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Teaching Eye Contact and Responding to Name to Children with Autism Spectrum Disorder

Amelia M. Fonger
Western Michigan University

TEACHING EYE CONTACT AND RESPONDING TO NAME TO CHILDREN WITH AUTISM SPECTRUM DISORDER

by

Amelia M. Fonger

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Doctoral Committee:

Richard W. Malott, Ph.D., Chair
Stephanie Peterson, Ph.D.
Steven Ragotzy, Ph.D.
Carmen Jonaitis, Ed.D.

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Eye contact and responding to name may be described as behavioral cusps because acquiring these skills extends contact with the environment, can allow behavior to come under the control of new contingencies, and may facilitate the acquisition of new behavior (Bloom & Lahey, 1978; Carbone, O'Brien, Sweeney-Kerwin, & Albert, 2013; Cook et al., 2017; Hanley, Heal, Tiger, & Ingvarsson, 2007; Rosales-Ruiz & Baer, 1997; Tiegerman & Primavera, 1984; Weiss & Zane, 2010). Eye contact and responding to name are commonly cited as targets for early intensive behavioral intervention; however, the existing literature is limited in its ability to guide a practitioner's selection of effective methods to teach these skills. This dissertation seeks to remedy this lack.

In the first study of this dissertation, we used a shaping procedure to teach three preschool-age children diagnosed with ASD to make eye contact with the instructor for a duration of 3 s. Then, we taught them to make eye contact during breaks in instruction. Following the initial intervention, we decreased the frequency of reinforcement while training for generalization across instructors and locations. All three children acquired quick and sustained eye contact, which maintained after one month and transferred across a variety of instructors and locations, without the need for prompting.

In a second study, we taught four children diagnosed with autism spectrum disorder to respond to their names, but not to other names, by making eye contact. First, we paired their names with reinforcers while they made eye contact, which resulted in

their responding to their names in 60-80% of trials. Next, we differentially reinforced responding to their names and extinguished responding to other names. By this point, two of the four children were not only discriminating between their name and others, but also responding to their names more than 80% of the time. Finally, we taught the children to respond to their names reliably while engaging in various activities. All four children reliably discriminated between their names and other names, and this transferred across a variety of instructors and locations and maintained when assessed one month after the intervention. The results suggest that these procedures can be used to teach children diagnosed with ASD to make eye contact and respond to their names in a less restrictive manner than other methods, while eliminating the need for prompt fading, which may make it more efficient and more desirable than existing strategies in the literature.

ACKNOWLEDGEMENTS

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TEACHING EYE CONTACT AND RESPONDING TO NAME TO CHILDREN WITH AUTISM SPECTRUM DISORDER

Eye contact avoidance has become synonymous with autism spectrum disorder (ASD) and social impairment (Hutt & Ountsted, 1966; Ninci et al., 2013; Wolf & Chess, 1964). And failure to respond to name is one of the earliest indicators of and is included in all diagnostic measures for ASD (Miller et al., 2016). These skills are common goals of interventions for children with ASD (Carbone et al., 2013; Foxx, 1977; Harris, 1975; Kozloff, 1973; Risley & Wolf, 1967; Weiss & Zane, 2010).

Sustained eye contact may increase the probability of attending to necessary instructional stimuli (e.g., observing modeled behavior of the instructor or instructional materials), thus increasing the probability of compliance with instructions and potentially increasing the rate of acquisition of such skills as manding and simple motor imitation (Bloom & Lahey, 1978; Carbone et al., 2013; Cook et al., 2017; Hanley, Heal, Tiger, & Ingvarsson, 2007; Tiegerman & Primavera, 1984; Weiss & Zane, 2010). When children can respond to their names, it allows an instructor to gain their attention before requesting compliance with an activity, therefore increasing the probability of compliance with those subsequent demands (Hamlet, Axelrod, & Kuershner, 1984; Kraus, Hanley, Cesana, Eisenberg, & Jarvie, 2012). It may also serve to interrupt an undesired or unsafe activity (e.g., a child is about to touch a hot stove or cross a busy street). Additionally, responding

to one's name may serve as a prerequisite for other more complex skills (Castellon et al., 2016; Cook et al., 2017; Weiss & Zane, 2010).

We make eye contact and respond to our names because those behaviors have resulted in the delivery of reinforcers (e.g., social interactions, tangibles, information). In academic contexts, a child responding to his or her name is typically the first response in a behavioral chain. For example, the instructor calls a child's name, the child looks at the instructor, the instructor gives an instruction, the child responds, and the instructor delivers a consequence (e.g., praise). With a sufficient history of reinforcement, responding to name maintains even when that response will not be reinforced or will be followed by a request to complete another action. Individuals diagnosed with ASD may not look at the instructor or respond to their name because a history of punishment outweighs the history of reinforcement for that response (e.g., more instructions than reinforcers are delivered as the consequence of responding to name or the reinforcers are less potent than the aversive stimuli) (Castellon et al., 2016).

In spite of their social validity and prominence as targets for early intervention, there is not sufficient literature and evidence to guide a practitioner's selection and development of programs to teach eye contact and responding to name (Castellon et al., 2016; Cook et al., 2017). A contributing factor may be that "responding to name" is typically referred to as "eye contact" in the literature. In some studies "eye contact" has been described as looking at a person spontaneously (Brooks, Morrow, & Gray, 1968; Carbone et al., 2013; Hall, Maynes, & Reiss, 2009; Harris, 1975; Jeffries, Crosland, & Miltenberger, 2016; Levin, Lee, Korneder, Bauer, & Evans, 2009; McConnell, 1967; Ninci et al., 2013; Taylor, & Hoch, 2008), but in others has been described as looking at a

person in response to a name or an instruction (e.g., “look at me”) (Altman, & Krupsaw, 1982; Cook et al., 2017; Foxx, 1977; Hamlet et al., 1984; Hanley et al., 2007; Koegel, Vernon, & Koegel, 2009; Kraus et al., 2012; Tetreault, & Lerman, 2010). This failure to discriminate is problematic because it assumes that the two skills are synonymous. “Eye contact” should be used to refer to eye contact without a vocal discriminative stimulus and “responding to name” should be used to refer to eye contact under the control of a vocal discriminative stimulus (i.e., the child’s name). This distinction suggests that these two skills may need to be taught independently (i.e., teaching eye contact first, as a prerequisite for responding to name) and may benefit from different teaching approaches.

Beyond this distinction, eye contact has been targeted both directly (Brooks et al., 1968; Carbone et al., 2013; Cook et al., 2017; Foxx, 1977; Hall et al., 2009; Harris, 1975; Jeffries et al., 2016; Levin et al., 2009; McConnell, 1967; Ninci et al., 2013) and indirectly (Altman, & Krupsaw, 1982; Hamlet et al., 1984; Hanley et al., 2007; Koegel et al., 2009; Kraus et al., 2012; Taylor, & Hoch, 2008; Tetreault, & Lerman, 2010). Few studies have utilized the same prompting strategies to teach eye contact, varying from none, to physical, to visual/modeling (Carbone, et al., 2013). In addition, few have considered and programmed for long-term maintenance and generalization in their investigations (Cook et al., 2017; Ninci et al., 2013). Responding to name has generally been taught via three methods; 1) introducing a visual prompt (Cook et al., 2017; Jones, Carr, & Feeley, 2006), 2) negative reinforcement, physical prompting, or overcorrection (Altman & Krupsaw, 1982; Foxx, 1977; Hamlet, Axelrod & Kuerschner, 1984), 3) modeling and differential positive reinforcement (Kraus, Hanley, Cesana, Eisenberg, & Jarvie, 2012; Tetreault & Lerman, 2010).

While effective for some children, prompting, negative reinforcement, overcorrection, modeling, and differential reinforcement may not be effective or desirable for others. Prompts may evoke facial orientation but the child must still orient his or her eyes to meet the instructor's eyes. Additionally, these added stimuli may be time consuming and difficult to fade (Carbone et al., 2013). Negative reinforcement and overcorrection procedures may evoke avoidance behavior (e.g., turning away from the instructor, closing eyes) (Carbone et al., 2013). Finally, modeling requires an imitative repertoire and differential reinforcement requires initial eye contacts or responding to name during baseline to be effective during intervention.

Levin, Lee, Korneder, Bauer, & Evans (2009) used shaping and differential reinforcement to teach eye contact during pauses in instruction. The instructor removed a preferred item until the child made eye contact and used differential reinforcement to decrease the latency to eye contact. If the child made eye contact within 5 s, they received a reinforcer for 40 to 60 s. If eye contact occurred after 5 s, the instructor delivered a reinforcer for only 10 to 30 s. Once the children made quick eye contact following the removal of the reinforcer, the instructor no longer immediately gave the reinforcer and instead required a previously mastered response (e.g., a high-five) and more eye contact before giving the reinforcer.

Castellon and colleagues (2016) examined the effectiveness of a pairing procedure on responding to name to address some of the aforementioned concerns with existing teaching procedures. They waited for the child to make eye contact, said his or her name, and delivered a reinforcer. After every 100 pairing trials, they conducted extinction probes while the child engaged with a preferred item and assessed whether the

child would respond to his or her name and other names by making eye contact. After 1,000 pairing trials, they began differentially reinforcing responding to the child's name and extinguishing responding to other names. This method was successful in teaching two of the three children to respond to their names.

Based on procedures recommended by Levin and colleagues (2009) and O'Reilly and Leslie (1999) and later adopted for our classroom by Shane, Lichtenberger, Michelin, Mrljak, & Malott (2016), our first study used shaping without prompting to increase eye contact during pauses in instruction with three children, as a prerequisite for responding to name. A duration of 3 s was selected because it was approximately the length of time required to observe any necessary instructional components of a discrete trial (e.g., the modeled behavior of the instructor during a discrete trial of imitation training). Given the present skill level of the participants, who engaged in few listener responses and who did not make spontaneous eye contact, a shaping-only approach was selected to increase eye contact as a prerequisite for discrete-trial training. To assess the value of eye contact, we evaluated maintenance, generalization, and changes in other behaviors including problematic behavior, eye contact avoidance, toy play, laughing and smiling, and functional speech sounds.

Our second study taught four children to respond to their names. We replicated the procedure designed by Castellon and colleagues (2016) while addressing some of the future directions and limitations they described. We reinforced correct responses during more frequent probes without preferred items, introduced other-name trials after responding to their own name initially increased, and slowly faded in concurrent activities.

STUDY 1: EYE CONTACT

Method

Participants

Three two-and-a-half-year-old children participated: Isabella, Natalie, and Gavin. Isabella was an African American/Asian female, Natalie was a Caucasian female, and Gavin was a Hispanic male. The children were enrolled in an early childhood special education (ECSE) preschool classroom where they received three hours of discrete-trial training (DTT), five days a week and had received an educational diagnosis of ASD by the program's evaluation team consisting of a social worker, school psychologist, occupational therapist, and speech therapist. Both the preliminary evaluations (consisting of a structured observation, home visit, and caregiver interviews) and initial VB-MAPP evaluation indicated that eye contact and responding to name were notable deficits and goals for intervention. Gavin scored a 1.5 on the initial VB-MAPP and did not demonstrate any verbal behavior, listener responses, imitation, or visual perceptual match-to-sample skills. Due to challenging behavior, we were unable to conduct an initial VB-MAPP with Natalie; however, anecdotally she had a repertoire similar to Gavin's. Isabella scored an 18 with no verbal behavior and limited listener responses and imitation. Additionally, the children avoided direct eye contact (e.g., used only peripheral vision), turned their head away from the instructor, or closed their eyes and engaged in other forms of problem behavior (e.g., flopped out of their seats and attempted to elope).

This made it difficult for instructors to ensure that the children were attending before delivering an instruction and ultimately interfered with the implementation of the children's DTT programming. Informed consent was obtained from all individual participants included in the study (see Appendix A for HSIRB approval letter).

Setting

We conducted sessions in the children's typical work areas (i.e., small cubicles) initially and in the playroom, at a group table in the classroom, and the hallway in later sessions. All sessions were conducted at the Kalamazoo Regional Education Service Agency's (KRESA) West Campus. Items used in the study included procedure-specific data sheets, pencils, timers, and a camera for recording sessions.

Experimental Design and Procedures

In a non-concurrent multiple baseline across participants design, we taught eye contact during 5-min sessions, ranging from one to six sessions each day. This design was non-concurrent in the sense that baseline for Natalie and Isabella began after Gavin's fourth baseline session.

Baseline. During baseline, at the beginning of each trial we removed a preferred item, waited 30 s before returning it, and recorded whether the child made eye contact. If eye contact was made, we recorded the latency to any instance of eye contact. Baseline sessions ranged from 4-6 trials. Eye contact was defined as Carbone and colleagues (2013) did, as any duration of the children's eyes looking directly at the instructor's eyes. The instructor in all phases (excluding phases targeting transfer to novel instructors) was the first author.

Intervention: General Method. First, we shaped orientation to the instructor's body, then orientation to the instructor's face; and finally, duration of eye contact. During intervention, at the beginning of each trial, the instructor removed a preferred item and waited until the child made the appropriate orienting response before returning it. If the orienting response occurred within 5 s of the removal of the item, we provided an edible reinforcer and 15-s access to the preferred item; the trial was recorded as correct. A latency longer than 5 s resulted in 5-s access to the preferred item, and the trial was recorded as incorrect. If eye contact was not made within 5 s, the instructor waited until the first instance of eye contact that met the phase-specific requirements. The instructor silently counted the duration of eye contact in seconds. Sessions during intervention ranged from 3 to 20 trials. We increased the response requirement after three consecutive sessions of performance at 80% correct or greater, or two consecutive sessions at 90% correct or greater (see Table 1 for a description of each numbered phase).

