

The Use of Correspondence Training to Increase Peer Social Behavior of Children with Autism
in Inclusive Preschool Classrooms

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Abstract

Children diagnosed with autism frequently exhibit marked impairments in social interaction. Peer social behavior can be an especially challenging skill for children with autism. Interaction with peers is integral in the development of peer relationships, successful inclusion, membership, and the use of self-advocacy for these children. The purpose of this study was to implement an intervention to increase peer social behavior in inclusive preschool classrooms for three children diagnosed with autism. A multiple-baseline across participants design was implemented to determine if correspondence training was an effective intervention used to increase the participants' peer social behavior. A partial-interval recording system was used to record peer social behavior and teacher behavior. The results of this study demonstrated that correspondence training was effective in increasing each participant's peer social behavior. In addition, social validity data suggested that this intervention was minimally-intrusive, easily implemented in a classroom setting and possibly generalizable to additional settings.

The Use of Correspondence Training to Increase Peer Social Behavior of Children with Autism in Inclusive Preschool Classrooms

Correspondence Training is an instructional strategy in which individuals are taught to make statements regarding their own behavior and are then provided with reinforcement when their statement and behavior correspond (Baer, 1990). It is often referred to as “plan-do-review” or “say-do” correspondence, because in the most simple terms, this intervention teaches children to make a plan and then provides reinforcement when they implement the plan as stated. In the earliest research studying the use of correspondence training, correspondence was defined as when an individual’s non-verbal behavior was changed by reinforcing his or her corresponding verbal behavior (Risley & Hart, 1968).

In one of the earliest studies examining correspondence training, Sherman (1964) provided 20 children in a child-care program, the option to play with two different toys following a session with a puppet. In this session, the talking puppet reinforced the child’s verbal statements about one target toy with approval and candy. Sherman found that the reinforcement of verbal behavior did, in fact, result in an increase of that verbal behavior. However, the results were varied regarding the effects of the reinforcement on the subsequent non-verbal behavior. While 11 participants demonstrated a significant increase in the non-verbal behavior of a corresponding reinforced verbal behavior, nine subjects showed a minimal increase, and one showed a decrease in non-verbal behavior following the sessions. Due to these mixed results, Sherman concluded that solely reinforcing a verbal behavior may have limited results in the increase of a corresponding non-verbal behavior.

Guevremont, Osnes and Stokes (1986) examined the maintenance of skills taught using correspondence training. Whereas some previous research had incorporated maintenance phases of correspondence interventions, few had sought to determine specifically how to design an intervention with the primary goal of maintenance. A multiple baseline design was employed with two preschool-aged, typically-developing children to increase a variety of adaptive classroom behaviors. Results of this study showed immediate and continued increase of target behaviors during each phase of the intervention. However, as shown in previous studies, the sole reinforcement of verbalization is not always a sufficient means of achieving maintenance of skills. This study, in particular, shed light on the fact that the use of mixed procedures removes the participants' ability to discriminate between contingencies and may have led to continued responding and maintenance of skills (Guevremont, et al., 1986a). This study provides valuable information regarding the importance of not only promoting the increase or decrease of behaviors through the use of correspondence training, but also the need for an effective means of maintaining behaviors following an intervention.

Correspondence training has been proven to be an effective intervention, used to increase adaptive behavior or decrease maladaptive behavior in individuals during shorter periods of time and within similar and closely related settings. However, Guevremont, Osnes and Stokes (1986b) studied correspondence training used with three preschool-aged and typically-developing children who demonstrated difficulty with social or academic behaviors to gain verbal control of behaviors that were isolated in time and across a variety of settings. The researchers intentionally and systematically increased the time between the children's verbalizations and their corresponding non-verbal behaviors within their school settings. In addition, probes were conducted in the participant's homes following the intervention. A within-subject multiple

baseline design was employed with the following experimental conditions: baseline, reinforcement of verbalization and correspondence training. These conditions were employed during four separate activities in the preschool day and the time between the participant's verbal behavior and the occasion for them to demonstrate the corresponding verbal behavior was systematically increased as the training continued. The study demonstrated that while correspondence training only occurred in the first play session, reinforcement of verbalizations in the following three sessions was effective in controlling the participants' demonstration of target behaviors (Guevremont, et al., 1986b). This proved that generalized verbal control can be achieved across behaviors and to different play settings occurring much later than the participants' initial verbalizations (Guevremont, et al., 1986b). However, unlike the preschool settings, generalization of target behaviors to the home setting did not occur until correspondence training was implemented in the third and fourth of the preschool settings. Similar to the Guevremont, et al. (1986b) study regarding the maintenance of acquired skills, Baer, Blount, Detrich and Stokes (1987) also sought to program maintenance of acquired verbal and non-verbal correspondence. In this study, the aforementioned researchers used intermittent reinforcement to achieve maintenance of skills in preschool-aged children in a child-care center. However, unlike most previous studies, this study targeted nutritious snack choices as a behavior to bring under verbal control. The experimental conditions in the study were as follows: baseline, reinforcement of verbalization, reinforcement of correspondence, intermittent consequences for correspondence and verbalization only to test for maintenance. Results of this study provided similar results to previous studies suggesting that a reinforcement of correspondence condition is considerably more effective than a reinforcement of verbalization condition. Correspondence training was an effective means of encouraging nutritious snack choices and intermittent

reinforcement was also effective in achieving maintenance of correspondence. Baer et al. (1987) found that the results of the use of intermittent reinforcement support a previous suggestion that gradual thinning of consequences can be an effective strategy in promoting maintenance (as cited in Kazdin & Polster, 1973).

