Training Teachers of Children with Moderate to Severe Disabilities to Contingently Respond to Child-Initiated Socially-Desirable Behaviors During Centers

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Dedication

To my Memommy, Helen King, who taught me that God is good.

To my nieces and nephews, Aiden, Kingsley, Emma, Tatum, John, and Sawyer, you can do anything you set your mind to and always reach for your goals.

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Abstract

Teachers of young children with moderate to severe disabilities may have insufficient training in implementing naturalistic instructional practices based in evidence. Behavior Specific Praise (BSP) and Incidental Teaching are well researched, but limited studies exist on the use of teacher contingent responses to children with moderate to severe disabilities' self-initiated socially-desirable behaviors during centers. I used a multiple baseline design across four special education teachers to measure the effects of a training package incorporating Behavior Skills Training (BST) and Emailed Performance Feedback (EPF) on teachers' contingent responses to their target children with a few self-initiated socially-desirable behaviors during centers. Results indicate that systematic introduction of BST with a checklist and EPF with graphs produced increases in the four teachers' percentage of contingent responses. Furthermore, teachers maintained their contingent responses to their target child's self-initiated socially-desirable behaviors after removal of the EPF. Programming common stimuli during BST resulted in all teachers providing contingent responses to at least one other child in their classroom who had a few self-initiated socially-desirable behaviors. Limitations of my study and implications for future research and practice are discussed.

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Chapter 1

Introduction

Special education teachers are required to implement instructional strategies that are considered Evidenced-based Practices (EBPs) as mandated by the law (Every Student Succeeds Act [ESSA], 2016; No Child Left Behind [NCLB], 2006). EBPs are instructional practices that demonstrate a functional relationship between the independent variable (e.g., the instructional strategy) and the dependent variable (e.g., child behavior or outcomes) (Horner et al., 2005; Odom, Collet-Klingenberg, Rogers, & Hatton, 2010). Additionally, for the instructional strategy to be an EBP it must be (a) operationally defined, (b) implemented with fidelity, and (c) replicated across multiple studies. Lastly, the context in which the practice is implemented should be defined (Horner et al., 2005).

Selecting an effective instructional strategy for teachers to implement with young children with severe disabilities is a difficult task because there is limited research specifically focused on EBPs for individuals and children with moderate to severe disabilities (Courtade, Test, & Cook, 2014; Singer, Agran, & Spooner, 2017; Spooner, McKissick, & Knight, 2017). However, there is substantially more research on children with autism and in some states (e.g., South Carolina), autism is identified in the severe disabilities construct. Levy et al. (2010) reviewed the statistics on autism spectrum disorder (ASD) and the co-occurrence with other diagnoses and found that ASD often co-occurs with other disorders, where the co-occurrence of a non-ASD diagnosis is 83%. Similarly, Frieden, Jaffe, Cono, Richards, and Iademarco (2014) reviewed seven states

that documented the co-morbidity of intellectual disabilities and ASD and found that 69% of children with ASD had a borderline or below average IQ score. In a report by Baio and Christensen (2018) on the statistics of children identified with ASD, 44% had an above average intelligence, the remaining children were identified with below average intelligence at 56%. Because intellectual disabilities often co-occur in children with ASD (Baio & Christensen, 2018; Frieden et al., 2014; Center for Disease Control and Prevention, 2018), and sometimes fall within the severe disabilities construct, I reviewed research on ASD.

More research has been conducted within the literature on young children with autism, enabling the replication of numerous studies to qualify as evidence-based with this population (Marder & deBettencourt, 2015; Wong et al., 2015). The National Autism Center has published a report of EBPs for teachers and practitioners to use when selecting instructional strategies to implement with children with autism. These teacher-implemented EBPs may be effective for young children with moderate to severe disabilities (National Autism Center, 2015) due to the co-morbidity of intellectual disabilities and ASD ranging from 56% to 69% (Baio & Christensen, 2018; Frieden et al., 2014). The National Autism Center's 2015 report outlines many EBPs that are conducted within young children's natural environments, such as (a) social skills package (i.e., recognizing facial expressions, turn-taking in conversations, initiating an interaction and joint attention), (b) pivotal response treatment (i.e., motivation, self-initiation, self-management, and responding to multiple cues), and (c) naturalistic teaching strategies (i.e., providing natural consequences, using a variety of preferred items to teach communication, and Incidental Teaching).

Teaching young children with severe disabilities in their natural environment increases the probability that children will generalize their learning to similar settings (Alberto & Troutman, 2016; Cooper, Heron, & Heward, 2007) or at least functionally use what they learned within their natural environment. One key domain to teach within the natural environment is socialization skills for both typically developing children and children with disabilities (Lee & Fox, 2009). Learning socialization skills is an important aspect of early childhood education as socialization skills have been associated with children's learning in other domains which enhances success in school and later in life (NAEYC, 2009; Noonan & McCormick, 2014; Sandall & Schwartz, 2008).

Socialization skills are embedded within the naturally occurring routines and include learning how to socialize with peers, follow directions, make choices, and ask questions to gain information. Social skills are important because these overarching behaviors are widely acceptable to society and considered "good behaviors". Baer, Wolf, and Risley (1968) suggest that behaviors that require investigation should be socially acceptable to society and be of importance to the individual. Even though socialization skills are predictors of future learning and embedded within natural occurring opportunities, many children with moderate to severe disabilities often lack in the frequency or have very low rates of socially-desirable behaviors (Beirne-Smith, Patton, & Kim, 2006; Brown, McDonnell, & Snell, 2016).

The environment has an effect on children's behaviors (Cooper et al., 2007; O'Neill, Albin, Storey, Horner & Sprague, 2015) and this could be one reason why children with moderate to severe disabilities have few self-initiated socially-desirable behaviors. A study conducted by Reszka, Odom, and Hume (2012) examined the

relationship between ecological features of preschool classrooms and the social behaviors of children with ASD. The study was conducted with 68 children in 24 classrooms with varying curriculums, but included centers, snack, small and large group. The researchers found that the children engaged in social interactions with peers and adults during child-directed times in which the child had the opportunity to initiate an interaction as opposed to adult-directed activities. This corresponds with the National Autism Center 2015 report, which focuses on the naturalistic environment EBPs and highlights self-initiations in the natural environment as a key component to children's learning. Additionally, Reszka et al. (2012) found that these children had an extremely low level of initiation with a 0.034 proportion of initiations during this time frame, which corresponds with Beirne-Smith et al. (2006) and Brown et al. (2016). Similarly, in two separate reports on research perspectives over a quarter century both Odom, Buysse, and Soukakou (2011) and Strain, Schwartz, and Barton (2011) highlight the importance of continuing to investigate naturalistic interventions across young children with moderate to severe disabilities to determine the intervention's effectiveness.

Need for Teacher Training in Naturalistic Instructional Approaches

Teachers of young children with moderate to severe disabilities need to learn how to provide instruction within naturally occurring daily routines. Providing naturalistic instructional strategies allow children to interact within their natural environment and will possibly benefit children by increasing their socialization skills (Odom et al., 2011; Strain et al., 2011). Since young children with moderate to severe disabilities engage in few socially-desirable behaviors, teachers of young children need to implement EBPs focusing on learning early socialization skills. Teaching socialization skills to young

children with moderate to severe disabilities includes outlining specific behaviors that will enhance options for regular education environments. Teachers may not provide a response that is potentially reinforcing for the child's socially-desirable behaviors due to the low frequency of the children's socially-desirable behaviors and higher frequency of the children's socially unacceptable behaviors. Also, the teachers may miss the opportunity to respond because they have not systematically outlined the socially-desirable behaviors they are looking for from the children.

Two naturalistic instructional strategies that these teachers should learn to implement are Incidental Teaching and Behavior Specific Praise (BSP). Both teaching strategies have been identified as EBPs with individuals with milder disabilities (e.g., Learning Disabilities and Emotional Behavior Disorders) and children with autism. Incidental Teaching allows the child to initiate the interaction and the teacher provides a response or potential reinforcement following the initiation (Hart & Risley, 1968; Hsieh, Wilder, & Abellon, 2011; McGee & Daly, 2007). Behavior Specific Praise (BSP) is when the teacher states what the child is doing correctly (Barton, Fuller, & Schnitz, 2016; Rathel, Drasgow, Brown, & Marshall, 2014; Sweigart, Landrum, & Pennington, 2015). The specific praise statement ideally would be a potential reinforcer for the child and occur within seconds of the child preforming the behavior.

When training teachers to implement these naturalistic EBPs with children with moderate to severe disabilities each child's preferences should be considered. This is because children with severe disabilities may not respond to lengthy specific praise, and their potential reinforcers (i.e., a particular response that occurs after the behavior and increases the future likelihood of the behavior) may vary from typically developing

children (DeLeon, Bullock, & Catania, 2013; Karsten, Carr, & Lepper, 2011; Stevens, Sidener, Reeve, & Sidener, 2011). For example, typically developing children may be reinforced by long praise statements (e.g., "I like the way you are sharing and taking turns."), whereas children with moderate to severe disabilities may not be reinforced by the long praise statements, but rather simplified specific praise (i.e., "Nice sharing."). Additionally, children with moderate to severe disabilities may request items such as flashing lights or shiny metals, whereas same-aged peers may request blocks. The teachers need to identify the potential reinforcers to use when responding to children's socially-desirable behaviors (Ogletree, Bruce, Finch, Fahey, & McLean, 2011; Rowland, Quinn, & Steiner, 2015).

In addition to teachers identifying potential reinforcers for children with moderate to severe disabilities, the teacher's contingent delivery of the potential reinforcement requires investigation. Several researchers have suggested that the timing of the delivery of a response must be immediate to develop a contingent relationship (Cooper et al., 2007; Dunst, Trivette, Raad, & Masiello, 2008). Therefore, teachers may provide a response that is a potential reinforcer after the child's socially-desirable behavior, but it may be delivered too long after the child's behavior to develop a contingency. If the potential response is a reinforcer, then the teacher's response will most likely reinforce the closest behavior emitted by the child when the teacher provided a reinforcer. For example, a child may have put a piece of the puzzle in the puzzle and then started flapping her hands. Then the teacher rubs the child's back. If the back rub was a potential reinforcer for the child, then the back rub would reinforce flapping and not putting the piece in the puzzle.

Special Education Teacher Responses to Socially-Desirable Behavior

Special education teachers may need support responding to children's socially-desirable behaviors for several reasons. First, teachers may be unaware of the influence children have over their own teaching behavior. For example, the teacher may respond to a child's inappropriate behavior (i.e., the child standing on the table) by coming over to lift him off the table while inadvertently providing tickles and hugs (i.e., potential reinforcer). Then if the child continues the behavior in the future, the teacher reinforced the child's inappropriate behavior and not socially-desirable behavior. Second, teachers may not have systematically determined each child's potential types of reinforcers. For example, one child may prefer physical contact (e.g., hugs, tickles, high fives, or sitting in the adult's lap), whereas another child prefers verbal language (i.e., praise statements). Third teachers may not recognize their timing of delivery when providing reinforcers for children's self-initiated socially-desirable behaviors. For example, the teacher may provide a potential reinforcer in close temporal value (i.e., within 5 seconds of the behavior) of the socially-desirable behavior, but the child emitted another behavior such as waving hands quickly in front of face within the 5-second delay from the socially-desirable behavior and the delivery of reinforcement. Lastly, teachers have limited planning time and may not have systematically planned out individualized response contingencies during naturally occurring routines.

A way to increase the teacher contingent responses to child-initiated socially-desirable behaviors is the use of a brief training with follow-up performance feedback such as Behavior Skills Training (BST). BST is an effective instructional strategy that has been used within the special education training literature (DiGennaro Reed, Blackmon,

Erath, Brand, & Novak, 2018; Miltenberger, 2008a) and includes the following components: (a) instruction, (b) modeling, (c) rehearsal, and (d) feedback. Additional components that have been embedded within the main components of BST include (a) checklists (Oliver, Wehby, & Nelson, 2015), (b) flowcharts (Graff & Karsten, 2012), and (c) graphs (Rathel et al., 2014). Following the training, providing performance feedback (PF) within the classroom has been found to increase teachers' implementation fidelity of instructional strategies (Barton et al., 2016; DiGennaro, Martens, & Kleinmann, 2007; Flynn & Lo, 2016; Hemmeter, Hardy, Schnitz, Adams, & Kinder, 2015; Luck, Lerman, Wu, Dupuis, & Hussein, 2018).

Performance feedback through email (i.e., Emailed Performance Feedback, EPF) has been identified as an effective format while saving the time of both the teacher and trainer (Hemmeter et al., 2015; Hemmeter, Snyder, Kinder, & Artman, 2011; Krick Oborn & Johnson, 2015; Rathel, Drasgrow, & Christle, 2008, 2014). Researchers have found that providing graphs of the teachers' performance during observations within the email has been effective (Hall, Grundon, Pope, & Romero, 2010; Rathel et al., 2014). Some researchers require the teachers' response to comprehension probes to assess whether the teachers read the email (Krick Oborn & Johnson, 2015), but this places another responsibility on the teachers and takes away their time. A solution may be to embed the graphs of a teacher's performance into the email so that they do not have to open an attachment. To save teachers' additional time, the only requirement will be to send an email back to the trainer identifying their receipt. Likewise, understanding teachers' perspectives of EPF has only been completed through a social validity survey

in one out of the five studies (Hemmeter et al., 2011); therefore, additional evidence is needed to determine the teachers' preference of this performance feedback format.

Needed Research

A teacher's increased contingent positive responses on a child's socially-desirable behaviors during natural instruction may result in the child increasing his or her self-initiated socially-desirable behaviors. Providing a brief training with follow-up performance feedback may increase teachers' contingent responses to socially-desirable behaviors and the teachers' learning may generalize to other children who have the same low frequency of socially-desirable behaviors. Once trained, this may be a worthwhile instructional strategy to use with future children, may be feasible to use in the classroom, and teachers could possibly train their paraprofessionals to use the same consequence-based (i.e., the teacher response happens after the child's socially-desirable behavior) instructional strategy. Therefore, the purpose of my study is to investigate a performance feedback training package that includes BST designed to (a) increase teacher's contingent responses to child self-initiated socially-desirable-behaviors and (b) to investigate if increasing teacher's contingent responses also increases children's self-initiated socially-desirable behaviors.

In my review of the literature, I found no interventions that focused on contingent teacher responses with respect to the timespan from the end of the child's initiated behavior and the teacher's response. The timing is important to establish a contingent relationship between the child's behavior and the teacher's response so that the child will increase his or her frequency of socially-desirable child-initiated behaviors. The timing is important so that the teacher does not inadvertently reinforce undesirable behaviors.

Additionally, limited studies have focused on whether the teacher training on an instructional strategy geared towards a specific child's strengths and needs would generalize to other children with the same instructional needs (Mouzakitis, Codding, & Tyron, 2015). For example, children with severe disabilities have deficits in communication modalities and their preferences vary from same-aged peers. Therefore, when training a teacher on one child's specific communication attempts along with the child's individualized preferences may not generalize to other children with similar fluency building needs. Thus, I designed a study where I specifically teach the teacher with one targeted child during training to determine whether or not the teacher generalized the training to her other children.

My specific research questions include: (a) Does a performance feedback training package – Behavior Skills Training (BST), checklist, and Emailed Performance Feedback (EPF) with graphs – increase teachers' delivery of contingent responses on self-initiated socially-desirable child behaviors?; (b) Do teachers maintain their contingent responses to child self-initiated socially-desirable behaviors after they reach the mastery criterion for six consecutive days?; (c) Do teachers' contingent responses to child self-initiated socially-desirable behaviors increase the frequency of child's self-initiated socially-desirable behaviors?; (d) Do teachers generalize behavior learned from a performance feedback training package to other children with a few self-initiated socially-desirable behaviors in their classrooms?

Chapter 2

Literature Review

Since children with moderate to severe disabilities have social learning skill deficits and social skill difficulties throughout their life (Koegel, Vernon, Koegel, Koegel, & Paullin, 2012; Reszka et al., 2012), teachers need training in how to implement effective social skills instruction. Characteristics of young children with severe disabilities vary by child, but may include a combination of the following: (a) learning skills at a slower rate, (b) difficulty with applying knowledge learned across settings or contexts, (c) limited communication skills either or both receptive and expressive, and (d) limited ability to take care of oneself (Beirne-Smith et al., 2006). There is limited research on teacher implementation of effective instructional practices with children with moderate to severe disabilities in relation to the individuals' specific characteristics (Spooner et al., 2017). Most of the teacher implemented EBP research conducted is not clear with specific descriptions of the targeted population lacking age and severity of disability. The research on training teachers to implement EBPs has typically involved teachers who teach individuals with milder disabilities and these individuals do not have as many deficits and support needs across both learning and functional skills.

There are even fewer teacher implemented instructional practices cited in the literature that are effective in increasing socially important behaviors in children with moderate to severe disabilities (Odom et al., 2011; Strain et al., 2011). Odom et al. (2011)

and Strain et al. (2011) state how research should be conducted to train teachers to implement and refine effective instructional strategies for children with moderate to severe disabilities within natural social situations. Similarly, when conducting individual investigations of specific teacher training intervention packages, Spooner et al. (2017) suggest teasing out instructional intervention packages (e.g., focusing on one of the following components instead of all components simultaneously: reinforcement, error correction, chaining and task analysis) to determine the effect the intervention has on child outcomes. Therefore, the principle of parsimony is employed where the simplistic and logical intervention is used prior to adding additional complex variables.

My literature review begins with the need for training teachers to use naturalistic instruction for young children with moderate to severe disabilities. The review examines the differences between two teacher-implemented naturalistic instructional approaches, Incidental Teaching and Behavior Specific Praise (BSP). The findings include information on how teachers should use child-centered instruction and the strategy of teachers providing a contingent response when children are engaging in socially-desirable behaviors. Further investigation leads to three specific elements the teachers should use to make reinforcers work for children with moderate to severe disabilities. Then I examine the special education teacher training literature to identify specific components that are evidenced-based in teacher trainings as well as components of providing teacher performance feedback. I conclude my review with an investigation of various types of performance feedback following trainings to provide ongoing support to teachers. I narrow my review to email performance feedback following trainings to enhance teacher implementation fidelity of the instructional practice.

Naturalistic Instructional Approaches

Naturalistic instructional approaches (such as activity-based intervention and embedded instruction) include the following four instructional components: (a) occur during ongoing activities, (b) address skills that support the child's participation, (c) implementation occurs following the child's lead, and (d) naturally occurring or logically planned consequences following the child's lead (Rule, Losardo, Dinnebeil, Kaiser, & Rowland, 1998). Two identified EBPs fall within the naturalistic instructional approach: Incidental Teaching and Behavior Specific Praise.

Incidental Teaching. Incidental Teaching was first clarified by Hart and Risley (1975), through their use of procedures to expand preschool children's spontaneity of speech into more complex sentences for requesting items during child-centered learning opportunities. According to the literature, Incidental Teaching is invaluable for stimulating spontaneity of children's initiations and incorporates generality of increased speech and language initiations, which is a cornerstone for learning (Hart & Risley, 1974, 1975, 1980; McGee, Krantz, & McClannahan, 1985).

Components. Incidental Teaching is child-selected; therefore, the child initiates interaction by requesting assistance from the adult or peer. The teacher selects this intervention if the purpose of instruction is to increase or expand the child's current use of language based on a selected behavior target. If the teacher (e.g., communicative partner) determines the child's initiation is an Incidental Teaching opportunity, then the communicative partner must make the decision about the cue to be used to initiate instruction. If the child does not respond to the cue, the prompt following the non-response or incorrect response of the child must be pre-planned and determined (i.e.,

based on the child's current functional communication level). Therefore, the communicative partner provides systematic instruction to expand the child's use of language to request items, objects, or assistance. For example, if the child is pointing toward a truck that is out of reach, but in sight, the teacher would prompt the child to say, "truck, please" prior to giving the truck to the child.

Targeted population. Studies reviewing the effects of Incidental Teaching found this to be an effective EBP for young children and children with various disabilities (McGee & Daly, 2007). Hsieh and colleagues (2011) report that it is a simple EBP to train others to implement.

Behavior Specific Praise. As far back as 1968 researchers studied the functional relationship between teacher praise and decreases in child behavior (Madsen, Becker, & Thomas, 1968; Thomas, Becker, & Armstrong, 1968).

Components. Behavior Specific Praise (BSP) is a teacher implemented intervention in which the teacher describes the action or actions the child is preforming to provide the child a positive statement about what he or she is doing (Rathel et al., 2014). For example, when a child is working with peers, the teacher says, "I like the way you are working with peers." instead of saying, "good job" when the child is working with peers. The goal of BSP is to reinforce the child for the behavior he or she performs, and the behavior is more likely to occur in the future because using a specific comment.

Targeted population. BSP studies are typically conducted by researchers training teachers to implement the EBP. The selected teachers for the majority of these studies teach individuals with mild disabilities such as Emotional Behavioral Disorders (EBD) (Hawkins & Heflin, 2011; Rathel et al., 2008), Learning Disabilities (LD) (Sweigart et

al., 2015), Intellectual Disabilities (ID), or some combination of milder disabilities (Rathel et al., 2014). Other researchers trained a combination of general and special education teachers to implement BSP with students with mild to moderate challenging behavior in the general education environment (Reinke, Lewis-Palmer, & Martin, 2007; Reinke, Stormont, Herman, & Newcomer, 2014). However, within the Early Childhood (EC) and Early Childhood Special Education (ECSE) literature, BSP is referred to as descriptive praise, which is the same process with the teacher providing the child specific praise on his or her actions (Barton, Fuller, & Schnitz, 2016; Hemmeter et al., 2011; Kennedy & Lees, 2016). BSP and descriptive praise are both EBPs with identical procedures.

Incidental Teaching and BSP as naturalistic instructional approaches. Rule et al. (1998) discussed the challenges in naturalistic instruction research related to the perception of the observers and the functions of the intended selected interventions. This is a common issue with what we now know as EBPs. Snyder et al. (2015) point out that the naturalistic interventions in ECSE and EC present this as an issue of what components are considered a part of this EBP or an EBP procedure, which includes multiple different interventions. For example, naturalistic instructional approaches embody other EBPs such as: Incidental Teaching and the use of BSP. Both EBPs address the four components listed within the naturalistic instructional approach, but variation occurs within each.

Comparison of Incidental Teaching and BSP. Both Incidental Teaching and BSP are EBPs use for the purpose of potentially reinforcing a behavior so that it occurs more frequently. However, teacher implementation of Incidental Teaching is used to

expand children's communication, whereas teacher implementation of BSP is utilized by the teacher to provide a specific verbal statement about the behavior the child is preforming. Similarly, each of these teacher-implemented naturalistic approaches include Rule et al. (1998)'s four components (i.e., (a) occur during ongoing activities, (b) address skills that support the child's participation, (c) implementation occurs following the child's lead, and (d) naturally occurring or logically planned consequences following the child's lead), but some studies have indicated variation in components c and d for BSP. Several BSP studies were conducted with naturally occurring teacher-led instruction instead of following the child's lead (Rathel et al., 2008, 2014; Sweigart et al., 2015). Other studies on BSP have highlighted the use of collateral effects to change the behavior of individuals who are rule-governed and respond to contingent responses from a teacher complimenting other children. Another difference between the two procedures is that Incidental Teaching includes additional procedures such as prompting, errorless learning and/or error-correction whereas in BSP the teacher is only providing the individual a specific praise statement. However, within the BSP literature, no studies within the special education field have specifically focused on the timing between the child's behavior and the teacher's response.

Child-Centered Context

Since BSP is an EBP for teachers to implement with children with milder disabilities and Incidental Teaching is an EBP for teachers to implement with early childhood and elementary aged children with disabilities, specifically autism, there is a need to determine if training teachers to implement these instructional procedures with children who have moderate to severe disabilities will be effective. A combination of

these teacher implemented approaches could be an effective instructional strategy for children with moderate to severe disabilities during child-centered routines. Rowland et al. (2015) found that the reinforcement contingency for an individual with severe disabilities should be given careful consideration by focusing on each individual's interests, strengths, and needs within a particular context. This is because children who often require more extensive support will likely benefit tremendously from instruction that takes advantage of motivating activities and materials (Ogletree et al., 2011; O'Reilly et al., 2008; Vaughn & Horner, 1997). Teachers providing instruction during a time that is child-centered, child-initiated and motivating to children who have a low frequency of self-initiated behaviors is needed (Beirne-Smith et al., 2006; Brown et al., 2016; Odom et al., 2011; Reszka et al., 2012; Strain et al., 2011).

Since naturalistic teacher implemented interventions such as BSP and Incidental Teaching occur during child-centered contexts, the child must show interest in the learning, have at least minimum skill prerequisites, or demonstrate that the behaviors are currently in acquisition (i.e., the learner may just have learned the skill, but has not moved to fluency with the skill). Koegel et al. (2012) highlight that there is a difference between skill deficit and performance deficit: with a skill deficit the child does not meet the prerequisite behaviors or responses to adequately meet the demands in varying situations, whereas with a performance deficit the child has acquired the necessary skills but does not use the skills functionally within their natural environment. If the child has a skill deficit more intrusive instruction is needed to teach the child the behavior (e.g., prompting), whereas if the child has a performance deficit the child requires reinforcement to build fluency with the behavior. Therefore, if a teacher is going to

provide a potential reinforcer for the child's behavior the child must have the skills to perform the behavior (i.e., the child must not have a skill deficit, but have a performance deficit).

Additionally, children with moderate to severe disabilities often need to learn skills in isolation and then build upon the learned skills, so that they become more fluent with the skills (Wolery & Schuster, 1997); therefore, a self-initiated discrete behavior (i.e., a behavior with a clear beginning and ending) should be reinforced within the child's natural environment. A combination of the two naturalistic instructional strategies may be perfect for increasing the frequency of children with severe disabilities self-initiated discrete behaviors by children with severe disabilities within child-centered routines. However, one key element that has yet to be specifically studied in the BSP, descriptive praise, and reinforcement literature is the contingent timing of the consequence the adult provides (e.g., praise, if praise is actually reinforcing to the child to whom it is delivered) on the child's behavior (Stevens et al., 2011).

Reinforcement

By definition reinforcement is provided after a child's behavior and increases the future occurrence of the behavior. Providing a potential reinforcer after the child's socially-desirable behavior may increase the likelihood the child will perform the behavior when in the presence of the stimuli in the future. However, to determine whether or not the teacher's response is a potential reinforcer, three avenues of potential reinforcement need to be reviewed: (a) timing, (b) schedules, and (c) type.