Table 1

Description of Phases in Figures 1, 2, and 3

Phase Label	*Description of Graphic Results*
A	Percentage of correct eye contacts during body orientation shaping
B	Percentage of correct eye contacts during facial orientation shaping
1	Any instance of eye contact
2	1-s duration
3	2-s duration
4	3-s duration
5	Eye contact, high-probability response, eye contact
6	Eye contact, high-probability response, eye contact, high-probability response, eye contact
6a	Differential reinforcement of eye contact without other behaviors (i.e., pointing for Natalie and open mouth for Isabella)
6b	Differential reinforcement of eye contact without pointing and visual prompt for Natalie
7	Generalization across instructors
8	Generalization across locations
NE	Edibles unavailable as a consequence
E	Reinstate edibles as a consequence
MC	Randomization of phases 4-6
Follow-Up	Once weekly for 3-4 weeks

Phases A-B. Initially, any orientation of the child's eyes to the instructor's body was reinforced. Once body orientation became reliable (i.e., within 5 s of the removal of the preferred item) the reinforcer was provided only when the child's eyes oriented to the instructor's face.

Phases 1-4. After the children reliably oriented to the instructor's face, eye contact shaping began. First, any instance of eye contact within 5 s of the removal of the preferred item was reinforced. Once eye contacts of less than 1-s duration were occurring within 5 s following the removal of the preferred item, the duration of eye contact was shaped to 3 s by reinforcing successive approximations. Initially any instance of eye contact was reinforced, then 1-s duration, 2-s duration, and finally 3-s duration.

Phases 5-6. After eye contact occurred within 5 s of the removal of the tangible item and sustained for 3-s, high-probability responses were interspersed to teach the children to make eye contact during breaks in instruction. For example, the instructor removed the preferred item, waited for eye contact, provided an instruction involving an unreinforced, high-probability response (e.g., high-five, imitation, echoic, listener response), and waited for a second eye contact. This method served to decrease the frequency of the added reinforcement for eye contact and also attempted to make the training environment more similar to the child's typical instructional environment (see Appendix B for procedure instructions and Appendix D for data sheets).

Partial-interval Recording. Additionally, we reviewed a sample (the first five sessions of baseline and the final five sessions of the shaping intervention) of the session videos using partial-interval recording for the following behaviors: problem behavior, eye contact avoidance, indices of happiness, speech sounds, and appropriate toy play. None of the behaviors were specifically targeted within or outside of the shaping sessions. Problem behavior was defined as flopping, sliding out of the seat, and/or standing and stepping away from the table, so that the participant's body was no longer in contact with the seat, screaming, or crying. Eye contact avoidance was defined as covering the face with one or both hands, arms, or table, turning head, shoulders, or upper body away from the instructor, squinting, or looking only peripherally. Indices of happiness were defined as smiling or laughing (audible or inaudible). Speech sounds were defined as any single or repetitive functional speech sound including single or multi-syllable utterances (e.g., "mmm", "ahh", "ohh") and excluding known topographies of vocal stereotypy, crying, or screaming. Appropriate toy play was defined as any movement with an object that is

functionally related to the object (e.g., taking a toy animal and walking it around, tapping the keys of a toy piano, etc.). If the specified behavior continued from the end of one 30-s interval into the beginning of the following interval, that behavior was indicated to have occurred in both intervals.

Reliability of Data Recording and Procedural Integrity

We collected procedural integrity and interobserver agreement (IOA) data for 58% of the shaping sessions. Undergraduate and graduate research assistants were trained using a set of fake data, in a behavioral skills training format. We modeled how to collect IOA and treatment integrity data, supervised their practice session, and then provided feedback until they were able to perform the tasks independently. We assessed IOA on a trial-by-trial basis by dividing the number of agreements by the total number of trials for that session. We evaluated procedural integrity by dividing the number of correct steps by the total number of steps (see Appendix C for treatment integrity checklists). IOA averaged 98% across all sessions with a range of 71% - 100% and procedural integrity averaged 97% with a range of 80% - 100%. For other behaviors assessed using partial-interval data recording, IOA was collected in 100% of the sample of sessions and averaged 30%, which may have been an artifact of interval recording and vague operational definitions. Several of the disagreements in IOA were due to one of the observers indicating that a behavior occurred during one interval and the second observer indicating an occurrence in the interval immediately following. Additionally, one observer was generally more conservative in their measurement.

Results

Gavin

During the seven sessions of baseline, Gavin did not make eye contact in six of the seven sessions. During the second baseline session, he only made fleeting eye contact for one of the five trials. Following two sessions of shaping body orientation and 28 sessions of shaping facial orientation, we began shaping duration of eye contact. But then, he quickly met the mastery criterion for increasing duration of eye contact to 3 s, and when we interspersed high-probability responses, eye contact remained at the mastery criterion with some variability when we required an additional high-probability response and a third eye contact. After we introduced novel instructors, Gavin met the mastery criterion in three of the four sessions before a 2-week vacation. When he returned, we anticipated that his performance might regress; therefore, we returned to earlier phases of the teaching procedure, although this may not have been necessary. We implemented a progressive phase where we began by reinforcing 3-s eye contacts. After each session of performance at 80% or greater, we progressed to the next phase of the original teaching procedure (i.e., one high-probability response and two eye contacts and then two high-probability responses and three eye contacts). After seven additional sessions, Gavin demonstrated generalization across five novel instructors and two novel environments. One month later, we assessed maintenance once a week for three weeks, and responding had increased to 100% (see Figure 1 for results). Anecdotally, Gavin also began scanning audiences. When a group of adults stood near him, he made eye contact with the person closest to him, then with the next person, and continued in this fashion until he made eye contact with each individual. Throughout the month following the

intervention, the technicians who typically worked with him continued to intermittently reinforce eye contact according to predesigned data sheets involving randomized trials from Phases 4, 5, and 6 (see Appendix D). This was implemented in the same fashion with the other two participants. We worked with each participant for six months during this study; however, the duration of all sessions did not exceed 10 hours for any participant.

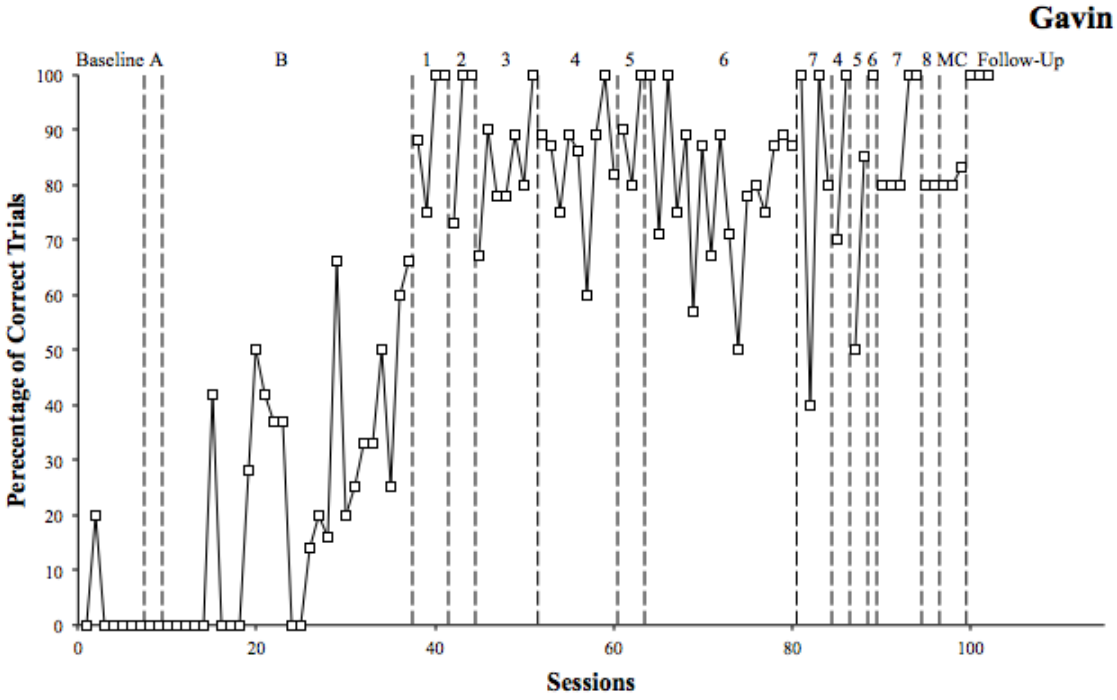


Figure 1. Results of the shaping procedure for Gavin.

Natalie

During the eight sessions of baseline, Natalie never made eye contact, but after nine sessions of shaping body orientation and 12 additional sessions of shaping facial orientation, she was making fleeting eye contact. When the response duration requirement increased to 1 s, responding increased initially, became variable, and then

increased once more until the mastery criterion was met across 1-s, 2-s, and 3-s durations. After interspersing high-probability responses, we observed that she was pointing at the instructor's face while making eye contact, and we began blocking pointing and differentially reinforcing eye contacts without pointing. After two sessions of blocking, we introduced a visual cue (i.e., hovering our hands over hers to allow us to block pointing if necessary). Although making eye contact without pointing was low initially, she began making eye contact without pointing by the tenth session. After assessing generalization across instructors and environments, the classroom had a 2-week break from school. When she returned, eye contact was lower than the mastery criterion and required seven sessions of training before meeting the criterion again. This time, responding remained at high, stable levels one month after the intervention, with a variety of instructors and in several environments (see Figure 2).

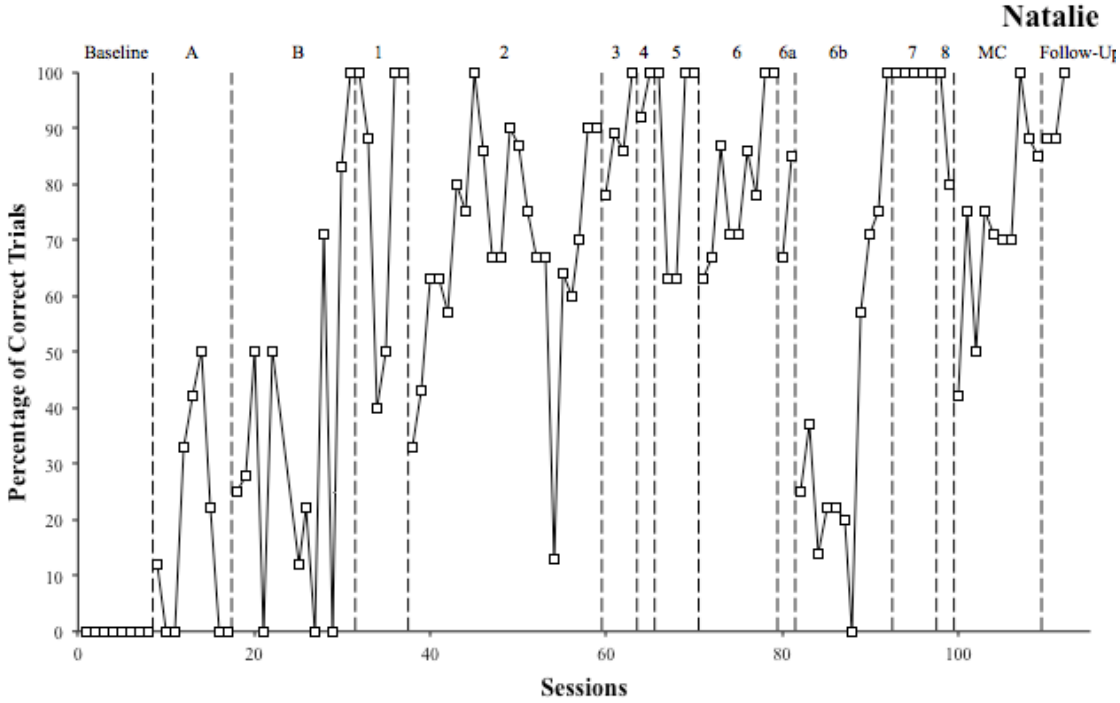


Figure 2. Results of the shaping procedure for Natalie.

Isabella

During the 13 sessions of baseline, Isabella made eye contact on an average of 17% of the trials with a range of 0-50%. After four sessions of shaping body orientation, we began reinforcing only instances of eye contact. The percentage of trials with eye contact was low and variable at first, but increased until meeting the mastery criterion within 14 sessions. Eye contact remained at the mastery criterion as the duration was shaped to 3 s, and as we introduced high-probability responses. We observed that Isabella would often open her mouth when making eye contact, so we began differentially reinforcing eye contact only when her mouth was closed. She met the mastery criterion within five sessions. When we introduced novel instructors to assess generalization, eye contact decreased; therefore, we reinforced eye contact with the novel instructors. After that training, eye contact remained at the mastery criterion across each subsequent phase. Next, we attempted to eliminate edibles as consequences and use preferred toys as reinforcers for the differential reinforcement procedure. She had a wide variety of preferred toys and edibles seemed, anecdotally, to be less preferred. However, when we eliminated edibles as consequences, responding decreased and never reached the mastery criterion. When we reintroduced edibles, responding increased to 100% and maintained for one month, across instructors and settings (see Figure 3).

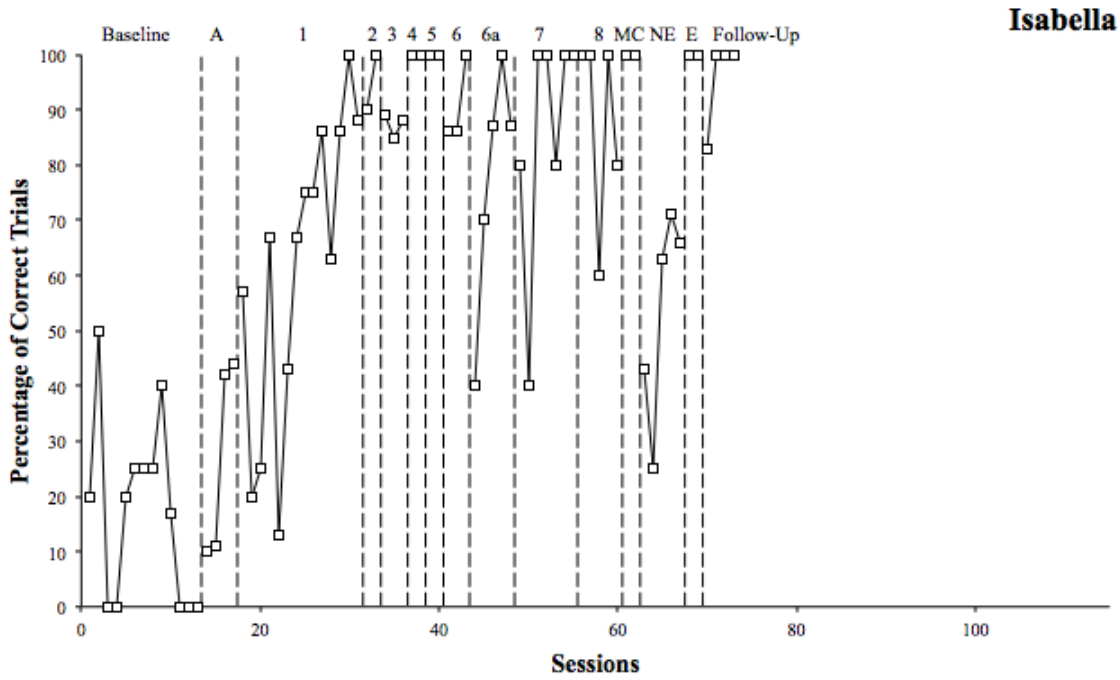


Figure 3. Results of the shaping procedure for Isabella.