Deacon and Konarski, Jr. (1987) questioned whether or not the successful increase in behavior found following correspondence training was due to the effects of reinforcement as opposed to simply verbal self-regulation. They compared a typical correspondence training procedure where participants first verbalized then engaged in a corresponding action with a reinforcement procedure, simply reinforcing a behavior as opposed to a verbalization. Participants in this study included 12 adults with intellectual disabilities who were randomly assigned to either of the experimental conditions. Following the procedures, results showed minimal differences between the behaviors of individuals in each group regardless of if they were exposed to a typical correspondence training procedure or a reinforcement only procedure. The authors suggested the similar results of these two procedures as being a result of rule-governed behavior, which they described as the effects of “when people are given, or generate on their own, a verbal description of the contingencies of reinforcement in a situation (i.e. a rule) and are reinforced for following the rule” (Deacon & Konarski Jr., 1987, p. 398.).

With the suggestion of rule-governed behavior by Deacon and Konarski Jr. (1987), came the question of whether or not a participant’s own verbalization in correspondence training was important. If, in fact, the demonstrated increase of non-verbal behaviors observed in previous studies was due to rule-governed behavior, then the subjects individual verbalization would be unnecessary as the participant could follow a previously generated rule without actually saying the rule itself (Baer, Detrich & Weninger, 1988). Following this suggestion made by Deacon

and Konarski Jr. (1987), a study was conducted to determine if a child's verbalization was an important factor in the process of increasing a target behavior. In the first experiment of this study, three typically-developing children enrolled in a preschool were chosen to participate. Similar to previous studies, there was a baseline, reinforcement of verbalization condition, reinforcement of correspondence condition and a second baseline to consider maintenance of skills. However, the authors also added a "Reinforcement of doing" condition where the experimenter verbalized the proposed target behavior as opposed to the participant as in previous studies. Results of this first experiment demonstrated that both reinforcement of doing and reinforcement of correspondence conditions were consistently and almost equally effective in increasing a target behavior. Therefore, if reinforcement is given after a target non-verbal behavior is observed, then the verbal behavior and the corresponding non-verbal behavior might be completely independent of each other (Baer et al., 1988). While the results of the first experiment gave cause for questioning whether or not a participant's verbalization is functionally necessary, it did not include a condition with no experimenter prompt to determine if any verbalization is necessary in the first place. In the second experiment, the authors included two "reinforcement of doing" conditions, one with an experimenter verbalization as a prompt and one without. Results from this second experiment demonstrated that the frequency of the target behaviors was clearly lower in the "reinforcement of doing" without experimenter verbalization condition than in the reinforcement of doing with experimenter verbalization and reinforcement of correspondence conditions. Therefore, the authors determined that an antecedent verbalization holds significant importance in the correspondence training process, however that verbalization may be able to be made by either the participant or the experimenter (Baer, et al., 1988). This

finding is relevant as it called for a need for future research in the area of the participants' verbalization.

Ward and Stare (1990) responded to the previous authors' call for a need of future research to clarify the importance of a subject's verbalization in correspondence training. In the study, 12 children enrolled in a kindergarten classroom were observed who had experienced one of the following conditions: reinforcement for a "say-do" correspondence condition and an experimenter verbalization and reinforcement provided separately for saying and doing condition. The authors predicted that if, in fact, a subject's own verbalization is functionally unnecessary in the increase of target behaviors, then only the participants in the "say-do" correspondence condition would show generalized correspondence (Ward & Stare, 1990). The study resulted in both conditions demonstrated that the target non-verbal behaviors occurred, however, maintenance was observed only in participants who received the correspondence training condition. Therefore, while the subject's verbalization might not be significant in increasing the frequency of a target behavior, it might be necessary to program maintenance of that target skill (Ward & Stare, 1990).