Timing. The immediacy of reinforcement is discussed by Cooper et al. (2007) as the matter of seconds that could make the difference in what the child learns. The timing

of the teacher's delivery of reinforcement after the child's behavior should be immediate (i.e., 5 seconds or less) (Cooper et al., 2007) so that the child does not perform any other behaviors within the seconds of the reinforcement and thus learn that the other behavior he or she performed if done in the future will gain the reinforcer. There must be a clear relationship between the child's behavior and its consequences; this will make it easier for the child to detect that he or she is the agent of the environmental effect. Dunst et al. (2008) suggest that if reinforcement for a child with moderate to severe disabilities is provided after the child's behavior and the child has more opportunities to learn, she or he will most likely learn that the behavior has an effect on the environment.

A study that was conducted in a controlled clinic setting by Sy and Vollmer (2012) examined whether or not an increased delay of the immediacy of reinforcement would change the behaviors the children learned. The study was conducted with teachers who teach individuals with developmental disabilities. The children learned to discriminate between items with an increasing delay of teacher reinforcement, up to 30 seconds, but the researchers caution the interpretation of these results in unstructured settings as there were no distracting variables. Therefore, the results do not align with a classroom setting where there are multiple children and teachers and many opportunities during less structured instruction to initiate behaviors. For individuals with moderate to severe disabilities, the teacher's timing of response to children's socially-desirable behaviors should be contingent and within 3 seconds or less (Cooper et al., 2007; Dunst et al., 2008) so that the response may become a potential reinforcer.

Schedules. After considering the potential reinforcer should be delivered within 3 seconds or less, the next avenue to review is how often the teacher should deliver the

potential reinforcer. A continuous schedule of reinforcement (CRF) is often used with low frequency behaviors, in which reinforcement is provided on every (1:1) child's correct response (Alberto & Troutman, 2016; Brown et al., 2016; Miltenberger, 2008b). However, there are potential problems with CRF schedules: (a) satiation on the reinforcement, (b) accusations of the behavior always obtains the reinforcement, (c) not resistant to extinction, (d) not natural (Cooper et al., 2007; Miltenberger, 2008b).

One way to combat these concerns is to teach teachers to use indiscriminable contingencies, which are intermittent schedules of reinforcement (Stokes & Baer, 1977). These schedules are extremely resistant to extinction and may be regarded as a form of maintenance if the behavior continues to occur over time. These schedules make it difficult for the child to predict when reinforcement will be delivered to ascertain occasions of reinforcement versus non-reinforcement (Alberto & Troutman, 2016; Brown et al., 2016; Miltenberger, 2008b). When the teacher uses an intermittent schedule of reinforcement, the child learns to delay the gratification of reinforcement by continuing to produce the behavior until it contacts the reinforcement in the future. Intermittent schedules of reinforcement balance satiation effects; therefore, the child is less likely to get tired of the delivery of reinforcement.

Type. Teachers who teach children with moderate to severe disabilities need to identify their children's potential preferences to select potentially effective reinforcers. For children with severe disabilities reinforcement may be primary (e.g., food, sleep, or water – things one is born with and requires for survival) or conditioned reinforcers (e.g., such as praise- things one learns through interactions within the environment). Often, children within this population have varied preferences or different reinforcing stimuli

from same-aged peers (Brown et al., 2016; Miltenberger, 2008b). For example, same-aged peers are often reinforced by peer interactions and playing with peers during centers, whereas children with moderate to severe disabilities are often reinforced by food or access to a preferred item (Martin, Drasgow, & Halle, 2015; Tullis, et al., 2011).

Identifying effective reinforcers is the first component in teaching using naturalistic teacher implemented instructional approaches. A study conducted by Stevens et al. (2011) focused on the differential effects of teacher implemented BSP versus non-specific teacher implemented praise for children with autism learning to tact items in the environment. They found that there were no different effects on the teacher implemented instructional strategies (e.g., BSP or general praise) for children with autism. The researchers commented that even though the children had been exposed to teacher praise with the primary reinforcement of food, this pairing may not have resulted in praise as a conditioned reinforcer (DeLeon et al., 2013; Lovaas et al., 1966). When reviewing teacher praise as a reinforcer for children with autism, these authors suggest conducting a reinforcer or preference assessment to determine whether teacher praise is actually reinforcing to children with autism or others with moderate to severe disabilities.

Teacher praise is a social consequence and should be evaluated first as it is (a) the least intrusive consequence following a socially-desirable child behavior, (b) requires few resources, and (c) appears to be the most practical in applied settings (DeLeon et al., 2013). These authors illustrate a possible reinforcer selection flowchart that utilizes directionality to start with the most natural reinforcers that an individual will contact within their natural environment and move to the most restrictive reinforcer selection based on the individual's unique needs. However, even if the social reinforcers work for

implementers within the clinical setting, that does not indicate the effectiveness of these potential stimuli to function as reinforcers within the natural environment or the context within which the stimuli are presented.

Selection of potential reinforcers. Stimulus preference assessments (SPA) have often been used to identify potential reinforcers to use within both the clinic and applied settings (Hagopian, Long, & Rush, 2004). Karsten et al. (2011) identified applicable uses of SPAs within the classroom setting where variables differ greatly from where clinical researchers conducted these preference assessments. Both studies found that social reinforcers are not always the most efficient or correct stimuli to provide following a targeted behavior to increase the occurrence of the targeted behavior(s) in the presence of the stimuli (antecedent) (DeLeon et al., 2013; Karsten et al., 2011).

Similarly, Tullis and colleagues (2011) conducted a review of preference assessments and claim that if the adult delivers a small amount of an identified highly preferred item from a preference assessment that they may continue to observe persistent levels of the target behavior in the future, thus the intervention is effective. However, the purpose of identifying preferences is to determine what may be reinforcing the individual child, and these preferences may vary in typographies (e.g., sensory, tangible, and physical contact). For example, DiCarlo, Schepis, and Flynn (2009) found that when adding a preferred sensory attribute during children's play their selection of the toy increased for two out of three children and all three children's independent functional toy play increased when adding a preferred item. In addition to sensory and tangibles, Kang and colleagues (2013) compared social and tangible reinforcers to determine which produced appropriate play or stereotyped behaviors in children with autism. They found

both to be effective in reinforcing appropriate play. However, it is important to caution the results based on the individual child's unique strengths, needs, and interests, as the researchers selected individuals with autism whose IQs were above average.

When determining various preferences of individuals with severe disabilities, there are several assessments adults could use that vary in terms of indirect and direct assessments. Indirect assessments take the form of a checklist or questionnaire (Fisher, Piazza, & Bowman, 1996) where the adult asks someone who is familiar with the child's preferences or what may reinforce the child but does not directly observe the child while recording their responses. Green et al. (1988) found that relying on interviews from a familiar person is based on that person's memory to recall preferences and does not necessarily yield reliable results. However, they found that using a more direct systematic method of preference assessment typically functions as reinforcers if provided contingent on the child's behavior. Therefore, they suggested the indirect assessment should be used in combination with direct assessment. In contrast, Cote, Thompson, Hanley, and McKerchar (2007) found that an interview or observation given to teachers of toddlers has the potential to identify similar results to a direct assessment of identifiable reinforcers to be used within practice.

The various direct assessment measures can be used in combination with interviews or questionnaires or singularly. The selected preference assessment used should be based on the individual child, but also should be doable within the context and relation of personnel (e.g., staff and children present). However, within applied setting a Naturalistic Free Operant (FO) Observation is the most time efficient method (DeLeon et al., 2013; Karsten et al., 2011). This procedure is used to identify potential reinforcers by

recording the amount of time the individual or child devotes to each activity and charting the results accordingly (Cooper et al. 2007). Therefore, conducting several direct naturalistic FO observations and if needed an indirect assessment may reveal potential reinforcers for the children during centers (Ortiz & Carr, 2000; Rapp, Rojas, Colby-Dirksen, Swanson, & Marvin, 2010; Sautter, LeBlanc, Gillett, 2008).

Teachers as reinforcers. Similarly, teachers are within the classroom environment and provide primary natural reinforcers throughout the day (e.g., snack and lunch). Teachers are considered generalized reinforcers as generalized reinforcers obtain their value through the association with other reinforcers (Alberto & Troutman, 2016; Cooper et al., 2007). For example, if a child likes to play on the playground, the teacher is paired with the playground by providing access to the playground when opening the door. Additionally, teachers are naturally paired with food because they provide food during snack and often provide choices amongst various favored items; therefore, the teacher is naturally paired with primary reinforcers and over time may become a potential secondary reinforcer for these children. Over time, pairing will possibly be removed with the introduction to natural maintaining contingencies. Assuming the behaviors selected are socially acceptable and performed throughout various environments a transfer of control from the teacher in the form of peer interactions and independent engagement in activities is likely to occur (Stokes & Baer, 1977). Additionally, the behaviors selected to be taught should meet naturally occurring reinforcement, which will maintain the behavior after teaching.

Teacher Training Interventions

Teachers of young children with moderate to severe disabilities may have had insufficient training and background in implementing evidenced-based practices. Descriptive studies have shown that teachers are often unfamiliar with the concept of evidence-based practice (Stahmer, Collings, & Plankas, 2005) and report implementing unproven educational practices (Burns & Yssldyke, 2009). A study by Hsiao and Peterson (2018) surveyed 63 special education teachers who graduated from their teacher education programs between 1975 to 2017 to determine if their pre-service program and subsequent in-service training or professional development addressed evidence-based practices. Results indicated that of the 26 EBPs identified only 32.06% were explicitly taught to the teachers using direct instruction, 30.29% were discussed, 20.76% were never taught, and 16.89% were mentioned incidentally.

In addition to the results from the above surveys, researchers have conducted studies to investigate the implementation fidelity of EBPs for this population of teachers. These studies include a baseline of performance prior to teacher training, a training, and sometimes additional performance feedback or coaching. The baseline is used in these studies to ascertain if the teacher is implementing the EBP prior to training, and if the teacher is not then there may be a need for training or additional feedback.

Brock, Seaman, and Gatsch (2018) investigated if there was need for training teachers of children with severe disabilities to implement the EBP of constant time delay with fidelity. Three teachers were selected, all were certified and their years of experience ranged from 3 to 13. In baseline prior to training, teachers correctly implemented 0% to 15% of steps, indicating that the teachers did not implement the EBP

with fidelity. The researchers implemented a training intervention following baseline, which included video-modeling and a checklist. Following the training two of the teachers correctly implemented 80% to 100% of the EBP steps; however, one of the three teachers required additional coaching following the training to implement the EBP with fidelity.

Similarly, Bethune and Wood (2013) conducted a study to determine if teachers of students with severe disabilities required training to implement function-based interventions with fidelity. Four certified teachers, ranging in years-experience from 3 to 15 years were included in the study. The researchers reviewed and observed the teachers' current instructional plan for their corresponding child's current behavior and found that none of the teachers were currently implementing a function-based EBP. The researchers implemented an in-service training to teach the teachers to implement the EBP with fidelity. Three of the four teachers' percentage of correct implementation following the in-service training alone was low ranging from 4% to 26%. Therefore, following the training additional coaching was embedded to increase the teachers' fidelity of implementation. After the coaching, teachers' implementation fidelity increased to a range of 94.3% to 100%. The fourth participant in this study demonstrated the ability to implement the function-based EBP with her selected child following the in-service training (i.e., without additional coaching); however, this teacher was not implementing this EBP prior to the in-service workshop. The researchers suggest that there is some level of support or ongoing feedback needed for teachers to implement EBPs with fidelity.

In a study conducted by Horrocks and Morgan (2011), they trained seven teachers ranging in years of experience from 2 to 18 who taught children with severe disabilities using a multi-component training package due to the results of the teacher's implementation fidelity in baseline. The results of the teachers' initial knowledge of how to conduct assessments (e.g., preference and skill assessments) and instruction (e.g., prompting systems) in baseline across all seven teachers were extremely low. Percentage of correctly implemented preference and skill assessments task analyzed steps ranged from 0% to 30% and correct implementation of prompting procedures ranged from 0% to 10% across teachers. These (Bethune & Wood, 2013; Brock et al., 2018) and other studies (Brown, Stephenson, & Carter, 2014; Martin et al., 2015; Suhrheinrich, 2015) support results from this study and provide some evidence that teachers of children with moderate to severe disabilities need training and possibly some additional feedback to implement EBPs with fidelity.

Schools often use the workshop training method to train teachers how to implement a range of topics, typically referred to as in-service training; however, research has suggested that this model alone is often insufficient to successfully train school personnel to implement EBPs (Brock et al., 2018; Brown et al., 2014; Codding, Skowron, & Pace, 2005; Horrocks & Morgan, 2011), and performance feedback or coaching is needed to increase teacher implementation fidelity. Prior to receiving performance feedback on the implementation of an EBP, teachers require some type of training. Therefore, initial training components prior to performance feedback are analyzed as part of the independent variable and follows below.

Initial Teacher Training

To determine which initial training components are most often used during special education teacher trainings prior to performance feedback, I used the four databases: Academic Search Complete, Education Source, ERIC, and PsycINFO. When using this search, I used the following key words to systematically determine the topic relevant hits related to the number of articles found from this interconnective search engine: Performance Feedback (1,914), Teachers (202), Special Education (35). Of the 35 peer-reviewed journal articles found, nine were removed for the following reasons: six were not focused performance feedback, one because of the distance and population (i.e., Turkey), one treatment package did not meet the criteria for performance feedback, and one was on the performance feedback use and comparison to others in the study. Twenty-six were analyzed to comprise this comprehensive literature review on performance feedback.

I originally categorized the training components into four main categories: (a) an overview, (b) demonstrations, (c) practice, and (d) feedback. These overarching categories were grouped by associating similarities in the trainer's description of use within each study. The main categories were determined using the criterion of occurrences per component being greater than 13 (50%) of included studies. Within each of the four main categories, components vary in occurrences across studies based on the need of training, individuals, and current performance of the trainees in the studies. However, during further investigation, Behavior Skills Training (BST) (Miltenberger, 2008a) is extremely similar to the listed categories; therefore, I renamed the categories within the table to include: (a) instructions, (b) modeling, (c) rehearsal, and (d) feedback.

Table 2.1

Articles with Training Components

	Instructions	*Definitions*	*Handouts*	*Materials*	*Rationale*	*Brainstorming*	*Examples*	*Checklists*	**Modeling**	*Modeling*	*Video Scenarios*	**Rehearsal**	*Rehearsal*	*Scenarios*	*Data on Child*	*Criterion*	*Practice Only*	**Feedback**	*During Training*	*Self-Video*	*Baseline Graph*	*Discussion*
Artman-Meeker and Hemmeter (2013)	x	x		x	x	x	x															
Codding, Feinburg, Dunn, and Pace (2005)									x	x		x					x	x	x			
Codding, Skowron, and Pace (2005)	x	x	x	x			x	x	x	x		x		x				x	x		x	x
DiGennaro, Martens, and Kleinmann (2007)	x	x		x	x	x	x		x	x		x				x	x	x	x			
Flynn and Lo (2016)	x	x	x	x	x		x		x	x	x	x	x			x		x	x	x		x
Hall, Grundon, Pope, and Romero (2010)	x	x	x	x	x	x						x	x		x			x	x			
Hawkins and Heflin (2011)	x				x		x											x	x	x	x	
Hemmeter, Snyder, Kinder, and Artman (2011)	x	x				x	x	x				x		x				x				x
Hemmeter et. al. (2015)	x				x		x															
Jeffrey, McCurdy, Ewing, and Polis (2009)	x	x	x																			
Kennedy and Lees (2016)	x	x			x																	
Krick Oborn and Johnson (2015)	x	x	x				x		x	x	x	x					x	x	x			x
Kunnavatana, Bloom, Samaha, and Dayton (2013)	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x		x	x			x
Luck, Lerman, Wu, Dupuis, and Hussein (2018)	x	x	x															x	x			
McCollum, Hemmeter, and Hsieh (2013)	x	x	x			x	x					x					x	x				x
McKenney and Bristol (2015)	x		x	x			x					x					x	x	x			x
Minor, DuBard, and Luiselli (2014)	x	x	x				x															
Mouzakitis, Codding, and Tryon (2015)	x	x					x	x	x	x								x	x		x	
Oliver, Wehby, and Nelson (2015)	x	x						x	x	x	x	x				x		x	x			
Ottley, Coogle, Rahn, and Spear (2017)	x	x		x	x				x	x	x	x					x	x				x
Rathel, Drasgow, Brown, and Marshall (2014)	x	x	x		x		x					x	x					x			x	
Rathel, Drasgow, and Christle (2008)	x	x					x											x			x	x
Reinke, Lewis-Palmer, and Martin (2007)	x	x					x	x				x			x			x	x			
Ryan and Hemmes (2005)	x	x	x	x					x	x	x	x	x			x		x	x			x
Sweigart, Landrum, and Pennington (2015)	x	x		x	x		x		x	x		x	x					x	x			x
Ward-Horner and Sturmey (2012)									x	x	x	x	x					x	x			
Total	**24**	*21*	*12*	*10*	*11*	*5*	*17*	*6*	**12**	*12*	*7*	**17**	*7*	*3*	*3*	*5*	*7*	**21**	*16*	*2*	*5*	*11*

Note. **X** = category of training included in study; *x* = specific components included within each training's category.

Even though each of these trainings did not specifically refer to BST, each of these trainings provided some or all components of BST. Of the 26 articles, 24 (92%) included instructions during the training through varying formats: definitions (21), forms or handouts (12), materials (10), a rationale (11), brainstorming and planning (5), examples and non-examples (17), and checklist or flowcharts to use for the teacher to self-monitor instructional implementation (6). Twelve of the 26 articles (46%) included modeling by the trainer in the following formats: modeling (12) and video recorded scenarios (7). The rehearsal category was incorporated for 17 of the 26 articles (65%) which included: specified rehearsal or role play within the training procedures (7), scenario probes with results (3), data collection on child (3), criterion until trained (5), and practice only listed (7). Feedback during trainings was incorporated for 21 of the 26 articles (81%) which included: performance feedback during training (16), feedback on self-video (2), baseline performance graph (5), and reflection or discussion (11).

Instruction. Instruction was the most common component illustrated in trainings, and Miltenberger (2008a) suggested several components that are associated with effective trainings. First, instruction must be presented in a format that the learner understands and can comprehend (e.g., free from jargon that is not explained and provided in a presentation format that is free from errors). Second, the instructions must be delivered by someone who is credible. Third, the learner should have the opportunity to rehearse the behavior as soon as possible following the instructions. Fourth, instructions should be paired with modeling and when the learner is paying attention. Finally, the learner should repeat the instructions so that the trainer can verify that the learner heard the instructions correctly.

Instruction is a useful first component when training teachers as it can be an overview of the broader content or it can be specific and related to one particular child or situation. A clear definition of what the teacher should do and say during the intervention is an essential component to incorporate in the training's instructions. This helps to clarify what the teacher should do in a step-by-step fashion, and trainers should deliver this information systematically, sequentially, and refrain from using jargon (DiGennaro Reed et al., 2018).

Written and verbal. Instruction presentation during trainings are often written and verbal so that the learner does not have to comprehend only the verbal instructions (Reid, Parsons, & Green, 2012). For example, Hemmeter et al. (2011) provided training to four lead teachers on the use of descriptive praise in early childhood classrooms, which served children with and without disabilities. In the study doctoral students served as trainers and the training lasted approximately 30 minutes. The trainers provided the training in the form of an interactive PowerPoint with accompanying handouts. The handouts included scenarios of examples and non-examples of descriptive praise and starter sentences of descriptive praise statements which served as a reminder of when and how to use the praise statements during instructional time. This provided the learners the opportunity to individualize their use of descriptive praise to their classroom and children. Results of their study demonstrated increases in the teachers' use of descriptive praise when written instructions with handouts were included as one component of their training.

Checklists. A study conducted by Oliver and colleagues (2015) introduced a checklist during initial trainings to four teachers to outline the steps of the intervention and to provide performance feedback during the initial training. Following the training,

once the teachers met criteria of implementation, the researchers were removed, and the checklist continued being utilized by the teachers as a self-monitoring form. Additional studies have found a checklist as being useful during initial trainings for a variety of instructional practices such as writing IEP goals (Codding et al., 2005), descriptive praise or BST (Hemmeter et al., 2011; Reinke et al., 2007), implementation of behavior support plans (Mouzakitis et al., 2015), or evaluating videos of specific behaviors (Kunnavatana, Bloom, Samaha, & Dayton, 2013).

Flowchart. Similarly, Graff and Karsten (2012) created a more complex variation of written instructions known as enhanced written instructions, which was effective in training 11 teachers to use two types of stimulus preference assessments. The researchers compared the overview of instructions versus the enhanced written instructions when training teachers. The components included in the enhanced written instructions were simple directions to each step of the implementation process, diagrams of how to respond, and data sheets. Teachers reported that the enhanced written instructions were easy to follow and they were more likely to reference the enhanced written instructions with diagrams in comparison to the written instructions alone.

Instruction alone is not effective. As indicated earlier, much of teacher training is conducted verbally, consisting of trainer lectures or presentations supplemented with written handouts or other visual material. Reid et al. (2012) suggest that instructions with handouts alone are helpful but are usually not sufficiently effective for training staff how to perform specific skills because these procedures do not involve demonstrations from the trainer and lack performance and competency-based trainings. Several additional studies have found that instructions alone are not effective in training teachers to

implement instructional strategies in applied settings or generalize their learning to other scenarios (Arco & Toit, 2006; Feldman, Case, Rincover, Towns, & Betel, 1989; Ward-Horner & Sturmey, 2012). Within these studies participants were not successful until other components were implemented within the training package, such as modeling, rehearsal, and performance feedback.

Modeling. Modeling is another component of BST and is often included in many of the training programs (see Table 2.1). Modeling is a strategy that the trainer uses to demonstrate the behavior for the learner. The skill is acquired by the learner observing the instructors' behaviors, and therefore the instruction provided to the learner is demonstrated and acquired. When using modeling within trainings, it consists of the trainer correctly demonstrating the target instructional practice and the intended outcome is the correct imitation of the modeled behavior by teachers (Miltenberger, 2008a). Several factors have been associated with effective modeling (Bandura, 1977). First, modeling should result in a successful outcome for the model (e.g., a reinforcer). Second, someone who has a higher status than the learner should conduct the model. Third, the learner must attend to the model and it must occur within the natural environment (Shapiro & Kazemi, 2017). Fourth, the model should provide repeated demonstrations until the observer performs the correct behavior of several model exemplars. For example, Moore and Fisher (2007) found that staff only learned to imitate modeled performance from videos when multiple examples were provided and did not learn to model with only a single example.

Rehearsal. Rehearsal is a component of BST that typically follows instructions and a model; it is best completed within the context of the natural environment. Rehearsal

is an essential component of BST for the following reasons (Miltenberger, 2008a): It provides (a) the trainer with confirmation that the learner has learned to correctly perform the behavior, (b) the opportunity to reinforce the learner's behavior, and (c) opportunities to correct any errors that may occur during the learner's performance of the behavior. Ward-Horner and Sturmey (2012) conducted a component analysis of BST and found that rehearsal alone without feedback was inefficient in training outcomes across various skills; however, within the combination of the other components of BST, rehearsal is an effective training procedure. Therefore, for rehearsal to be an effective training component it requires instructions, modeling, and performance feedback.

Role-play and in situ. Rehearsal has two variations depending on the setting and feasibility of the persons being trained. These rehearsals may be done in-situation, meaning with children present or in an analog role-play scenario which simulates that situation (DiGennaro Reed et al., 2018; Miltenberger, 2008a). In any case the rehearsal situation should approximate the materials and resources within the classroom. Role-play serves as an approach to rapidly train the learner's specific instructional practices and saves time for the trainer and the learner (Reid et al., 2012). When possible, it is best to have the learner demonstrate competency of the skills learned more than once during training (DiGennaro Reed et al., 2018; Miltenberger, 2008a; Reid et al., 2012).

Trials to criterion. Ryan and Hemmes (2005) used role-play, performance feedback, and trials to criterion to train three special education teachers to implement discrete behavioral procedures which were operationally defined and included: attending, verbal direction, voice tones, wait, praise statement, contingent reinforcers, prompting and correction procedure, pause for inter-trial interval, incidental or additional teaching,

and data recorded. Results indicated that all teachers demonstrated a low percentage of correctly implemented Incidental Teaching components ranging from 50.4% to 77% where the other behaviors ranged from 90% to 94.8%. The researchers suggest that Incidental Teaching is a more difficult instructional practice to teach and recommends providing more than one mastery criterion prior to ending training.

Similarly, Hall et al. (2010) conducted a training workshop with six paraprofessionals using the following training components: instructions, modeling, role play (with their supervising teacher), rehearsal (with a volunteer young child), and performance feedback. The researchers found that without performance feedback to the learners following the training, the paraprofessionals did not generalize learning how to implement Incidental Teaching, discrete trials, or pivotal response teaching (PRT) to the classroom post training. These researchers were unclear with how many correct occurrences the learner had to demonstrate prior to ending the rehearsal portion of the training, but suggest an additional component to consider is the inclusion of a mastery criterion during training.

Feedback. In addition to the need for practice during rehearsal, feedback occurs in tandem with rehearsal in BST. Feedback refers to the delivery of information to the teacher about his or her performance in rehearsal to adjust his or her performance in the future. Miltenberger (2008a) provides the following key elements for the trainer when providing feedback contingent on the learner's performance: (a) immediate, (b) praise first for some aspect of the behavior even if it was not 100% correct, (c) specifically describe what the learner did or said when providing praise, and (d) corrective feedback

should be provided in a way the learner could do better or how the learner could improve performance.

Modalities of feedback. Feedback after rehearsal can take on several modalities (i.e., written, verbal, graphic, or video), but DiGennaro Reed et al. (2018) recommends verbal feedback during the initial stage of training and incorporating other forms of feedback during ongoing teacher support. As highlighted in Table 2.1, feedback during training components varied and some studies incorporated more than one type of feedback: During Training was where the trainers provided verbal performance feedback (16); Self-video was when the trainers had the teachers watch a video of themselves and then the trainers provided feedback on the teacher's performance (2); Baseline Graph was presented by the trainers to teachers and illustrated the teacher's performance during baseline prior to intervention (5); and Discussion was initiated by the trainers and provided opportunities for the teachers to ask questions (12).