Changes in Other Behaviors

As a secondary dependent variable, we reviewed a sample of videos from baseline and post-intervention sessions and collected 30-s, partial-interval data for changes in untargeted behaviors including problem behavior, eye contact avoidance, appropriate toy play, laughing and smiling, and functional sounds. The first author selected these behaviors based on informal observation during shaping sessions and two independent observers subsequently reviewed the sample of videos. We observed a decrease in problem behavior for each participant, a slight increase in laughing and smiling for Gavin and Natalie, an increase in functional sounds and appropriate toy play for Isabella. We also observed decreases in appropriate toy play for Natalie, which may have been a function of the type of preferred items used as consequences. For example, during baseline sessions we used preferred toys, but during intervention we used her iPhone (see

Figures 4-6). While the present study was confounded with maturation and exposure to a variety of other interventions, it is possible that the shaping procedure or acquisition of eye contact facilitated these changes in other, untargeted behaviors during our shaping sessions. Future research should be designed to explicitly evaluate the effects of eye contact instruction on rates of skill acquisition in other procedures as well as its effects on social engagement (see Figures 4-6 for partial-interval data).

Additionally, all three participants acquired some imitative responses during discrete-trial imitation training after completing this procedure and demonstrated increases in VB-MAPP scores (see Table 2 for pre and post-intervention VB-MAPP scores and Appendices E-G for VB-MAPP graphs). The technicians who normally worked with these children and implemented other procedures reported increased eye contact and social engagement during their sessions. They also reported that it was easier to implement other procedures when the children made eye contact before a trial and helped increase the pacing of instruction.

Table 2

Pre- and Post-Intervention VB-MAPP Scores

Participant	*Pre-Intervention*	*Post-Intervention*
Gavin	1.5	9
Natalie	Untestable	22.5
Isabella	18	52.5

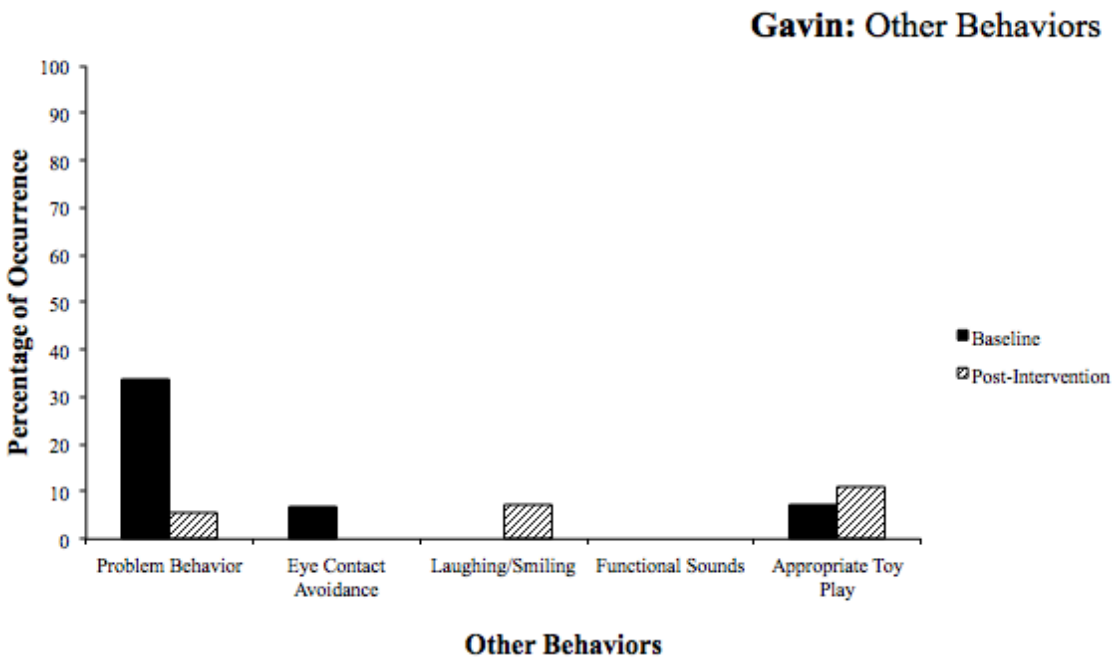


Figure 4. Changes in Gavin's other behaviors from baseline to post-intervention.

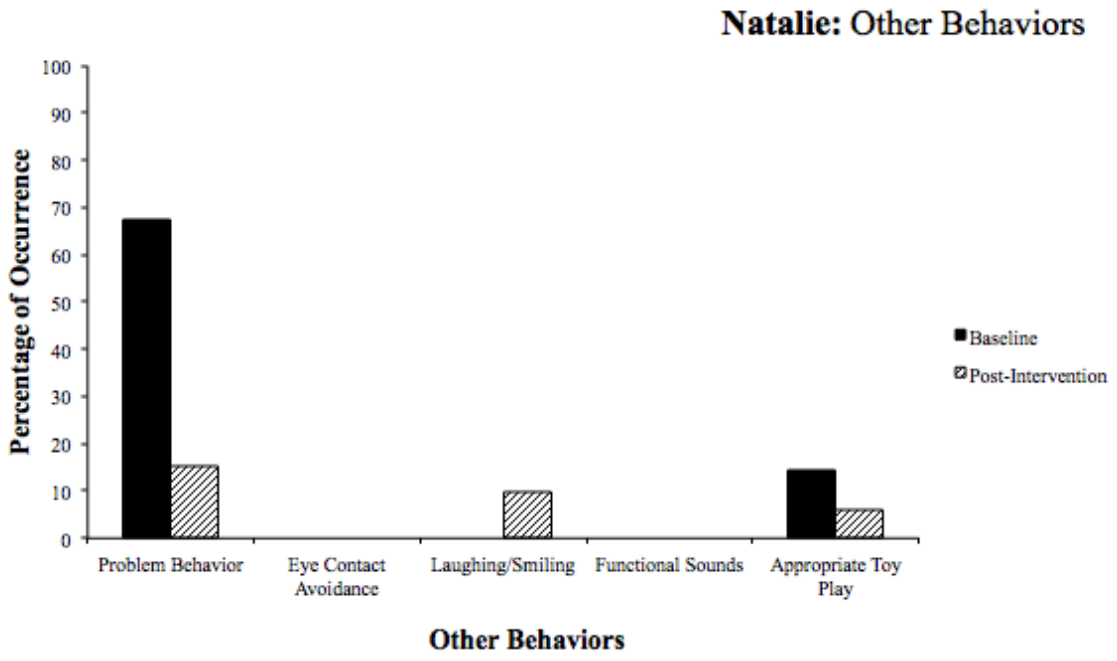


Figure 5. Changes in Natalie's other behaviors from baseline to post-intervention.

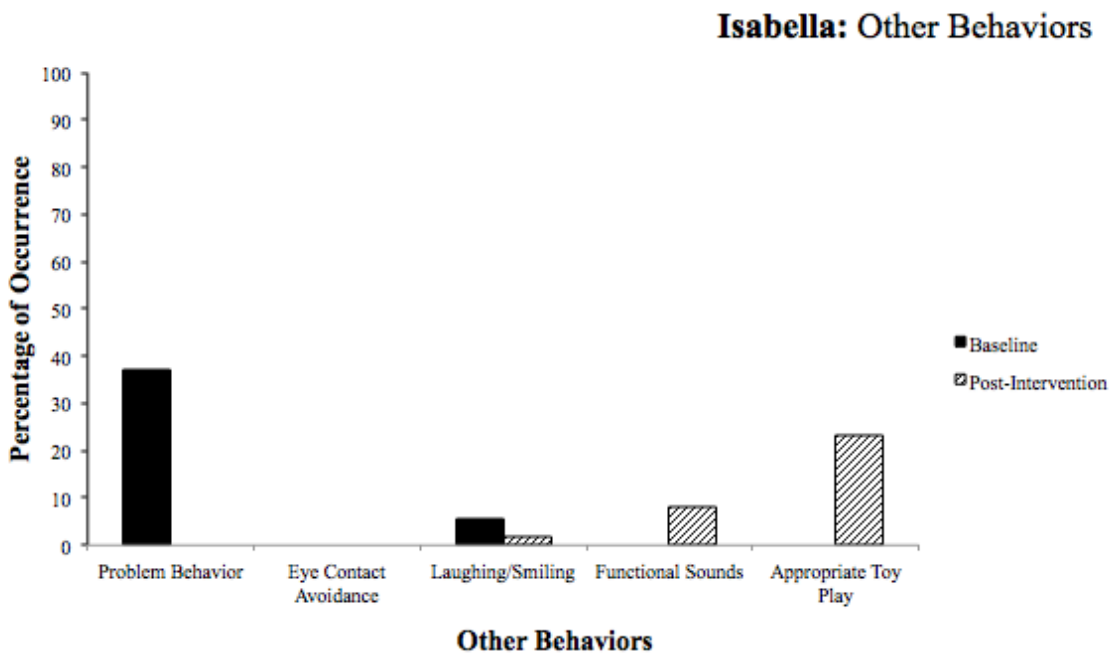


Figure 6. Changes in Isabella's other behaviors from baseline to post-intervention.

Discussion

The results of this study support the use of shaping to teach young children with autism to engage in eye contact with their instructor. This procedure adds to the current research by demonstrating success with an approach that did not require prompting or prompt fading, aversive control. Based on informal experience and historical data from the KRESA ESCE classroom, visual prompts (e.g., pinching a preferred item between the instructor's eyes) may not be effective for some children, because it requires that they extend their gaze beyond the preferred stimulus to the instructor's eyes. When children rarely make eye contact during baseline, the visual prompt may evoke orienting to the instructor's face, but transferring stimulus control from the visual prompt to the instructor's face or eyes and fading the visual prompt has been difficult. For example, in

the past five years a procedure using a visual prompt was used for fifteen children within our classroom, but only six met the mastery criterion. For the nine children who did not learn to respond to their names, we were never able to fade the visual prompt.

We taught eye contact in the absence of a vocal cue (e.g., “look at me”, or the child’s name) before teaching responding to name. The children who participated in this study rarely made eye contact, making it difficult to teach common early intervention targets (e.g., imitation) and did not demonstrate auditory discrimination at the beginning of treatment. Therefore, we implemented a procedure to teach eye contact as an attending response to increase the probability of observing necessary instructional components of a learning trial and as a prerequisite to responding to their names. Although generalization probes were not conducted during baseline, the lack of eye contact during baseline and concerns from the preliminary evaluations suggest that eye contacts made during follow-up with novel instructors were a result of this intervention.

Although effective, this shaping procedure required more than 60, 5-min sessions for each participant and spanned six months. Further research might evaluate the effectiveness of this intervention when implemented intensively in isolation for the first days of early intervention services. More efficient implementation may result in quicker rates of acquisition of eye contact within this program and may influence learning when more complex programs are implemented later. Practitioners should also consider the difficulty and inherent subjective nature of shaping. When implemented, shaping procedures should be conducted with a single, experienced, and highly trained instructor (Cooper, Heron, & Heward, 2007). Additionally, the only attempt to fade edible reinforcers was with Isabella and was unsuccessful. This apparent reliance on the

intermittent delivery of preferred items and edibles may limit the generalization of this procedure to contexts other than those described in this study (outside of academic, discrete-trial training contexts).

An additional limitation of the experimental design was that we gave the reinforcer on each trial, as soon as the child's duration of eye contact met the duration criterion; we did not conduct probe trials to see if the duration of eye contact would have increased, for example from 1 s to 3 s, without the subsequent shaping phases. Finally, if we had maintained performance and extended each phase to further demonstrate experimental control, it would have been easier to evaluate each component of this shaping treatment package. In spite of these limitations, it is clear that all three children acquired eye contact and that this treatment package had its desired effect. Future research could attempt to isolate the necessary and sufficient phases of this intervention, compare the efficiency to methods in other published literature, and individualize the treatment package for specific clients.

STUDY 2: RESPONDING TO NAME

Method

Participants

Four children who had an educational diagnosis of ASD participated, Isabella, Natalie, Gavin, and Paul (see Table 3 for participant characteristics). Natalie and Gavin were nonverbal, but Isabella and Paul had generalized echoic repertoires and some intraverbal responses. Each child received 15 hours of discrete-trial training per week in an ECSE classroom in the KRESA West Campus school. Their preliminary evaluations, consisting of a structured observation, home visit, and caregiver interview, indicated that the children did not respond to their names and that this was a major concern for the caregivers. None of the children made eye contact when they were first enrolled in the classroom. Before beginning the intervention, each child learned to make eye contact during discrete-trial instruction, as a prerequisite for responding to his or her name. Isabella, Natalie, and Gavin received eye contact training by participating in the first study. Paul received essentially the same intervention but did not participate in the first study. Informed consent was obtained for all individual participants. Sessions were conducted in small cubicles, at a group table in the common area of the classroom, in the playroom, and in the hallway and used procedure-specific data sheets, pencils, and a camera for recording sessions (see Appendices H and J for instructions and data sheets).