Wilson, Rusch and Lee (1992) studied whether or not correspondence training procedures could be used with teenage boys who were intellectually disabled to increase exercise. In earlier research, it was determined that correspondence training could be used as an effective educational tool with individuals who have disabilities (Whitman et al, 1982). The authors of this study acknowledged that in special education, it is significantly important that students who have disabilities are included in a normalized educational environment, and suggested that a physical education class might be an ideal normalized environment for teenage boys (Wilson et al., 1992). The purpose of this study was to determine if four teenage boys who had intellectual disabilities

and severe language deficits could benefit from a correspondence training procedure of first engaging in a behavior then verbally reporting following the behavior. In addition, the researchers sought to determine after accurate reporting occurred, if the participants would have success with a correspondence procedure of first verbally promising one would engage in a behavior then engaging in the target behavior (Wilson et al., 1992). The authors defined “do-report” correspondence as “agreement between the machines used during the student’s workout (do) and what he said he did (report) during each session” and “Promise-do” correspondence as “agreement between a student’s indication that he would use a machine (promise) and his actual machine use (do) during an exercise session” (Wilson et al., 1992). Results proved that the participants could, in fact, be taught to report their own exercise behavior when reinforcement was used and over time, their “promise-do” correspondence also increased. This study was significant as it was the first of its kind to allow subjects to determine the content of their verbalizations, when their verbalizations occur, and their actual engagement or lack thereof in the corresponding target behaviors (Wilson et al., 1992).

Bevill, Gast, Maguire and Vail (2001) studied the use of correspondence training simultaneously with picture cues to increase engagement in preschool-aged children with disabilities. Experimental conditions in this study included an initial probe session, a reinforcement of content I condition (picture display) in which the children made a visual play schedule, a reinforcement of content II condition (Picture display + verbal prompt) which was similar to the prior condition except that the experimenter prompted the child to use the play schedule if needed, and a reinforcement of correspondence condition in which the child was reinforced if his or her behavior reflected the picture schedule. The results of this study demonstrated that the intervention increased engagement for all four participants; however, each

participant needed a different level of intervention to increase his or her engagement. Had the design of the intervention been altered so that there were a picture display only condition and a return to probe, the authors determined it might have been more effective in determining the differences between the children's needs for level of intervention (Bevill, et al., 2001).

Similar to the previous authors, Morrison, Sainato, Benchaaban and Endo (2002) used correspondence training and picture activity schedules together. These authors intended to increase both on-task behaviors and play correspondence in young children with autism. In this study, four children with a diagnosis of autism and eight typically-developing children enrolled in an inclusive preschool classroom participated. The authors defined the two dependent variables in the study as "the percentage of intervals the child exhibited on-task behavior and the total number of occurrences of correspondence between children's play selections and their actual play behavior" (Morrison, et al., 2002). Experimental conditions in the study included an initial baseline where the children were prompted to make a play schedule and told to follow it, an activity schedule training similar to baseline except that graduated guidance was used to prompt the child through tasks on his or her schedule, a "say + reinforcement" condition in which the child was reinforced following his or her creation of an activity schedule, a play correspondence package in which the child was reinforced following his or her engagement in the activities described on the schedule, a return to the "say + reinforcement" condition and a generality condition. In addition, the authors gathered social validity data including parent interview, teacher interview and checklists. Results of this study demonstrated both correspondence training and the use of picture schedules were effectively used to increase on-task behavior and play correspondence in children with autism. After completion of the intervention conditions, participants demonstrated generalization of skills. Lastly, social validity

assessments showed that consumers found the intervention to be both acceptable and usable (Morrison, et al., 2002). This social validity data is relevant as it lends to the importance of less intrusive interventions used with children with autism in inclusive classroom settings.

The purpose of the current study was two-fold. First, the researcher sought to determine if correspondence training was an effective intervention used to increase peer social behavior in children diagnosed with autism in inclusive preschool classrooms. Second, the researcher asked the following question: If correspondence training was effective in increasing peer social behavior, was maintenance of skills observed following the implementation of the intervention.

Method

Setting and Participants

This study was conducted in 3 inclusive preschool classrooms during a scheduled free-choice play time. Three boys diagnosed with autism participated in this study, all in separate preschool classrooms. In each classroom, 16 students are enrolled, 8 who are typically-developing and 8 who have identified disabilities. Staff in each classroom consistently included a lead teacher with a Master's level degree, an Assistant Teacher enrolled in a Master's level program and practicum students. In addition, a Speech and Language Pathologist, Occupational Therapist, Physical Therapist, aides and volunteers work in the classrooms on varied days of the week. The preschool classrooms include the following areas available during free-choice play time: blocks, dramatic play, games, books, art, and an outside playground. During the 30 minute free-choice, students were expected to play with peers in any chosen area with support as needed from staff.

Participants were recruited for this study by contacting lead classroom teachers to identify students with a diagnosis of autism who demonstrated infrequent peer social behaviors. As potential students were identified, letters were sent home to families describing the study in addition to parental consent forms.

