule. Instruction continued after mastery criterion was met to allow opportunities to teach conversation. If the participant displayed an unprompted error, the investigator said, "Wait if you do not know," or some variation. If the student did not respond to the target stimulus, the investigator provided a verbal model of the target word and waited 4s for the student to imitate the model. If one or both participants displayed more than one error in a single session, the investigator reverted back to the previous delay.

Modifications. Zaire used an AAC device to name sight words and, as such, procedural modifications were required. Picture icons that represented each of the six sight words were added to the "Reading" screen on Zaire's AAC device and were among a field size of 24 images. Based on recommendation from the special education teacher, Zaire was allowed more time than the other participants to respond to the stimulus before the controlling prompt was provided; after 0 s delay trials, 5 s delay trials, followed by 10 s delay trials were used as a part of the modified PTD procedure (the delay doubled, like other participants in the study). In addition to saying the word as the controlling prompt, the investigator also pointed to the corresponding icon on his screen. Occasionally, Zaire would respond verbally to the sight word stimuli. Both verbal and AAC-facilitated responses were accepted. The icons on Zaire's AAC device were rearrange after each

trial to ensure he was attending to the icons and not just their location on the screen. Zaire quickly learned to praise Mariana during the dyad training, but did not successfully provide her a token until a gestural prompt was introduced. As the investigator praised Mariana, she pointed toward Mariana's token board to prompt Zaire to place a token there.

Within session generalization of conversation. The initial PTD instructional sessions served as a baseline measure of frequency of conversation initiation during the ITI. If participants did not begin to initiate conversation during the first five PTD sessions, an SLP procedure was implemented to teach participants how to initiate a conversation around a peer's interests. Participants were reminded at the start of each session to provide praise, administer tokens, and initiate conversation. After a trial had ended and a reinforcer had been provided, the investigator waited 4 s for the participant to initiate a conversation in the form of a question or statement. If this did not occur, an intermediate verbal prompt was provided (i.e. "You can ask *child's name* a question."). The investigator waited 4 s for the participants to respond then, if no conversation occurred, provided a controlling prompt (i.e. "Say, '*statement or question about child's preferred activity/item*'"). Participants received a small edible reinforcer each time they initiated conversation with their peer about the preferred item depicted on the token.

Modification. After several sessions, Zaire was still dependent on the controlling prompt to initiate conversation with his peer, so the investigator limited his choices to one character, with a plan to systematically introduce other characters as Zaire was successful.

Generalization during play. The purpose of the generalization probes was to assess whether participants initiated conversation with their peers during other activities throughout the school day. During play-based activities, the investigator observed the students and recorded the frequency with which participants initiated conversation, responded to initiations, and continued conversation with his or her peer. Each generalization session was 5 minutes. Participants were instructed to remain in the same area during free time and encouraged to play and talk with their peer to increase the opportunity for social interactions (Goldstein, English, Shafer, & Kaczmarek, 1997).

Interobserver Agreement and Procedural Fidelity

Inter-observer agreement (IOA) and procedural fidelity (PF) data were collected at least 20% of sessions for each participant in each condition. Observers had previous experience with systematic instruction and were trained by the investigator. The investigator modeled what each possible response could look like and allowed observers to watch sessions and practice collecting IOA and PF data until they were comfortable collecting official IOA and PF. IOA was calculated by dividing the number of agreements by the number of agreements plus disagreements multiplied by 100. Procedural fidelity was calculated by dividing the number of performed observed behaviors divided by the number of planned teacher behaviors and multiplied by 100.

Dyad 1. IOA and PF were collected for 25% of probe sessions and 25% of intervention sessions. IOA was 91% during probe and 100% during intervention. PF was 100% during probe sessions and 99% during intervention sessions.

Dyad 2. IOA and PF were collected for 25% of probe sessions and 20% of intervention sessions. IOA was 100% during probe sessions and 95% during intervention sessions. PF was 100% during probe sessions and 97% during intervention sessions.

Dyad 3. IOA and PF were collected for 20% of probe sessions. During probe sessions, IOA was 92% and PF was 90%.