Table 3

Participant Characteristics

Name	*Age (years)*	*Ethnicity*
Isabella	3	African American/Asian
Natalie	3	Caucasian
Gavin	3	Hispanic
Paul	4	African American

Experimental Design and Procedures

The current study taught four children to respond to their names in a non-concurrent, multiple baseline, across participants design. This design was non-concurrent in the sense that baseline for Paul did not begin until after the intervention had already been introduced with Isabella, Natalie, and Gavin.

Baseline. During baseline, the instructor (the first author) tested whether the children would respond to their names while they engaged in a moderately preferred activity in a small cubicle. Baseline sessions consisted of five trials, each with the child's name being called from a different direction (i.e., right, left, above, behind, front). If the child made eye contact with the person who spoke his or her name, the instructor did not provide a consequence and continued with the instructional programming. Isabella, Natalie, and Gavin were receiving eye contact training when we began conducting baseline sessions. Because eye contact was a prerequisite for this study, baseline sessions continued until they met the mastery criterion for making eye contact.

Intervention

Pairing. When the eye contact intervention had been mastered, the child's name was paired with reinforcers while he or she made eye contact with the instructor. The instructor removed a preferred item from the child's possession, waited for him or her to

make eye contact, said his or her name, and simultaneously delivered a preferred edible along with the preferred item. At the beginning of each session, five probe trials were conducted to test whether the child would respond to his or her name in the same manner as baseline; however, we reinforced any correct responses. If the child did not respond reliably (i.e., two consecutive sessions at 60% or greater or one session at 80% or greater), the instructor conducted 15 pairing trials. This continued until the child met the mastery criterion.

Discrimination Training. Next, the instructor began differentially reinforcing responding to the child's name and extinguishing responding to other names, with five trials saying the child's name and five trials saying other names. For correct responses during name trials (i.e., making eye contact within 5 s of the name being called), the instructor provided access to a preferred activity and a preferred edible. If the child did not make eye contact when his or her name was called, we repeated the name once. If the child made eye contact, the response was reinforced. If the child did not make eye contact, any activity was interrupted and two unreinforced trials involving high-probability responses were conducted before the next name trial. During other-name trials, if the child made eye contact, the instructor looked away for two seconds and then conducted two unreinforced trials involving high-probability responses. The mastery criterion for discrimination was 80% or greater for three consecutive sessions or 90% or greater for two consecutive sessions for name trials and 20% or less for other-name trials.

Concurrent Activities. In the following phases we introduced concurrent activities during the discrimination trials (i.e., first a non-preferred activity, then moderately preferred, finally highly preferred). The mastery criterion for each phase was

80% or greater for three consecutive sessions or 90% or greater for two consecutive sessions for name trials and 20% or less for other-name trials. Two of the four children had not acquired a discrimination between their name and other names initially; therefore other name trials were eliminated and the instructor continued to introduce the concurrent activities as previously described. However, other-name trials were reintroduced after the children were responding reliably while engaging in a highly preferred activity. After the children could discriminate between their names and other names, transfer was assessed across at least five novel instructors and novel environments. If the child did not respond reliably with a specific instructor or location, transfer was reassessed with that instructor or in that location during the following session. See Table 4 for a description of the phases in Figures 7-10. Some phases were not implemented with every participant. We worked with each participant for three months.

Table 4

Description of Phases in Figures 7-10

Phase Label	*Description of Procedural Modifications*
BL	No consequences for correct/incorrect responses
Pairing	5-trial probes; reinforced correct responses
NCA	Discrimination training with no concurrent activity
Add Wall	Added a cubicle wall to make the space smaller
No Wall	Removed the cubicle wall
QR	Began conducting sessions in a quiet room
Shaping	Reinforced responding to name by both orienting to the instructor and making eye contact
Fading	Said other names in a whisper
NP	Concurrent non-preferred activity introduced
MP	Concurrent moderately preferred activity introduced
HP	Concurrent highly preferred activity introduced
Disc	Same as HP and reintroduced other-name trials
I	Same as HP and different instructor each trial
L	Same as HP and different location each session
Maintenance	One month after mastery

Reliability of Data Recording and Procedural Integrity

The percentage of correct responses during name trials and the percentage of trials that the children looked at the instructor during other-name trials were calculated. Data were collected for 56% of the sessions for procedural integrity (i.e., number of correct procedural steps divided by total number of steps, within a session) and for interobserver agreement (i.e., number of agreements divided by total number of trials). Undergraduate and graduate research assistants were trained using a set of fake data, in a behavioral skills training format. We modeled how to collect IOA and treatment integrity data, supervised their practice session, and then provided feedback until they were able to perform the tasks independently. IOA averaged 97% with a range of 80% - 100% and

procedural integrity averaged 98% with a range of 90% - 100%. See Appendix I for treatment integrity checklists.

Results

Paul

During the four sessions of baseline, Paul only responded to his name twice; but after 60 pairing trials he responded reliably. When other-name trials were introduced without a concurrent activity, he responded to other names infrequently. However, after two sessions, responding to other names increased and then responding to both his name and other names remained high and stable, yet he would accurately echo both his name and other names. In an attempt to facilitate discrimination between his name and other names, the instructor began whispering the other names and said his name at the same volume as before, but he continued to respond to other names and echo them. Other-name trials were eliminated and Paul quickly met the mastery criterion for responding to his name without a concurrent activity and then with non-preferred, moderately preferred, and highly preferred concurrent activities. When other-name trials were reintroduced, he responded to them initially but this decreased until he met the mastery criterion after three sessions. However, when transfer across novel instructors was assessed, he began responding to other names again and responding to his name became variable. After several sessions of attempting to train the discrimination, the instructor eliminated the other-name trials and he responded to his name reliably and the discrimination was ultimately never mastered. In spite of this, he continued to engage in other behaviors that indicated he was discriminating between his name and the other names. For example, he continued echoing his name and other names and would periodically tell the instructor to

"stop" during other-name trials. Responding to his name maintained across a variety of instructors and locations one month after the intervention (see Figure 7 for results).

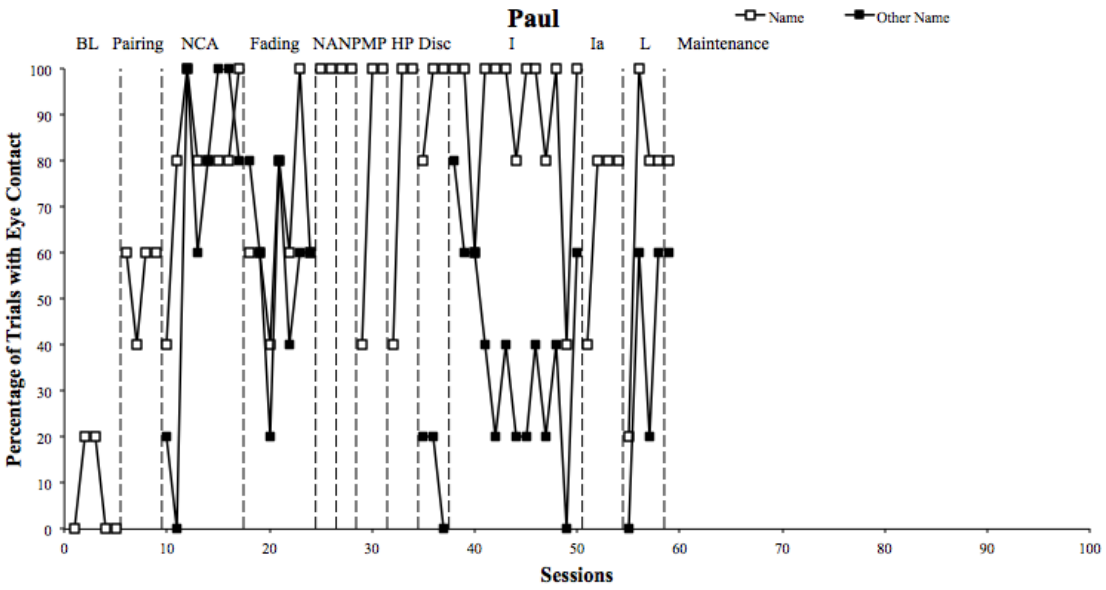


Figure 7. Results of the respond-to-name treatment package for Paul.

Isabella

During the 13 baseline sessions, Isabella never responded to her name more than twice in a 5-trial session; but after 75 pairing trials she responded reliably. Given the high percentage of correct responding during pairing, the instructor immediately introduced a moderately preferred concurrent activity (i.e., we did not train discrimination without a concurrent activity or with a non-preferred activity). Responding to her name increased to 100% and responding to other names remained low. When a highly preferred concurrent activity was introduced, she responded to other names during the second session, but then this decreased until meeting the mastery criterion within two sessions. She responded to her name and not to others across a variety of instructors and locations and the discrimination maintained one month after the intervention (see Figure 8).

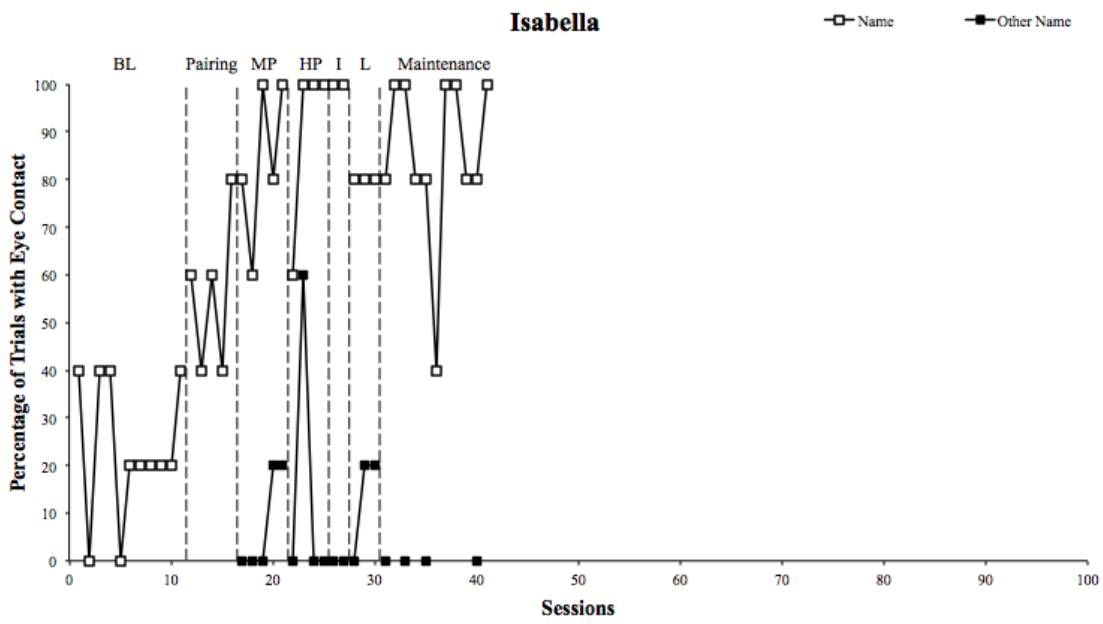


Figure 8. Results of the respond-to-name treatment package for Isabella.

Gavin

During the 17 baseline sessions, Gavin never responded to his name more than twice in a 5-trial session; but after 210 pairing trials he responded reliably. However, when we introduced other names, responding to his name decreased below the mastery criterion. Interestingly, he would only respond when a cubicle wall was next to him, therefore, a cubicle wall was added to the two sides that did not have walls (i.e., behind and to the right of him) and he began responding to both his name and other names. When the wall was removed, responding to his name and other names persisted. The instructor introduced a non-preferred concurrent activity because engaging in a activity might compete with responding to other names and he began discriminating reliably between his name and other names and this discrimination continued with moderately preferred and highly preferred concurrent activities. While assessing transfer across instructors, responding to his name became variable until meeting the mastery criterion

after 12 sessions (this may have been because the other instructors often tended to say his name more softly.) During the fourth session of assessing transfer across locations, responding to his name decreased below the mastery criterion, however with repeated assessments in the same location and he responded to his name reliably. The discrimination maintained across instructors and locations one month after the intervention (see Figure 9).

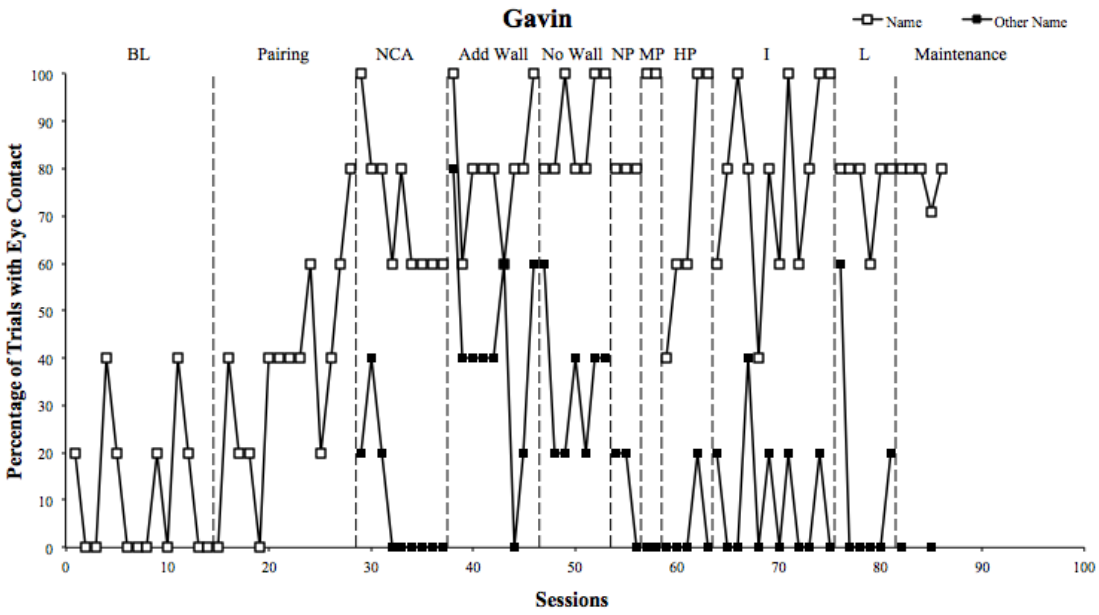


Figure 9. Results of the respond-to-name treatment package for Gavin.