Feedback without rehearsal. Twenty-one of the 26 (81%) studies included performance feedback, which may come as a surprise because 73% of the studies only included rehearsal. The two studies which attribute to the percentage variation from rehearsal and feedback categories fall within the baseline performance graph component of feedback. The studies did not incorporate rehearsal during training, but the researchers used observation of teachers' or preservice teachers' performance in baseline of specific praise rates as feedback to train how and when to provide behavior specific praise (Hawkins & Heflin, 2011; Reinke et al., 2008). Therefore, the trainees did not require specific practice during training, but providing a visual display of performance during baseline was sufficient for the initial trainings, which explains the percentage variation

from both categories. This finding provides evidence that even if rehearsal is not included, providing some sort of contextual representation of one's own performance enhances training sessions.

Video feedback during rehearsal. Similar to the graph feedback of the trainee's own performance within baseline, two of the studies included an actual video of the trainee during baseline performing behaviors. Flynn and Lo (2016) used the video of the trainee's baseline performance during training and after role-play where the trainer highlighted correct and incorrect trials on the Trial-Based Functional Analysis (TBFA) instructional procedures they just practiced together. Hawkins and Heflin (2011) also used edited video clips of the teacher using correct Behavior Specific Praise (BSP) during teaching, however, they removed all incorrect performances during training. Both studies reported that this was a socially acceptable training procedure and may be worthwhile in future trainings. Nevertheless, the greatest downfall in the Hawkins and Heflin study (2011) is the amount of time it took for the trainers to edit videos of the trainees, and the results of their intervention only maintained one of the three teachers' instructional behaviors. Therefore, editing and reviewing video clips may be too time intensive for an intervention and possibly only used in training as a tertiary intervention and not initial interventions.

Performance Feedback Following Training

Performance feedback (PF) sometimes occurs during trainings (see Table 2.1), but there is a need for additional performance feedback following the training especially if (a) the skill trained is already somewhat known (e.g., reinforcement or Discrete Trial Training, DTT) (McKenney & Bristol, 2015), (b) the skill is complex (Flynn & Lo,

2016), (c) the teachers are within their first years of teaching or are preservice teachers (Barton et al., 2016; Rathel et al., 2008), or (d) they are refining or learning a new skill (Hall et al., 2010; Kunnavatana et al., 2013). Flynn and Lo (2016) trained teachers to implement a TBFA, but they found that the teachers' fidelity of implementation was low and suggested that if they had provided performance feedback in addition to training they might have further sustained teachers' high implementation fidelity. Barton et al. (2016) found that for preservice teachers, mastering skills in isolation should be done before moving on to more complex skills, and the teachers often required tertiary feedback measures such as video recording and reflecting.

Studies that include adults who teach individuals with disabilities are important when reviewing the literature on PF. For example, Fallon, Collier-Meek, Maggin, Sanetti, and Johnson (2014) found when reviewing the literature on PF, that general education teachers tended to receive PF better than special educators. It is not certain why this was the case, however it may be due to the setting, children's behaviors, or the multiple adult opposing views in the setting. In addition, children without disabilities typically have self-initiated behaviors at extremely high frequency levels whereas children with disabilities may need more support to increase their frequency of self-initiated behaviors. Also, children without disabilities may have challenging behavior, but the challenging behavior may be associated with adult-directives or tasks the teacher places on the child. Nevertheless, 22 studies were identified as providing PF to adults who teach individuals with disabilities and are reviewed in further detail to determine which type to implement following initial training.

Table 2.2

Articles by Types of Performance Feedback and Additional Components

	Type				**Additional Components**			
	In Person	Bug-In-Ear	Written	Email	Graph	Video	Checklist	**Total**
Artman-Meeker and Hemmeter (2013)				x				1
Codding, Feinburg, Dunn and Pace (2005)	x							1
DiGennaro, Martens and Kleinmann (2007)	x		x		*x*			3
Hall, Grundon, Pope and Romero (2010)	x		x		*x*		*x*	4
Hawkins and Heflin (2011)	x		x		*x*	*x*		4
Hemmeter, Snyder, Kinder and Artman (2011)				x		*x*		2
Hemmeter et al. (2015)	x			x				2
Jeffrey, McCurdy, Ewing, and Polis (2009)			x					1
Kennedy and Lees (2016)	x		x			*x*		3
Krick Oborn and Johnson (2015)				x	*x*			2
Kunnavatana et al. (2013)	x							1
McCollum, Hemmeter, and Hsieh (2013)	x		x		*x*			3
McKenney and Bristol (2015)	x		x		*x*			3
Minor, DuBard, and Luiselli (2014)	x		x		*x*			3
Mouzakitis, Codding, and Tryon (2015)	x		x				*x*	3
Oliver, Wehby, and Nelson (2015)	x		x		*x*		*x*	4
Ottley, Coogle, Rahn, and Spear (2017)		x						1
Rathel, Drasgow, Brown, and Marshall (2014)				x	*x*			2
Rathel, Drasgow, and Christle (2008)				x				1
Reinke, Lewis-Palmer, and Martin (2007)			x		*x*			2
Ryan and Hemmes (2005)	x							1
Sweigart, Landrum, and Pennington (2015)		x			*x*			2
Total	13	2	11	6	11	3	3	

Note. x = type of performance feedback used within the study; *x* = additional components.

In-person. The majority of studies provided PF in-person in combination with other forms (13). Of the 13, two used only in-person feedback (Codding et al., 2005; Ryan & Hemmes, 2005). Kunnavatana and colleagues (2013) did not originally plan to use PF after training, as the teachers' performance remained above baseline levels during an in-situ maintenance condition during training, but they found for three of the four teachers, additional feedback was required to recapture performance observed immediately following the training.

The major downfalls with in-person PF is that it is not cost effective, efficient (Kunnavatana et al., 2013), or sustainable (DiGennaro et al., 2007; Ottley, Coogle, Rahn, & Spear, 2017; Reinke et al., 2014). DiGennaro et al. (2007) discuss that daily or live meetings may not be needed to sustain treatment integrity over time. They found that three out of the four teachers actually increased their treatment integrity when allowed to avoid the in-person meeting (negative reinforcement). These findings suggest other types of performance feedback may be more advantageous such as Bug-In-Ear (BIE), written, email, embedded with additional components such as graphs, videos and checklists to determine the best fit for educators and trainers.

Bug-In-Ear. A reason trainers choose BIE is to combat the issue of immediacy when using PF, so that as the teacher is implementing the intervention the trainer provides feedback immediately following the actions of the teacher. Two studies used BIE's benefit of immediacy to provide: (a) verbal PF to their co-teachers correct use of communication strategies (Ottley et al., 2017) and (b) real-time graph instances of the teacher's BSP using Excel (Sweigart et al., 2015). Technical difficulties occurred often, and the amount of time it took for researchers or colleagues to provide feedback in-

person (even though electronically), was reported as exhaustive. To avoid technical difficulties, incorporation of low-tech options such as written feedback is explored.

Written. As compared to in-person or BIE-immediacy, written feedback in the form of electronic (i.e., typed) and handwritten, but not sent electronically have been reviewed within the PF literature. Of the 11 written PF studies, nine included both written and in-person PF. Three included additional components: (a) coaching teachers provided extensive supports to the preservice teachers (Kennedy & Lees, 2016), (b) researchers provided coaching in addition to PF (McCollum, Hemmeter, & Hsieh, 2013), and (c) researchers initiated problem-solving with the teachers (Minor, Dubard, & Luizelli, 2014). More importantly, the majority of the written studies with in-person and written PF suggested that there is needed research in systematically reducing the number of in-person meetings and determining the optimum amount of support required for these teachers. Two studies provided only written feedback as a format to save teachers' and the trainers' time (Jeffrey, McCurdy, Ewing, & Polis, 2009; Reinke et al., 2007).

Live with email. A major finding across studies is the need to reduce the amount of time trainers and trainees spend during PF. Hemmeter et al. (2015) used complex teaching arrangements with coaching, and 70% live and 30% email performance feedback (EPF). The researchers found an increase of teachers' implementation of practices, but they recommend researchers review less time intensive interventions and supports because overtime resources will become limited. I did not include this study in my review of EPF below as it did not meet the criterion of 50% or more delivered through email.

Email. EPF is another format of PF that has been introduced and researched within the literature as web-based communication options continue to grow within and outside of the literature. A preliminary study by Rathel et al. (2008), demonstrated that PF was successfully delivered via email to preservice teachers. Five studies including persons instructing individuals with disabilities are reviewed in-depth to determine EPF's: (a) components, (b) elapse time of receipt of the email after observation, (c) social validity, (d) internal validity, (e) effectiveness of the intervention, and (f) additional areas.

Rathel et al. (2008) included the following components: (a) greeting, (b) corrective feedback, (c) praise for correct implementation, and (d) a statement offering to address questions through email or in person. The first author sent EPF to the teachers the same day as the observation, but one limitation to the internal validity was the absence of a treatment fidelity measure. Nonetheless, the EPF increased both teachers' positive communication behaviors and decreased the number of negative communication behaviors. The researchers did not measure child outcomes or include a specific social validity questionnaire, but used notes from the preservice teachers' journals and found that before intervention there were more comments about challenging behaviors in the classroom than during intervention.

Hemmeter et al. (2011) incorporated EPF using the following five components: (a) opening comment, (b) supportive feedback, (c) corrective feedback, (d) planned actions, and (e) closing comments. These components are similar to Rathel et al. (2008), but include a planned actions section to provide the teachers with a way to determine what to do next. Although, the study did not include a time frame from observation to

EPF, it did include a video exemplar reference in the email as a resource. Also, the researchers included a treatment fidelity checklist where a person outside of the researcher reviewed the EPF to make sure each component was included. The training plus EPF increased the teachers' use of descriptive praise but did not decrease children's challenging behavior. A social validity questionnaire was provided to the teachers using a four-point Likert scale where the average score for the training and the EPF was high at 3.75, but the additional video example was the lowest ranked item at 2.75. Surprisingly, this study is the only one that measured teacher preference for EPF, and it indicates that EPF may be a socially acceptable way to provide PF to teachers.

A study conducted by Artman-Meeker and Hemmeter (2013) demonstrated a functional relationship between training and EPF. The researchers used the same five-step protocol as Hemmeter et al. (2011), but they included a requirement for teachers to respond to a question to ascertain whether or not the teachers read their email. The researchers provided emailed feedback eight hours after each video observation. The video observation was unique to this study and was incorporated to combat the internal validity threat – researcher presence. However other researchers, Krick Oborn and Johnson (2015) used video to enhance their procedural internal validity and claim they could not say for certain if the video helped to prevent the teachers from behaving differently due to the researcher's presence. Including measures on child behaviors may be a fruitful option to explore to determine if teachers maintain their behaviors when researchers are absent. Artman-Meeker and Hemmeter (2013) found that EPF increased the teachers' use of preventative practices, although on one occasion the first author had to provide face-to-face feedback following an observation because the frequency of

preventative practice the teacher was implementing was extremely low. Furthermore, these researchers did not measure social validity and set a minimum of three and maximum of five emails per each preventative practice.

Rathel et al. (2014) used the four-step protocol developed by Rathel et al. (2008), along with the receipt of the EPF, and included additional summary statements of the teacher's behavior (i.e., ratio of positive to negative behaviors). The EPF was provided within the same day as the observation. The intervention fidelity was assessed through a checklist, and journal comments were used as a type of social validity. However, a more rigorous social validity measure is needed to ensure the external validity of EPF. The EPF was effective in improving two of the four teacher's ratios of positive to negative communication behaviors. The third teacher left after intervention, and the fourth made modest gains. The intervention also appeared to have a collateral effect on child task engagement as evidenced by two of the four teachers' students increasing their on-task behaviors comparing baseline performance to intervention performance.

Krick Oborn and Johnson (2015) used Snyder et al. (2011) protocol to deliver emailed performance feedback which included a graph or data of performance similar to Rathel et al. (2014), graph or data of performance, and included a final question or prompt similar to Artman-Meeker and Hemmeter (2013). Additionally, videos to record home visits and EPF were used to evaluate the home visitors' feedback on caregiver strategies to use with the children. The feedback was within six days, differing from the above studies, which ranged from the next day or two after the observation, and feedback was scheduled to end after six occurrences (i.e., six weeks one time per week). Trainers focused on seven different complex intervention components at once to train each of the

home visitors to provide feedback to the caregivers on their interactions with their child. After the training, minimal to no change was found in the home visitors' use of strategies. The use of strategies increased after EPF, but did not reach anywhere near criterion.

In review of the five EPF interventions, all included similar components, but some included graphs or numerical summaries of teacher performance (Krick Oborn & Johnson, 2015; Rathel et al., 2014), and some included a prompt to acknowledge receipt of the email (Artman-Meeker & Hemmeter, 2013; Krick Oborn & Johnson, 2015). It is not certain whether or not the graphs were socially acceptable to the teachers as social validity was not calculated through a survey in both studies (Krick Oborn & Johnson, 2015; Rathel et al., 2014). Social validity was calculated in only the Hemmeter et al. (2011) study finding that 3.75 out of 4 participants thought the EPF was helpful, but 2.75 out of 4 thought the additional video was helpful. When considering the amount of work teachers have to do within their classrooms and the limited time available, it is important to make the intervention as easy as possible. Providing a clear visual of performance may be easier for teachers to use when providing EPF (i.e., a graph) rather than a video example.

Generalization and Maintenance of Teacher Behavior

Learning a skill or skills consists of four stages (Alberto & Troutman, 2016; Brown et al., 2016) – acquisition, fluency, generalization and maintenance. Generalization refers to the occurrence of newly learned behavior under conditions that are different from those that were present during instruction, and maintenance refers to the occurrence of the newly learned behavior across time (Stokes & Baer, 1977). Maintenance is a type of generalization, and maintenance of teacher implemented

instructional practices has been identified as an important indicator of effective training and generalization (Baer, Wolf, and Risley 1987; Kazdin, 1973; Kennedy, 2002; Parsons & Reid, 1995; Reid et al., 2012); however, procedures for measuring teachers' continued performance often have been excluded from training research, or confounding variables may have contributed to maintenance.

Most studies conclude intervention and transition to maintenance once the teacher has reached a criterion of two to three days (e.g., DiGennaro et al., 2007; Hemmeter et. al., 2011, 2015; Krick Oborn, & Johnson, 2015; Ottley et al., 2017). In these studies teachers did not consistently maintain their behaviors once the training or feedback was removed. One approach to review is increasing the EPF to five or more consecutive days to determine if teachers maintain their behavior over time.

In review of the procedures previous researchers have included to promote generalization of newly learned behaviors, studies have found that trainings with only instructions do not support teachers' generalization to other scenarios (Arco & Toit, 2006; Feldman et al., 1989; Ward-Horner & Sturmey, 2012). Shapiro and Kazemi (2017) indicate that generalization from a training is enhanced if modeling occurs within the natural environment (Shapiro & Kazemi, 2017). In addition, DiGennaro Reed et al. (2018) and Miltenberger (2008a) express the importance of the rehearsal situation approximating the materials and resources within the classroom. Therefore, programming common stimuli during the BST is a simple approach to explore if using the teacher's classroom or similar classroom with toys and materials will generalize the teacher's responses to other children with similar needs in increasing their self-initiated socially-desirable behaviors.

Summary

Young children with moderate to severe disabilities need instruction within naturally occurring daily routines through the use of naturalistic instructional approaches. Incidental Teaching is an EBP that allows the child to initiate the interaction where the teacher provides the response or potential reinforcement following the initiation. Catching children engaging in socially-desirable behaviors is similar to the EBP of BSP; however, the children with moderate to severe disabilities may not respond to specific praise, and their potential reinforcers may vary from typically developing children. In addition, the timing of the potential reinforcers following a child's initiated socially-desirable behavior has not been specifically investigated within the current literature.

Teachers require training to learn how to implement these instructional practices, and BST is an effective instructional strategy that has been used within the special education teacher training literature. Components that have been proven to be effective in addition to instruction, modeling, rehearsal, and feedback include: collaboration, checklists, flowcharts, and a baseline performance graph. As a way to enhance teacher implementation after the training has ended, EPF has been found to be effective while saving the time of both the teacher and trainer. Researchers have found that continuing to provide graphs to the teachers within the email has been effective. However, some researchers require that teachers answer comprehension probes to assess whether or not the teachers read the email. In my study, graphs of teachers' performance are embedded in the email to save time opening attachments. Teachers are required to send an email back to verify that they received the email.

Additionally, limited studies have focused on whether or not the teacher training on an instructional strategy geared towards a specific child's strengths and needs would be maintained and generalize to other children with the same instructional needs. To determine if teacher's maintain their newly learned skill during intervention, my study will increase the delivery of feedback above the set mastery criterion to six consecutive days. To determine if teachers generalize their behaviors from a training focused on a specific child, I used programming common stimuli as the generalization strategy during BST. As stated previously children have different communication modalities and interests; therefore, I will investigate if teachers generalize their learning to other children who need to increase their self-initiated socially-desirable behaviors, but have not been specifically trained on those child's unique differences.

Research questions:

1. Does a performance feedback training package – Behavior Skills Training (BST), checklist, and Emailed Performance Feedback (EPF) with graphs – increase teachers' delivery of contingent responses on self-initiated socially-desirable child behaviors?
2. Do teachers maintain their contingent responses to child self-initiated socially-desirable behaviors after they reach the mastery criterion for six consecutive days?
3. Do teachers' contingent responses to child self-initiated socially-desirable behaviors increase the frequency of child's self-initiated socially-desirable behaviors?

4. Do teachers generalize behavior learned from a performance feedback training package to other children with a few self-initiated socially-desirable behaviors in their classrooms?

Chapter 3

Methods

Participants and Setting

Teacher participants. Criteria for teacher selection consisted of (a) having a teaching certificate that aligns to the state's certification board, (b) hired within the district as certified staff personnel where his or her primary job was the lead teacher in the selected classroom, (c) teaching young children with moderate to severe disabilities with at least three of the children between the age range 3 to 8 years old, and (d) having a schedule that included centers where children have the opportunity to initiate socially-desirable behaviors.

First, I contacted a local school district and received permission to conduct my study in their schools. Second, I contacted the district's behavior specialist and asked her to nominate six teachers who met the inclusion criteria and who would possibly be willing to participate in the study. Third, I sent out a recruitment letter to the six teachers through email to determine if they (a) had children with few self-initiated socially-desirable behaviors, (b) were interested in learning an instructional strategy to potentially increase the behaviors, and (c) would be willing to volunteer as a participant in my study. All six teachers emailed back and were interested in volunteering. I observed in each teacher's classroom prior to finalizing teacher selection. Following the observations, four teachers were selected. One teacher was not selected because she did not meet criteria for

three children with a need for improving self-initiated socially-desirable behaviors, and the other teacher was not selected because she did not meet the classroom structure requirements (i.e., she did not have centers).

Four teachers participated in the study. The teachers in both schools were not using the same curriculum so these teachers did not plan instruction or have a common lunch hour with each other. Ms. Yelton was a 29-year-old White female who taught in a preschool classroom that served seven students with a range of developmental delays and moderate to severe disabilities. She has worked in her current classroom for 4 years prior to the study and taught young children with disabilities within the district for 6 years. She has an undergraduate degree in elementary education and a graduate degree in early childhood education.

Ms. Melillo was a 28-year-old White female who taught in a kindergarten through fourth grade classroom that served eight students with moderate to severe intellectual disabilities. She has worked in her current classroom for 4.5 years and was in her fifth-year teaching. She has a Bachelor of Arts in Special Education - Multi-categorical.

Ms. Senn was a 31-year-old White female who taught in a kindergarten through second grade classroom that served twelve students with moderate to severe intellectual disabilities. She has worked in her current classroom for 3 years and this was her third-year teaching. She has a Bachelor of Arts in Special Education - Multi-categorical. She commented on the email that this year she only has kindergarten through first graders instead of kindergarten through second grade.

Ms. Kelly was a 37-year-old White female who taught in a preschool classroom that served eight students with a range of developmental delays and moderate to severe

disabilities. She has worked in her current classroom for less than 1 year, as this is her first year in the district, but she has taught 14 years prior. She has taught young children between the ages of 3 through 8 for 15 years. She has a Bachelor of Arts in Early Childhood and a graduate degree in Special Education.

Child participants. Criteria for selecting children consisted of children who: (a) were between the age range of 3 to 8 years old, (b) were within the construct of moderate to severe disabilities, and (c) had few (i.e., ranging from four to 10) independent self-initiated socially-desirable behaviors. Children were excluded if they did not have any self-initiated socially-desirable behaviors or had Behavior Intervention Plans.

Children were selected through my observations and the teacher nominations (see the pre-baseline section in procedures). The finalized selected children were randomly assigned to a group (i.e., target child, generalization child one, generalization child two) as to protect the teacher from knowledge of which children were included in the study. Four target children and eight generalization children participated in the study (i.e., three children per teacher). Both the target and generalization children are described below.

Target children. Sammy was Ms. Yelton's target child. Sammy was a 4-year-old Black male who was diagnosed with autism by an outside agency. He functioned within the moderate to severe range intellectually, was non-verbal, and inconsistently used pictures to communicate within his environment.

John was Ms. Melillo's target child. John was a 7-year-old White male who was diagnosed with an intellectual disability by the school psychologist. He functioned within the moderate to severe range intellectually, was non-verbal, and inconsistently used Prologue to Go an iPad app to communicate within his environment.

Dalton was Ms. Senn's target child. Dalton was a 7-year-old White male who was diagnosed with an intellectual disability by the school psychologist. He functioned within the moderate to severe range intellectually, was non-verbal, and inconsistently used gestures to communicate. He did not have a functional communication system within his classroom environment; however, the speech pathologist worked with him on using a communication device in a segregated setting, but he was not allowed to use the device in the classroom.

Mya was Ms. Kelly's target child. Mya was a 4-year-old Black female who was diagnosed with autism by an outside agency. She functioned within the moderate to severe range intellectually and used minimal functional language to communicate. She had a range of 20 to 30 words, but inconsistently used language to communicate wants. She often repeated phrases or parts of phrases she heard.

Generalization children. The generalization children are described by teacher and are ordered sequentially, that is, generalization child one is described first and generalization child two follows in the description. The order of the children were selected at random.

Evie and Kejuan were Ms. Yelton's selected generalization children. Evie was a 4-year-old White female who was diagnosed with autism by an outside agency. She functioned within the moderate range intellectually and used between 30 to 40 words to communicate. The majority of her language was echolalia, which means that she often repeated phrases or parts of phrases she has heard previously. She used minimal functional language to communicate. Kejuan was a 4-year-old Black male who was diagnosed with a developmental delay by the school psychologist. He functioned in the

moderate range intellectually and had a range of 40 to 50 words; however, when requesting, he inconsistently used language to communicate.

Larry and Mills were Ms. Melillo's generalization children. Larry was a 6-year-old White male who was diagnosed with an intellectual disability by the school psychologist. He functioned in the moderate range intellectually and used approximately 20 words, but he inconsistently used words to obtain functional wants and needs. Mills was an 8-year-old White male who was diagnosed with an intellectual disability by the school psychologist. He functioned in the moderate to severe range intellectually and used fewer than 20 words to communicate.

Jaden and Nieko were Ms. Senn's generalization children. Jaden and Nieko were both 6-year-old Black males who were diagnosed with an intellectual disability by the school psychologist. Jaden functioned in the moderate range intellectually and had a range of approximately 40 to 50 words; however, he used minimal functional language to communicate. Nieko functioned in the moderate range intellectually and used over 50 words communicate; however, when requesting, he inconsistently used language to communicate.

Marcus and Tommy were Ms. Kelly's generalization children. Marcus was a 4-year-old Black male who was diagnosed with a developmental delay by the school psychologist. He functioned in the moderate to severe range intellectually, was non-verbal, and inconsistently used gestures to communicate. Tommy was a 4-year-old White male who was diagnosed with a developmental delay by the school psychologist and autism by an outside agency. He functioned in the moderate range intellectually and used

over 50 words communicate; however, when requesting, he inconsistently used language to communicate.

Description of setting. Each classroom consisted of a certified teacher and one to two paraprofessionals with a range of six to 14 children with disabilities. The classrooms were standard classroom size (539 square feet), and included a variety of defined learning spaces (e.g., centers, small group, large group, and an area for snack). Each classroom included child-size tables and chairs for small and large group instruction. Each classroom had an area for centers that included low shelving where children had access to various child-friendly materials (e.g., puzzles, blocks, games, trains, markers, paper, etc.). Center time within the daily classroom schedule consisted of free access to the materials in centers without direct instruction from the teacher or paraprofessionals; therefore, children had the opportunity to self-initiate behaviors.

Dependent Variables

My study had two dependent variables: one was teacher responses and the other was child self-initiated socially-desirable behavior.

Teacher responses. Teacher behavior was classified into three response categories for her response behavior to the target and generalization children's self-initiated socially-desirable behavior. Table 3.1 below organizes the teacher behaviors into response categories.

Table 3.1

Response Categories by Teacher Behaviors

Response Category	Teacher Behaviors

Contingent	provided behavior specific praise, praise, or physical contact (i.e., 0 - 3 seconds) during or following the child's self-initiated socially-desirable behavior or provided request or help (only for request) immediately (i.e., 0 - 3 seconds) during or following the child's self-initiated socially-desirable behavior
Non-contingent	provided behavior specific praise, praise, physical contact, or provided request or help (a) after 4 seconds of the child's self-initiated socially-desirable behavior or (b) in absence of the child socially-desirable behavior (i.e., the child did not self-initiate a socially-desirable behavior, but praise, physical contact was provided, or item/help was provided)
Missed Opportunity	was out of sight, ignored, or rejected (i.e., said no) the child's self-initiated socially-desirable behavior

Child socially-desirable behavior. Socially-desirable behavior was defined as the child spontaneously initiating any of five socially-desirable behaviors during naturally occurring routine observation (e.g., centers) for 20 minutes. Table 3.2 below presents the operational definitions of the five socially-desirable behaviors.