Section 3: Results

Graphs were visually analyzed by the investigator with consideration of level, trend, stability, overlap, immediacy of effect, and consistency of effect (Gast & Spriggs, 2014). Findings related to academic and social behaviors are divided among dyads. Academic behavior data were collected within the context of a multiple probe design across dyads and social behaviors within an A-B design.

Academic Behaviors

Accuracy in naming sight words is displayed in *Figure 1*.

Dyad 1. During probe sessions, Mariana learned one of the six sight words without instruction and continued to provide the correct response for the remainder of probe sessions. Upon introduction of the intervention, following 0 s delay trials for unknown words, Mariana's unprompted correct responses were at 83%, with 100% non-overlapping data. She reached the mastery criterion for naming sight words after six intervention sessions. Zaire displayed a zero-celerating trend during probe sessions, responding incorrectly or not responding to sight word stimuli during probe sessions. Zaire did not provide unprompted correct response during the first three intervention sessions, but began to display an accelerating trend in a therapeutic direction during all remaining intervention sessions. Zaire reached the mastery criterion for naming sight words after seven intervention sessions.

Dyad 2. Logan displayed a zero-celerating trend during probe sessions, responding incorrectly or not responding to sight word stimuli during probe sessions. Following 1 s delay trials, Logan started to display unprompted correct responses. Unprompted correct responses increased during each session until reaching 100%. Logan

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reached the mastery criterion for naming sight words after seven intervention sessions. Christopher also displayed a zero-celerating trend during probe sessions. Christopher did not provide unprompted correct responses during the first three intervention sessions, but began to display an accelerating trend in a therapeutic direction after 2 s delay trials. There was a decrease in his unprompted correct responding in session 19, during which the investigator noted he engaged in high rates of problem behavior (e.g. screaming, crying, destruction of materials). Following this session, unprompted responding continued to increase and mastery criterion was reached after 10 intervention sessions.

Dyad 3. During probe sessions, Evan learned two of the sight words without receiving instruction. In contrast, Jabari responded to the unknown sight word stimuli by engaging in vocal stereotypy. In addition, when responding to unknown stimuli, Jabari's voice volume was typically too low to be understood and, as such, was scored as an error. Jabari has consistently responded incorrectly to all sight word stimuli presented during probe sessions.

Social Behaviors

Conversation initiations and responses are displayed in *Figure 2*.

Dyad 1. Both Zaire and Mariana learned to praise and provide tokens to each other following the instructor's feedback to the target student (e.g., "You're right! That word is *target stimulus*"). Following dyad training, Mariana praised and provided tokens to Zaire 100% of opportunities, with Zaire initially displaying variable responding but data stabilized between 83 and 100% for the last nine sessions. Regarding within session generalization, following the fifth intervention sessions, Mariana consistently initiated conversation with Zaire. Since Zaire did not initiate a conversation with Mariana, the

SLP procedure was implemented. With the exception of one unprompted correct response, Zaire required the controlling prompt to initiate conversation during each trial. Due to lack of initiations, modification to the SLP procedure were recently implemented. In addition, responsivity to peer initiations was measured. Mariana responded to all of Zaire's conversation initiations. Although variable, Zaire's responses to Mariana's initiations increased since the introduction of the SLP procedure.

   Dyad 2. Both Christopher and Logan learned to praise and provide tokens to each other following the instructor's feedback to the target student. Logan consistently initiated conversation with Christopher after praising him and providing a token without prompting since the SLP procedure was introduced. Logan also responded to all conversation initiations made by Christopher. Christopher was dependent upon verbal prompts to initiate conversation about Logan's interests after praising and providing a token for correct responses. Christopher consistently responded independently to Logan's conversation initiations.