Lance, a 5 year, 3 month old boy, was diagnosed with autism when he was 2 years and 7 months old. During this study he attended his inclusive preschool classroom 5 days a week for 2 hours, in addition to receiving push-in social skills support from an extended-day teacher for 1 hour per week. According to Lance's teachers, he most frequently required prompting to initiate social interactions with peers or to respond to peer social bids. In addition, he engaged at an activity for short periods of time before moving to another activity, decreasing his opportunities for continued engagement with peers. Standardized testing scores were collected during Lance's most recent evaluation using the Battelle Developmental Inventory (BDI-2) which resulted in the following scores qualifying Lance for services: Adaptive skills at -2.33 standard deviations below the mean or same-aged peers and Social skills at -2.33 standard deviations below the mean of same aged peers.

Evan, a 5 year, 7 month old boy, was diagnosed with Pervasive Developmental Disorder-Not Otherwise Specified when he was 2 years and 2 months old and began receiving specially designed services shortly thereafter. During this study he attended his inclusive preschool classroom 5 days a week for 2 hours, an extended-day classroom 2 days a week for 3 ½ hours, in addition to receiving push-in social skills support from an extended-day teacher for 1 hour per week. Evan was highly motivated to engage with peers; however, he often required prompting from teachers to initiate appropriately with his peers and to sustain an interaction. Evan was also receiving services from a Speech and Language Pathologist in his inclusive classroom to support

his articulation which possibly affected his peers' ability to understand his speech. Standardized testing scores were collected during Evan's most recent evaluation using a variety of assessments with results qualifying him for services as follows: Cognition scoring at -1.53 standard deviations below the mean using the BDI-2, Social/Emotional scoring at -1.73 standard deviations below the mean using the BDI-2, Adaptive scoring at -1/46 standard deviations below the mean using the BDI-2 and Communication skills, specifically receptive communication at -2.0 standard deviations below the mean and expressive communication at -2.2 standard deviations below the mean as measured by the Preschool Language Scale-4 (PLS-4) and the Assessment Evaluation and Programming System (AEPS).

Jack, a 4 year, 7 month old boy, was diagnosed with autism when he was 2 years and 8 months old and began receiving specially designed services shortly thereafter. During this study he attended his inclusive preschool classroom 5 days a week for 2 hours, an extended-day classroom 2 days a week for 3 ½ hours, in addition to receiving push-in social skills support from an extended-day teacher for 1 hour per week. While Jack was socially motivated to engage with his peers, he struggled with cooperative play which impacted his ability to sustain interactions with peers. Jack frequently followed his own play-plan as opposed to following the group plan and remained at activities for shorter periods of time. Standardized testing scores were collected during Jack's most recent evaluation which qualified him for services in the following developmental areas: Cognitive scoring at -1.86 standard deviations below the mean using the Developmental Assessment of Young Children (DAYC), Communication scoring at -2.13 standard deviations below the mean for expressive language and -2.73 standard deviations below the mean for receptive language using the Receptive Expressive Emergent Language Test-

3 (REEL-3), and Social behavior scoring at -1.53 standard deviations below the mean of same aged peers as measured by the Battelle.

Experimental Design

A multiple-baseline design across subjects was implemented to determine the efficacy of correspondence training in increasing peer social behavior in children diagnosed with autism. The experimental conditions implemented were as follows: baseline, reinforcement of verbalization #1, reinforcement of correspondence, reinforcement of verbalization #2, and maintenance.

Experimental Conditions

Baseline. The researcher observed the participants during a 10 minute portion of the free choice play-time. No changes were made to the classroom routine, activities, or teacher behavior during the baseline condition. During baseline, as was the classroom routine, participants were free to choose to interact with any children in any activity center. If children were unengaged, classroom staff prompted them to choose an activity and use the materials in an appropriate manner. During baseline, the researcher did not interact with the participant prior, during or following the observation. Baseline conditions continued until each participant's behavior remained demonstrated a steady trend.

Reinforcement of Verbalization. The purpose of this phase was to reinforce participants for verbalizing their intent to engage in the target activity during free choice. In order to implement this step of the intervention, the researcher pulled the participant from the classroom at the beginning of the free choice play time for a brief interaction. At this point the researcher asked the child, "What are you going to do during free choice today?" The participant was taught

to say he would “play with friends.” If the child did not say this independently, he would be prompted as necessary. The researcher then asked the child, “What does playing with your friends mean?” The child was taught to say “Stay, play and talk with friends”, and prompted to do so if necessary. The child was immediately reinforced following his verbalization with behavior specific praise such as “Great job telling me you are going to stay, play and talk to your friends at free choice!” and a small piece of candy. Following interaction with the researcher, the child returned to free choice in his classroom and no longer engaged with the researcher. This entire process took less than two minutes per day. No changes were made to the classroom routines, activities, or teacher behavior during this condition.