Natalie

During the 20 baseline sessions, Natalie never responded to her name; but after 180 pairing trials she responded reliably. When other names were introduced, responding to both her name and other names decreased. We returned to the pairing phase, but after 60 additional pairing trials she continued to respond unreliably; therefore, sessions were conducted in a quiet room. After 90 additional pairing trials, performance still had not returned to the mastery criterion; however, she oriented to the instructor during some of

the trials. The instructor began reinforcing these orienting responses and she responded to her name reliably after 10 sessions. When other-name trials were reintroduced, she responded to both her name and other names. Therefore, other-name trials were eliminated and concurrent activities were introduced. After she responded to her name reliably during non-preferred, moderately preferred, and highly preferred concurrent activities, other-name trials were reintroduced and she met the mastery criterion in three sessions. While assessing transfer across locations, she initially responded to her name only 60% of the time in two of the locations. When transfer was reassessed in the same locations during the following session, she met the mastery criterion. The discrimination maintained across instructors and locations one month after the intervention. Performance during follow-up sessions continued to vary between 60% and 100%; therefore, we will continue to monitor performance and consult with her team to ensure that the skill maintains over time (see Figure 10).

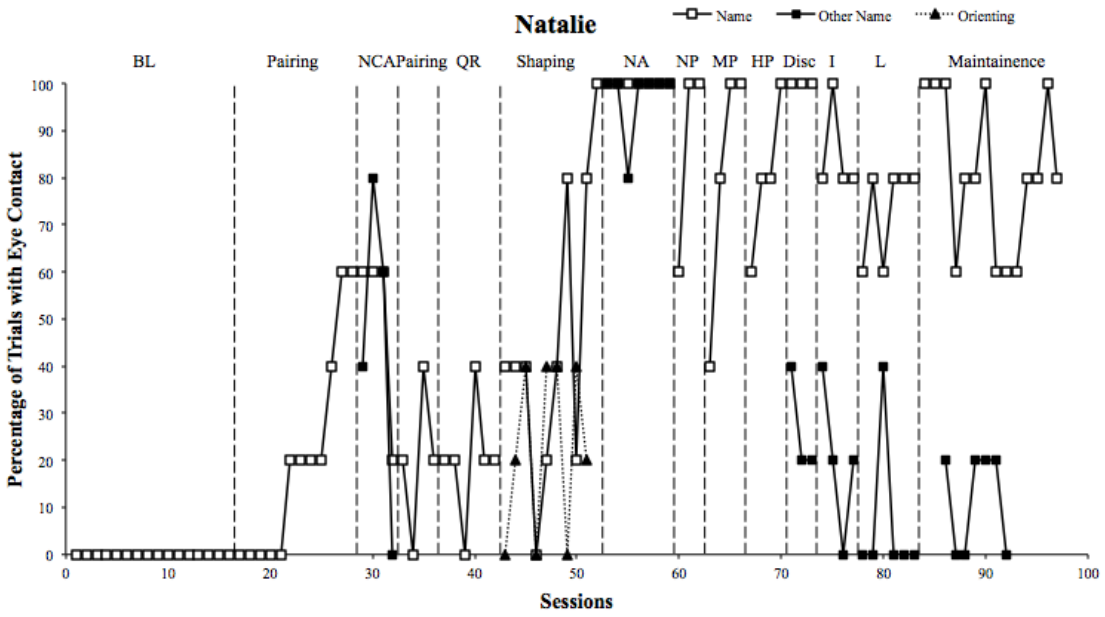


Figure 10. Results of the respond-to-name treatment package for Natalie.

Discussion

These results suggest that a pairing procedure and differential reinforcement during probe sessions can be used to teach children diagnosed with ASD to respond to their names without prompting, negative reinforcement, or overcorrection. This pairing and positive reinforcement procedure is less restrictive than physical prompting and does not require fading of prompts, which may make it more efficient and more desirable than the other strategies. In spite of the success of the intervention, we cannot confidently report that the pairing procedure was responsible for the increase in responding to name because we reinforced responding to name during the probe sessions, However, during baseline Natalie never responded to her name, making it probable that the first instance of responding to her name during the probe sessions was due in some way to the pairing procedure. Future research could attempt to determine whether the pairing procedure is a necessary component of the intervention.

We had to revise the original procedure for three of the four children to be successful. In general, revisions were required when we first introduced other-name trials. We selected a lower mastery criterion for the pairing phase in an attempt to avoid extensively training responding to the child's name in isolation. We anticipated that the participants might begin to respond to the sound of our voice, rather than their name, which may interfere with discrimination training. However, two of the children (who did not initially master the discrimination) learned to discriminate between their name and other names relatively quickly after we introduced concurrent activities.

Practitioners might consider increasing the mastery criterion for the pairing phase, introducing concurrent activities before targeting discrimination, and individualizing the

treatment package for their client. Future research should also determine the essential components of the procedure, the most efficient pairing-probe ratio, and the most effective sequence of the intervention components. Additionally, future research may measure and evaluate efficiency of this method compared to methods used in other published literature.

All four children had successfully mastered eye contact as part of their DTT programming and eye contact was a component of the pairing phase of our procedure. This may limit the procedure's effectiveness with children who do not make eye contact or who have not had previous exposure to this specific eye contact procedure.

Additionally, generalization and transfer probes were not conducted during baseline, limiting the conclusions that can be drawn about transfer during the final phases of this intervention. However, given that the initial VB-MAPP and preliminary assessments all concluded that each child was not able to respond to their name, it is likely that this intervention was responsible for the high performance during generalization phases. Finally, edible and tangible reinforcers were not eliminated once the children responded to their names reliably. Future research should assess whether responding to name, as taught in this procedure, can come under control of natural contingencies when edible and tangible reinforcers are eliminated.

GENERAL DISCUSSION

The materials (i.e., data sheets, procedures, and treatment integrity checklists) were integrated into the existing systems within the ECSE classroom at KRESA West Campus. Based on preliminary reports and assessments, the teacher and doctoral students determine when these procedures are appropriate targets for incomig children. The eye contact procedure is now a common initial target for many incoming children, as a prerequisite to DTT. For example, five children recently entered the classroom and caregivers expressed concerns about eye contact for two of them. We are currently implementing the shaping intervention to target eye contact intensively during their first days in the classroom. Variations of the eye contact and responding to name procedures are also being assessed by using similar procedures to teach other behaviors (i.e., joint attention and attending to visual stimuli), altering components of the procedure to determine necessary and sufficient components (i.e., eliminating the pairing phase and altering the sequence of discrimination and concurrent activity phases), and targeting generalization within more naturalistic social interactions (i.e., embedding trials during manding sessions).

While these studies were successful in teaching eye contact and responding to name, there are several research questions that need to be answered by future research. First, two children began discriminating between their names and other names fairly readily, however, the other two participants did not. Future research may evaluate how

best to address discrimination training. For example, discrimination training may be best implemented after children can respond to their names during other concurrent activities. Engaging in another activity may be more likely to compete with responding to another name. Furthermore, if an individual is not engaging in an activity, he or she may be more likely to attend to a speaker by making eye contact, even if the speaker does not say the individual's name.

Additionally, given the potential of eye contact to serve as a prerequisite skill or behavioral cusp, future research should be designed to evaluate these claims. For example, we may investigate correlations of improvements in other skill areas that may be affected by eye contact acquisition (i.e., imitation). Researchers may also design interventions to evaluate whether eye contact facilitated an increase in attempted responses as opposed to trials without responding or a decrease in latency to responding. Future research may also seek to evaluate whether eye contact acquisition was correlated with any improvements in other programs. For example, we may determine whether acquisition of eye contact served to improve performance in another program that was not progressing desirably prior to the eye contact intervention. Finally, future research should compare the efficiency of the methods from these studies to the efficiency of methods in the published literature.

Appendix A

HSIRB Approval Letter

WESTERN MICHIGAN UNIVERSITY

Human Subjects Institutional Review Board

Date: December 6, 2016

To: Richard Malott, Principal Investigator
Amelia Fonger, Student Investigator
Student Investigators: Kaley Barnes, Heriberto Bobadilla, Katelyn Buchholz, Taylor Clements, Melanie Coon, Jonathan Fujii, Jared Gibbs, Keili Howard, Haley Hughes, Sarah Lichtenberger, Naomi Magnotte, Natalie Mann, Andrea Perez, Jennifer Petree, Emma Sipila, Corey Spala, Abigail Trotz, Kelsey Turnquist, Madeline Klingensmith

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 15-04-24

This letter will serve as confirmation that the change to your research project titled "Pre-Learner Curriculum for Children with Autism" requested in your memo received March 20, 2017 (increase total number of participants to N=8) has been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: **April 19, 2018**

1903 W. Michigan Ave., Kalamazoo, MI 49008-5456
PHONE: (269) 387-8293 FAX: (269) 387-8276
CAMPUS SITE: 251 W. Walwood Hall

Western Michigan University
H.S.I.R.B.
Approved for use for one year from this date

APR 20 2016

HSIRB Office

Western Michigan University
Department of Psychology

Principal Investigator: Richard W. Malott, Ph.D., BCBA
Collaborator: Carmen Jonaitis, Ed.D
Title of Study: Continuous Quality Improvement Projects at WoodsEdge Learning Center

The purpose of this project will be (1) to evaluate the intensive behavioral instruction provided in two preschool settings for children diagnosed with autism and other developmental disabilities and, based on these evaluations, (2) to continuously improve the teaching procedures provided for the children in these classrooms. The behavior of the children in the classrooms will be recorded through direct observation and video recordings. The project will take place in the Early Childhood Special Education (ECSC) preschool classroom at WoodsEdge Learning Center, where undergraduate and graduate practicum students provide treatment. The students will be taking data on your child's progress. We are requesting permission to use these evaluation, training, and assessment data in theses, dissertations, undergraduate projects and honors theses, presentations, and/or publications to document the effectiveness of this continuous quality improvement effort. This consent document will explain the purpose of this research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

What are we trying to find out in this study?
The purpose of this research project is to BA, MA, and PhD students from WMU to continuously evaluate the effects of their work with the children and to modify their teaching procedures accordingly. Our first criterion in any practicum project, thesis, or dissertation is for the children directly involved in the projects to immediately benefit from their involvement; not just that their involvement will contribute to the long-term betterment of the treatment of subsequent children. Our second criterion is that children that are not involved in the projects, theses, and dissertations, will also benefit from the findings of those studies through the continuous quality improvement of classroom curriculum and teaching procedures.

Who can participate in this study?
You are being invited as a participant because your child is enrolled in the ECSE classroom at WoodsEdge Learning Center.

Where will this study take place?
This study will take place at WoodsEdge Learning Center in Portage, MI.

Western Michigan University
H.S.I.R.B.
Approved for use for one year from this date:

APR 20 2016

HSIRB Office

What is the time commitment for participating in this study?
There is no time commitment above and beyond the time your child spends at the WoodsEdge Learning Center

What will you be asked to do if you choose to participate in this study?
We are requesting permission to use these evaluation, training, and assessment data in Doctoral dissertations, Master's projects, undergraduate projects and honors theses, presentations, and/or publications to document the effectiveness of this continuous quality improvement effort.

What information is being measured during the study?
This study will collect data on the children's behavior, including the children's acquisition of desirable skills and reduction of undesirable behaviors. Data are recorded in terms of percentage of correct responses for each child for the educational programs assigned to him or her as part of enrollment in WoodsEdge Learning Center, the occurrence of problem behaviors, and skills obtained throughout their time in the classroom.

What are the risks of participating in this study and how will these risks be minimized?
Participation in this research project does not involve any known risks, discomfort, or inconvenience.

What are the benefits of participating in this study?
The primary objective of this project is to thoroughly evaluate the educational achievements of the children involved and to work to continuously improve their educational procedures and their skill acquisition. Additionally, the project seeks to improve instructional techniques and learning rates for additional children in the classroom. All improvements made to classroom training procedures are part of standard continuous quality improvement designed to constantly improve the education provided to the children in the classroom.

Are there any costs associated with participating in this study?
There are no costs associated with this study.

Is there any compensation for participating in this study?
There is no compensation for participating in this study.

Who will have access to the information collected during this study?
Student investigators will be collecting all the data for this research study. They will be the people with access to the information. Any individual data will not be disclosed. The investigator will keep your records for this research project private in a secure location at Western Michigan University, 2536 Wood Hall that only they may access. We may present the information from this research project at meetings or conferences, and use it in theses and dissertations.

Western Michigan University
H.S.I.R.B.
Approved for use for one year from this date:

APR 20 2016

HSIRB Office

What if you want to stop participating in this study?
Your participation in this research project is voluntary. You do not have to participate in this research project. If you decide to choose to have your data utilized for research, then please indicate your consent by signing and dating in the space provided below. Your decision whether or not to take part will not affect your current or future involvement with WoodsEdge Learning Center or any of its affiliates. If you do decide to participate, then you are free to change your mind and discontinue participation at any time. You may contact Dr. Richard Malott at (269) 372-1268 at any time with any questions or concerns about your participation in this research project. You may also contact the Chair, Human Subjects Institutional Review Board (HSIRB) at (269) 387-8293 or the Vice-President for Research at (269) 387-8298 if questions or problems arise during the course of the research project.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I provide consent for the following information about my child to be used by Dr. Malott and his students:

	YES	NO
First name	( )	( )
Picture	( )	( )
Video	( )	( )
Data	( )	( )
All of the above	( )	( )

Please Print Your Name

Participant's signature

Date

Appendix B

Shaping Procedure Instructions

Shaping Eye Contact – Increasing Duration (Part 1) and Increasing Spontaneous Eye Contact
(2 DATA SHEETS)

Pupil:		**Teacher:**	**CJ/DS/MN**
		Procedure Writer:	**JM/JS**
		Date Written:	**07/10/13, Rev: 01/2017 AF**
IEPC Goal:	Student will look at tutor upon removal of the reinforcer or ending an activity (consumption of edibles or playing w iPad), and engage in eye contact for duration of 3 seconds.		
Objective:	Acquisition of spontaneous eye contact – Please pay attention to correct and incorrect pupil criteria		
Notes:	- It's okay to wait the entire 5-min session without delivering a reinforcer. DO NOT PROMPT EYE CONTACT. If the child is not reaching or looking for the item, stop the timer, do a preference assessment, and then continue the session. - If the student refuses to select the toy as a reinforcer, it's okay to provide just the edible. If this is the case, a new trial begins once the edible has been fully consumed. **- Ask the support coordinator whether you should hand the student the edible or if you can deliver it to their mouth.** **- Talk to the support coordinator if problem behavior is interfering with the sessions.**		
Materials:	2 Data Sheets (1 for 5-min shaping sessions and 1 for reinforcing spontaneous eye contact throughout the day); Highly preferred reinforcer(s) & a timer		
Reinforcer:	See student's reinforcers list. Do a preference assessment prior to beginning a session. Pair socials with tangible and edible reinforcers.		
Data collection:	Spontaneous: 1 opportunity per minute (60/hr) is your goal. We should be reinforcing as many instances as possible with the goal of reinforcing every instance unless problem behavior is occurring or you have already given an SD for a trial. ONLY collect data on instances of eye contact that were reinforced. Shaping: 5-min sessions: ~20 trials, (+) for correct and (-) for incorrect. Support coordinators may adjust amount of time or trials.		