Generalization

   To date, a pre-test session for each dyad has been conducted, with post-tests planned following mastery of sight words and conversation. For Dyad 1, Mariana initiated conversation three times during the pre-test. Zaire did not respond to any of Mariana's initiations and did not initiate conversation during the session. For Dyad 2, Neither Christopher nor Logan initiated conversation during the pre-test. For Dyad 3, Evan initiated conversation twice during the pre-test. Jabari did not respond to any of Evan's initiations and did not initiate conversation during the session.
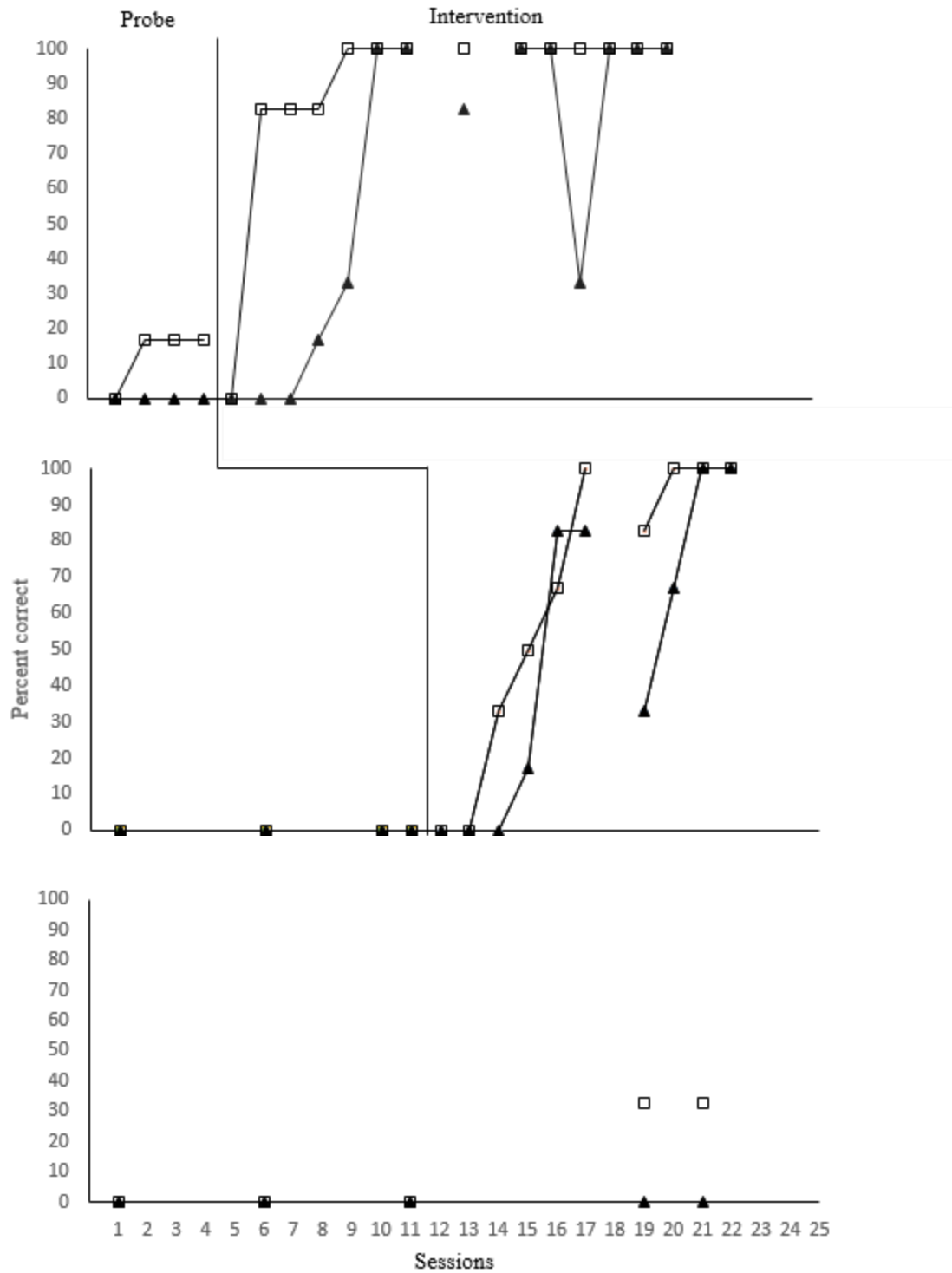