Reinforcement of Correspondence. The purpose of this condition was to reinforce the participants for stating that they would engage in the target behavior and then providing them with reinforcement if and only if their behavior during free choice corresponded with the plan they made before free choice. As in the previous condition, the researcher pulled the participant from the classroom at the beginning of the free choice play time. At this point the researcher asked the child, “What are you going to do during free choice today?” The participant was expected to say they would “play with friends.” If the child did not say this independently, he would be prompted as necessary. The researcher then asked the child, “What does playing with your friends mean?” The child would then be expected to say “Stay, play and talk with friends”, and prompted to do so if necessary. Following the verbalization, the researcher then told the student “Ok, time to go back to free choice” with neutral affect. The researcher observed the child and recorded data for 10 minutes immediately following his return to the classroom. Immediately following the 10 minute observation, the researcher pulled the student again to review his behavior. The researcher asked the child what he said he was going to do during free

choice. Following the student's response of "Stay, Play and Talk", the researcher asked "And what did you actually do at free choice". If the student's verbalization corresponds with his performance of peer social behavior, he was immediately reinforced with behavior specific praise such as "That's right! You said you would stay, play and talk and you actually did!" If the student's corresponding report is inaccurate, the researcher would say something such as "Yes, you said you would stay, play and talk, but you didn't really, did you? Let's try again next time." These interactions took less than 5 minutes per day. No changes were made to the classroom routines, activities, or teacher behavior during this condition.

Reinforcement of Verbalization. During this condition, identical procedures were followed as in the first Reinforcement of Verbalization condition.

Maintenance. Every two weeks following the completion of the intervention, data were collected for each child using the same observation code to determine if acquired skills were maintained. Maintenance conditions were conducted the same as baseline conditions, in other words, no changes were made to the classroom activities or routines.

Dependent Variables

The dependent variables were measured during 10 second intervals in 10 minute observations during a free choice time in the inclusive preschool classroom. The specific behaviors that were coded were as follows: initiations to peers, responses to peers, continuations with peers and teacher behavior. Initiations to peers were coded when the child began a verbal or non-verbal interaction intended to evoke a social response from his peer(s) when there was no previous interaction occurring or intended to change the topic in a previously ongoing conversation.

Responses to peers were coded when the child acknowledged and verbally or non-verbally participated in an exchange with a peer following a peer's initiation by answering a question, using a gesture, or following through with a peer's request. Continuations with peers occurred when an interaction between the focal child and his peer(s) was ongoing either verbally or non-verbally. The continuation was recorded until the activity was discontinued or if the direction of conversation or play changed significantly. Teacher behavior was recorded when a teacher or adult in the room initiated or responded verbally or non-verbally to the focal child or to the group with whom the child belongs.

The children were observed for a 10 minute probe, taking place at any point during the 30 minute free choice play-time. The researcher recorded initiations, responses, continuations and teacher behavior using partial interval recording. For each variable, the number of occurrences was divided by the total number of intervals to determine the percentage of intervals that each variable occurred. In addition, intervals which included any occurrence of peer social behavior, including initiations, responses and continuations were recorded and divided by the total number of intervals to determine the percentage of the observation that the children were engaged in peer social behavior. This form of measurement was used to record behaviors during every phase of the study.

Interobserver Agreement

The overall reliability was 95% (range 91-100%) and was obtained for 40% of all observations. Interobserver agreement was conducted for Lance in 10 of 19 and ranged from 91% to 100%. Interobserver agreement was conducted for Evan in 11 of 24 sessions and ranged

91% to 97%. Interobserver agreement was conducted for Jack in 6 of 25 sessions and ranged from 92% to 98%.

Social Validity

According to Morrison et al. (2009), the science of applied behavior analysis can be used to improve quality of life. The development of interventions based on research is equally as integral as the social validity of the interventions themselves. According to Schwartz and Baer (1991), social validity data should incorporate two factors: a collection of accurate opinions from relevant consumers as well as the use of collected opinions to enhance and sustain the success of the intervention used in a community. In the current study, information was collected from both classroom staff as well as parents prior to implementing correspondence training to determine perception of the child's peer social behavior. Following the intervention, the classroom staff and parents completed a brief survey to determine if an increase of peer social behavior had been observed, if the child had developed or strengthened friendships with peers, if prompting had decreased to support the child in social behavior and if staff/parents would be interested in learning more about correspondence training or would like support in continuing to implement it at home or in the classroom. If teachers and parents expressed a desire to receive support in implementing the intervention, following the conclusion of the study, training and relevant resources were provided by the researcher.

To assess the social validity and acceptability of this intervention, each student's teacher was asked to complete a social validity assessment with the following questions:

- Have you observed an increase in peer social behavior in the student following the implementation of the intervention?

- Can you briefly describe any changes you have observed in this student following his involvement in this study?
- Would you be interested to learn more about this intervention in order to implement it with other students?
- Is there anything you would have changed about the intervention or other general feedback?

The participants' parents were also contacted with the following questions:

- Can you describe your child's social interactions with children outside of his school setting prior to his involvement in this study?
- Did you see any changes in his social interactions with children outside of school during and/or following his involvement in this study? If yes, can you please describe these changes?
- Would you be interested to learn how to implement this with your child at home?