Table 3.2

Operational Definitions of Socially-Desirable Behaviors

Desirable Behavior	Operational Definitions
1. Using a material for its corresponding purpose	The child manipulates the selected object (e.g., cuts with scissors, drives with truck, turns pages in a book, colors with markers) by oneself or in a group.
2. Initiating an activity with a peer	The child asks a peer to join in an activity he or she is not already completing by communicating through any of the following modalities: a) verbally (e.g., "Hey do you want to play with blocks?")

b) augmentative device (e.g., presses the button when in front of peer to request to play)
c) pictures (e.g., hands the peer the picture)
d) non-verbally
   - gestures (e.g., points towards activity, takes peers hand and guides to activity, *does not include hand pulling or dragging)
   - eye-gaze (e.g., looks at the peer and activity)

3. Sharing	The child gives (hands object to peer) or verbally offers an object to another child (e.g., uses current communication modality to ask peer if he or she wants the object).
4. Turn-taking	The child participates in a back and forth activity with one or more peers through conversation, a non-verbal activity, or a combination of both. a) Conversational (e.g., children verbally taking turns saying what they did the night before and what they are planning to do tonight b) Nonverbal Activity (e.g., completing a tower together, working together to make a picture, without talking, but may include gestures) c) Combination of conversational and nonverbal (e.g., children make requests to each-other while creating a story, and turns can be both conversational and nonverbal)
5. Requesting	The child gains the attention of a communication partner for help or for an item by using his/her current communication modality a) verbally (e.g., "Help me build a tower." or "I want the crayon, please?") b) augmentative device (e.g., presses the button when in front of adult/peer to request help or item) c) pictures (e.g., finds the communication partner and hands the help or item picture) d) non-verbally • gestures (e.g., points towards the item needing help with or wants or takes adult/peer's hand and guides to item needing help with or wants, *does not include hand pulling or dragging) • eye-gaze (e.g., looks at the adult/peer and activity)

Recording Procedures

I selected each teacher's center time to conduct observational sessions as center time provides children with the opportunity to self-initiate behaviors, whereas, other times during the school day the instruction is teacher directed and minimizes the opportunities for children to initiate behaviors. I conducted observational sessions during each teacher's already scheduled center time – Ms. Yelton 12:05 to 12:25 p.m., Ms. Melillo 11:05 to 11:25 a.m., Ms. Senn 8:30 to 8:50 a.m., and Ms. Kelly 9:40 to 10:00 a.m. – therefore I selected observation times that occurred during each teacher's normal routine.

I conducted teacher and children observational sessions simultaneously four to five days per week. I arrived to each classroom 10 minutes prior to each teacher's center time to allow for any variability in schedules (i.e., if the classroom was on or slightly off schedule). Early arrival provided time to select a position that was an unobstructed view of the teacher and children within each center area because children self-initiated center selection each day. Additionally, early arrival provided time to identify children in attendance by surveying the atmosphere of the classroom.

Teacher responses. I used response-per-opportunity recording for teacher responses within 10, 2-minute intervals during a 20-minute center time period (see Appendix B for the Data Sheet sample). Intervals were 2 minutes in length and were recorded using the Repeat Timer App, which vibrates every 2 minutes and displays the number of the current interval.

Teacher responses were dependent on child-initiated socially-desirable behavior; therefore, for each recorded child-initiated socially-desirable behavior, I counted the

approximate number of seconds from the end of the child's behavior to the teacher's response. Then I circled the category of the teacher's response (i.e., contingent, non-contingent, or missed the opportunity). Teacher responses were calculated as a percent by using the response-per-opportunity recording method. That is, after each observation, I divided the total number of the teacher contingent responses by the total number of teacher responses and multiplied by 100 to obtain the teacher's percentage of contingent responses to each child's self-initiated socially-desirable behaviors.

I recorded teacher responses when the teacher and the children began center time and did not record if the teacher or her target child was unavailable. I recorded teacher responses to all three children's self-initiated socially-desirable behaviors simultaneously. If the target child was not present during the observation day, then I did not record data. However, if one of the generalization children were absent, I continued to collect data. The criterion for collecting data on the teacher's responses was the presence of the target child.

Child-initiated socially-desirable behaviors. I used event recording for child-initiated socially-desirable behaviors within 10, 2-minute intervals during a 20-minute center time period. Child behavior was a secondary area of interest in my study and was collected with the teacher responses. Data on each child's socially-desirable behaviors were collected to determine whether or not the child's self-initiated socially-desirable behaviors increased in frequency (i.e., was reinforced) as a result of the teacher's immediate contingent response.

Experimental Design

I employed a multiple baseline design (Kazdin, 2011) consisting of four teachers to assess changes in teacher behavior and identify any functional relationships between the independent and dependent variable in my study.

Teacher responses to target child. Three experimental conditions were included based on the teacher's responses to her target child: (a) baseline, (b) intervention (i.e. BST and EPF), and (c) maintenance. In baseline and in each experimental condition, I assessed the teacher's contingent response percentage (i.e., contingent, non-contingent, or missed opportunity) and the frequency of the target child's self-initiated socially-desirable behaviors during naturally-occurring centers. Once the teacher entered intervention, I provided BST on her contingent responses to her target child's self-initiated socially-desirable behaviors. After BST and each subsequent observation in intervention, I provided EPF on her contingent responses to her target child until she increased at or above 50% for six consecutive school days. The teacher entered maintenance once she met the mastery criterion. I conducted maintenance observations without EPF, one- and three-weeks following intervention, to assess teacher contingent responses to her target child's self-initiated socially-desirable behaviors.

Teacher responses to generalization children. A multiple baseline design was employed based on the teacher's contingent responses to her target child to assess if the teacher generalized her responses from the BST and EPF to children with a few self-initiated socially-desirable behaviors. Teacher contingent responses to each of her generalization children were collected every day the target child was present; however, if a generalization child was absent then no data was collected. In baseline and in each

condition, I assessed the teacher's contingent response percentage and each generalization child's frequency of self-initiated socially-desirable behaviors. The BST and EPF were specifically focused on the teacher's contingent responses to her target child and the target child's behaviors as I did not train or provide the teacher with EPF on her contingent responses to either generalization child. The teacher entered maintenance once she reached the mastery criterion of contingent responses to her target child, not the generalization children. During maintenance, I returned one and three weeks following the intervention to assess teacher contingent responses to her generalization children's self-initiated socially-desirable behaviors.

Procedures

Pre-baseline. Pre-baseline included several components: teacher recruitment, and observations, both of which embedded internal validity procedures. Pre-baseline lead to teacher and child participant selection along with a design that prevents reactivity.

Teacher recruitment and consent. I systematically designed the teacher recruitment letter and teacher consent form when I recruited teacher volunteers and secured teacher consent. The purpose for these procedures included: (a) identifying potential teacher volunteers to be participants in the study and (b) providing informed consent so that the teacher was aware of what was expected of her throughout the duration of the study.

Teacher recruitment letter. Prior to selecting teachers as described in the section on teacher participants, I sent out a teacher recruitment letter. The recruitment letter included: (a) general purpose of the study - to teach teachers how to increase their students' socially acceptable behaviors during center time activities, (b) a definition of

which children could possibly be selected - children who had a few (i.e., anywhere from four to 10) self-initiated socially-desirable behaviors, and (c) a general overview of the procedures in accepting to be a participant in the study - observation prior to acceptance, identification of children with few self-initiated socially-desirable behaviors, a short 30-minute training, and emailed performance feedback. The purpose of the recruitment letter was to recruit teacher volunteers and provide basic information about the study to assist the teacher in determining whether she wanted to participate.

Consent form. After selecting four teachers, I had the teachers sign a consent form that included an explanation of what was required of their participation in the study. This included a 30-minute training on learning to identify children's self-initiated socially-desirable behaviors, brainstorming additional examples of their child's preferences, practicing these strategies with me, and then implementing the intervention with their students. Following the training, the teachers were aware of and agreed to receive feedback on their performance through email following the observations. The purpose of the teacher consent form was to make teachers aware of the basic components of the study as well as provide them the knowledge that this study was voluntary and they may drop out at any point.

Observations. I systematically designed the observations to include child selection and identification of each child's potential reinforcers. The purpose of observations during pre-baseline included: (a) observing each teacher's and children's behaviors within the center time daily routine, (b) familiarizing the teachers and children to myself and my colleague's additional presence, (c) identifying children who would

benefit from increased socially-desirable behaviors, and (d) recording potential reinforcers (e.g., praise, physical contact, or request item or help).

I observed teacher and child behavior during each teacher's center-time schedule for a period of two months - Ms. Yelton 12:05 to 12:25 p.m., Ms. Melillo 11:05 to 11:25 a.m., Ms. Senn 8:30 to 8:50 a.m., and Ms. Kelly 9:40 to 10:00 a.m. I observed prior to baseline to familiarize the teachers and children with my presence. Since the teachers knew I was observing them for a study, I included this procedure to prevent reactivity to my additional presence; therefore, it was more likely that the teachers and children would react the same over time. Additionally, my colleague who collected interobserver agreement attended multiple times during the two-month period to familiarize herself with the teachers and children.

Child selection. Child selection consisted of the following procedures: (a) I informally observed within each teacher's classroom for two weeks to identify children with few (i.e., ranging from four to 10) independent self-initiated socially-desirable behaviors (see Table 3.2 above) and (b) during the observational period I asked the teacher to nominate children who would benefit from increasing their socially-desirable behaviors. However, children were excluded as possible participants if they had Behavior Intervention Plans (BIPs) because these children already had plans in place for their behavior created by their Individualized Education Program (IEP) team. Additionally, children who did not have any self-initiated socially-desirable behaviors were excluded because these children would require more intensive instruction.

My observations of the children and classroom routine revealed potential children to be included in the study. During the first week, I attended each placement and

informally collected data on child behaviors (i.e., the number of occurrences the children emitted socially-desirable behavior based on the operational definitions). The following week, I extended my observations to the teachers by asking them to nominate children who they believed would benefit from increasing socially-desirable behaviors. I asked the teachers to provide three to five students. One teacher provided seven, but two were automatically excluded because of their BIPs. I continued my observations for the next two weeks to solidify that the children I was observing aligned with the selection criteria.

Child observations and requesting the teacher nominate children assisted with my selection of three children per teacher. Once I solidified the three children per teacher, I randomly assigned each child to one of three groups: target child, generalization child one, and generalization child two. The target child was the child I provided the teacher specific instruction on during behavior skills training and emailed performance feedback was specifically focused on this child. The other two children were generalization children; these children were defined as generalization children because I did not provide specific instruction to the teachers on these children during intervention, but collected data to determine if the teachers generalized their learning from the training to the generalization children.

Providing teachers with the knowledge of which three children were selected occurred naturally through my observations and the request for teachers to nominate children. However, teachers were not be aware of which child was the target child out of the three children nor did the teachers know what the specifics were within the intervention. Additionally, I observed multiple children at one time; therefore, it made it

more difficult for the teacher to ascertain which child I was observing and who was selected target child.

Recording potential reinforcers. In addition to selecting the children through observation and teacher nominations, I observed the frequency and type of behaviors the children displayed during centers and teacher responses to behaviors. If the child emitted the behavior in the future, after the teacher provided a response to the child's behavior, then I documented it as a potential reinforcer (i.e., if the teacher spoke to the child or provided the child with physical contact). If the child approached or requested items, activities, touch, or help, then I documented the child's current communicative modality along the child's persistence to obtain request. Table 3.3 below presents the three separate categories that related to potential, feasible contingent teacher response types based on child behavior.

Table 3.3

Categorization of Potential Reinforcers

Category	Interactions with Teacher and Environment	Child Behavior
Praise	• If the teacher spoke to the child or praised the child • If the child was initiating a behavior and the teacher spoke or praised the child	Did the child continue the behavior or smile?
Physical contact	• If the teacher patted the child on the back or gave the child a hug • If the child approached the teacher to sit on lap, touch, hug, or hang; (I also documented as a request)	Did the child continue the behavior or smile?
Requests	• The child's current communication modality to request (e.g., pictures, gestures, words, etc.) • Types of items, activities, and/or assistance the child typically requested	Did the child persist to get the requested item and/or assistance?

Even if the child displayed a non-preferred behavior, I documented the teacher's response and whether or not the child continued the behavior in the future. For example, the child stood on the table (i.e., child-initiated); the teacher used physical contact to hug and lift him off the table (i.e., teacher response); if the child stood on the table again in the future, then I documented hugs and physical contact as a potential reinforcer. If the child engaged in the behavior often and consistently across the observational period based on the teacher's response, I documented the response as a potential reinforcer that the teacher could provide contingent on the child's self-initiated socially-desirable behavior.

Baseline. Baseline entailed recording the teacher's response (i.e., contingent, non-contingent, or missed opportunity), and type if provided contingently or non-contingently (i.e., behavior specific praise, praise, physical contact, or requested item or help) to the occurrence of each child's self-initiated socially-desirable behavior (i.e., the opportunity for the teacher to respond), for 20 minutes during centers. Teacher and child observations occurred simultaneously, as the teacher behavior was dependent on the child-initiated socially-desirable behavior. The baseline condition ended when a teacher's contingent responses to her target child in baseline showed a stable trend with little variability for a minimum of five days.

Intervention: training and email performance feedback. Teachers entered intervention conditions once their baseline data on responses to the target child's self-initiated socially-desirable behavior were stable. The intervention consisted of two separate components: Behavior Skills Training (BST) (Miltenberger, 2008a) and email performance feedback (EPF), which was focused on the teacher's contingent responses to

her target child; however, the first data point in intervention was after the BST without EPF and the second data point through the rest of the intervention included EPF based on my data.

Behavior Skills Training (BST). BST consisted of one individual 30-minute training session during a time that was convenient for the teacher. Each teacher was trained in their own classroom with all relevant materials used within their daily center time. The BST session included four procedures: instruction, modeling, rehearsal, and feedback and was focused on the teacher's contingent responses to her target child.

Instruction. Instruction consisted of two components: (1) purpose of the intervention and (2) checklist. First, I described the purpose and rationale of the study. I explained that the purpose of the intervention was to increase the number of times the targeted child self-initiated socially-desirable behaviors. I also explained that providing behavior specific praise, praise, or physical contact to a child following his or her spontaneous socially-desirable behavior within 3 seconds would probably increase his or her socially-desirable behaviors. In addition, if the child requested an item or help, providing the requested item or help immediately would most likely increase the child's self-initiated requests. I then explained to teachers that providing unstructured opportunities to demonstrate socially-desirable behaviors similar to same-aged peers was needed for individuals with moderate to severe disabilities. I complimented all teachers for already scheduling a time within their day that included opportunities for children to self-initiate socially-desirable behaviors.

Second, I gave the teacher a checklist with the socially-desirable behavior operational definitions on one side and a flowchart on the back (see Appendix A for the

Checklist for Teachers, which includes the operational definitions on one side and the flowchart on the opposite side). I provided time to discuss additional examples of the target child's socially-desirable behaviors with the teacher. This was done to provide the teacher with ownership and development of understanding how her responses to a socially-desirable behavior could be a potential reinforcer for the child self-initiating socially-desirable behavior in the future. Each teacher added any additional examples we developed together to the checklist during the training. I then explained the opposite side of the checklist, which was a flowchart to prompt the teacher when selecting the type of teacher response following their target child's self-initiated socially-desirable behavior.

I explained that for the socially-desirable behavior 'requesting' the teacher should provide the requested response contingent on the request instead of only selecting praise or physical contact from the list (e.g., if the child pointed to a toy out of reach, the teacher should provide the toy and not a pat on the back without the requested item). However, I did explain that if they would like they could use both BSP and provide the request. I explained that the flowchart could be individualized to the child to write what communicative behaviors to look for from the target child as well as write examples of behavior specific praise (e.g., good job drawing) or physical contact (e.g., tickles, pat on the back, etc.) based on each child's interactions during observations (i.e., what the child typically likes when around or near the teacher). I also provided additional blank copies of the checklist and flowchart.

Modeling. I modeled how I would use the checklist by reviewing the checklist prior to the instructional time in order to remind myself of the targeted socially-desirable behaviors. I also modeled reviewing the side of the checklist with the flowchart. I

pretended to see the target child performing one of the socially-desirable behavior. I then pretended to approach the target child within 3 seconds and provided behavior-specific praise, physical contact, or the requested item or help from the list. I individualized the modeling portion to each teacher and target child; however, I included additional examples that the target child did not currently self-initiate. For example, since all target children did not self-initiate each of the five categories within the socially-desirable operational definition, I pretended to model other behavior scenarios related to these additional socially-desirable behaviors.

Rehearsal. Rehearsal occurred following each modeled socially-desirable target child behavior and teacher response. Two components were included in the rehearsal portion of the training (1) graph of performance in baseline and (2) rehearsal.

First, I showed the teacher the graph of her performance in baseline along with the frequency of the target child's self-initiated socially-desirable behaviors. We discussed the results and the goal of reaching 50% contingent responses to the target child's self-initiated socially-desirable behaviors. Additionally, three out of the four teachers asked if they had to always provide the request of the child (e.g., if the child requests to go to a different center). I explained that it was part of the rationale for the 50% criterion of contingent responses, which included: (a) it is impossible to catch each time a child initiates a socially-desirable behavior due to multiple children in the classroom, (b) reinforcing many of the socially-desirable behaviors would most likely maintain the behavior, and (c) children also need to learn that sometimes they obtain their request and sometimes they are told no.

Second, I explained that we were going to practice together to increase her contingent responses within 3 seconds of the target child's socially-desirable behavior. During the rehearsal portion, I demonstrated each of the operationally-defined socially-desirable behaviors interspersed with other behaviors. At the end of the behavior, if the teacher delayed providing a behavior specific praise, physical contact, or requested help or item from the list within 3 seconds, I prompted the teacher to look at the operational definitions on her checklist and stated the behavior I was performing. If she did not deliver the potential reinforcer within 3 seconds, I prompted her to review the back of the checklist to select a behavior specific praise, physical contact, or requested help or item. I repeated the rehearsal procedures for each of the operationally-defined socially-desirable behaviors and provided feedback about her performance after each practice interaction. Once the teacher had provided a contingent response for each of the operationally-defined socially-desirable behaviors for two occurrences, the rehearsal portion of the training ended. The mastery criterion for rehearsal was two correct contingent responses for all five socially-desirable behaviors.

Feedback. During the feedback portion of the training, I initiated a discussion with the teacher by asking what went well, what they wanted to work on, and provided them an opportunity to ask me questions. I also explained to the teachers that following the training and after each of my observations, I would provide them with emailed performance feedback in written and graph format. I explained each of the components provided within the email, and discussed that they needed to send a follow-up email confirming that they received my email.

Email Performance Feedback. EPF began after the teacher training and after each observation during intervention. EPF was focused on the teacher contingent responses to the target child's self-initiated socially-desirable behaviors. EPF was provided within 24 hours (i.e., by 8:00 p.m. the same day of the observation). EPF included: (a) embedded graphs including: percentage of teacher-contingent responses and number of the target child's socially-desirable behavior initiations, (b) a greeting (e.g., Hi, ____), (c) positive comment about the observation behaviors (e.g., I like how you provided Johnny the toy within 3 seconds when he touched his communication device to say toy), (d) corrective feedback (e.g., Johnny picked up the marker and made a line on three occasions today which would have been additional opportunities for you to provide him with behavior specific praise), (e) opportunity to ask questions (e.g., What questions do you have for me?), and (f) closing (e.g., Sincerely, Abigail). The teachers were required to send an emailed response to the feedback prior to the next scheduled observation to verify that they received the performance feedback.

EPF continued until the teacher reached 50% criteria of contingent responses to the target child's self-initiated socially-desirable behavior for six consecutive days. The criteria of 50% was selected due to the evidence on the strength of intermittent reinforcement (Alberto & Troutman, 2016; Brown et al., 2016; Miltenberger, 2008b) to successfully maintain children's newly learned behaviors. Six consecutive school days was selected instead of three consecutive days, which occurs as the mastery criterion across most studies; however due to the literature on over-learning and fluency it was hypothesized that if criterion was extended to six days that overlearning may increase maintenance of teacher contingent responses to the target child's self-initiated socially-

desirable behaviors. Once the teacher had reached the mastery criteria of 50% for six consecutive school days, EPF discontinued. On the sixth consecutive day of the teacher's contingent responses at or above 50%, the teacher received a standardized email that included (a) the graph, (b) greeting, (c) congratulations, (d) a vague follow-up time, (e) a survey link, (f) reminder to respond, and (g) a closing.

Maintenance. Maintenance began the day following the sixth consecutive day at or above 50% contingent responses. During maintenance I collected data on the teacher's contingent responses, the children's self-initiated socially-desirable behaviors, and the type of response if contingent or non-contingent, but did not provide emailed feedback or graphs on their performance. Maintenance occurred five school days (i.e., one week) following the mastery criterion, and then 10 school days (i.e., two weeks) following the first maintenance check. The additional maintenance checks were included to determine if the teacher had maintained her contingent responses without the EPF.

Inter-observer Agreement (IOA)

Virtual training. A clinical professor (from hereafter referred to as colleague) was trained by me to use the operational definitions to record data on teacher responses to children's self-initiated socially-desirable behaviors. I began the training by reviewing and demonstrating the operational definitions to my colleague virtually through Appear.In. Then we both left the virtual meeting to record data on teacher and child behavior within a 20-minute video in our own space (i.e., I was at home or in the office and my colleague was at home or in her office). After each video, my colleague and I met virtually to compare our agreement on the occurrence across all teacher responses and types along with child-initiated socially-desirable behaviors. We discussed any possible

reasons for not observing or coding one of these behaviors. Training was complete once we reached 90% agreement on occurrence across all of the teacher responses (i.e., contingent, non-contingent, or missing) and types (e.g., behavior specific praise, praise, physical contact, or requested item or help) along with child-initiated socially-desirable behaviors (i.e., using materials for their corresponding purpose, sharing, initiating an activity with a peer, turn-taking, and requesting) for three consecutive video observations. The reason for the 90% agreement was to increase our likelihood of agreement in real-time when recording IOA data.

In-vivo practice. Following the virtual trainings during the 2-month pre-baseline period, my colleague attended the classrooms with me on multiple occasions to become acclimated to the settings, teachers, children, our placements within each setting, and check our agreement prior to the beginning of the study. The difference between the in-vivo practice and virtual trainings included different teachers, children, and locations to record data within the classroom. Our placements in the classrooms were to the side of the center area locations across the room to ensure our recording was independent of influence on one another. The materials used to collect data during in-vivo pre-baseline and during all phases of the study remained consistent and included: a compact clipboard, writing utensils, data sheets with operational definitions, and iPhones with the interval recording app on it.

Point-by-point agreement. Even though the data collected and documented on the data sheet (see Appendix B) was event recording, in which we were simultaneously recording teacher responses and types to three different children's behaviors, we included interval bands within point-by-point agreement. It would have been difficult to use a total

point-by-point interobserver agreement measure; therefore, to obtain IOA my colleague and I practiced recording the 2-minute intervals by using the Repeat Timer App. This app allowed each observer to set the length of interval and the number of intervals to easily alert without distracting others in the environment when to proceed to the next interval.

Intervals were 2 minutes in length and were recorded using the Repeat Timer App, which vibrates every 2 minutes and displays the number of the current interval. This helped my colleague and I to start and stop recording within each numbered interval at the exact same time as we used the same app. In other words, after 2 minutes when the app vibrated, both observers began collecting data in the next interval band (e.g., when the app vibrates at 4 minutes elapse, this alerted both observers it was the end of the second interval and start the third interval). Therefore, after the observation my colleague's data and my data were compared across 2-minute intervals for consistency.

I served as the primary observer and my colleague as the IOA recorder during teacher, target children, and generalization children observations. Interobserver agreement was collected on: (a) each teacher's responses and types of responses to target and generalization children's socially-desirable behaviors, (b) each target child's count and type of socially-desirable behaviors, and (c) both generalization children's count and type of socially-desirable behavior by teacher. During baseline, intervention, and maintenance interobserver agreement was calculated using point-by-point agreement ratio (Kazdin, 2011) within 2-minute intervals bands during each 20-minute center observation.

Point-by-point IOA is the most stringent description of IOA obtained by recording discrete behaviors (Kazdin, 2011), which is the acceptable standard for single-

case design research. The formula for calculating Point-by-point IOA consists of total agreements divided by agreements plus disagreements multiplied by one hundred. The responses from each observer were counted and compared by row within each interval band to determine agreement on the teacher's response to a child's self-initiated socially-desirable behavior (e.g., interval 1- row 1: both observers circled the *C* for contingent, row 2: both circled *NC* for non-contingent) (see Appendix B for the data sheet). If there were only two recorded occurrences of teacher responses within the interval and both were the same, then two agreements contributed to the total agreements. Rows without the same count or disagreements in teacher responses in an interval (e.g., interval 2- row 1: both observers circled the *C* for contingent, but in row 2: one circled *NC* for non-contingent, and the other circled *C* for contingent) were documented as agreements (i.e., same) or disagreements (i.e., different or more than) and were added to the total agreements and disagreements. Comparison of data based on agreements and disagreements were completed for all 10 intervals during each reliability measure across all teachers' responses and children's behaviors.

Teacher responses to target children. Inter-observer agreement was conducted for teacher responses to target children during 35% (13/37) of observations in baseline. The second observer collected data on baseline for Ms. Yelton, 40% (2/5) of observations, Ms. Melillo 38% (3/8) of observations, Ms. Senn 36% (4/11) of observations, and Ms. Kelly 31% (4/13) of observations. Overall agreements for the primary observer and second observer in baseline for Ms. Yelton was 100% (range, 100%), Ms. Melillo was 90% (range, 86% to 100%), Ms. Senn was 88% (range, 60% to 100%), and Ms. Kelly was 91% (range, 85% to 100%).

Inter-observer agreement was conducted for teacher responses to target children's behaviors during 30% (10/33) of observations in intervention. The second observer collected data on intervention for Ms. Yelton 30% (3/10) of observations, Ms. Melillo 29% (2/7) of observations, Ms. Senn 30% (3/10) of observations, and Ms. Kelly, 33% (2/6) of observations. Overall agreements for the primary observer and second observer in intervention for Ms. Yelton was 98% (range, 92% -100%), Ms. Melillo was 97% (range, 95% to 100%), Ms. Senn was 96% (range, 95% to 100%), and Ms. Kelly was 97% (range, 96% to 97%).

Inter-observer agreement was conducted for teacher responses to target children's behaviors during one of the two observations in maintenance; therefore, mean and range are not reported, but percent agreement for the one of the two maintenance days. Ms. Yelton was 97%, Ms. Melillo was 97%, Ms. Senn was 90%, and Ms. Kelly was 94%. (see Appendix F, Table F.1 for IOA by session).