*Support coordinators, BCBAs, and classroom teachers: The eye contact procedure has a Part 2, which works on eye contact in between trials. If the student is already demonstrating the skill, Part 2 may be skipped. Otherwise, please move to Part 2 after mastery of Phase 4 from Part 1.

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
Spontaneous Eye Contact	Throughout the shift, outside of the 5-min shaping sessions, watch closely for instances of spontaneous eye contact. Provide at least one, 5-second opportunity for eye contact each minute. Always have a highly preferred edible with you and within close reach. **An opportunity may include**: waiting 5-second to deliver a reinforcer or waiting 5-second before delivering a demand If you provide a 5-second opportunity and they look: + If you provide a 5-second opportunity and they don't look: NR If you do not provide an explicit opportunity, but they look: I If the student looks away before you are able to deliver the reinforcer or does not look during an opportunity, proceed with other procedure trials.	Student establishes eye contact with the tutor for at least 1 full second during an opportunity or while engaging in some other appropriate behavior.	Tutor immediately provides an edible reinforcer and praise (e.g., "Good looking!")	Student establishes eye contact with the tutor for less than 1 full second, after an SD has been given, or while engaging in problem behavior.	Tutor does not provide a consequence (unless an SD has been given, in which case, follow through with that SD)	Continue implementing across all phases of Shaping (1-4). MC when Shaping: Part 1 is MC
Shaping A (Tutor's Body)	Tutor removes all unnecessary items from the booth (procedure materials, toys, etc). 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **look at the tutor's body (do not need to establish eye contact).** Tutor prompts the student back to the chair or quiet hands if necessary. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (**DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else**).	Student looks for any amount of time at the tutor's body **within 5 seconds** of the reinforcer being taken away.	Immediately deliver **both** reinforcers to student and provide simple vocal praise ("good job"). Allow 10 to 15 seconds of manipulation.	Student looks at the tutor's body **after 5 seconds** of the reinforcer being taken away.	Immediately deliver the toy, neutral "good", and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. [*WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.*]

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
Shaping B (Tutor's Face)	1. Tutor removes all unnecessary items from the booth. 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **look at the tutor's face (do not need to establish eye contact).** Tutor prompts the student back to the chair or quiet hands if necessary. Tutor should perform preference assessments as necessary throughout the session. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else).	Student looks at the tutor's face **within 5 seconds** of the reinforcer being taken away. *Any duration/instance of looking is a correct response, even a split second.	Immediately deliver **both** reinforcers to student and provide simple vocal praise ("good job"). Allow 10 to 15 seconds of manipulation.	Student looks at the tutor's face **after 5 seconds** of the reinforcer being taken away. *Be sure to wait for looking at the tutor's face to occur – it's ok to wait for the whole 5 minutes if needed – do not prompt!	Immediately deliver the toy, neutral "good", and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. [*WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.*]
Shaping 1 (Any Instance)	. Tutor removes all unnecessary items from the booth. 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **make any instance of eye contact.**Tutor prompts the student back to the chair or quiet hands if necessary. Tutor should perform preference assessments as necessary throughout the session. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else).	Student establishes eye contact with tutor **within 5 seconds** of the reinforcer being taken away. *Any duration/instance of eye contact is a correct response, even a split second.	Immediately deliver **both** reinforcers to student and provide simple vocal praise ("good job"). Allow 10 to 15 seconds of manipulation.	Student establishes eye contact with tutor **after 5 seconds** of the reinforcer being taken away. *Be sure to wait for eye contact to occur – it's ok to wait for the whole 5 minutes if needed – do not prompt!	Immediately deliver the toy, neutral "good", and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. [*WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.*]

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
Shaping 2 (1 sec)	1. Tutor removes all unnecessary items from the booth. 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **make eye contact for at least one full second.** Tutor prompts the student back to the chair or quiet hands if necessary. Tutor should perform preference assessments as necessary throughout the session. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else).	Student establishes eye contact with tutor for at least **ONE full second within 5 seconds** of the reinforcer being taken away.	Immediately deliver **both** reinforcers to student and provide simple vocal praise ("good job"). Allow 10 to 15 seconds of manipulation.	Student establishes eye contact with tutor after 5 seconds of reinforcer removal **OR** makes eye contact for less than one full second.	Immediately deliver the toy, neutral "good", and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. [*WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.*]
Shaping 3 (2 sec)	1. Tutor removes all unnecessary items from the booth. 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **make eye contact for at least two seconds.** Tutor prompts the student back to the chair or quiet hands if necessary. Tutor should perform preference assessments as necessary throughout the session. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else).	Student establishes eye contact with tutor for at least **TWO full seconds within 5 seconds** of the reinforcer being taken away.	Immediately deliver **both** reinforcers to student and provide simple vocal praise ("good job"). Allow 10 to 15 seconds of manipulation.	Student establishes eye contact with tutor after 5 seconds of reinforcer removal **OR** makes eye contact for less than two full seconds.	Immediately deliver the toy, neutral "good", and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. [*WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.*]

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
Shaping 4 (3 sec)	1. Tutor removes all unnecessary items from the booth. 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **make eye contact for at least three full seconds.** Tutor prompts the student back to the chair or quiet hands if necessary. Tutor should perform preference assessments as necessary throughout the session. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else).	Student establishes eye contact with tutor for at least **THREE full seconds within 5 seconds** of the reinforcer being taken away.	Immediately deliver **both** reinforcers to student and provide simple vocal praise ("good job"). Allow 10 to 15 seconds of manipulation.	Student establishes eye contact with tutor after 5 seconds of reinforcer removal **OR** makes eye contact for less than three full seconds.	Immediately deliver the toy, neutral "good", and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. *[WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.]*

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
5	1. Tutor removes all unnecessary items from the booth. 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **establish eye contact for 1 full second.** 4. Tutor immediately presents a **High-Probability ELO** (HP-ELO) (ex. High-five, tap table, wave, etc.). 5. Tutor waits for the child to **establish eye contact for 1 full second again**, for a second time. Tutor prompts the student back to the chair or quiet hands if necessary. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else).	Student establishes eye contact once (for 1 full second) with tutor **within 5 seconds** of the preferred item **AND** eye contact again, (for 1 full second) after completing the HP-ELO. ***Two instances of eye contact are required for a correct trial**, for this phase (unless eye contact is maintained before, during, and after the ELO).	After the second instance of eye contact (1 full second) occurs within 5 seconds from completing HP-ELO, immediately provide simple social praise ("good job") and deliver the tangible/edible reinforcer to student. Allow up to 15 seconds of manipulation.	Student establishes eye contact with tutor after 5 seconds of reinforcer removal and/or completion of the HP-ELO. *Be sure to wait for eye contact to occur	Complete the eye contact HP-ELO eye contact sequence, and then immediately deliver the toy and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. *[WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.]*

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
6	1. Tutor removes all unnecessary items from the booth. 2. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 3. Tutor starts the timer for 5 min and then removes the toy gently (without saying anything), and maintains eye contact with student until they **establish eye contact for 1 full second.** 4. Tutor immediately presents a **High-Probability ELO** (HP-ELO) (ex. High-five, tap table, wave, etc.). 5. Tutor waits for the child to **establish eye contact for 1 full second again**, for a second time. 6. Tutor immediately presents a **High-Probability ELO** (HP-ELO) (ex. High-five, tap table, wave, etc.). 7. Tutor waits for the child to **establish eye contact for 1 full second again**, for a third time. Tutor prompts the student back to the chair or quiet hands if necessary. If the child is not establishing eye contact and is not reaching or looking for the item, stop the timer and perform a preference assessment. Tutor does not use any prompts to get eye contact (DO NOT: get in the child's face, use a toy to get them to look, block looking at anything else).	Student establishes eye contact once (for 1 full second) with tutor **within 5 seconds** of the preferred item removed **AND** eye contact a second time, (for 1 full second) after completing the HP-ELO, **AND** eye contact a third time, (for 1 full second) after completing a second HP-ELO. ***Three instances of eye contact are required for a correct trial**, for this phase (unless eye contact is maintained before, during, and after the entire sequence of ELOs).	After the third instance of eye contact (1 full second) occurs within 5 seconds from completing HP-ELO, in addition to the entire sequence, immediately provide simple social praise ("good job") and deliver the tangible/edible reinforcer to student. Allow up to 15 seconds of manipulation.	Student establishes eye contact with tutor after 5 seconds of reinforcer removal and/or completion of the HP-ELO. *Be sure to wait for eye contact to occur	Complete the eye contact HP-ELO eye contact HP-ELO eye contact sequence, and then immediately deliver the toy and mark trial as incorrect (-). Allow up to 5 seconds of manipulation.	80% or > for 3, or 90% or > for 2, consecutive sessions. *[WB criteria 20 sessions without a phase change, or 10 sessions with 0% correct.]*

*Support coordinators, BCBAs, and classroom teachers: The eye contact procedure has a maintenance data sheet, which works on rotating through eye contact without additional demands and eye contact in between trials. Please use the Shaping Eye Contact Maintenance Data sheet after mastery of Phase 6 in Part 2.

Appendix C

Shaping Procedure Treatment Integrity Checklists

Student:	Date:	A: Tutor's body	2: 1 second		
Tutor:	Time:	B: Tutor's face	3: 2 seconds		
Observer:	Phase:	1: Any instance	4: 3 seconds		
Procedure Preparation					
1. Tutor removes all non-essential items from the booth (procedure materials, toys, etc).				Y	N
Every Phase					
1. Tutor sits across from the student at the desk.				Y	N
2. Tutor presents two preferred items and completes tangible and edible pref. assessment.				Y	N
3. Tutor allows student to play with the selected toy for 10-15 s.				Y	N
4. Tutor sets timer for 5 min.				Y	N
5. Tutor removes the toy gently, without saying anything.				Y	N
6. Tutor maintains eye contact with the student until they meet phase specific requirements.				Y	N
8. Tutor provides the tangible reinforcer for 10-15 s and edible reinforcer for correct responses.				Y	N
9. Tutor provides the tangible reinforcer for 5 s for incorrect responses.				Y	N
10. Tutor does not prompt eye contact (getting in student's face, using a toy between eyes).				Y	N
As Necessary					
1. If the student does not select a tangible, a new trial begins as soon as the edible is fully consumed.				Y	N
2. If the tutor must do a pref. assessment during the session, they stop the timer until finished.				Y	N
3. Tutor provides prompts for the student to sit in chair or quiet hands if necessary.				Y	N
Note: It's okay to go the whole 5 min without providing a reinforcer. WAIT until phase requirements are met. DO NOT PROMPT. If the student is not reaching for or looking at the reinforcers, stop the timer and do a pref. assessment.					
Feedback:					
					%

Appendix D

Shaping Procedure Data Sheets

Name:

Procedure: Shaping Eye Contact, Part 1

Mastery criteria: 3 con sessions >80%, or 2 >90%

5 min sessions

P1: Any instance P2: 1 sec P3: 2 sec P4: 3 sec

SD: Removal of preferred item (no vocal)

Additional sheet: **Sup initials: _____ | PC: _____ PC date: _____/_____/_____ | WB date: _____/_____/_____**

Phase: _______				Duration: _______	
Trial	**Latency**	**B/F/E**	ECA/PB	Duration	**Date**
1					
2					**Initials**
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					WB / MC
15					N/A
16					PC?
17					Y / N
18					**Code:**
19					
20					
				WB:	**MC:**
	%: _______				

Phase: _______				Duration: _______	
Trial	**Latency**	**B/F/E**	ECA/PB	Duration	**Date**
1					
2					**Initials**
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					WB / MC
15					N/A
16					PC?
17					Y / N
18					**Code:**
19					
20					
				WB:	**MC:**
	%: _______				

Phase: _______				Duration: _______	
Trial	**Latency**	**B/F/E**	ECA/PB	Duration	**Date**
1					
2					**Initials**
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					WB / MC
15					N/A
16					PC?
17					Y / N
18					**Code:**
19					
20					
				WB:	**MC:**
	%: _______				

Name:

Procedure: Shaping Eye Contact, Part 2: Phase 5

Mastery criteria: 3 con sessions >80%, or 2 >90%

5 min sessions, or 20 trials

P5: Remove item --> eye contact --> ELO --> eye contact --> Reinforcer

SD: Removal of preferred item (no vocal)

Additional sheet: **Sup initials: _____ | PC: _____ PC date: _____/_____/_____ | WB date: _____/_____/_____**

Phase: ________			Duration: __________		
Trial	**Eye Contact 1**	**HP-ELO**	**Eye Contact 2**	**Trial (+/-)**	**Date**
1		ELO			
2		ELO			**Initials**
3		ELO			
4		ELO			
5		ELO			
6		ELO			
7		ELO			
8		ELO			
9		ELO			
10		ELO			
11		ELO			
12		ELO			
13		ELO			
14		ELO			WB / MC
15		ELO			N/A
16		ELO			PC?
17		ELO			Y / N
18		ELO			**Code:**
19		ELO			
20		ELO			
				WB:	**MC:**
	Total Trial %: ______				