Results

Lance

During the baseline condition, Lance's mean peer social behavior, including initiations, responses and continuations was 6%. Upon implementation of the Reinforcement of Verbalization condition, Lance demonstrated a minimal increase at 7% peer social behavior. During the Reinforcement of Correspondence condition, a mean of 56% peer social behavior was recorded. During the Return to Reinforcement of Verbalization condition, Lance demonstrated a decrease in peer social behavior with a mean of 49%. During the Maintenance condition, Lance

demonstrated a mean of 14% peer social behavior, a significant decrease following intervention, yet still higher than his baseline performance.

Verbal and non-verbal teacher behavior toward Lance was recorded in each condition. A mean of 34% teacher behavior was recorded during baseline, 20% in the Reinforcement of Verbalization Condition, 12% during the Reinforcement of Correspondence Condition, 19% during the return to Reinforcement of Verbalization condition and 34% during Maintenance. The results of Lance's peer social behavior and teacher behavior are presented in Figure 1.

Evan

During the baseline condition, Evan's mean peer social behavior, including initiations, responses and continuations was 10%. Upon implementation of the Reinforcement of Verbalization condition, Evan demonstrated a minimal decrease at 9% peer social behavior. During the Reinforcement of Correspondence condition, an increase in mean of 33% peer social behavior was recorded. During the second Reinforcement of Verbalization condition, Evan demonstrated minimal decrease in peer social behavior with a mean of 32%. During the Maintenance condition, Evan demonstrated a mean of 25%.

Verbal and non-verbal teacher behavior toward Evan was recorded in each condition. A mean of 46% teacher behavior was recorded during baseline, 30% in the Reinforcement of Verbalization Condition, 46% during the Reinforcement of Correspondence Condition, 29% during the second Reinforcement of Verbalization condition and 47% during Maintenance. The results of Evan's peer social behavior and teacher behavior are presented in Figure 1.

Jack

During the baseline condition, Jack's mean peer social behavior, including initiations, responses and continuations was 12%. Upon implementation of the Reinforcement of Verbalization condition, Jack demonstrated an increase of 27% peer social behavior. During the Reinforcement of Correspondence condition, a mean of 42% peer social behavior was recorded. During the second Reinforcement of Verbalization condition, Jack demonstrated a further increase in peer social behavior with a mean of 57%. During the Maintenance condition, Jack demonstrated a mean of 37% peer social behavior.

Verbal and non-verbal teacher behavior toward Jack was recorded in each condition. A mean of 42% teacher behavior was recorded during baseline, 34% in the Reinforcement of Verbalization Condition, 22% during the Reinforcement of Correspondence Condition, 29% during the second Reinforcement of Verbalization condition and 38% during Maintenance. The results of Jack's peer social behavior and teacher behavior are presented in Figure 1.

Social Validity

Each teacher provided feedback suggesting that the intervention was effective for all three students. Lance's teachers felt that the intervention was successful in increasing his social behavior not only at free choice but also his confidence in social behavior during other activities throughout the school day. Specifically, his teachers observed him independently entering and sustaining play more frequently. They also suggested that the use of visuals and other modifications used along with correspondence training might have increased his performance even further. His teachers reported that the results of the study helped them "re-evaluate how often we should be interacting with our students and helped us reflect on how best to help

students increase in peer social behaviors”, as higher teacher behavior was frequently correlated with lower peer social behavior.

Evan’s teacher reported that while he already had an interest in engaging with peers, the intervention seemed to help him increase in his social interactions and become more persistent in getting his “message heard”. The classroom staff reports less of a need for teacher prompting to support his social skills. In addition, they planned to implement this intervention with other students who they felt could benefit from the support following training from the researcher.

Jack’s teacher reported a significant increase in his cooperative play following the study, specifically his ability to be both a “play leader and a play follower”. The intervention had resulted in Jack inviting peers to play more frequently and becoming a member of a larger peer group. His teacher asked that she and her team be trained to use Correspondence Training due to how “simple it seems to implement, with only very little direct, 1:1 student-teacher time”.

Only one parent returned a survey. Lance’s mother reported that she had seen a steady increase in his social skills as the intervention was implemented. She stated that while he would previously ignore other children in environments such as the playground, she observed him more frequently initiating interactions, responding to peers and maintaining interactions for sustained periods of time. She also observed him building on the play ideas of others more frequently which she felt had contributed to increased interest of peers to seek him out as a playmate.

Discussion

The results of this study demonstrated that Correspondence Training is an effective intervention to increase peer social behavior in children diagnosed with autism in an inclusive preschool setting. Two of the three participants did not demonstrate any increase in social

behavior during the reinforcement of verbal behavior alone phase, but all participants demonstrated large increases in social behavior during the correspondence training phase and maintained this increase to the second reinforcement of verbal behavior phase. Limited maintenance data suggests variable effects across participants when all components of the intervention are removed. Social validity data suggest that this intervention was minimally intrusive in a busy preschool classroom, easily implemented by teachers and resulted in marked improvements in participants' social interactions during the school day, even during activities when the intervention did not take place.