Teacher responses to generalization children. Inter-observer agreement was conducted for teacher responses to both generalization children's behaviors if the child was present the day of the observation (see Appendix F, Table F.2 and Table F.3 for IOA).

Teacher responses to child one. Overall agreements for the teacher responses to child one's behavior during baseline for Ms. Yelton was 85% (no range to report), Ms. Melillo was 94% (range, 89% to 100%), Ms. Senn was 94% (range, 86% to 100%), and Ms. Kelly was 94% (range, 90% to 100%). Agreements in intervention for Ms. Yelton was 83% (range, 85% to 92%), Ms. Melillo was 100% (no range to report), Ms. Senn was 97% (range, 94% to 100%), and Ms. Kelly was 96% (no range to report). Percent

agreements on teacher responses to child one's behavior during maintenance for Ms. Yelton was 93%, Ms. Melillo was 91%, Ms. Senn was 90%, and Ms. Kelly was 87%. (see Appendix F, Table F.2 for IOA by session).

Teacher responses to child two. Overall agreements for the teacher responses to child two's behavior during baseline for Ms. Yelton was 86% (no range to report), Ms. Melillo was 91% (range, 89% to 100%), Ms. Senn was 100% (range, 100%), and Ms. Kelly was 95% (range, 91% to 100%). Agreements in intervention for Ms. Yelton was 89% (range, 80% to 100%), Ms. Melillo was 87% (range, 82% to 92%), Ms. Senn was 95% (range, 94% to 100%), and Ms. Kelly was 100% (range, 100%). Percent agreements on teacher responses to child two's behavior during maintenance for Ms. Yelton was 94%, Ms. Melillo was 100%, Ms. Senn was 96%, and Ms. Kelly was 100%. (see Appendix F, Table F.3 for IOA by session).

Children's self-initiated socially-desirable behaviors. The percentage of observations conducted for each teacher's target child's self-initiated socially-desirable behaviors across all three phases aligns directly to the data reported in teacher responses to target children's behaviors as the child must initiate the behavior for the teacher to respond. The percentage of observations conducted across each phase for the generalization children varied due to their presence during the observation. Therefore, percentage of agreements and range are only reported across conditions within the remaining sections.

Target Child. Overall agreements in baseline for Sammy was 100% (range, 100%), John was 90% (range, 86% to 100%), Dalton was 88% (range, 60% to 100%), and Mya was 91% (range, 85% to 100%). Agreements in intervention for Sammy was

98% (range, 92% -100%), John was 97% (range, 95% to 100%), Dalton was 96% (range, 95% to 100%), and Mya was 97% (range, 96% to 97%). Maintenance percent agreements for Sammy was 97%, John was 97%, Dalton was 90%, and Mya was 94%. (see Appendix F, Table F.4 for IOA by session).

Generalization child one. Overall agreements in baseline for Evie was 85% (no range to report), Larry was 94% (range, 89% to 100%), Jaden was 94% (range, 86% to 100%), and Marcus was 97% (range, 92% to 100%). Agreements in intervention for Evie was 92% (range, 92%), Larry was 100% (no range to report), Jaden was 100% (range, 100%), and Marcus was 100% (range, 100%). Maintenance percent agreements for Evie was 96%, Larry was 91%, Jaden was 95%, and Marcus was 96%. (see Appendix F, Table F.5 for IOA by session).

Generalization child two. Overall agreements in baseline for Kejuan was 93% (no range to report), Mills was 91% (range, 89% to 100%), Nieko was 100% (range, 100%), and Tommy was 100% (range, 100%). Agreements in intervention for Kejuan was 95% (range, 90% to 100%), Mills was 87% (range, 82% to 92%), Nieko was 95% (range, 80% to 100%), and Tommy was 96% (range, 95% to 100%). Maintenance percent agreements for Kejuan was 97%, Mills was 92%, Nieko was 92%, and Tommy was 100%. (see Appendix F, Table F.6 for IOA by session).

Procedural Fidelity of Behavior Skills Training and Emailed Performance Feedback

Behavior Skills Training fidelity checks. BST fidelity checks were conducted remotely by a colleague for 100% of initial teacher trainings (i.e., four). Prior to the initial training, video consent was received for each teacher (i.e., teachers had the option to not consent). The consent allowed my colleague to remotely view all four trainings,

which occurred immediately when each teacher transitioned into the intervention phase during a convenient time for the teacher. I trained the teacher in-person and recorded the training using the SWIVL hardware, software, app, and microphone. I selected this technology to provide my colleague with a full view of each training component just as if she was present. For example, the hardware of the SWIVL technology rotates following the path of the teacher and myself when conducting the rehearsal portion of the BST. Additionally, the use of this technology could have prevented possible intimidation of an additional person's presence during the training or possible deviation from one training to another (i.e., if some trainings included an additional person and others did not).

Procedural fidelity was calculated by dividing the total number of correctly completed procedures by the total number of procedures (correct plus incorrect) and multiplying the quotient by 100 (Kazdin, 2011). (see Appendix C for the Behavior Skills Training Fidelity Check). In addition to my colleague's use of the BST fidelity checklist through remote recordings, I used the checklist when training the teacher to ensure my correct implementation procedures (i.e., I checked off each step when training each individual teacher). Procedural fidelity for all four BSTs was 100% of implemented procedures.

Emailed Performance Feedback fidelity check. Following the observations when a teacher was in the intervention phase, EPF was provided through an email by 8:00 p.m. the same day of the observation. When providing EPF, I used the checklist in Appendix D to document the occurrence and non-occurrence of each component as I wrote the email. My colleague used the checklist to ascertain if I included all components by reviewing my email correspondence following each teacher's observation during

intervention: (a) my initial email components, (b) teacher receipt, and (c) teacher questions with my response by the next observation. First procedural fidelity for the initial email I wrote was calculated by dividing the total number of correctly completed components by the total number of components (correct plus incorrect) and multiplying the quotient by 100 (see Appendix D for the Emailed Performance Feedback Check). Second, teacher responses to receipt of the email were documented as yes or no by the time of the next observation and the data was reported as total number of teacher responses over total number of initial emails. Lastly, if the teacher initiated a question within her email confirmation receipt, then the question was documented and my response prior to the next observation was documented (i.e., my responses to questions by total questions in the receipt). Table 3.4 below depicts the results of my EPF procedural fidelity.

Table 3.4

Procedural Fidelity for Emailed Performance Feedback.

	Initial Email		Teacher Response	Question Response
Teacher	(%)	(C/C+I)	y/total	r/q
Ms. Yelton	100%	(100/100)	9/10	3/3
Ms. Melillo	100%	(70/70)	7/7	2/2
Ms. Senn	100%	(100/100)	10/10	3/3
Ms. Kelly	100%	(60/60)	6/6	0/0

Note. (%) Percentage of correct components in initial emails to teacher; (C/C+I) = Number of correct initial email components over correct plus incorrect for all initial emails; (y/total) = Number of times the teacher confirmed receipt of email prior to next observation over total number of initial emails; (r/q) = number of times I responded to each teacher-initiated question prior to next observation.

As displayed in the table above all initial email components for each teacher were at 100% and each time a teacher asked a question in her emailed receipt, I was able to respond to her question prior to the next observation. However, one of the four teachers did not respond to the initial email prior to my next observation and this is further discussed in the discussion section.

Teacher Social Validity Questionnaire and Feedback

At the conclusion of the intervention, the teachers were given a survey to assess social validity through questions related to the following components: (a) ease of use, (b) helpfulness of BST, (c) use of training materials, (d) satisfaction with EPF, and (e) need and continued use of intervention. (see Appendix E, Table E.1).

Chapter 4

Results

The main purpose of my study was to implement a performance feedback training package using BST and EPF to evaluate if the training package increased and maintained teachers' percentage of contingent responses to children's self-initiated socially-desirable behaviors during centers. My specific research questions were:

1. Does a performance feedback training package – Behavior Skills Training (BST), checklist, and Emailed Performance Feedback (EPF) with graphs – increase teachers' delivery of contingent responses to self-initiated socially-desirable child behaviors?
2. Do teachers maintain their contingent responses to child self-initiated socially-desirable behaviors after they reach the mastery criterion for six consecutive days?
3. Do teachers' contingent responses to self-initiated socially-desirable behaviors increase the frequency of child's self-initiated socially-desirable behaviors?
4. Do teachers generalize behavior learned from a performance feedback training package to other children with a few self-initiated socially-desirable behaviors in their classrooms?

Research Question One: Does a performance feedback training package – Behavior Skills Training (BST), checklist, and Emailed Performance Feedback (EPF) with graphs – increase teachers' delivery of contingent responses on self-initiated socially-desirable child behaviors?

Figure 4.1 presents the results for Research Question One.

Ms. Yelton. Baseline consisted of 5 days. Her contingent responses varied from 8% (1 out of 12) to 10% (1 out of 10), with three data points at 8% (1 out of 12), one data point at 9% (1 out of 11) on day 2, and one data point at 10% (1 out of 10) on day 3. Her final data point during baseline was 8% (1 out of 12). During baseline, her contingent responses leveled at 9%.

Intervention consisted of 10 days. When intervention was introduced an immediate increase to 36% (4 out of 11) occurred. Her contingent responses varied during intervention from 33% (4 out of 12) to 75% (9 out of 12), and ended with four data points at approximately 54% (14 out of 26; 15 out of 28; 16 out of 30; 16 out of 29). Baseline data predicted that her contingent responses would remain near 9%; however, her intervention data displayed an increasing trend in her contingent responses, leveling at 52%.

Ms. Melillo. Baseline consisted of 8 days. Her contingent responses varied from 0% (0 out of 5; 0 out of 6; 0 out of 7; 0 out of 9) to 20% (1 out of 5), with six data points at 0% (0 out of 5; 0 out of 6; 0 out of 7; 0 out of 9), one data point at 20% (1 out of 5) on day 4, and one data point at 14% (1 out of 7) on day 5. Her final data point during baseline was 0% (0 out of 6). During baseline, her contingent responses leveled at 4%. Intervention consisted of 7 days.

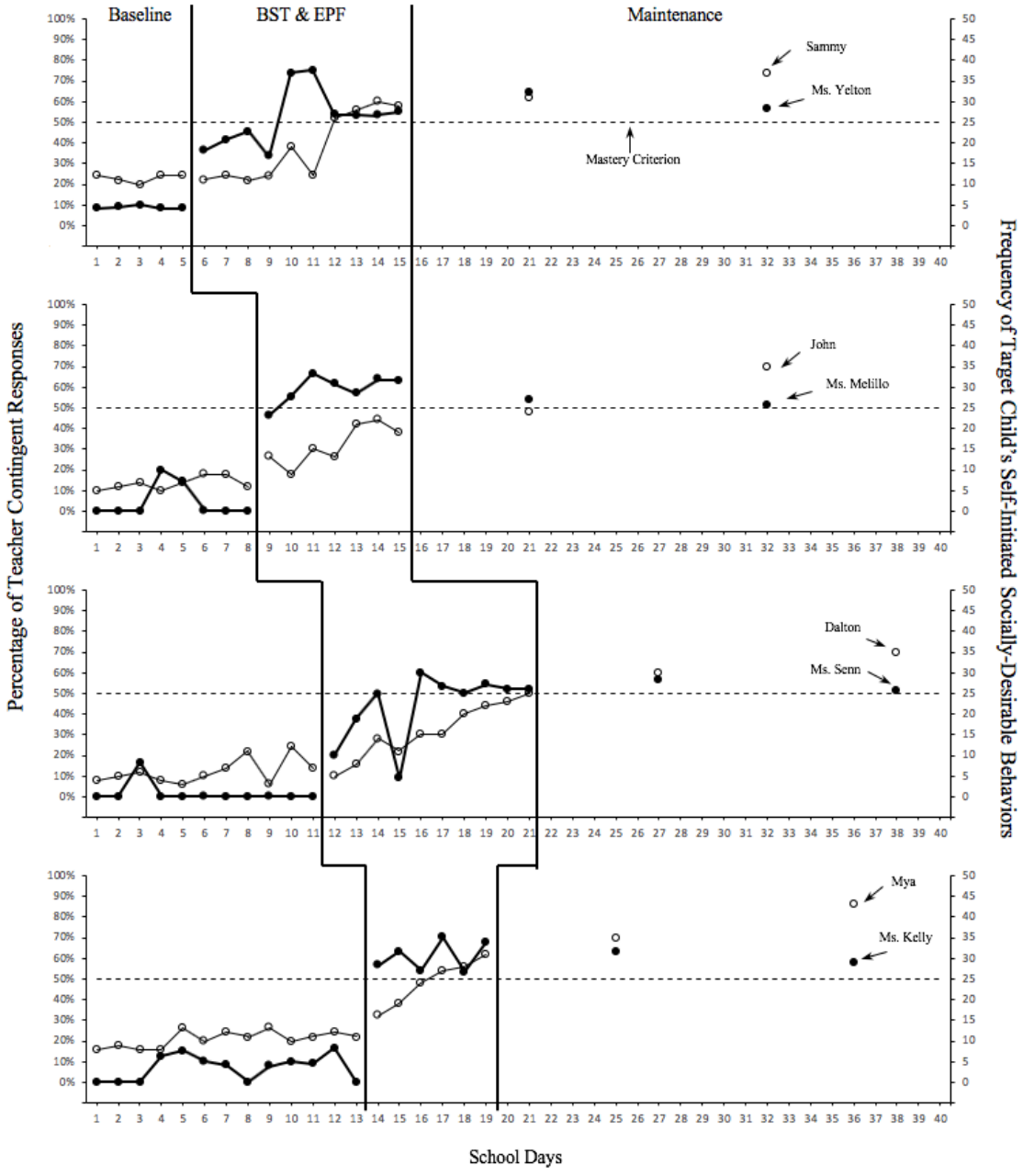

Figure 4.1

Percentages of teacher contingent responses to the target child's self-initiated socially desirable behaviors during baseline, Behavior Skills Training and Emailed Performance Feedback (BST & EPF), and maintenance with the frequency of the target child's self-initiated socially-desirable behaviors.

Intervention consisted of 7 days. When intervention was introduced, an immediate increase to 46% (6 out of 13) occurred. Her contingent responses varied during intervention from 46% (6 out of 13) to 67% (10 out of 15), and ended with four data points between 57% (12 out of 21) and 64% (14 out of 22). Her final data point in intervention was 36% (12 out of 19). Baseline data predicted that her contingent responses would remain near 4%; however, intervention data displayed an increasing trend in her contingent responses, leveling at 59%. Ms. Melillo's data pattern in intervention replicated Ms. Yelton's data pattern.

Ms. Senn. Baseline consisted of 11 days. Her contingent responses varied from 0% (0 out of 4; 0 out of 5; 0 out of 3; 0 out of 7; 0 out of 11; 0 out of 12) to 17% (1 out of 6) with 10 data points at 0% (0 out of 4; 0 out of 5; 0 out of 3; 0 out of 7; 0 out of 11; 0 out of 12). The outlier was on day 3 at 17% (1 out of 6) and data points at 0% for all other days had varying opportunities to contingently respond from 3 to 12, but she did not contingently respond. Her final data point during baseline was 0% (0 out of 7). During baseline, her contingent responses leveled at 2%.

Intervention consisted of 10 days. When intervention was introduced, an immediate increase to 20% (1 out of 5) occurred. Her contingent responses varied during intervention from 9% (1 out of 11) to 60% (9 out of 15). Her contingent responses were initially increasing with one data point at 20% (1 out of 5) on day 1, one data point at 38% (3 out of 8) on day 2, and one data point at 50% (7 out of 14) on day 3. Ms. Senn had a large dip in her performance on day 4; her contingent responses fell to 9% as she was unable to contingently respond to her target child due to other classroom occurrences that required her involvement. Following the decline, her contingent responses were at

60% (9 out of 15) on day 5, and ended with five data points between 50% (10 out of 20) and 55% (12 out of 22). Her final two data points in intervention were 52% (12 out of 23; 13 out of 25). Baseline predicted that her contingent responses would remain near 2%; however, intervention data displayed an increasing trend in her contingent responses, leveling at 44%. Ms. Senn's contingent responses in intervention were the third replication of an immediate level increase once intervention was introduced with an increasing trend, leveling near 50%.

Ms. Kelly. Baseline consisted of 13 days. Her contingent responses varied from 0% (0 out of 8; 0 out of 9; 0 out of 11) to 17% (2 out of 12), with five data points at 0% (0 out of 8; 0 out of 9; 0 out of 11) on days 1, 2, 3, 8 and 13, five data points between 8% (1 out of 12; 1 out of 13) and 10% (1 out of 10) on days 6, 7, 9, 10, and 11, and three data points between 13% (1 out of 8) and 17% (2 out of 12) on days 4, 5, and 12. Her final data point during baseline was 0% (0 out of 11). During baseline, her contingent responses leveled at 7%.

Intervention consisted of 6 days. When intervention was introduced, an immediate increase to 56% (9 out of 16) occurred. Her contingent responses varied during intervention from 54% (13 out of 24) to 70% (19 out of 27) and remained above 54% for the entire intervention. Her final data point in intervention was 68% (21 out of 31). Baseline data predicted that her contingent responses would remain near 7% and slightly increase over time; however, intervention data displayed an immediate increase above the mastery criterion on the first day, and variability above the mastery criterion for the remainder of the intervention. Ms. Kelly's contingent responses in intervention were the

fourth replication of an immediate increase once intervention was introduced with an increasing trend, leveling above 50%.

Summary. The intervention was introduced in a stepwise fashion to all four teachers. All four teachers displayed a low level of contingent responses in baseline. Three of the four teachers had flat trend, and one teacher had greater variability with a slightly increasing trend. When intervention was introduced, an immediate increase in level and trend occurred for all four teachers and one teacher increased above the mastery criterion. All teachers' contingent responses in intervention followed an increasing trend from baseline, leveling near or above the 50% mastery criterion. The replication of each teacher's contingent responses in baseline, immediate increases upon intervention, and increasing trends in intervention provides evidence that there is a functional relationship between the intervention and the teachers' contingent responses.

Research Question Two: Do teachers maintain their contingent responses to child self-initiated socially-desirable behaviors after they reach the mastery criterion for six consecutive days?

Figure 4.1 presents the results for Research Question Two.

Ms. Yelton. Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention was 55%. Her contingent responses during maintenance were 65% (20 out of 31) on day 21 and 57% (21 out of 37) on day 32. Her contingent responses leveled at 61%, which was similar to her final data point in intervention.

Ms. Melillo. Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention was 51%. Her

contingent responses during maintenance were 54% (13 out of 24) on day 21 and 51% (18 out of 35) on day 32. Her contingent responses leveled at 53%, which was similar her final data point in intervention. The level of her contingent responses replicated the previous teacher's data pattern remaining above 50%.

Ms. Senn. Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention was 52%. Her contingent responses during maintenance were 57% (17 out of 30) on day 27 and 51% (18 out of 35) on day 38. Her contingent responses leveled at 54%, which was similar to her final data point in intervention. The level of her contingent responses replicated the previous two teachers' data patterns remaining above 50%.

Ms. Kelly. Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention was 68%. Her contingent responses during maintenance were 63% (22 out of 35) on day 25 and 58% (25 out of 43) on day 36. Her contingent responses leveled at 61%, which was similar to her final data point in intervention. The level of her contingent responses replicated the previous three teachers' data patterns remaining above 50%.

Summary. The maintenance condition occurred once each teacher met the mastery criterion in intervention for six consecutive days. Maintenance consisted of assessment one week and three weeks following the end of intervention. All four teachers' contingent responses remained at or above the 50% mastery criterion with a level similar to their final data point in intervention. The replication of each teacher's contingent responses from intervention to maintenance provides evidence that six

consecutive days at or above the mastery criterion in intervention may produce maintenance in teacher contingent responses.

Research Question Three: Do teachers' contingent responses to child self-initiated socially-desirable behaviors increase the frequency of child's self-initiated socially-desirable behaviors?

Figure 4.1 presents the results for Research Question Three.

Sammy. Baseline consisted of 5 days. His frequency of self-initiated socially-desirable behaviors varied from 10 to 12, with three data points at 12, one data point at 11 on day 2, and one data point at 10 on day 3. His final data point during baseline was 12. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 11.

Intervention consisted of 10 days. When intervention was introduced, the frequency of his self-initiated socially-desirable behaviors resembled baseline for four days varying from 11 to 12. On day 5, his self-initiated socially-desirable behaviors increased to 19 and fell to 12 on day 6, and ended with four data points between 26 to 30. Baseline data predicted his self-initiated socially-desirable behaviors would remain near 11 and slightly increase over time; however, intervention data leveled at 19, and displayed an increasing trend in his self-initiated socially-desirable behaviors once his teacher increased her contingent responses above the mastery criterion for three consecutive days.

Maintenance consisted of assessment one week and three weeks following the end of intervention. His final data point in intervention was 29. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 31 on day 21

and 37 on day 32, leveling at 34, which was greater than his final data point in intervention.

John. Baseline consisted of 8 days. His frequency of self-initiated socially-desirable behaviors varied from 5 to 9, with two data points at 5 on days 1 and 4, two data points at 6 on days 2 and 8, two data points at 7 on days 3 and 5, and two data points at 9 on days 6 and 7. His final data point during baseline was 6. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 7.

Intervention consisted of 7 days. When intervention was introduced, an immediate increase to 13 occurred. His self-initiated socially-desirable behaviors varied during intervention from 9 to 22 and ended with three data points between 19 and 22. His final data point in intervention was 19. Baseline data predicted his self-initiated socially-desirable behaviors would remain near 6 and slightly increase over time; however, intervention data leveled at 16, and displayed an increasing trend in his self-initiated socially-desirable behaviors once his teacher increased her contingent responses above the mastery criterion for four consecutive days. John's data pattern in intervention replicated Sammy's increasing trend following their teachers' increase in contingent responses.

Maintenance consisted of assessment one week and three weeks following the end of intervention. His final data point in intervention was 19. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 24 on day 21 and 35 on day 32, leveling at 30, which was greater than his final data point in intervention. The level and trend of his self-initiated socially-desirable behaviors

replicated Sammy's data pattern with an increasing trend, leveling above his final data point in intervention.

Dalton. Baseline consisted of 11 days. His frequency of self-initiated socially-desirable behaviors varied from 3 to 12, with one data point at 6 on day 3, two data points at 3 on days 5 and 9, two data points at 7 on days 7 and 11, one data point at 11 on day 8, and one data point at 12 on day 10. His final data point during baseline was 7. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 6.

Intervention consisted of 10 days. When intervention was introduced, the frequency of his self-initiated socially-desirable behaviors resembled baseline for days 1, 3, and 4 varying from 5 to 11. On day 3, his self-initiated socially-desirable behaviors increased to 14 and fell to 11 on day 4. Following the decline, his self-initiated socially-desirable behaviors increased to 15 for two days and ended with four data points increasing from 20 to 25. Baseline data predicted his self-initiated socially-desirable behaviors would vary from 3 to 12 and slightly increase over time; however, intervention data leveled at 16, and displayed an increasing trend in his self-initiated socially-desirable behaviors. Dalton's data pattern in intervention was a third replication of an increasing trend.

Maintenance consisted of assessment one week and three weeks following the end of intervention. His final data point in intervention was 25. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 30 on day 27 and 35 on day 38, leveling at 33, which was greater than his final data point in intervention. The level and trend of his self-initiated socially-desirable behaviors

replicated the previous two children's data patterns with an increasing trend, leveling above his final data point in intervention.

Mya. Baseline consisted of 13 days. Her frequency of self-initiated socially-desirable behaviors varied from 8 to 13, with three data points at 8 on days 1 and 3, one data point at 9 on day 2, two data points at 13 on days 5 and 9, two data points at 10 on days 6 and 10, two data points at 12 on days 7 and 12, and three data points at 11 on days 8, 11, and 13. Her final data point during baseline was 11. During baseline, her frequency of self-initiated socially-desirable behaviors leveled at 10.

Intervention consisted of 6 days. When intervention was introduced, an immediate increase to 16 occurred. Her self-initiated socially-desirable behaviors continued on an increasing trend from 19 to 31. Her final data point in intervention was 31. Baseline data predicted her self-initiated socially-desirable behaviors would remain near 10 and slightly increase over time; however, intervention data displayed an increasing trend in her self-initiated socially-desirable behaviors, leveling at 24. Mya's data pattern in intervention was a fourth replication of an increasing trend.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention was 31. Her self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 35 on day 25 and 43 on day 36, leveling at 39, which was greater than her final data point in intervention. The level and trend of her self-initiated socially-desirable behaviors replicated the previous three children's data patterns with an increasing trend, leveling above her final data point in intervention.

Summary. The intervention was introduced in a stepwise fashion to all four teachers. In baseline, all four children displayed a low level of self-initiated socially-desirable behaviors with a slight increasing trend. When intervention was introduced, an immediate increase in self-initiated socially-desirable behaviors occurred for two children, but did not remain consistent until three to four days of teacher contingent responses at or above the 50% mastery criterion. All children's self-initiated socially-desirable behaviors in intervention leveled above predictions made in baseline. The replication of each child's self-initiated socially-desirable behaviors in baseline, increasing trends in intervention, and increases when teacher's contingently responded to 50% of the child-initiated socially-desirable behaviors for three to four consecutive days provides evidence that there is a functional relationship between the teachers' contingent responses and the children's increases in self-initiated socially-desirable behaviors.

Research Question Four: Do teachers generalize behavior learned from a performance feedback training package to other children with a few self-initiated socially-desirable behaviors in their classrooms?

To answer this question, teacher contingent responses to both generalization children are separated into two figures (4.2 and 4.3) to enable a clear visual analysis of teacher contingent responses to each generalization child. Each figure's results are reported in the respective order: teacher contingent responses, child self-initiated socially-desirable behavior, and a summary of all teachers' contingent response results to their generalization child's self-initiated socially-desirable behaviors.

Figure 4.2 presents the results for Research Question Four.