Phase: ________			Duration: __________		
Trial	**Eye Contact 1**	**HP-ELO**	**Eye Contact 2**	**Trial (+/-)**	**Date**
1		ELO			
2		ELO			**Initials**
3		ELO			
4		ELO			
5		ELO			
6		ELO			
7		ELO			
8		ELO			
9		ELO			
10		ELO			
11		ELO			
12		ELO			
13		ELO			
14		ELO			WB / MC
15		ELO			N/A
16		ELO			PC?
17		ELO			Y / N
18		ELO			**Code:**
19		ELO			
20		ELO			
				WB:	**MC:**
	Total Trial %: ______				

Phase: ________			Duration: __________		
Trial	**Eye Contact 1**	**HP-ELO**	**Eye Contact 2**	**Trial (+/-)**	**Date**
1		ELO			
2		ELO			**Initials**
3		ELO			
4		ELO			
5		ELO			
6		ELO			
7		ELO			
8		ELO			
9		ELO			
10		ELO			
11		ELO			
12		ELO			
13		ELO			
14		ELO			WB / MC
15		ELO			N/A
16		ELO			PC?
17		ELO			Y / N
18		ELO			**Code:**
19		ELO			
20		ELO			
				WB:	**MC:**
	Total Trial %: ______				

Name:

Procedure: Shaping Eye Contact, Part 2: Phase 6

Mastery criteria: 3 con sessions >80%, or 2 >90%

5 min sessions, or 20 trials

P6: Remove item --> EC --> ILO --> EC --> ILO --> EC --> Reinforcer

SD: Removal of preferred item (no vocal)

Additional sheet: **Sup initials:** _____ | **PC:** _____ **PC date:** _____/_____/_____ | **WB date:** _____/_____/_____

Phase: ________

Trial	Eye Contact 1	HP-ILO	Eye Contact 2	HP-ILO	Eye Contact 3	Trial (+/-)	Date
1		ILO		ILO			
2		ILO		ILO			Initials
3		ILO		ILO			
4		ILO		ILO			
5		ILO		ILO			
6		ILO		ILO			
7		ILO		ILO			
8		ILO		ILO			
9		ILO		ILO			
10		ILO		ILO			
11		ILO		ILO			
12		ILO		ILO			
13		ILO		ILO			
14		ILO		ILO			WB / MC
15		ILO		ILO			N/A
16		ILO		ILO			PC?
17		ILO		ILO			Y / N
18		ILO		ILO			Code:
19		ILO		ILO			
20		ILO		ILO			
						WB:	MC:
	Total Trial %: _____						

Phase: ________

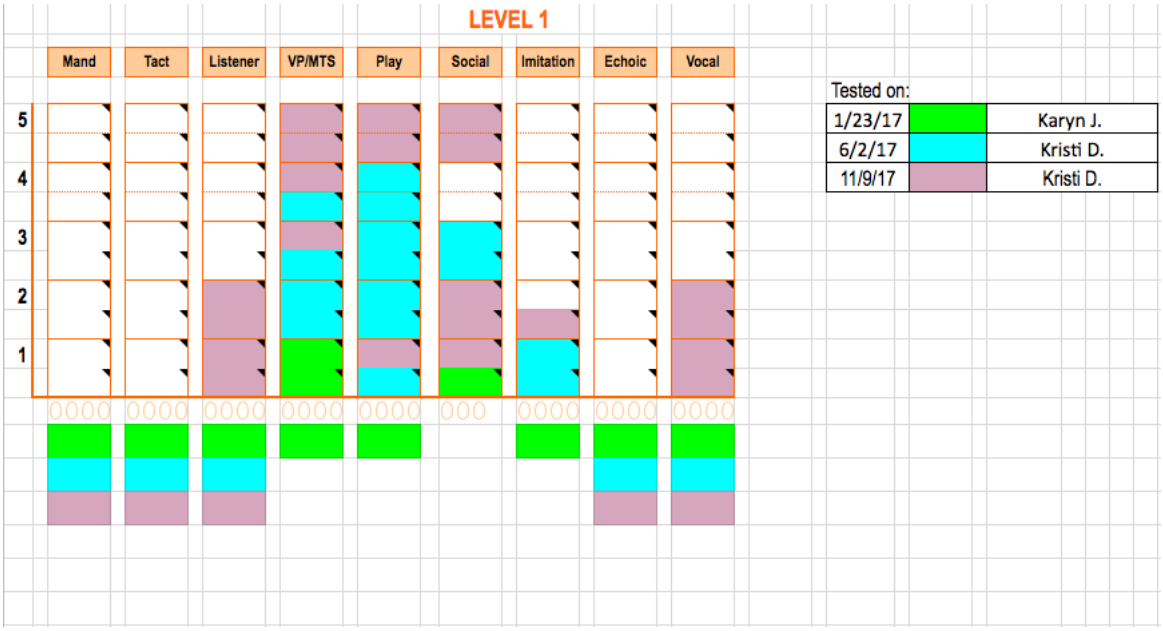
Trial	Eye Contact 1	HP-ILO	Eye Contact 2	HP-ILO	Eye Contact 3	Trial (+/-)	Date
1		ILO		ILO			
2		ILO		ILO			Initials
3		ILO		ILO			
4		ILO		ILO			
5		ILO		ILO			
6		ILO		ILO			
7		ILO		ILO			
8		ILO		ILO			
9		ILO		ILO			
10		ILO		ILO			
11		ILO		ILO			
12		ILO		ILO			
13		ILO		ILO			
14		ILO		ILO			WB / MC
15		ILO		ILO			N/A
16		ILO		ILO			PC?
17		ILO		ILO			Y / N
18		ILO		ILO			Code:
19		ILO		ILO			
20		ILO		ILO			
						WB:	MC:
	Total Trial %: _____						

Phase: ________

Trial	Eye Contact 1	HP-ILO	Eye Contact 2	HP-ILO	Eye Contact 3	Trial (+/-)	Date
1		ILO		ILO			
2		ILO		ILO			Initials
3		ILO		ILO			
4		ILO		ILO			
5		ILO		ILO			
6		ILO		ILO			
7		ILO		ILO			
8		ILO		ILO			
9		ILO		ILO			
10		ILO		ILO			
11		ILO		ILO			
12		ILO		ILO			
13		ILO		ILO			
14		ILO		ILO			WB / MC
15		ILO		ILO			N/A
16		ILO		ILO			PC?
17		ILO		ILO			Y / N
18		ILO		ILO			Code:
19		ILO		ILO			
20		ILO		ILO			
						WB:	MC:
	Total Trial %: _____						

Appendix E

VB-MAPP Graph: Gavin

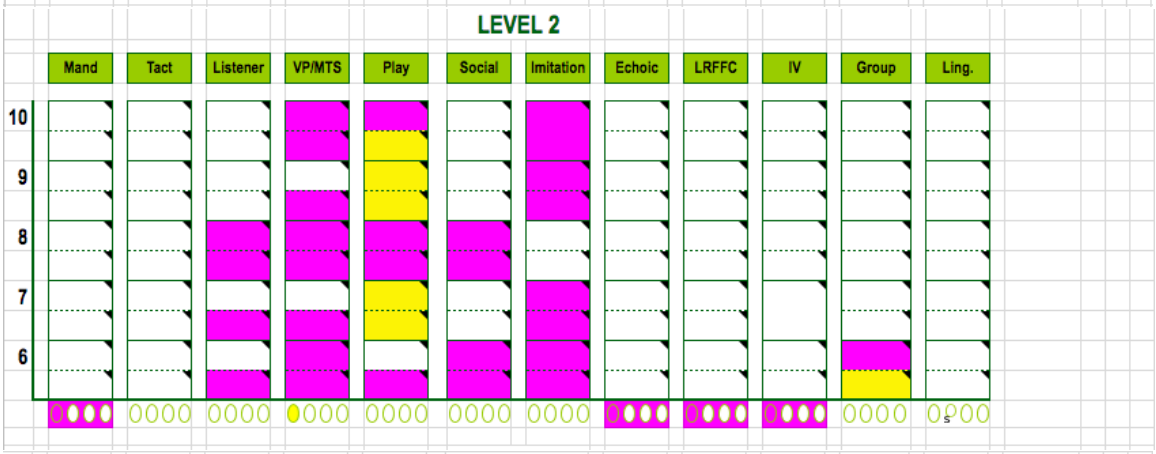

LEVEL 1
Mand
Tact
Listener
VP/MTS
Play
Social
Imitation
Echoic
Vocal
5
4
3
2
1
Tested on:
1/23/17
Karyn J.
6/2/17
Kristi D.
11/9/17
Kristi D.

Appendix F

VB-MAPP Graph: Isabella

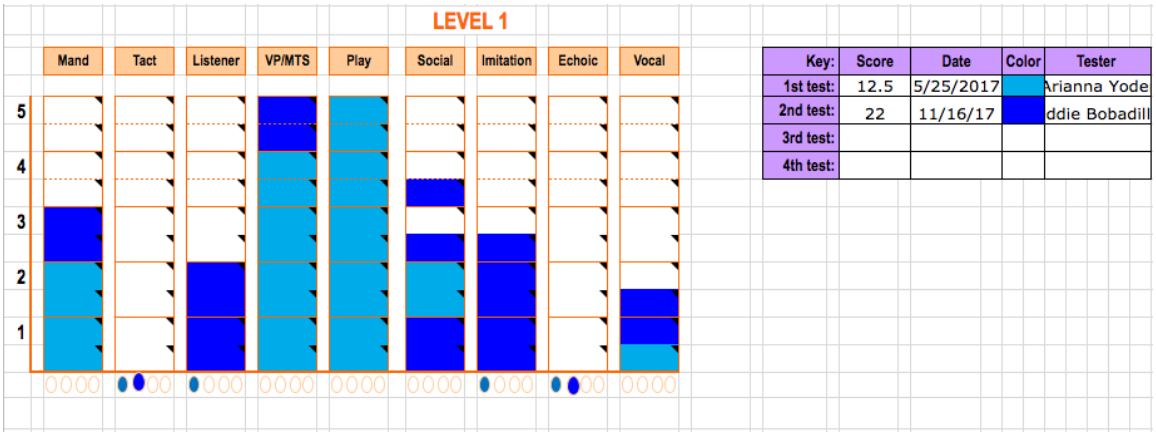
Child's name:	Inna
Date of birth:	6/12/2013
Age at testing:	1 2 ears, 4 mon 4

Key:	Score	Date	Color	Tester
1st test:	18	23-Feb		Ben Lowe
2nd test:	52.5	9/25/17		Eddie Bobadilla
3rd test:				
4th test:				



Appendix G

VB-MAPP Graph: Natalie



Key:	Score	Date	Color	Tester
1st test:	12.5	5/25/2017		Arianna Yode
2nd test:	22	11/16/17		ddie Bobadill
3rd test:				
4th test:				

Appendix H

Respond to Name Procedure Instructions

1F Orient to Name- Attending (Discrimination)
PROCEDURE SHEET

Pupil:		**Teacher:**	DM/MN
		Procedure Writer:	AF
		Date Written:	8/2016
		Revised Date:	1/2017
IEPC Goal:			
Objective:			
Materials:	Special Data Sheets (phase 1 and phases 2-7)		
Reinforcer:	**See student's reinforcers list.**		
Data collection:	**10-20 trials (phase specific), (+) for correct and (-) for incorrect.** **This procedure should be mix-trialed with other procedures in the student's schedule.** *****Within Session Whistle Blow***** **If at any time during a session of Phases 2-7 there are 3 incorrect NAME trials, stop NAME trials and do PAIRING trials for the remaining NAME trials. Indicate pairings in the target column of the data sheet and record data (on the same data sheet, same session) according to Phase 1 Pairing Trials. The next session should resume at the current phase. Do not code the session as "whistle blown". Do not include pairing trials in the %.** *****Whistle Blow***** **5 consecutive sessions at less than 50% for "name" or "other name" trials (Either or both).** **10 consecutive sessions without a phase change.**		

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
1	**Test Trials (1-5): The student is <u>not</u> engaging with a toy or activity and two tutors are present** (one delivering the SD, one as a distractor delivering reinforcers). State the student's name in a louder-than-normal volume and neutral tone. Do not attempt to get the student's attention (getting in his or her line of vision). If the student does not make eye contact within 5 s, repeat the student's name once. **Pairing Trials (6-20):** 1. The tutor sits across from student at the desk and does a preference assessment for both an edible and a toy. Tutor allows the student to play with the toy for 10-15 seconds. 2. Tutor removes the toy gently (without saying anything), and maintains eye contact with student until they **make eye contact for at least one full second.** *(Pairing trials should always be "correct". We are marking a + each time we deliver the pairing of the child's name and reinforcer)*	**Tests:** Student makes eye contact with tutor within 5 s of **either** presentation of his/her name for at least 1 full second. **Pairing Trials:** Student makes eye contact with the tutor for at least 1 full second (+).	**Tests:** Immediately deliver a highly preferred reinforcer and social praise Mark a + on the data sheet. **Pairing Trials:** Tutor immediately states the student's name and delivers both reinforcers and praise	**Tests:** Student does not makes eye contact with tutor within 5 s of either presentation of his/her name, or does not maintain eye contact for at least 1 full second. **Pairing Trials:** Student makes eye contact with the tutor for less than 1 full second (-) or while engaging in problem behavior (-).	**Tests:** Mark a - and move on to another trial. **Pairing Trials:** Tutor does not provide a consequence and moves on to a different trial.	60% or greater for both tests and pairings for 2 consecutive sessions or 80% or greater for both tests and pairings for 1 session (Calculate % of tests and pairings separately.)