Figure 1. Accuracy in naming unknown sight words (unprompted correct responses). Tier 1: Mariana=open squares; Zaire=closed triangles. Tier 2: Logan=open squares; Christopher=closed triangles. Tier 3: Evan=open squares; Jabari responding=closed triangles.
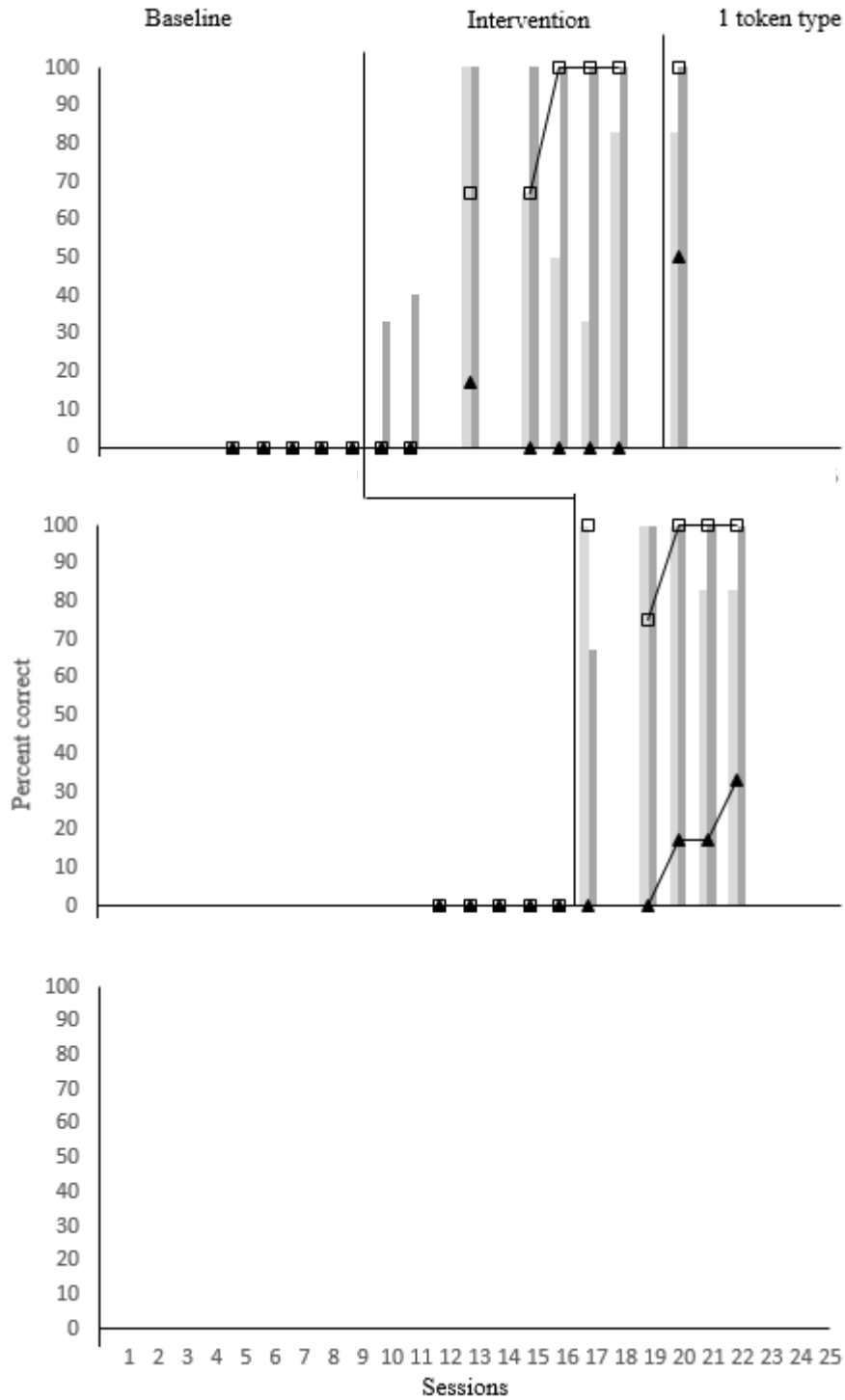
Figure 2. Conversation initiations and responses (unprompted correct responses). Initiations are depicted by the lines and responses by the bars. Dyad 1: Mariana=open squares and dark gray bars; Zaire=closed triangles and light gray bars. Dyad 2: Logan=open squares and dark gray bars; Christopher=closed triangles and light gray bars.