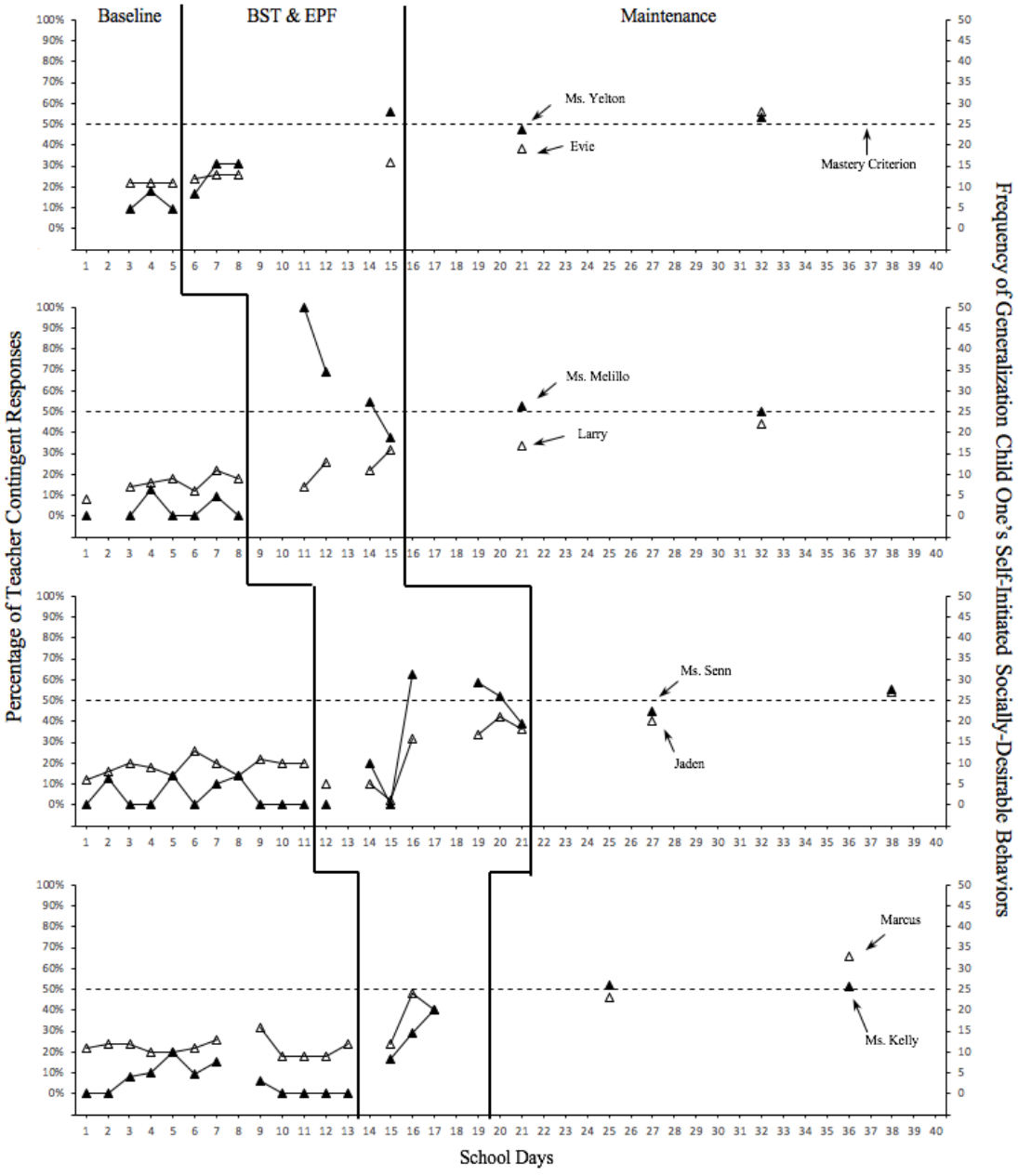

Figure 4.2

Percentages of teacher contingent responses to generalization child one's self-initiated socially-desirable behaviors during baseline, Behavior Skills Training and Emailed Performance Feedback (BST & EPF), and maintenance with the frequency of generalization child one's self-initiated socially-desirable behaviors.

Teacher contingent responses to child one.

Ms. Yelton. Baseline consisted of 5 days, and Evie was present for 3 days. Ms. Yelton's contingent responses to her varied from 9% (1 out of 11) to 18% (2 out of 11) with 9% on days 3 and 5 and 18% on day 4. Ms. Yelton's final data point in baseline was 9% (1 out of 11) for Evie. During baseline, her contingent responses leveled at 12%.

Intervention for Ms. Yelton's contingent responses to the target child lasted for 10 days and Evie was present for 4 days. When intervention was introduced, contingent responses to Evie immediately increased to 17% (2 out of 12). Overall, Ms. Yelton's contingent responses to her followed an increasing trend from 17% (2 out of 12) to 56% (9 out of 16), with one data point at 17% on day 1, two data points at 31% (4 out of 13) on days 2 and 3, and one data point at 56% (9 out of 16) on day 10. Ms. Yelton's final data point for Evie was 56% (9 out of 16) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 9% to 18%; however, intervention data displayed an increasing trend in her contingent responses, leveling at 34%.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention, based on her target child, for Evie was 56%. Her contingent responses during maintenance were 47% (9 out of 19) on day 21 and 54% (15 out of 28) on day 32. Her contingent responses leveled at 50%, which was similar to her final data point in intervention.

Ms. Melillo. Baseline consisted of 8 days, and Larry was present for 7 days. Ms. Melillo's contingent responses to him varied from 0% (0 out of 4; 0 out of 7; 0 out of 9; 0 out of 6) to 13% (1 out of 8), with five data points at 0% (0 out of 4; 0 out of 7; 0 out of

9; 0 out of 6), one data point at 13% (1 out of 8) on day 4, and one data point at 9% (1 out of 11) on day 7. Ms. Melillo's final data point in baseline was 0% (0 out of 9) for Larry. During baseline, her contingent responses leveled at 12%.

Intervention for Ms. Melillo's contingent responses to the target child lasted for 7 days, and Larry was present for 4 days. When intervention was introduced, contingent responses to Larry immediately increased to 100% (7 out of 7). Overall, Ms. Melillo's contingent responses to him followed a decreasing trend from 100% (7 out of 7) to 38% (6 out of 16), with one data point 100% (7 out of 7) on day 3, one data point at 69% (9 out of 13) on day 4, one data point at 55% (9 out of 11) on day 6, and one data point at 38% (6 out of 16) on day 7. Ms. Melillo's final data point for Larry was 38% (6 out of 16) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 0% to 13%; however, intervention data displayed an immediate increase in her contingent responses followed by decreasing trend, leveling at 65%. Ms. Melillo's contingent responses in intervention do not overlap with data in baseline, and provide some evidence of her contingent response generalization to Larry.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention, based on her target child, for Larry was 38%. Her contingent responses during maintenance were 53% (9 out of 17) on day 21 and 50% (11 out of 22) on day 32. Her contingent responses leveled at 51%, which was above her final data point in intervention. The level of her contingent responses replicated the previous teacher's data pattern remaining near or above 50%.

Ms. Senn. Baseline consisted of 11 days, and Jaden was present every day. Ms. Senn's contingent responses to him varied from 0% (0 out of 6; 0 out of 10; 0 out of 9; 0 out of 13; 0 out of 11; 0 out of 5) to 14% (1 out of 7), with seven data points at 0% (0 out of 6; 0 out of 10; 0 out of 9; 0 out of 13; 0 out of 11; 0 out of 5), one data point at 13% (1 out of 8) on day 2, two data points at 14% (1 out of 7) on days 5 and 8, and one data point at 10% (1 out of 10) on day 7. Ms. Senn's final data point in baseline was 0% (0 out of 10) for Jaden. During baseline, her contingent responses leveled at 5%.

Intervention for Ms. Senn's contingent responses to her target child lasted for 10 days, and Jaden was present for 7 days. When intervention was introduced, no change in Ms. Senn's contingent responses to Jaden occurred. Overall, Ms. Senn's contingent responses to him varied from 0% (0 out of 5; 0 out of 1) to 63% (10 out of 16), with one data point increasing to 20% (1 out of 5) on day 3 before a decline on day 4. Ms. Senn had a large dip in her performance on day 4; her contingent responses fell to 0% as she was unable to contingently respond to children due to other classroom occurrences that required her involvement. Following the decline, her contingent responses were at 63% on day 5, two data points above 50% (10 out of 17; 11 out of 21) on days 8 and 9, and ended with one data point at 39% (7 out of 18) on day 10. Ms. Senn's final data point for Jaden was 39% (7 out of 18) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 0% to 14%; however, intervention data displayed 3 of the 6 data points above the mastery criterion.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention, based on her target child, for Jaden was 39%. Her contingent responses during maintenance were 45% (9 out of 20) on day

27 and 56% (15 out of 27) on day 38. Her contingent responses leveled at 50%, which was above her final data point in intervention. The level of her contingent responses replicated the previous two teachers' data patterns.

Ms. Kelly. Baseline consisted of 13 days, and Marcus was present for 12 days. Ms. Kelly's contingent responses to him varied from 0% (0 out of 11; 0 out of 12; 0 out of 9) to 20% (2 out of 10), with four data points ranging from 6% to 10% (1 out of 12; 1 out of 10; 1 out of 11; 1 out of 16) on days 3, 4, 6, and 9, one data point at 20% (2 out of 10) on day 5, one data point at 15% (2 out of 13) on day 7, and the remaining six data points at 0% (0 out of 11; 0 out of 12; 0 out of 9). Ms. Kelly's final data point in baseline was 0% (0 out of 12) for Marcus. During baseline, her contingent responses leveled at 6%.

Intervention for Ms. Kelly's contingent responses to her target child lasted for 6 days, and Marcus was present for 3 days. When intervention was introduced, contingent responses to Marcus immediately increased to 17% (2 out of 12) on day 2. Overall, Ms. Kelly's contingent responses to him varied increasing from 17% (2 out of 12) to 40% (8 out of 20), with one data point at 17% (2 out of 12) on day 2, one data point at 29% (7 out of 24) on day 3, and one data point at 40% (8 out of 20) on day 4. Ms. Kelly's final data point for Marcus was 40% (9 out of 16) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 0% to 20%; however, intervention data displayed an increasing trend in her contingent responses, leveling at 29%. Ms. Kelly's increase in trend replicated Ms. Yelton's data pattern for child one.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention, based on her target child, for Marcus was 40%. Her contingent responses during maintenance were 52% (12 out of 23) on day 25 and 52% (17 out of 33) on day 36. Her contingent responses leveled at 52%, which was above her final data point in intervention. The level of her contingent responses replicated the previous three teachers' data patterns remaining near or above 50%.

Child one's self-initiated socially-desirable behaviors.

Evie. Baseline consisted of 5 days, and Evie was present for 3 days. Her frequency of self-initiated socially-desirable behaviors remained consistent at 11. Her final data point in baseline was 11.

Intervention based on her teacher's contingent responses to the target child consisted of 10 days, and Evie was present for 4 days. When intervention was introduced, Evie's frequency of self-initiated socially-desirable behaviors resembled baseline for the first three days, with two data points at 13 on days 2 and 3, and one data point at 12 on day 1. On day 10, she increased her frequency to 16. Evie's final data point in this phase was 16. During intervention, her self-initiated socially-desirable behaviors leveled at 14.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Evie's final data point during intervention, based on her teacher's target child, was 16. Her self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 19 on day 21 and 28 on day 32, leveling at 24, which was greater than her final data point in intervention.

Larry. Baseline consisted of 8 days, and Larry was present for 7 days. His frequency of self-initiated socially-desirable behaviors varied from 4 to 11, with one data

point at 4 on day 1, one data point at 6 on day 6, one data point at 11 on day 7, and four data points between 7 and 9 on days 3, 4, 5, and 8. His final data point in baseline was 9. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 8.

Intervention based on his teacher's contingent responses to the target child consisted of 7 days, and Larry was present for 4 days. When intervention was introduced, Larry's frequency of self-initiated socially-desirable behaviors resembled baseline with his first data point at 7 on day 3, but varied throughout this phase with 13 on day 4, 11 on day 6, and 16 on day 7. Larry's final data point in this phase was 16. During intervention, his self-initiated socially-desirable behaviors leveled at 12.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Larry's final data point in intervention, based on his teacher's target child, was 16. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 17 on day 21 and 22 on day 32, leveling at 20, which was greater than his final data point in intervention. His level and trend replicated the previous child's maintenance data pattern.

Jaden. Baseline consisted of 11 days, and Jaden was present every day. His frequency of socially-desirable behaviors varied from 6 to 13, with data points below 10 on days 1, 2, 4, 5, and 8, four data points at 10 on days 3, 7, 10, and 11, one data point at 13 on day 6, and one data point at 11 on day 9. His final data point in baseline was 10. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 9.

Intervention based on his teacher's contingent responses to the target child consisted of 10 days, and Jaden was present for 7 days. When intervention was introduced, Jaden's frequency of self-initiated socially-desirable behaviors dropped from

his baseline range, with his first data point at 5. Overall, his behaviors varied from 1 to 21 with two data points at 5 on days 1 and 3 and an immediate decrease to 1 on day 4. Following day 4, there was an increase to 16 on day 5, and ended with three days between 17 and 21. Jaden's final data point in this phase was 18. During intervention, his self-initiated socially-desirable behaviors leveled at 12.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Jaden's final data point in intervention, based on his teacher's target child, was 18. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 20 on day 27 and 27 on day 38, leveling at 24, which was greater than his final data point in intervention. His level and trend replicated the previous children's data patterns.

Marcus. Baseline consisted of 13 days and Marcus was present 12 days. His frequency of socially-desirable behaviors varied from 9 to 16, with data points between 10 and 13 on days 1, 2, 3, 4, 5, 6, 7, and 13, three data points at 9 on days 10, 11, and 12, and one data point at 16 on day 9. His final data point in baseline was 12. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 11.

Intervention based on his teacher's contingent responses to the target child consisted of 6 days, and Marcus was present for 3 days. When intervention was introduced, the frequency of Marcus' self-initiated socially-desirable behaviors remained consistent with baseline levels with one data point at 12 on day 2. Following the first day, his self-initiated socially-desirable behaviors were 24 on day 3 and 20 on day 4. Marcus' final data point in this phase was 20. During intervention, his self-initiated socially-desirable behaviors leveled at 19.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Marcus' final data point in intervention, based on his teacher's target child, was 20. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 23 on day 25 and 33 on day 36, leveling at 28, which was greater than his final data point in intervention. His level and trend replicated the previous children's data patterns.

Summary of teacher contingent responses to child one. Teachers' contingent responses to child one were analyzed to determine if they generalized behavior learned from a training based on a target child to other children in their classrooms who have few self-initiated socially-desirable behaviors. All four teachers' contingent responses during baseline leveled below 13%.

When intervention based on the target child was introduced in a step-wise fashion, three of the four teachers immediately increased from their final data point in baseline (8% to 17% for Ms. Yelton; 0% to 100% for Ms. Melillo; 0% to 17% for Ms. Kelly), but Ms. Yelton's and Ms. Kelly's immediate increases overlapped with at least one data point in baseline. All teachers' contingent responses to their child one differed from baseline predictions in level and trend. During intervention, all teachers' level increased. Ms. Yelton's, Ms. Senn's, and Ms. Kelly's trends were increasing, and Ms. Melillo's trend was decreasing from 100% to 39%. However, many of the children were absent during the intervention based on the target child, and this could have implications on conclusions of these results.

During maintenance all teachers either: reached (Ms. Koon), increased from their final data point in intervention (Ms. Melillo and Ms. Senn), or maintained (Ms. Yelton)

their 50% mastery criterion of contingent responses. Although all teachers did not generalize their contingent responses during intervention, they did during maintenance.

Figure 4.3 presents the results for Research Question Four.

Teacher contingent responses to child two.

Ms. Yelton. Baseline consisted of 5 days, and Kejuan was present for 2 days. Ms. Yelton's contingent responses to him consisted of 14% (2 out of 14) on day 2 and 11% (1 out of 9) on day 4. Ms. Yelton's final data point in baseline was 11% (1 out of 9) for Kejuan. During baseline, her contingent responses leveled at 13%.

Intervention for Ms. Yelton's contingent responses to her target child lasted for 10 days, and Kejuan was present for all 10 days. When intervention was introduced, contingent responses to Kejuan immediately increased to 36% (4 out of 11). Overall, Ms. Yelton's contingent responses to him varied from 36% (4 out of 11) to 70% (7 out of 10) and ended with five data points within the 50% (7 out of 14) to 59% (10 out of 17) range. Ms. Yelton's final data point for Kejuan was 57% (8 out of 14) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 11% to 14%; however, intervention data displayed an increasing trend in her contingent responses, leveling at 53%.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention, based on the target child, for Kejuan was 57%. Her contingent responses during maintenance were 65% (13 out of 20) on day 21 and 59% (20 out of 34) on day 32. Her contingent responses leveled at 62%, which was similar to her final data point in intervention.

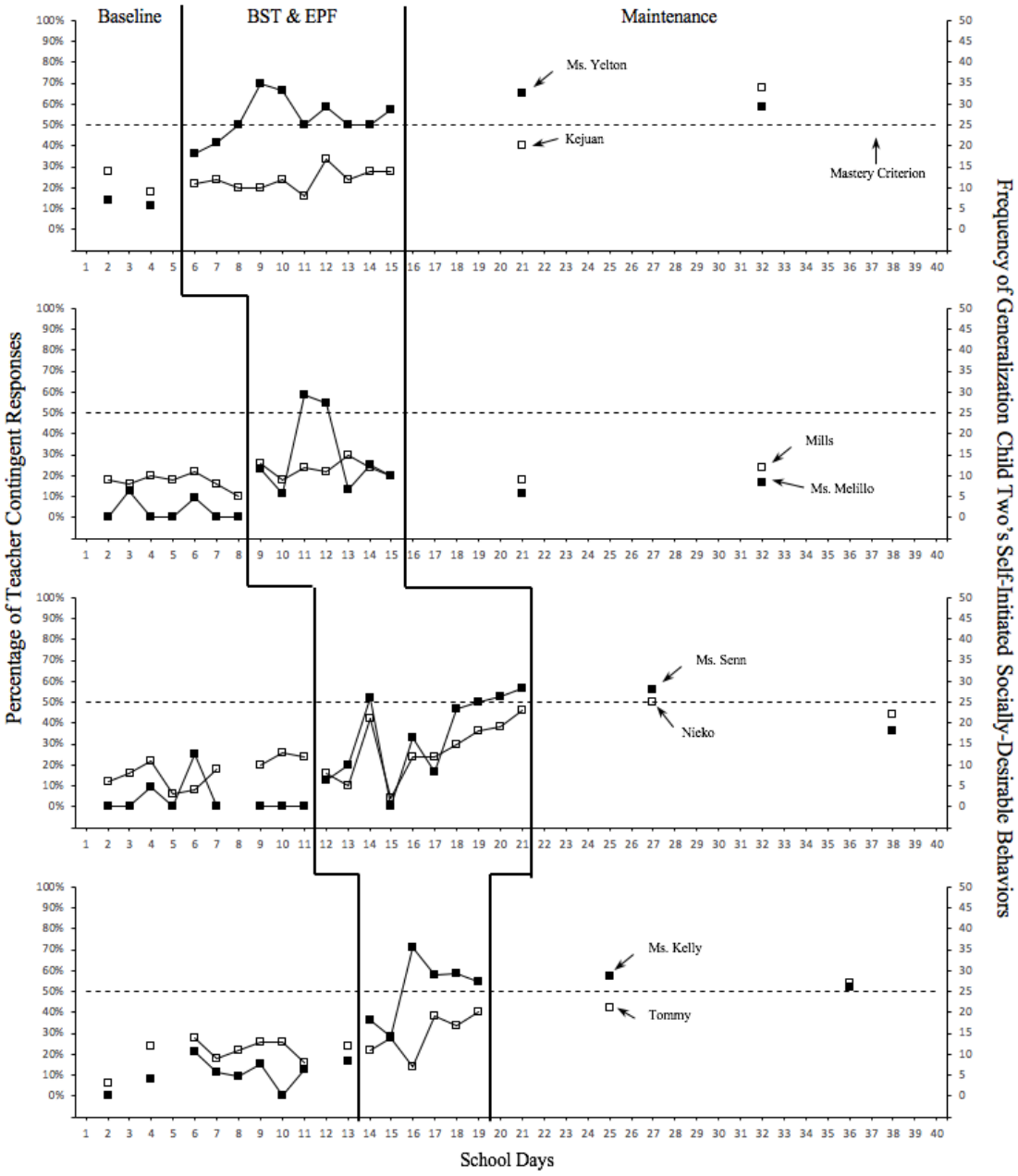

Figure 4.3

Percentages of teacher contingent responses to generalization child two's self-initiated socially-desirable behaviors during baseline, Behavior Skills Training and Emailed Performance Feedback (BST & EPF), and maintenance with the frequency of generalization child two's self-initiated socially-desirable behaviors.

Ms. Melillo. Baseline consisted of 8 days, and Mills was present for 7 days. Ms. Melillo's contingent responses to him varied from 0% (0 out of 9; 0 out of 10; 0 out of 8; 0 out of 5) to 13% (1 out of 8), with five data points at 0% (0 out of 9; 0 out of 10; 0 out of 8; 0 out of 5), one data point at 13% (1 out of 8) on day 3, and one data point at 9% (1 out of 11) on day 6. Ms. Melillo's final data point in baseline was 0% (0 out of 5) for Mills. During baseline, her contingent responses leveled at 3%.

Intervention for Ms. Melillo's contingent responses to her target child lasted for 7 days, and Mills was present every day. When intervention was introduced, contingent responses to Mills immediately increased to 23% (3 out of 13). Overall, Ms. Melillo's contingent responses to him varied from 11% (1 out of 9) to 58% (7 out of 12), with two points at approximately 56% (7 out of 12; 6 out of 11) on days 3 and 4, and the remaining five data points ranged between 11% and 25% (3 out of 13; 1 out of 9; 2 out of 15; 3 out of 12; 2 out of 10). Ms. Melillo's final data point for Mills was 20% (2 out of 20) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 0% to 13%; however, intervention data displayed an immediate increase followed by variability from 11% to 58%, and leveling at 29%. Ms. Melillo's increase in level replicated Ms. Yelton's increase in level.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention, based on the target child, for Mills was 20%. Her contingent responses during maintenance were 11% (1 out of 9) on day 21 and 17% (2 out of 12) on day 32. Her contingent responses leveled at 14%, which was below her final data point in intervention. Her contingent responses fell below the mastery criterion and do not replicate Ms. Yelton's data pattern.

Ms. Senn. Baseline consisted of 11 days, and Nieko was present for 9 days. Ms. Senn's contingent responses to him varied from 0% (0 out of 6; 0 out of 8; 0 out of 3; 0 out of 9; 0 out of 10; 0 out of 13; 0 out of 12) to 25% (1 out of 4), with seven data points at 0% (0 out of 6; 0 out of 8; 0 out of 3; 0 out of 9; 0 out of 10; 0 out of 13; 0 out of 12), one data point at 9% (1 out of 11) on day 4, and one data point at 25% (1 out of 4) on day 6. Ms. Senn's final data point in baseline was 0% (0 out of 12) for Nieko. During baseline, her contingent responses leveled at 4%.

Intervention for Ms. Senn's contingent responses to her target child lasted for 10 days, and Nieko was present all 10 days. When intervention was introduced, contingent responses to Nieko immediately increased to 13% (1 out of 8). Overall, Ms. Senn's contingent responses to him varied from 0% (0 out of 2) to 57% (13 out of 23). Her contingent responses were initially increasing with one data point at 13% (1 out of 8) on day 1, one data point at 20% (1 out of 85) on day 2, and one data point at 52% (11 out of 21) on day 3. Ms. Senn had a large dip in her performance on day 4; her contingent responses fell to 0% as she was unable to contingently respond to children due to other classroom occurrences that required her involvement. Following the decline, her contingent responses were at 33% (4 out of 12) on day 5, 17% (2 out of 12) on day 6, and ended with four data points increasing from 47% (7 out of 15) to 57% (13 out of 23). Ms. Senn's final data point for Nieko was 57% (13 out of 23) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 0% to 13%; however, intervention data displayed 5 of the 10 data points above the mastery criterion, leveling at 34%. Ms. Senn's increase in level replicated previous two teacher's increase in level during intervention.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Ms. Senn's final data point in intervention, based on the target child, for Nieko was 57%. Her contingent responses during maintenance were 56% (14 out of 25) on day 27 and 36% (8 out of 22) on day 38. Her contingent responses leveled at 46%, which was below her final data point in intervention. However, her contingent responses leveled near the 50% mastery criterion.

Ms. Kelly. Baseline consisted of 13 days, and Tommy was present for 9 days. Ms. Kelly's contingent responses to him varied from 0% (0 out of 3; 0 out of 13) to 21% (3 out of 14), with four data points ranging from 8% to 13% (1 out of 12; 1 out of 9; 1 out of 11; 1 out of 8) on days 4, 7, 8, and 11, one data point at 21% (3 out of 14) on day 6, one data point at 15% (2 out of 13) on day 9, one data point at 17% (2 out of 12) on day 13, and the remaining two data points at 0% (0 out of 3; 0 out of 13). Ms. Kelly's final data point in baseline was 17% (2 out of 12) for Tommy. During baseline, her contingent responses leveled at 11%.

Intervention for Ms. Kelly's contingent responses to her target child lasted for 6 days, and Tommy was present every day. When intervention was introduced, contingent responses to Tommy immediately increased to 36% (4 out of 11). Overall, Ms. Kelly's contingent responses to him varied from 29% (4 out of 14) to 71% (5 out of 7) and ended with three data points at approximately 56% (11 out of 19; 10 out of 17; 11 out of 20). Ms. Kelly's final data point for Tommy was 55% (11 out of 22) during the contingent response intervention to her target child. Baseline data predicted her contingent responses would vary from 0% to 21%; however, intervention data displayed an increasing trend in

her contingent responses, leveling at 51%. Ms. Senn's increase in level replicated previous three teacher's increase in level during intervention.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Her final data point in intervention, based on the target child, for Tommy was 55%. Her contingent responses during maintenance were were 57% (12 out of 21) on day 25 and 52% (14 out of 27) on day 36. Her contingent responses leveled at 54%, which was similar to her final data point in intervention. Her level of contingent responses replicated Ms. Yelton's data pattern during maintenance.

Child two's self-initiated socially-desirable behaviors.

Kejuan. Baseline consisted of 5 days, and Kejuan was present for 2 days. His frequency of self-initiated socially-desirable behaviors was 14 on day 2 and 9 on day 4. His final data point in baseline was 9.