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
2	**The student is not engaging with a toy or activity and two tutors are present** (one delivering the SD and reinforcers, one as a distractor). Randomly alternate between the student's name and other, distractor names (5 trials each) State the name in a louder-than-normal volume, neutral tone, and a variety of positions. Do not attempt to get the student's attention (in his or her line of vision) If the student does not make eye contact within 5 s, repeat the name once.	**Name:** Student makes eye contact for a full second and within 5 s of either presentation of the student's name **Other Name:** Student does not make eye contact within 5 s of either presentation of the name.	**Name:** Tutor immediately delivers social praise and edibles/ tangibles. Proceed to a trial of another procedure or ELO. Mark + **Other Name:** Proceed to a trial of another procedure or ELO. Mark +	**Name:** Student does not make eye contact with tutor for at least a full second and within 5 s of either presentation of the student's name. **Other Name:** Student makees eye contact with the tutor within 5 s of one of the presentations of the name.	**Name:** Tutor provides a neutral "good" and proceeds to a trial of another procedure or ELO. Mark - **Other Name:** Tutor turns away for 3 s and proceeds to a trial of another procedure or ELO. Mark -	80% or > for 3 or 90% or > for 2 consecutive sessions. Calculate % of name and other name trials separately. Must meet phase change criteria for both
3	**The student is engaging in a neutral activity and two tutors are present** (one delivering the SD and reinforcers, one as a distractor). Randomly alternate between the student's name and other, distractor names (5 trials each) State the name in a louder-than-normal volume, neutral tone, and a variety of positions. Do not attempt to get the student's attention (interrupting play, getting in his or her line of vision, stopping an activity) If the student does not make eye contact within 5 s, repeat the name once.	**Name:** Student makes eye contact for a full second and within 5 s of either presentation of the student's name **Other Name:** Student does not make eye contact within 5 s of either presentation of the name.	**Name:** Tutor immediately delivers social praise and edibles/ tangibles. Proceed to a trial of another procedure or ELO. Mark + **Other Name:** Proceed to a trial of another procedure or ELO. Mark +	**Name:** Student does not make eye contact with tutor for at least a full second and within 5 s of either presentation of the student's name. **Other Name:** Student makees eye contact with the tutor within 5 s of one of the presentations of the name.	**Name:** Tutor provides a neutral "good" and proceeds to a trial of another procedure or ELO. Mark - **Other Name:** Tutor turns away for 3 s and proceeds to a trial of another procedure or ELO. Mark -	80% or > for 3 or 90% or > for 2 consecutive sessions. Calculate % of name and other name trials separately. Must meet phase change criteria for both

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
4	**The student is engaging in a moderately preferred activity and two tutors are present** (one delivering the SD and reinforcers, one as a distractor). Randomly alternate between the student's name and other, distractor names (5 trials each) State the name in a louder-than-normal volume, neutral tone, and a variety of positions. Do not attempt to get the student's attention (interrupting play, getting in his or her line of vision, stopping an activity) If the student does not make eye contact within 5 s, repeat the name once.	**Name:** Student makes eye contact for a full second and within 5 s of either presentation of the student's name **Other Name:** Student does not make eye contact within 5 s of either presentation of the name.	**Name:** Tutor immediately delivers social praise and edibles/ tangibles. Proceed to a trial of another procedure or ELO. Mark + **Other Name:** Proceed to a trial of another procedure or ELO. Mark +	**Name:** Student does not make eye contact with tutor for at least a full second and within 5 s of either presentation of the student's name. **Other Name:** Student makees eye contact with the tutor within 5 s of one of the presentations of the name.	**Name:** Tutor provides a neutral "good" and proceeds to a trial of another procedure or ELO. Mark - **Other Name:** Tutor turns away for 3 s and proceeds to a trial of another procedure or ELO. Mark -	80% or > for 3 or 90% or > for 2 consecutive sessions. Calculate % of name and other name trials separately. Must meet phase change criteria for both
5	**The student is engaging in a highly preferred activity and two tutors are present** (one delivering the SD and reinforcers, one as a distractor). Randomly alternate between the student's name and other, distractor names (5 trials each) State the name in a louder-than-normal volume, neutral tone, and a variety of positions. Do not attempt to get the student's attention (interrupting play, getting in his or her line of vision, stopping an activity) If the student does not make eye contact within 5 s, repeat the name once.	**Name:** Student makes eye contact for a full second and within 5 s of either presentation of the student's name **Other Name:** Student does not make eye contact within 5 s of either presentation of the name.	**Name:** Tutor immediately delivers social praise and edibles/ tangibles. Proceed to a trial of another procedure or ELO. Mark + **Other Name:** Proceed to a trial of another procedure or ELO. Mark +	**Name:** Student does not make eye contact with tutor for at least a full second and within 5 s of either presentation of the student's name. **Other Name:** Student makees eye contact with the tutor within 5 s of one of the presentations of the name.	**Name:** Tutor provides a neutral "good" and proceeds to a trial of another procedure or ELO. Mark - **Other Name:** Tutor turns away for 3 s and proceeds to a trial of another procedure or ELO. Mark -	80% or > for 3 or 90% or > for 2 consecutive sessions. Calculate % of name and other name trials separately. Must meet phase change criteria for both

Phase	Tutor Presentation/Preparation	Correct Response		Incorrect Response		Criteria for Change
		Pupil Behavior	Tutor Behavior	Pupil Behavior	Tutor Behavior	
6	**The student is engaging in an activity in the booth. A variety of tutors should deliver the SD and the reinforcer** and the typical tutor should serve as a distractor. Randomly alternate between the student's name and other, distractor names (5 trials each) State the name in a louder-than-normal volume, neutral tone, and a variety of positions. Do not attempt to get the student's attention (interrupting play, getting in his or her line of vision, stopping an activity) If the student does not make eye contact within 5 s, repeat the name once.	**Name:** Student makes eye contact for a full second and within 5 s of either presentation of the student's name **Other Name:** Student does not make eye contact within 5 s of either presentation of the name.	**Name:** Tutor immediately delivers social praise and edibles/ tangibles. Proceed to a trial of another procedure or ELO. Mark + **Other Name:** Proceed to a trial of another procedure or ELO. Mark +	**Name:** Student does not make eye contact with tutor for at least a full second and within 5 s of either presentation of the student's name. **Other Name:** Student makees eye contact with the tutor within 5 s of one of the presentations of the name.	**Name:** Tutor provides a neutral "good" and proceeds to a trial of another procedure or ELO. Mark - **Other Name:** Tutor turns away for 3 s and proceeds to a trial of another procedure or ELO. Mark -	80% or > for 3 or 90% or > for 2 consecutive sessions. Calculate % of name and other name trials separately. Must meet phase change criteria for both
7	**The student is engaging in an activity outside of the booth in a variety of locations. A variety of tutors should deliver the SD and reinforcer** and the typical tutor should serve as a distractor. Randomly alternate between the student's name and other, distractor names (5 trials each) State the name in a louder-than-normal volume, neutral tone, and a variety of positions. Do not attempt to get the student's attention (interrupting play, getting in his or her line of vision, stopping an activity) If the student does not make eye contact within 5 s, repeat the name once.	**Name:** Student makes eye contact for a full second and within 5 s of either presentation of the student's name **Other Name:** Student does not make eye contact within 5 s of either presentation of the name.	**Name:** Tutor immediately delivers social praise and edibles/ tangibles. Proceed to a trial of another procedure or ELO. Mark + **Other Name:** Proceed to a trial of another procedure or ELO. Mark + on the data sheet.	**Name:** Student does not make eye contact with tutor for at least a full second and within 5 s of either presentation of the student's name. **Other Name:** Student makees eye contact with the tutor within 5 s of one of the presentations of the name.	**Name:** Tutor provides a neutral "good" and proceeds to a trial of another procedure or ELO. Mark - **Other Name:** Tutor turns away for 3 s and proceeds to a trial of another procedure or ELO. Mark -	80% or > for 3 or 90% or > for 2 consecutive sessions. Calculate % of name and other name trials separately. Must meet phase change criteria for both

Appendix I

Respond to Name Procedure Treatment Integrity Checklists

Orient to Name Phase 1

First 5 trials: Tests; Last 15 trials: Pairing

Student:	Date:	
Tutor:	Time:	
Observer:		
Testing Trials		
1. The student is not engaging with a toy or in an activity	Y	N
2. Two tutors are present	Y	N
3. One tutor says the child's name and delivers the reinforcer	Y	N
4. The tutor says the child's name in a louder-than-normal volume and neutral tone	Y	N
5. Neither tutor attempts to get the child's attention (interrupting play, getting in his/her line of vision, stopping an activity)	Y	N
6. Tutor repeats the child's name once if he/she does not make eye contact within 5 s of the first presentation	Y	N
7. Tutor immediately delivers a reinforcer if the child makes eye contact within 5 s of his/her name (either presentation)	Y	N
8. Tutor proceeds to another trial if the child does not make eye contact	Y	N
Pairing Trials		
1. Tutor removes toy gently without saying anything		
2. Tutor waits until the child makes eye contact	Y	N
2. Tutor does not prompt eye contact (getting in student's face, using a reinforcer between eyes)	Y	N
4. The tutor immediately states the child's name while the child is still making eye contact	Y	N
5. The tutor does not state the child's name or deliver the reinforcer after the child has looked away	Y	N
Feedback: Total:		
		%

Orient to Name (Discrimination) Phases 2-7

Student:	Date:	2: in the booth, only tutor (no activity)	5: in the booth, only tutor (pref. act)
Tutor:	Time:	3: in the booth, only tutor (neutral activity)	6: in the booth, variety of tutors
Observer:	Phase:	4: in the booth, only tutor (moderately preferred act)	7: out of booth, variety of tutors

Phase specific set up and two people are present (one says child's name and delivers reinforcer).	Y	N
Child is engaging in an activity (phase specific)	Y	N
Tutor states the child's name in a variety of positions relative to the student's body	Y	N
L: R: B: A: F:		
Tutor repeats the child's name only once if the child does not make eye contact the first time	Y	N
Tutor allows at least 5 seconds to pass between each presentation (during 1 trial)	Y	N
Tutor randomly intersperses 5 trials in which the tutor states another name (at least 2 different names) 1: 2: 3: 4: 5: Name 1: Name 2:	Y	N
Tutor immediately presents a reinforcer if the child establishes eye contact within 5s of a name trial	Y	N
For correct and incorrect responses, tutor moves on to a DIFFERENT procedure trial or ELO	Y	N
For phases with an activity involved, an incorrect response is followed by the removal of that activity and then a procedure trial or ELO	Y	N
For correct "other name" trials the tutor moves on to a trial of another procedure or ELO	Y	N
For incorrect "other name" trials, the tutor turns away for 3 seconds and moves on to a trial of another procedure or ELO	Y	N
If at any time the student gets 3 NAME trials incorrect, tutor resumes Phase 1 Pairing for remaining NAME trials	Y	N
Total %		

Appendix J

Respond to Name Procedure Data Sheets

Name:

Procedure: Phase 1 Orient to Name

Phase Change Criteria: 60% for 2 consecutive sessions or 80% or greater for 1 session

SD: Trial specific

Additional sheet: Sup initials: _____ | PC: _____ PC date: _____/_____/_____ | WB date: _____/_____/_____

Phase: ____ SD Prompt: _____

Trial	Target	Data	Repeat?	Date
1	Test: A		1 2	
2	Test: B		1 2	Initials
3	Test: L		1 2	
4	Test: F		1 2	
5	Test: R		1 2	
6	Pairing			
7	Pairing			
8	Pairing			
9	Pairing			
10	Pairing			
11	Pairing			
12	Pairing			
13	Pairing			
14	Pairing			WB / MC
15	Pairing			N/A
16	Pairing			PC?
17	Pairing			Y / N
18	Pairing			Code:
19	Pairing			
20	Pairing			
%	Test: Pairing:		WB:	MC:

Phase: ____ SD Prompt: _____

Trial	Target	Data	Correction	Date
1	Test: R		1 2	
2	Test: F		1 2	Initials
3	Test: A		1 2	
4	Test: B		1 2	
5	Test: L		1 2	
6	Pairing			
7	Pairing			
8	Pairing			
9	Pairing			
10	Pairing			
11	Pairing			
12	Pairing			
13	Pairing			
14	Pairing			WB / MC
15	Pairing			N/A
16	Pairing			PC?
17	Pairing			Y / N
18	Pairing			Code:
19	Pairing			
20	Pairing			
%	Test: Pairing:		WB:	MC:

Phase: ____ SD Prompt: _____

Trial	Target	Data	Correction	Date
1	Test: R		1 2	
2	Test: B		1 2	Initials
3	Test: A		1 2	
4	Test: F		1 2	
5	Test: L		1 2	
6	Pairing			
7	Pairing			
8	Pairing			
9	Pairing			
10	Pairing			
11	Pairing			
12	Pairing			
13	Pairing			
14	Pairing			WB / MC
15	Pairing			N/A
16	Pairing			PC?
17	Pairing			Y / N
18	Pairing			Code:
19	Pairing			
20	Pairing			
%	Test: Pairing:		WB:	MC:

Name:

Procedure: Phases 2-7 Orient to Name

Mastery criteria: Mastery criteria: 80% or greater for 3 consecutive sessions or 90% or greater for 2 consecutive sessions

SD: Student's Name

Additional sheet: Sup initials: _____ | PC: _____ PC date: _____/_____/_____ | WB date: _____/_____/_____

Phase: SD Prompt: _____

Trial	Target	Data	Repeat?	Date
1	Other 2		1 2	
2	Name R		1 2	Initials
3	Other 2		1 2	
4	Other 1		1 2	WB / MC
5	Name A		1 2	N/A
6	Other 2		1 2	PC?
7	Name B		1 2	Y / N
8	Other 1		1 2	Code:
9	Name L		1 2	
10	Name F		1 2	
	Name: % Other: %		WB:	MC:

Phase: SD Prompt: _____

Trial	Target	Data	Repeat?	Date
1	Other 1		1 2	
2	Other 2		1 2	Initials
3	Name B		1 2	
4	Other 2		1 2	WB / MC
5	Name F		1 2	N/A
6	Other 1		1 2	PC?
7	Name L		1 2	Y / N
8	Name R		1 2	Code:
9	Other 1		1 2	
10	Name A		1 2	
	Name: % Other: %		WB:	MC:

Phase: SD Prompt: _____

Trial	Target	Data	Repeat?	Date
1	Other 1		1 2	
2	Other 2		1 2	Initials
3	Name L		1 2	
4	Other 1		1 2	WB / MC
5	Name F		1 2	N/A
6	Other 1		1 2	PC?
7	Name A		1 2	Y / N
8	Other 2		1 2	Code:
9	Name B		1 2	
10	Name R		1 2	
	Name: % Other: %		WB:	MC:

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