Section 4: Discussion

This study assessed the effects of a PTD procedure on naming sight words, the effects of a one-time dyad training on praising and providing tokens to peers after correct responses to sight word stimuli, and the effects of a SLP procedure on conversation initiation for students with reading delays, both with and without social deficits. Responses to conversation initiation and generalization of acquired social skills were also observed. The PTD procedure was effective in teaching participants in Dyad 1 and Dyad 2 to name sight words. Training a heterogeneous group of students to praise each other and provide a token for correct responses by modeling these behaviors and providing the participants an opportunity to engage in the behaviors led to high fidelity in engaging in these behaviors during instructional sessions. The SLP procedure was effective in increasing both conversation initiations and responses between trials for participants with typical social skills. Participants with social delays engaged in few conversation initiations, but displayed a high rate of responding to peer initiations.

Limitations

Limitations of the study warrant attention. First, two students learned sight words during probe sessions, which might have been prevented if the participants were exposed to the words more times during screening. The words learned by participants during probe sessions (e.g. police; cantaloupe) were words that could have easily been learned while grocery shopping or spending time in the community. Second, the investigator did not use multiple exemplars of each sight word (i.e. different fonts) to program for stimulus generalization. Only one handwritten exemplar of each sight word was used. However, the primary focus of the study was the social behaviors that took place during

the ITI. Finally, social behaviors were assessed within the context of an A-B design, thus it was not possible to assess presence of a functional relation between the SLP procedure and conversation initiations. However, improvement in target social behaviors improved only after introduction of the intervention, so this improvement was attributed to the intervention.

Implications

The results of this study are promising; findings support previous studies that used a 0-4 s PTD procedure to teach academic targets to children without and with disabilities, including children (Lane et al., 2016; Ledford & Wolery, 2015; Reichow & Wolery, 2011). The findings indicate that PTD is an effective instructional method for students with ASD and peers at-risk for academic failure. Students with mild disabilities could benefit from PTD instruction which requires relatively little academic time. Ideally, sessions would have been conducted in the inclusive general education setting, but the teacher did not use small group instruction in her classroom and indicated this would be a distraction.

Pairing students with ASD with socially competent, same-age peers during small group instruction can lead to increased opportunities for social interaction (Ledford & Wehby, 2015). This adds to the literature on systematically teaching social behaviors by targeting social skills in students with SCD by embedding social opportunities during small group instruction (Lane et al., 2015). Teachers of students with ASD can maximize instructional time by concurrently teaching academic and social instruction and using peers with typical social skills as models for socially appropriate behavior. Although not measured, targeting social skills in addition to academic targets added a few minutes, at

most, to each session and led to an increase in praising, providing tokens, conversation initiation, and responses to conversation initiations in students with and without social delays.

Students who use AAC devices to communicate may require a longer time delay than students who communicate verbally to allow additional time for scanning the field and motor planning regarding selecting a corresponding button. The field size of the AAC should be considered when deciding how long to allow the student to answer before providing the controlling prompt, as it may take several seconds for the student to scan the screen for the correct icon. It may also be difficult for some students to recognize when they should initiate conversation and what they should say. Some students may require additional training in order to understand when it is an appropriate time to comment about their peer's interests or ask a question. Since this study involved implementing two different procedures (i.e. PTD for teaching sight words; SLP for teaching social behaviors) during each session, adequate fidelity might be challenging for teachers, especially those with limited or no training in systematic procedures. Thus, teachers should be trained to fidelity before beginning these procedures to ensure correct implementation. Teachers should also be trained to teach social behaviors such as praising and providing tokens for correct responses because, such training provides students additional opportunities for socialization during academic instruction. Maximizing instructional time by teaching learners who are diverse in abilities together in a small group gives students with social delays access to same-age peer models of socially appropriate behavior. This also gives students the opportunity to interact with

socially-competent conversation partners and learn how to communicate through

experience.

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