Intervention based on his teacher's contingent responses to the target child consisted of 10 days, and Kejuan was present every day. When intervention was introduced, Kejuan's frequency of self-initiated socially-desirable behaviors resembled baseline for 9 out of 10 days ranging from 8 to 14, but on day 7 his self-initiated socially-desirable behaviors increased above baseline to 17. His final data point in this phase was 14. During intervention, his self-initiated socially-desirable behaviors leveled at 12.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Kejuan's final data point in intervention based on his teacher's target child was 14. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 20 on day 21 and 34 on day 32, leveling at 27, which were two times greater than his final data point.

Mills. Baseline consisted of 8 days and Mills was present for 7 days. His frequency of his self-initiated socially-desirable behaviors varied from 5 to 11, with two data points at 9 on days 2 and 5, two data points at 8 on days 3 and 7, one data point at 10 on day 4, one data point at 11 on day 6, and one data point at 5 on day 8. His final data point in baseline was 5. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 9.

Intervention based on his teacher's contingent responses to the target child consisted of 7 days, and Mills was present every day. When intervention was introduced, Mills' frequency of self-initiated socially-desirable behaviors initially increased to 13. His self-initiated socially-desirable behaviors increased above baseline in 4 out of the 7 days, with two data points at 12 on days 3 and 6, one data point at 13 on day 1, and the highest data point at 15 on day 5. His final data point in this phase was 10. During intervention, his self-initiated socially-desirable behaviors leveled at 12.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Mills' final data point in intervention based on his teacher's target child was 10. His self-initiated socially-desirable behaviors during maintenance remained near baseline and intervention with 9 on day 21 and 12 on day 32, leveling at 11, which were close to his level in baseline (9) and intervention (12).

Nieko. Baseline consisted of 11 days, and Nieko was present for 9 days. His frequency of his self-initiated socially-desirable behaviors varied from 3 to 13, with data points below 10 on days 2, 3, 5, 6, and 7, one data point at 11 on day 4, one data point at 10 on day 9, one data point at 13 on day 10, and one data point at 12 on day 11. His final

data point in baseline was 12. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 8.

The intervention phase for his teacher's contingent responses to the selected target child lasted 10 days, and Nieko was present every day. When intervention was introduced, Nieko's frequency of self-initiated socially-desirable behaviors resembled baseline with one data point at 8 on day 1 and one data point at 5 on day 2. On day 3, there was an immediate increase to 21 followed by a decrease to 2 on day 4. Following the decrease, there was an increasing trend from 12 to 23. Nieko's final data point in this phase was 23. During intervention, his self-initiated socially-desirable behaviors leveled at 14.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Nieko's final data point in intervention based on his teacher's target child was 23. His self-initiated socially-desirable behaviors during maintenance followed a decreasing trend with 25 on day 27 and 22 on day 38, leveling at 24, which was greater than his final data point.

Tommy. Baseline consisted of 13 days, and Tommy was present for 9 days. His frequency of self-initiated socially-desirable behaviors varied from 3 to 14, with data points below 10 on days 2, 7, and 11, two data points at 12 on days 4 and 13, one data point at 14 on day 6, one data point at 11 on day 8, and two data points at 13 on days 9 and 10. His final data point in baseline was 12. During baseline, his frequency of self-initiated socially-desirable behaviors leveled at 11.

Intervention based on his teacher's contingent responses to the target child consisted of 6 days, and Tommy was present every day. When intervention was

introduced, Tommy's frequency of self-initiated socially-desirable behaviors initially remained consistent to baseline with one data point at 11 on day 1, one data point at 14 on day 2, and one data point at 7 on day 3. After day 3, his self-initiated socially-desirable behaviors increased with a range of 17 to 20. His final data point in this phase was 20. During intervention, his self-initiated socially-desirable behaviors leveled at 15.

Maintenance consisted of assessment one week and three weeks following the end of intervention. Tommy's final data point in intervention based on his teacher's target child was 20. His self-initiated socially-desirable behaviors during maintenance followed an increasing trend with 21 on day 25 and 27 on day 36, leveling at 24, which was greater than his final data point.

Summary of teacher contingent responses to child two. Teachers' contingent responses to child two were analyzed to determine if they generalized behavior learned from a training based on a target child to other children in their classrooms who have few self-initiated socially-desirable behaviors. All four teachers' contingent responses during baseline leveled below 14%.

When intervention based on the target child was introduced in a step-wise fashion, all four teachers immediately increased from their final data point in baseline (11% to 36% for Ms. Yelton; 0% to 23% for Ms. Melillo; 0 to 13% for Ms. Senn; 17% to 36% for Ms. Kelly), but Ms. Senn's immediate increase overlapped with at least one data point in baseline. All teachers' contingent responses to their child two were different from baseline predictions in level. During intervention, all teachers' level increased. However, three of the four teachers provided contingent responses above the mastery criterion for at least three consecutive days.

During maintenance, Ms. Yelton and Ms. Kelly maintained their contingent responses above the 50% mastery criterion, whereas Ms. Senn maintained her contingent responses during the first assessment, but fell to 36% on the second assessment. Ms. Melillo's contingent responses in maintenance fell below her final data point in intervention. Three of the four teachers generalized their behaviors during intervention, and two of the three maintained their contingent responses.

Social Validity Results

Once each teacher met the mastery criterion of six consecutive days at or above 50% of contingent responses, the teacher was given an online survey to assess social validity of the intervention through questions related to: (a) ease of use, (b) helpfulness of BST, (c) use of training materials, (d) satisfaction with EPF, and (e) need and continued use of intervention. Table 4.1 presents the questions in the survey below.

Table 4.1

Teacher Questions for Social Validity Survey

Questions	Response	Explanation
1. Did you find the teaching strategy easy to use?	Yes or No	Why or Why not?
2. Did the training help you implement the teaching strategy?	Yes or No	Why or Why not?
3. Were the training materials/packet helpful to remind you of what to do?	Yes or No	Why or Why not?
4. Did you like the emailed performance feedback?	Yes or No	Why or Why not?
5. Would you continue to use this teaching procedure in the future with children who need to increase socially-desirable behaviors?	Yes or No	Why or Why not?

All teachers responded "yes" to every question and provided comments to why they responded yes. Examples of teacher comments are listed by question order, and at least one example was included for each teacher. In response to question one, Ms. Kelly stated, "The strategy didn't require much additional planning, just more purposeful use of words and specific kinds of praise." In response to question two, Ms. Melillo replied, "Abigail and I role playing the teaching strategy helped me to understand the expectations." In response to question three, Ms. Kelly, "Yes. It is also helpful for other students." In response to question four, Ms. Senn reported:

> The emailed performance feedback was extremely helpful! It gave me time to reflect on my application of the strategy and engagement with the student through an objective observer's eyes. I felt rewarded as I could see the increases in my contingent responses and the student's self-initiated requests, and the effect my responses had on the student. The emailed feedback helped me make small adjustments throughout the week and kept the goal of the strategy fresh in my mind throughout the school day, not just during the observation. This helped me try to model contingent responses to the paraprofessionals when addressing the target student and others.

In response to question five, Ms. Yelton commented, "Definitely! It was so simple, and I have already encouraged my paraprofessional to start using BSP." (see Appendix E, Table E.2 for all teacher comments to the Social Validity Questionnaire).

Overall Summary of Results

I utilized Kratochwill et al. (2010) to vertically analyze the level, trend, variability, and immediacy of effect for my intervention components across phases. Systematic introduction of Behavior Skills Training (BST) with a checklist and Emailed Performance Feedback with graphs (EPF) produced increases in the four teachers' percentage of contingent responses. Furthermore, teachers maintained their contingent responses to their target child's self-initiated socially-desirable behaviors after removal of the EPF. Target children increased their self-initiated socially-desirable behaviors

following the teachers' increase of consistent contingent responses at or above the 50% mastery criterion. BST embedding Programming Common Stimuli resulted in all teachers providing contingent responses to at least one other child in their classroom who had a few self-initiated socially-desirable behaviors. Social validity responses from teachers were in favor of the training package and found the intervention feasible and user-friendly. Teachers reported that they will continue to use the instructional strategy in the future.

Chapter 5

Discussion

The main purpose of my study was to implement a performance feedback training package using BST and EPF to evaluate if it increased and maintained teachers' percentage of contingent responses to children's self-initiated socially-desirable behaviors during center time. Systematic introduction of Behavior Skills Training (BST) with a checklist and Emailed Performance Feedback with graphs (EPF) produced increases in the four teachers' percentage of contingent responses. Furthermore, teachers maintained their contingent responses to their target child's self-initiated socially-desirable behaviors after removal of the EPF. Programming common stimuli during BST resulted in all teachers providing contingent responses to at least one other child in their classroom who had a few self-initiated socially-desirable behaviors. My discussion is organized by research questions and includes implications for practice and future research.

Research Question One: Does a performance feedback training package – Behavior Skills Training (BST), checklist, and Emailed Performance Feedback (EPF) with graphs – increase teachers' delivery of contingent responses on self-initiated socially-desirable child behaviors?

Results of my study provide evidence that BST and EPF is an effective training package to increase teacher contingent responses to child-initiated socially-desirable

behaviors. Baseline performance demonstrated teachers displayed a low level of contingent responses prior to training. The teachers' behaviors often included non-contingent responses or missed opportunities to respond. When the intervention was introduced, BST with a checklist and EPF with graphs of teacher and child performance, all teachers increased their contingent responses to their target child's self-initiated socially-desirable behaviors.

Few studies have addressed the use of BST and EPF to train teachers to contingently respond to their children's self-initiated socially-desirable behaviors. The practical implications of the findings are important since special education teachers may receive insufficient training or support for providing naturalistic instruction to children with moderate to severe disabilities (Odom et al., 2011; Strain et al., 2011). Results show during baseline all teachers had 0 to 20% contingent responses; however, following the BST alone three teachers did not meet the 50% mastery criterion (i.e., Ms. Yelton was 36%; Ms. Senn was 20%; Ms. Melillo was 46%). These three teachers reached and sustained the 50% mastery criterion after EPF occurred for one day (i.e., Ms. Melillo), two days (i.e., Ms. Senn), and three days (i.e., Ms. Senn and Ms. Yelton), respectively, suggesting at least three of the four teachers required additional feedback to reach the mastery criterion. However, I cannot conclude this finding as the design was a multi-intervention package that was implemented concurrently without including a phase of at least five data points of BST alone prior to a phase of EPF.

The results of my study contribute to the growing body of literature in BST. My findings support other researchers' work (Feldman et al., 1989; Ward-Horner & Sturmey, 2012) who demonstrated that participants were successful in changing their behaviors

once the BST components were implemented collectively. Therefore, this finding contributes to the effectiveness of BST to change participants' behaviors, which has been demonstrated in previous studies across a variety of educational, institutional, and residential settings. Furthermore, Ms. Kelly's contingent responses increased above (i.e., 56%) the 50% mastery criterion after BST without EPF. Therefore, above mastery criterion percentage of teacher contingent responses following the 30-minute BST might have been sufficient in changing her behaviors. The additional EPF after each school day observation might have further sustained Ms. Kelly's contingent responses. Although DiGennaro Reed et al. (2018) suggested the importance of ongoing teacher support (i.e., performance feedback) after initial BST had been completed, due to the nature of the training package implemented in my study, it was not possible to determine the degree to which the BST alone or BST with follow-up EPF might have produced different results.

My results extend the findings of other researchers' work (e.g., Artman-Meeker & Hemmeter, 2013; Hemmeter et al., 2011; Krick Oborn & Johnson, 2015; Rathel et al., 2008, 2014) who have demonstrated similar effects on teacher behavior when providing EPF. Researchers (Krick Oborn & Johnson, 2015; Rathel et al., 2014) investigated incorporating graphs of teachers' performance into the EPF, but did not include graphs on child performance. Only one other researcher (Hemmeter et al., 2011) has obtained a social validity measure on BST and EPF, and teacher responses were in favor of email as a method of receiving performance feedback.

Several researchers have incorporated a checklist (Hemmeter et al., 2011; Mouzakitis et al., 2015; Reinke et al., 2007) or flowchart (Graff & Karsten, 2012) within their trainings. In my study, I included a checklist with a flowchart in BST for the

teachers to self-monitor their contingent responses to their target child. During BST, I worked with the teacher to individualize her responses to the target child's self-initiated socially-desirable behavior and we rehearsed using the checklist and flowchart. Requesting for the teacher to individualize response types may have provided ownership to the teacher; therefore, making it more likely she would provide her selected type of contingent response when the target child self-initiated a socially-desirable behavior. Also, rehearsing using the checklist with the flowchart may have increased the teachers' use during my subsequent observations, as I saw teachers using the checklist and flowchart to remind them of the operational definitions and contingent response types. The results of the teacher responses on the social validity survey indicated that the checklist and flowchart were easy to use and assisted with pointing out areas of focus for contingently responding to their target child. Based on the findings in my study, providing teachers the option to have input on their own behaviors and a checklist with a flowchart are components that trainers may consider including in future teacher trainings on evidence based instructional practices.

Few studies have included child outcomes (Artman-Meeker & Hemmeter, 2013; Krick Oborn & Johnson, 2015; Martin et al., 2015) as a part of the EPF, but included graphs of teacher behavior only. My study included graphs of teacher and child behavior. During the initial display of graphs in BST, all teachers were stunned as they did not recognize or contingently respond when their target child self-initiated a socially-desirable behavior. Following BST, the graphs were embedded in the email under the greeting. The embedded graphs were unique to my study, which saved teachers time by not having to download the graphs. Teachers have busy schedules and adding one more

responsibility to them may afford their departure away from implementing an intervention. Based on teacher reactions in BST and the comments on the social validity survey, feedback to teachers on child performance could have resulted in an increase in their contingent responses.

To extend the limited research on the social validity of BST and EPF, I provided a survey to teachers following intervention, and all teachers responded positively to the EPF. Comments reflected that it was an easy-to-read visual; therefore, my study extends the evidence that teachers rate this as an acceptable method for trainers to use when providing teachers performance feedback. However, not reflected on the survey results, but in the procedural fidelity for emailed performance feedback, the first teacher in intervention reported that she was unable to respond to my email prior to my next observation, and she had a question. She commented that it was too difficult due to home reasons to respond to my email that night, and was unsure if she could ask me a question prior to my observation. I recommend that the trainer include the option of emailed receipt in-person, and the option of clarifying or inquiring about feedback in-person to meet the diverse situations of teachers.

Since the intervention package was found to effectively increase teachers' contingent responses to child self-initiated socially-desirable behaviors, a fruitful option to explore is the use of BST and EPF to increase teachers' implementation of other instructional practices based in evidence. My study was conducted in the applied setting, programmed within the teachers' current schedule, and implemented with their current children (Baer et al., 1968; Stokes & Baer, 1977). However, a limitation in my study is that I was the person who implemented BST and EPF. Since professional development

models are the most common form of teacher training and have been found to be ineffective in changing teachers' behaviors (Brock et al., 2018; Brown et al., 2014; Codding et al., 2005; Horrocks & Morgan, 2011), future research should investigate training district personnel (e.g., a district behavior specialist or a district coach) to implement the independent variables in my study to determine if it is feasible and practical in the applied setting without a researcher's presence.

Research Question Two: Do teachers maintain their contingent responses to child self-initiated socially-desirable behaviors after they reach the mastery criterion for six consecutive days?

In the maintenance condition, I returned one week and three weeks following the intervention to assess teacher's delivery of contingent responses and child-initiated socially-desirable behaviors. EPF was not provided during maintenance, and the teachers were unaware of the specific dates I was returning to assess their contingent responses to their target child's self-initiated socially-desirable behaviors. Results show that the four teachers maintained their percentage of contingent responses to their target child above criterion levels without trainer EPF. The teachers' percent of contingent responses to their target children's self-initiated socially-desirable behaviors one week and three weeks following intervention was: 65% and 57% for Ms. Yelton; 54% and 51% for Ms. Melillo; 51% and 57% for Ms. Senn; 65% and 58% for Ms. Kelly.

According to Alberto and Troutman (2016) and Brown et al. (2016), learning a skill or skills consist of four stages – acquisition, fluency, generalization and maintenance. Maintenance is a type of generalization, and maintenance of teacher implemented instructional practices has been identified as an important indicator of

effective training and generalization (Baer et al., 1987; Kazdin, 1973; Kennedy, 2002; Parsons & Reid, 1995; Reid et al., 2012); however, procedures for measuring teachers' maintenance of the new behavior often have been excluded from training research, or confounding variables may have contributed to maintenance. A common potential confounding variable found in many applied studies (e.g., Hawkins & Heflin, 2011; Hemmeter et al., 2011; Krick Oborn, & Johnson, 2015; Martin et al., 2015) that could constitute the explanation for the maintenance results of teacher contingent responses to their target child's self-initiated socially-desirable behaviors is the observer's presence (i.e., reactivity). My study includes a novel procedure for programming for maintenance and it addresses the concerns of the researcher's presence.

To program for maintenance of teacher contingent responses to target children's self-initiated socially-desirable behaviors, I used the conceptual framework of learning a new skill - that acquisition and fluency are prerequisites to produce maintenance (Drasgow, Wolery, Halle, & Hajiaghamoheni, 2011). Most studies (e.g., DiGennaro et al., 2007; Hemmeter et. al., 2015; Hemmeter et al., 2011; Krick Oborn, & Johnson, 2015; Ottley et al., 2017) investigating effective ways to train teachers set the mastery criterion for the intervention's acceptable performance at two or three consecutive days prior to withdrawing the intervention. The two to three consecutive days may only provide evidence that the teachers reached acquisition, which is the ability to perform the motor components of the behavior (Drasgow et al., 2011), but not fluency. To program for fluency, which is the rate or speed at which the behavior occurs (Drasgow et al., 2011), the trainer should provide the teacher multiple opportunities to practice at the mastery criterion. Therefore, I used overlearning by increasing the mastery criterion to six

consecutive days as a strategy to program for maintenance. That is, the teacher had multiple opportunities to practice the intervention at or above mastery criterion with performance feedback prior to entering the maintenance phase, thus building fluency of the behavior at 50% contingent responses for six consecutive days.

My extended feedback to teachers was a novel approach to enhance maintenance of the teachers' contingent responses. Feedback procedures during intervention included: (a) observation of the teacher's contingent responses to their target child's self-initiated socially-desirable behaviors, (b) frequency of the target child's self-initiated socially-desirable behaviors, and (c) EPF by 8:00 p.m. the same day of the observation. To ensure that teachers received this email, the teachers were required to send a reply of receipt, and if the teacher initiated a question within her email confirmation receipt, I replied prior to the next observation. After the teacher reached six consecutive days with contingent responses to her target child at or above the 50% mastery criterion, the teacher transitioned to the maintenance phase. Extending feedback to six consecutive days was programmed to build fluency in teachers' contingent responses to their target child.

An interesting finding occurred in maintenance, such that children's behaviors simultaneously continued to increase as the teachers maintained their contingent responses at or above the mastery criterion. Data on each target child's frequency of self-initiated socially-desirable behaviors are in the respective order: (a) last day of intervention, (b) first maintenance observation, and (c) second maintenance observation: Sammy (29, 31, 37), John (19, 24, 35), Dalton (25, 30, 35), and Mya (31, 35, 43). If the teacher did not provide contingent responses when I was absent, then the target child's behavior would be placed on extinction; therefore, I would expect the child's self-

initiated socially-desirable behaviors to decrease over the two maintenance observations. However, the opposite occurred, and all target children's self-initiated socially-desirable behaviors continued to increase in frequency during the maintenance condition, which suggests the teachers were continuing to provide contingent responses in my absence. This finding possibly addresses the concern of teachers performing the behavior only when the trainer is present.

Although acquisition and fluency are prerequisites to maintenance, I cannot conclude that six consecutive days or overlearning produces maintenance of the teachers' change in behavior as I did not compare teachers across different mastery criterions. However, this is a novel approach to programming for maintenance, and researchers should continue to investigate whether overlearning or building teacher fluency produces maintenance of the new target behavior. There is evidence that this approach may combat the threat to the presence of the observer as the children's behaviors increased.

Feedback on the target child's self-initiated socially-desirable behaviors serves as another plausible explanation that may have contributed to the maintenance of teacher performance. Teachers were provided with feedback about increases in their target child's self-initiated socially-desirable behaviors and their associated contingent responses throughout the intervention, whereas Martin et al. (2015), provided this feedback the day before the teachers entered maintenance. Children with severe disabilities often acquire skills more slowly than their same-age peers, and such gradual change can be subtle and may not function as a salient consequence for maintaining teacher behavior (Halle, Chadsey, Lee, & Renzaglia, 2004). Providing teachers with graphs of their own performance and the target child's performance throughout

intervention may have convinced them of a relationship between increases in their contingent responses and the increases in their target child's self-initiated socially-desirable behaviors. Therefore, maintenance is enhanced when the participant has opportunities to use this behavior, and the behavior produces motivating consequences at least occasionally or intermittently (Drasgow et al., 2011). Because feedback on child performance was not systematically manipulated, it is unclear whether this component of the training package functioned to maintain teacher performance. Feedback on child performance appears to be an advantageous approach for sustaining teacher performance (Artman-Meeker & Hemmeter, 2013; Krick Oborn & Johnson, 2015; Martin et al., 2015) when the reported improvements function as reinforcers for teacher instruction. However, experimental analysis of this feedback procedure is necessary to support it as an effective maintenance strategy.

Research Question Three: Do teachers' contingent responses to child self-initiated socially-desirable behaviors increase the frequency of child's self-initiated socially-desirable behaviors?

A pattern emerged in the frequency of the target children's self-initiated socially-desirable behaviors when teachers increased their contingent responses to at least 50%. The increases in all four target children's self-initiated socially-desirable behaviors were visible once their teachers increased the schedule of their contingent responses to 50% for three to four consecutive days. This suggests the need for teachers of children with moderate to severe disabilities to continue delivery of contingent responses to increase and maintain the frequency of child self-initiated socially-desirable behaviors.

My study adds to previous research by combining BSP and Incidental Teaching into one category consisting of teacher contingent responses. Few studies have addressed the use of EBPs for children with moderate to severe disabilities to increase their play behaviors during centers (Odom et al., 2011; Strain et al., 2011). The practical implications of the findings are important since instruction during a time that is child-centered, initiated and motivating to children who have a low frequency of self-initiated behaviors is needed (Beirne-Smith et al., 2006; Brown et al., 2016; Odom et al., 2011; Reszka et al., 2012; Strain et al., 2011). The results demonstrate that the combination of BSP and Incidental Teaching categorized as contingent responses was an effective instructional strategy based in evidence to increase children's self-initiated socially-desirable behaviors during child-centered routines.

Limited research in Behavior Specific Praise and Incidental Teaching includes child outcomes (e.g., Hawkins & Heflin, 2011; Martin et al., 2015; Rathel et al., 2008). By including child outcomes, I can compare correspondence between the teacher's contingent response and the child's initiated socially-desirable behavior. For example, if a teacher provided contingent responses and the frequency of the child's behavior did not increase, then the teacher correctly implemented the intervention, but the intervention was ineffective in increasing the child's socially-desirable behaviors. Therefore, reinforcement was not in effect. However, all children who received contingent responses from their teacher increased their socially-desirable behaviors; therefore, contingent responses reinforced the children's socially-desirable behaviors. Thus, trainers should include child outcomes to identify the effectiveness of instructional procedures.

For an intervention to produce meaningful child outcomes, the children's characteristics should be reviewed. An inclusion criterion for the children in my study was a few self-initiated socially-desirable behaviors. I reviewed the literature on schedules of reinforcement and found continuous schedule of reinforcement (CRF) (Alberto & Troutman, 2016; Brown et al., 2016; Miltenberger, 2008b) is often used with low frequency behaviors. However, there are potential problems to CRF schedules: (a) satiation on the reinforcement, (b) accusations of the behavior always obtains the reinforcement, (c) not resistant to extinction, and (d) not natural (Cooper et al., 2007; Miltenberger, 2008b). Baseline concluded that teachers provided 0 to 20% contingent responses to their target child's self-initiated socially-desirable behaviors, and the children's behaviors remained at a low frequency. From the performance in baseline, I recognized that a CRF schedule would not be an appropriate schedule for the teachers to implement due to multiple children in the classroom; therefore, I reviewed the literature on the strength of intermittent schedules of reinforcement (Stokes & Baer, 1977).

Once the intervention package was introduced, I told the teachers to contingently respond when they saw their target child initiate a socially-desirable behavior – aiming for 50% or above contingent responses. Therefore, it made it difficult for the child to predict when reinforcement will be delivered to ascertain occasions of reinforcement versus non-reinforcement (Alberto & Troutman, 2016; Brown et al., 2016; Miltenberger, 2008b). Increasing the teacher's use of reinforcement assists with the child learning to delay the gratification of reinforcement by continuing to produce the behavior until it contacts the reinforcement in the future. Therefore, I hypothesized that if the teachers

increased their contingent responses to at least 50%, then the children's self-initiated socially-desirable behaviors would increase in frequency.

The increase to 50% of contingent responses appeared to be socially valid as well. Three out of the four teachers asked if they had to always provide the request of the child (e.g., if the child requests to go to a different center). I explained that it was part of the rationale for the 50% criterion of contingent responses, which included: (a) it is impossible to catch each time a child initiates a socially-desirable behavior due to multiple children in the classroom, (b) reinforcing many of the socially-desirable behaviors would most likely maintain the behavior, and (c) children also need to learn that sometimes they obtain their request and sometimes they are told no. Teachers agreed with the rationale of the 50% of contingent responses and commented on the feasibility of these expectations.

In addition to the schedule of reinforcement increase, children within this population have varied preferences or different reinforcing stimuli from same-aged peers (Brown et al., 2016; Miltenberger, 2008b). Prior to beginning my study, I observed the frequency and type of behaviors the children displayed during centers and teacher responses to behaviors. If the child emitted the behavior in the future, after the teacher provided a response to the child's behavior, then I documented it as a potential reinforcer (i.e., if the teacher spoke to the child or provided the child with physical contact). These observations proved to identify potential response types for the teachers to implement contingent on the children's self-initiated socially-desirable behaviors suggesting that even direct Naturalistic Free Operant Observations (Ortiz & Carr, 2000; Rapp et al.,

2010; Sautter et al., 2008) may not be warranted to identify potential stimuli to use as a type of teacher contingent response.

A final consideration is that teachers may not be trained to contingently respond to children's subtle socially-desirable communicative behaviors or trained in the way this population of children communicate these behaviors (e.g., gestures, picture communication). Training the teachers during BST and EPF to identify these behaviors may have increased their contingent responses to subtle communicative behaviors and as a result established the teacher as a generalized reinforcer (Alberto & Troutman, 2016; Cooper et al., 2007). For example, Ms. Senn commented:

> … reminded me to look for the purpose of students' communication. This was especially helpful when strengthening my rapport with the target student, who is nonverbal. I needed to refresh the ways I received his communication and responded to him.