Prior literature demonstrated that correspondence training is an effective intervention in increasing a variety of skills. In a very early study, Correspondence training was effectively implemented to increase verbal and non-verbal sharing and praising in typically-developing preschool children (Rogers-Warren & Baer, 1976). In 1982, Whitman and colleagues' study demonstrated two very important findings: first, Correspondence training could be used successfully not only to increase pro-social behavior, but also to decrease problem behavior and second, that correspondence training was effectively used with children who had intellectual disabilities. Similar to a study conducted by Guevremont et al., 1986, the current study demonstrated that participants' behavior maintained following correspondence training with the implementation of a Reinforcement of Verbalization condition; however, an abrupt change such as a return to baseline may result in a decrease of target behavior. Correspondence training had also been used previously to promote nutritious snack choices in typically-developing preschool children (Baer et al., 1987). Wilson, Rusch and Lee, (1992) provided a second demonstration that Correspondence Training can be effective when used with individuals with disabilities, specifically in increasing exercise reporting in adults with intellectual disabilities. In two more

recent studies, it was demonstrated that Correspondence Training could be used simultaneously with other interventions such as activity schedules and visual cues to increase behaviors such as engagement, on-task behavior and play behavior in preschool-aged children (Bevill et al., 2001; Morrison et al., 2002). The current study contributed to previous research now suggesting that correspondence training can be easily implemented to support peer social behavior in young children with autism in an inclusive preschool setting.

A second important contribution of the current study was the inclusion of social validity data. While many interventions have proven to be effective in increasing social behaviors in children diagnosed with autism, they are frequently labor-intensive and difficult for teachers to implement while managing a classroom of children. Social validity information gathered from this study suggest multiple significant findings. First, the intervention resulted in increased confidence and persistence in social interaction for all three participants. Teachers reported that the participants were more confident in initiating play and also more persistent in engaging their peers even after initial failed attempts. Another important finding demonstrated that the participants engaged in longer, more sustained play with peers. Prior to the intervention, participants engaged in shorter interactions, whereas following the intervention, participants sustained play for longer durations of play-time. In addition, one teacher reported that she observed her student engaging in cooperative play for the first time as the intervention was implemented. More specifically, she observed his willingness to be both a “play leader” as well as a “play follower”. All teachers requested to be trained in the implementation of correspondence training for the participants and additional children they felt could benefit from a quickly and easily implemented intervention. The parent survey returned by Lance’s mother,

suggested that the behaviors acquired through correspondence training in the classroom, may have generalized to home and community settings.

One important finding demonstrated in this current study was the relationship between teacher behavior and peer social interaction. We observed for all three participants that during sessions when higher percentages of teacher behavior toward the participant were recorded, lower percentages of peer social interaction were also observed. In addition, during observations, peer social behavior occurred more often during intervals without teacher behavior. We do not know, of course, if the teacher behavior was higher because students were not engaged with peers or if the teacher behavior was actually a barrier to independent student engagement and interaction with peers. This brings up important considerations in how teachers can support children with autism who struggle with peer social interaction. As results were shared with teachers, one participants' teacher reported that the findings led her team to re-evaluate how they support their students. In other words, how can teachers not necessarily decrease behavior towards students, but more effectively support students' peer social interactions with that behavior? This is an important consideration which could be explored through future research.

One teacher provided feedback suggesting that the use of visual supports or activity schedules might have been effective if used simultaneously with correspondence training for the participant in her classroom. Considering the use of correspondence training and activity schedules was effectively used to increase on-task play behavior in children with autism (Morrison et al., 2002) and Visual Cues were used with Correspondence training to increase engagement in preschoolers with disabilities (Bevill et al., 2001) both resulted in increased of desired behavior, one might consider similar research targeting peer social interactions for children with autism.

While this study did support previous research suggesting that Correspondence Training can be effectively used with preschool-aged children with autism, measures should be taken in future use to ensure that behaviors are maintained as Correspondence Training is discontinued. Guevremont et al. (1986) found that the reinforcement of a child's verbalization of intended behavior was sufficient in maintaining behaviors acquired following the use of correspondence training. The data from the current study support to use of reinforcement of verbalizations to maintain behavior as all three participants maintained behavior over three times higher than demonstrated in baseline conditions. In addition, social validity data suggest that this procedure is both successful and minimally intrusive, supporting its feasibility when implemented by teachers managing many children in a classroom setting. Furthermore, the use of intermittent reinforcement or indiscriminable reinforcement contingencies has proven to be effective in maintaining behaviors following correspondence training (Baer et al., 1987; Guevremont et al., 1986). Future research studying the use of correspondence training may consider including the above strategies to support maintenance. According to social validity data acquired from teachers, the use of visual supports may have been a useful strategy to support peer social behavior and could have affected the maintenance of such skills. Following the completion of this study, classroom staff in all three classrooms were trained by the researcher to implement correspondence training to support participants in maintaining behaviors observed during correspondence training.

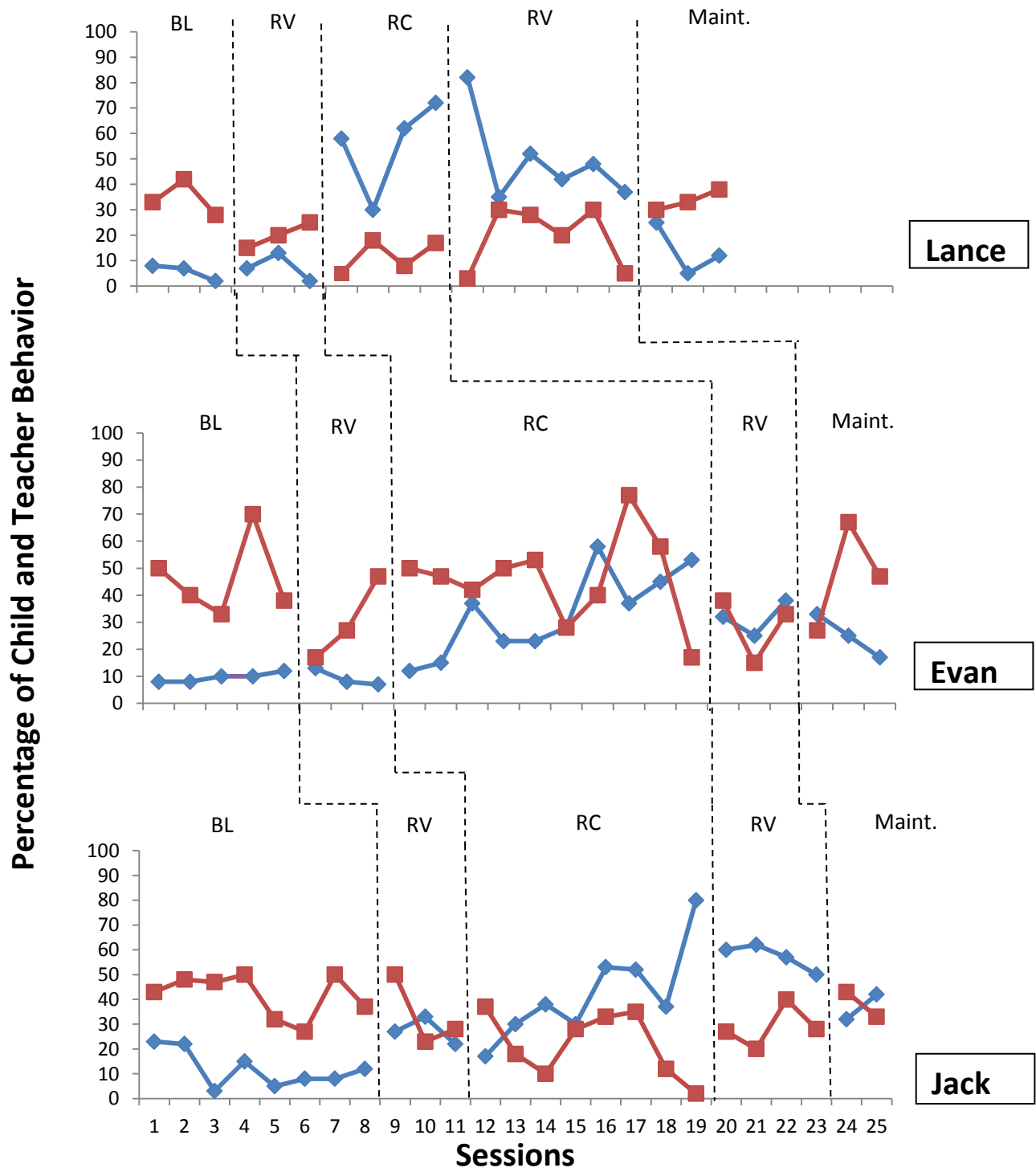
This intervention effectively increased peer social behavior in young children diagnosed with autism in an inclusive preschool classroom. Future research might contribute to the field by exploring how correspondence training could be used simultaneously with other interventions to support peer behavior, how teacher behavior affects peer social interaction in children with

autism and how an increase of peer social behavior can be more effectively maintained following the implementation of Correspondence Training.

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**Figure 1.**

Percentage of Child and Teacher Behaviors across Baseline (BL), Reinforcement of Verbalization (RV), Reinforcement of Correspondence (RC), return to Reinforcement of Verbalization (RV) and Maintenance (Maint.) Conditions. Peer Social behavior is represented by Diamond (◆) and percentage of Teacher Behavior is represented by Square (■).