Her statement above on the social validity survey provides evidence of the teacher possibly not acknowledging her target child's pointing as a communicative behavior until after the implementation of the intervention. This finding provides possible evidence that BST and EPF is necessary in making sure that teachers are trained in the variety of communication behaviors.

As mentioned at the beginning of the discussion for research question three, a pattern emerged in the frequency of the target children's self-initiated socially-desirable behaviors when teachers increased their contingent responses to at least 50% for three to four consecutive days. Although, Kejuan, Ms. Yelton's generalization child two, increased his self-initiated socially-desirable behaviors after more than three to four consecutive days of teacher contingent responses at or above the 50% mastery criterion. His increase occurred during maintenance, which suggests that some children with

moderate to severe disabilities may require more consecutive days of teacher contingent responses to increase their self-initiated socially-desirable behaviors. Future research should continue measuring child outcomes to determine if the intervention increases child's behavior and to what extent or how long interventions should be in place prior to making an educational decision to change the intervention.

Research Question Four: Do teachers generalize behavior learned from a performance feedback training package to other children with a few self-initiated socially-desirable behaviors in their classrooms?

The results of the teachers' contingent responses to their generalization children were separated by their response to child one and child two. All teachers contingently responded at or above the mastery criterion to child one during the maintenance phase of the intervention focused on the target child. Similarly, all children labeled as child one increased their frequency of self-initiated socially-desirable behaviors when their teachers' contingently responded at or above the mastery criterion. However, for child two Ms. Yelton and Ms. Kelly generalized and maintained their contingent responses. Ms. Senn generalized and did not maintain her contingent responses on the last maintenance observation to child two. Ms. Melillo generalized for two days in the middle of intervention, but did not sustain or maintain her contingent responses to child two.

Limited studies have focused on whether teacher training on an instructional strategy geared towards a specific child's strengths and needs would generalize to other children with the same instructional needs (Mouzakitis et al., 2015). This is an important avenue to investigate since children with moderate to severe disabilities have deficits in communication modalities and their preferences vary from same-aged peers and from one

another (DeLeon et al., 2013; Karsten et al., 2011; Stevens et al., 2011). Therefore, when training a teacher on one child's specific communication attempts along with the child's individualized preferences, the training may not generalize to other children with a few self-initiated socially-desirable behaviors. In an attempt to increase the efficiency of the training and feedback procedures, I decided to train the teacher to contingently respond to their target child.

The rationale for training teachers on only one target child is based on teachers' and trainers' limited time within their daily schedule (Hsiao & Peterson, 2018); therefore, BST with follow-up performance feedback requires an efficient format. The BST on teacher contingent responses for the target child was 30 minutes. If training teachers on all three children (i.e., the target and generalization children), then BST may have increased to a duration of an hour and a half. Additionally, EPF on teacher contingent responses to their target child's self-initiated socially-desirable behaviors was 40 minutes (i.e., 20-minute observation, 20 minutes per email). If emailing teachers feedback on all three children, then EPF may have increased by double as the trainer would need to include graphs of all three teacher's children with their individual contingent responses to each, totaling six graphs instead of two. Also, the written portion would increase by two times as the feedback on contingent responses and area of improvement would need to be completed for each child instead of only the target child. The length of the email and information may have become aversive to teachers, and thus the training package may have been ineffective if training was provided on all of their children.

However, it is important that teachers generalize their learning from the BST and EPF to other children in their classrooms who have a few self-initiated socially-desirable

behaviors. One generalization strategy to embed in BST is programming common stimuli, which means including typical features of the generalization setting into the instructional setting (Stokes & Baer, 1977; Cooper et al., 2007). This generalization strategy was selected because BST may be less effective and efficient in real time since the trainer cannot halt the natural flow of events to contrive the optimal number of training trials due to other children and situations that may arise in their classroom. Therefore, training occurred in the teacher's classroom or a classroom with similar materials without the children present. This decreased the amount of time BST occupied and allowed for the teacher to practice her contingent responses to two consecutive mastery opportunities for all five socially-desirable behaviors. I role-played with the teacher using materials and examples that would occur naturally within her setting by switching roles of the teacher and the child.

Since Ms. Senn did not sustain her contingent responses during maintenance to child two, I explored the relationship in the child's frequency of self-initiated socially-desirable behaviors and teacher contingent responses. Based on the principle of reinforcement I would assume if the teacher is not contingently responding in my absence, then the child's behavior would be placed on extinction or decrease close to baseline levels given the time-span between maintenance observations. Even though Ms. Senn's contingent responses were at 36% on her second maintenance observation, Nieko self-initiated 22 socially-desirable behaviors, which is close to the frequency of his first maintenance data point at 25, where Ms. Senn's contingent responses were 56%. Based on Nieko's frequency two weeks following the first maintenance observation, I cannot ascertain whether or not Ms. Senn was providing higher or lower percentages of

contingent responses in my absence. Future research may want to include a questionnaire after maintenance to determine if the teachers are continuing to use the intervention and if they find the intervention effective.

Ms. Melillo's lack of consistent contingent responses follows patterns of increases or lack thereof in Mills' self-initiated socially-desirable behaviors. This is an interesting finding as Mills' level of self-initiated socially-desirable behaviors is slightly higher in level during the intervention on the target child and returns to near baseline levels during maintenance observations. In comparison, all other generalization children's levels increased M = 0.50 to 7.50 from baseline to intervention, where Mills' level was M = 3.14; however, Mills' level decreased M = -1.21 from intervention to maintenance, whereas all generalization children's levels increased M = 9.34 to 15 from intervention to maintenance. This evidence provides support that Ms. Melillo did not generalize the training to Mills' self-initiated socially-desirable behaviors and further provides evidence that teacher contingent responses increase child-initiated socially-desirable behaviors. Future researchers may want to investigate other avenues in programming for generalization.

Summary

My focus in this study was to develop and evaluate an intervention package based on evidence that was efficient and effective to train teachers to implement practical and feasible instructional practices in an applied setting. First, my study supports that BST and EPF is effective in training teachers to contingently respond to their children's socially-desirable behaviors within their naturally-occurring center routine. Second, the training procedures for providing emailed feedback on teacher performance to enhance

fluency is a practical format to maintain the teachers' instruction. Third, results demonstrate that providing contingent responses increase the children's self-initiated socially-desirable behaviors, if provided intermittently and the type of teacher responses is preferred by the child (i.e., physical contact, praise, or requested item). Finally, programming common stimuli (Stokes & Baer, 1977) as a generalization strategy for training teachers produced generalized behaviors in 3 of 4 teachers. Replication of these procedures across participants (i.e., teachers, children) and other settings is recommended to validate and extend the findings.

My study has practical implications for teacher trainers, teachers, and children in school settings and in other environments. The implications are that explicit instruction with BST and direct observation with EPF was effective in training and maintaining newly acquired teacher behavior. The feedback provided following each observation was concise, specific, personalized, and individualized. Teacher trainers within the school setting may easily implement the training package procedures to train teachers to implement EBPs with fidelity. Likewise, teachers may choose to implement these procedures to train their paraprofessionals.

Often teachers are unaware of how their own behavior influences or potentially reinforces children's behaviors. For example, when children engage in problem behaviors teachers often respond by providing attention, which inadvertently reinforces the problem behavior. A proactive approach is identifying and selecting behaviors that the teachers want to increase, and contingently providing attention when the child is self-initiating a socially-desirable behavior. The instructional strategy that I used did not require teachers to do anything new, but only to respond to the children's socially-desirable behavior.

This study demonstrated that teacher attention can be a powerful reinforcer. The teacher must contingently respond when the child self-initiates a socially-desirable behavior, rather than respond to problem behavior. Responding contingently to children when they self-initiate a socially-desirable behavior reduces the likelihood of problem behaviors because the children are getting reinforced by attention for their socially-desirable behaviors, making the problem behaviors less relevant and incompatible with their good behavior.

I selected self-initiated socially-desirable behaviors that would be emitted by children in general education and in the community. Children participating in the intervention had few self-initiated socially-desirable behaviors and increasing the frequency of these existing behaviors may provide them with inclusion opportunities in other settings. It is extremely important for children with moderate to severe disabilities to learn socially appropriate skills to enhance their options for regular education and for more meaningful active participation in society.

In conclusion, my study produced an effective teacher-training package that is feasible for district teacher trainers to use when training teachers to implement EBPs with fidelity. The proactive approach highlighted children's self-initiated socially-desirable behaviors by making teachers aware of these behaviors. Once teachers were trained to identify and contingently respond to their children's self-initiated socially-desirable behaviors, the children's behaviors increased. The increase in children's socially-desirable behaviors demonstrated that teacher attention to the children's socially-desirable behaviors was a powerful reinforcer for these children. Finally, identifying

behaviors that are socially-acceptable has the possibility to impact the children's inclusion in settings outside of the self-contained classroom.

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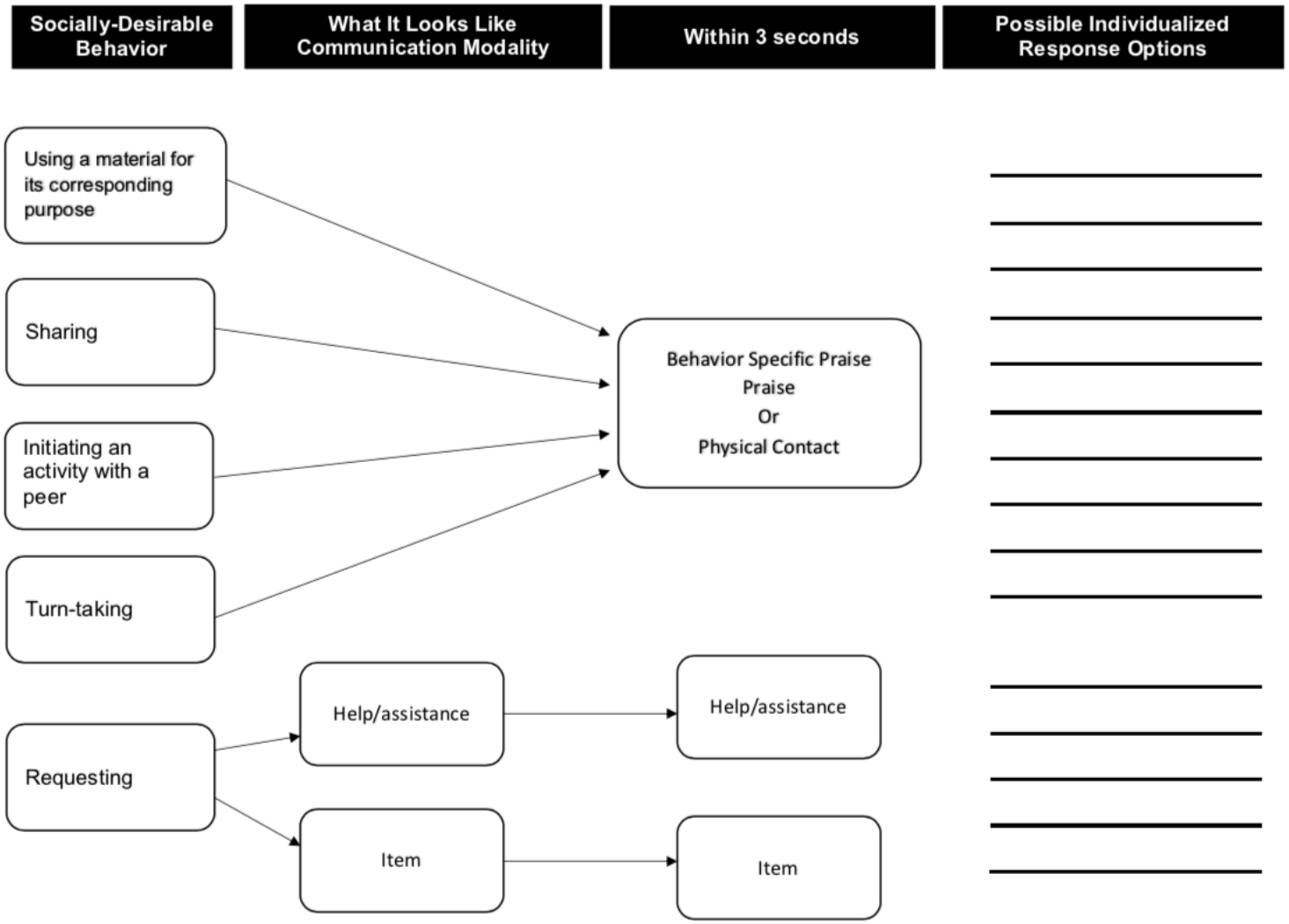
Appendix A

Checklist for Teachers

Operational Definitions: Side One

Socially-Desirable Behavior	Definition	Form of Child's Behavior
Using a material for its corresponding purpose	manipulates object (e.g., cuts with scissors, drives with truck, turns pages in a book, colors with markers) by oneself or with a group	
Initiating an activity with a peer	asks a peer either to join in an activity he or she is not already completing by communicating through any of the following modalities: a) verbally (e.g., "Hey do you want to play with blocks?") b) augmentative device (e.g., presses the button when in front of peer to request to play) c) pictures (e.g., hands the peer the picture) d) non-verbally • gestures (e.g., points towards activity, takes peers hand and guides to activity, *does not include hand pulling or dragging) • eye-gaze (e.g., looks at the peer and activity)	
Sharing	gives (hands object to peer) or verbally offers an object to another child (e.g., uses current communication modality to ask peer if he or she wants the object)	
Taking-turns	participates in a back and forth activity with one or more peers through conversation, a non-verbal activity, or a combination of both a) Conversational: (e.g., children verbally taking turns saying what they did the night before and what they are planning to do tonight) b) Nonverbal Activity: (e.g., completing a tower together, working together to make a picture, without talking, but may include gestures, etc.) c) Combination of both: (e.g., children make requests to each-other while creating a story, the turns can be both conversational and nonverbal)	
Requesting	gains the attention of a communication partner for help or for an item by using his or her current communication modality: a) verbally (e.g., "Help me build a tower." or "I want the crayon, please?") b) augmentative device (e.g., presses the button when in front of adult/peer to request help or item) c) pictures (e.g., finds the communication partner and hands the help or item picture) d) non-verbally • gestures (e.g., points towards the item needing help with or wants or takes adult/peer's hand and guides to item needing help with or wants, *does not include hand pulling or dragging) • eye-gaze (e.g., looks at the adult/peer and activity)	

Flowchart: Side Two



Appendix B

Data Sheet

Sample Portion of Data Sheet

Teacher's Name: _____ Child' Name: _____ Date: _____ Time Start: _____ End: _____

Teacher and Child Data Sheet

Interval		Child Initiated Socially-Desirable Behavior						Teacher Response				Type of Teacher Response			
1	1	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	2	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	3	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	4	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	5	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	6	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	7	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	8	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	9	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	10	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
2	1	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	2	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	3	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	4	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	5	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	6	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	7	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	8	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	9	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	10	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
3	1	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	2	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	3	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	4	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	5	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	6	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	7	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	8	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	9	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I
	10	UMCP	S	IAP	TT	R		C	NC	MO		BSP	GP	PC	RH/I

Appendix C

Behavior Skills Training Fidelity Check

		Steps to Use within BST	Completed
Instructions	Purpose	a) Looking for an instructional strategy that will be something that is easy and ongoing in a teachers' daily routine	
		b) Increase the number of times _____ spontaneously initiates socially-desirable behavior	
		c) Providing unstructured opportunities to demonstrate socially-desirable behaviors is needed for individuals with severe disabilities as self-determination is a right for all individuals	
	Checklist	Give the teacher the checklist	
	Side 1: Definitions	a. Discuss with teacher the operational definitions of socially-desirable behaviors	
		b. Discuss any other examples that directly relate to his or her targeted child	
	Side 2: Flowchart	1. Review and Discuss the contingent response must occur within 3 seconds (column 3)	
		2. Discuss responses for socially-desirable behaviors (UMCP, IAP, S, TT provide contingent BSP or PC) and (R provided contingent RH/I)	
		3. Discuss and fill in target child's communication modality as needed	
		4. Discuss and write additional examples of individualized response options	
Modeling	Model	a) review the checklist prior to the instructional time to remind myself of the socially-desirable behaviors	
		b) review the flow chart (parts for reminders will vary across teachers)	
		c) continue with my interactions with the children as normal during the time	
		• Exception to Requesting and Contingent Response*** *provide the requested response contingent on the request instead of behavior specific praise or physical contact (e.g., if the student pointed to a toy out of reach, the teacher should provide the toy and not a pat on the back)*	
		d) when I see _____ preforming a socially-desirable behavior, I will within 3 seconds approach the child and provide a behavior specific praise, physical contact, or help/item from flowchart based on the child-initiated behavior	
Rehearsal	Graph of Performance	1. show the teacher performance in baseline (child and self)	
		2. discuss the purpose of practicing together to increase contingent responses within 3 seconds	
	Rehearsal	Randomly demonstrate each of the socially-desirable behaviors interspersed with other behaviors	
	Least to Most Prompting	a) At the end of the of the behavior, if the teacher delays/does not provide praise, physical contact, or help/item within 3 seconds • prompt the teacher to look at the behavior I was preforming – (side 1) b) If he/she does not deliver the potential reinforcer in 3 seconds • prompt to review the back of the checklist to select either praise, physical contact, or help/item – (side 2)	
	Rehearsal	Repeat for all 5 socially-desirable behaviors until the teacher has contingent responses within 3 seconds (2 times for each socially-desirable behavior is mastery)	
Feedback	Debrief	a) Ask the teacher what went well and what they need clarification on	
		b) Provide an opportunity for the teacher to ask questions	
	Performance Feedback	Explanation of the emailed performance feedback (time, response requests, and purpose)	
		Discussion of Graph (which components will be sent and measured)	
		Total	

Appendix D

Emailed Performance Feedback Fidelity Check

	Teacher Name												
EPF	**Observation Date**												
Sent same day	No later than 8:00 p.m.	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
Graphs	included directly in the email and not as attachments	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	% of teacher-contingent responses to socially-desirable behaviors	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	# of child-initiated socially-desirable behaviors	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
Email Components	Greeting	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Praise	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Corrective Feedback	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Soliciting Questions	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Reminder to Respond	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Closing	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Total												

Teacher Response	Did the teacher respond to email prior to next observation?	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
***If the teacher responded with a question, then**	Did the researcher answer the question prior to the next observation?	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA	Y N NA
	Total												

Appendix E

Social Validity Survey and Teacher Responses

Table E.1

Teacher Questions for Social Validity Survey

Questions	Response	Explanation
1. Did you find the teaching strategy easy to use?	Yes or No	Why or Why not?
2. Did the training help you implement the teaching strategy?	Yes or No	Why or Why not?
3. Were the training materials/packet helpful to remind you of what to do?	Yes or No	Why or Why not?
4. Did you like the emailed performance feedback?	Yes or No	Why or Why not?
5. Would you continue to use this teaching procedure in the future with children who need to increase in socially-desirable behaviors?	Yes or No	Why or Why not?

Table E.2

Teacher Responses to Social Validity Survey

	Questions				
Teacher	1. Did you find the teaching strategy easy to use?	2. Did the training help you implement the teaching strategy?	3. Were the training materials/packet helpful to remind you of what to do?	4. Did you like the emailed performance feedback?	5. Would you continue to use this teaching procedure in the future with children who need to increase in socially-desirable behaviors?
Ms. Yelton	Yes The strategy was simple. I just had to pay attention to the amount of behavior-specific praise, which was a simple adjustment for me.	Yes Abigail pointed out ways I could use BSP with my student, which was very helpful in helping me understand how to implement it.	Yes It helped point out areas of focus for my target student.	Yes It was an easy-to-read visual that helped me keep up with my progress and reflect each day.	Yes Definitely! It was so simple, and I have already encouraged my paraprofessional to start using BSP.
Ms. Melillo	Yes The teaching strategy is something I naturally try to do in my classroom on a regular basis.	Yes Abigail and I role playing the teaching strategy helped me to understand the expectations.	Yes Training materials were very clear and easy to understand.	Yes The emailed feedback helped me to know what to continue or discontinue. It also guided my thinking about certain situations in the classroom.	Yes I think it is beneficial for students with disabilities to know what they are doing that is desirable since sometimes they may not know.
Ms. Senn	Yes The strategy was a best-practice tool that, as a teacher, I should be using with each student. The strategy was practical and simple enough to apply.	Yes I always appreciate an outside perspective. The training helped me brainstorm ways that I could easily apply the teaching strategy within what was already occurring in my classroom. The training explained the purpose of the strategy very well and kept me focused on the target student's needs.	Yes The checklist was helpful as I thought about how to adapt my mindset and language to best use the teaching strategy during instruction.	Yes The emailed performance feedback was extremely helpful! It gave me time to reflect on my application of the strategy and engagement with the student through an objective observer's eyes. I felt rewarded as I could see the increases in my contingent responses and the student's self-initiated requests, and the effect my responses had on the student. The emailed feedback helped me make small adjustments throughout the week and kept the goal of the strategy fresh in my mind throughout the school day, not just during the observation. This helped me try to model contingent responses to the paraprofessionals when addressing the target student and others.	Yes Yes! I have already seen and used opportunities with the target student and others in my class. I think we educators fall into a trap of only praising students' communications that we consider desirable, rather than acknowledging every communication as valid, and using positive reinforcement to continue the appropriate communication. This procedure reminded me to look for the purpose of students' communication. This was especially helpful when strengthening my rapport with the target student, who is nonverbal. I needed to refresh the ways I received his communication and responded to him.
Ms. Kelly	Yes The strategy didn't require much additional planning, just more purposeful use of words and specific kinds of praise.	Yes The training helped me remember to focus on specific ways to praise and engage children in play.	Yes Yes. It is also helpful for other students.	Yes I loved seeing daily feedback on how things were going.	Yes It was simple and effective.

Appendix F

Inter-Observer Agreement Data

Table F.1

IOA for Teacher Contingent Responses to Target Child's Self-Initiated Behavior across Phases by School Day and Totals

	Baseline			BST & EPF			Maintenance			Total All Phases	
Teacher	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	(%)	(A/A+D)
Ms. Yelton	2	100	11/11	7	100	11/11	32	97	36/37		
Sammy	5	100	12/12	8	92	11/12					
				14	100	30/30					
Total		100	23/23		98	52/53				98	111/113
Ms. Melillo	2	100	6/6	10	100	9/9	32	97	34/35		
John	5	86	6/7	14	95	21/22					
	8	86	6/7								
Total		90	18/20		97	30/31				95	82/86
Ms. Senn	2	60	3/5	13	100	8/8	27	90	27/30		
Dalton	5	100	3/3	19	95	21/22					
	8	91	10/11	21	96	24/25					
	11	100	7/7								
Total		88	23/26		96	53/55				93	103/111
Ms. Kelly	2	100	9/9	16	96	23/34	25	94	33/35		
Mya	5	85	11/13	19	97	30/31					
	8	91	10/11								
	11	91	10/11								
Total		91	40/44		97	53/55				98	26/134
									Overall Total	95	422/444

Note. (%) = Percent agreement; (A/A+D) = Agreements divided by agreements plus disagreements; (Day) = School day number

Table F.2

IOA for Teacher Contingent Responses to Child One's Self-Initiated Behavior across Phases by School Day and Totals

	Baseline			BST & EPF			Maintenance			Total All Phases	
Teacher	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	(%)	(A/A+D)
Ms. Yelton	2	-	-	7	85	11/13	32	93	26/28		
Evie	5	85	11/13	8	92	12/13					
				14	-	-					
Total		85	11/13		83	23/26				90	60/67
Ms. Melillo	2	-	-	10	-	-	32	91	20/22		
Larry	5	89	8/9	14	100	11/11					
	8	100	9/9								
Total		94	17/18		100	11/11				94	48/51
Ms. Senn	2	100	8/8	13	-	-	27	90	18/20		
Jaden	5	86	6/7	19	100	17/17					
	8	86	6/7	21	94	17/18					
	11	100	10/10								
Total		94	30/32		97	34/35				94	82/87
Ms. Kelly	2	92	11/12	16	96	23/24	25	87	20/23		
Marcus	5	90	9/10	19	-	-					
	8	100	3/3								
	11	100	9/9								
Total		94	32/34		96	23/24				93	75/81
								Overall Total		93	265/286

Note. (%) = Percent agreement; (A/A+D) = Agreements divided by agreements plus disagreements; (Day) = School day number; (-) = Absent the day of secondary observer's observation

Table F.3

IOA for Teacher Contingent Responses to Child Two's Self-Initiated Behavior across Phases by School Day and Totals

	Baseline			BST & EPF			Maintenance			Total All Phases	
Teacher	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	(%)	(A/A+D)
Ms. Yelton	2	86	12/14	7	85	11/13	32	94	32/34		
Kejuan	5	-	-	8	80	8/10					
				14	100	14/14					
Total		86	12/14		89	33/37				91	77/85
Ms. Melillo	2	89	8/9	10	82	9/11	32	100	12/12		
Mills	5	89	8/9	14	92	11/12					
	8	100	5/5								
Total		91	21/23		87	20/23				91	53/58
Ms. Senn	2	100	6/6	13	100	5/5	27	96	24/25		
Nieko	5	100	3/3	19	94	17/18					
	8	-	-	21	94	17/18					
	11	100	12/12								
Total		100	21/21		95	39/41				97	84/87
Ms. Kelly	2	100	3/3	16	100	7/7	25	100	21/21		
Tommy	5	-	-	19	100	20/20					
	8	91	10/11								
	11	100	8/8								
Total		95	21/22		100	27/27				99	69/70
								Overall Total		94	283/300

Note. (%) = Percent agreement; (A/A+D) = Agreements divided by agreements plus disagreements; (Day) = School day number; (-) = Absent the day of secondary observer's observation

Table F.4

IOA for Target Child's Self-Initiated Socially-Desirable Behavior across Phases by School Day and Totals

	Baseline			BST & EPF			Maintenance			Total All Phases	
Target Child	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	(%)	(A/A+D)
Sammy											
	2	100	11/11	7	91	10/11	32	89	33/37		
	5	100	12/12	8	92	11/12					
				14	100	30/30					
Total		100	23/23		96	51/53				95	107/113
John											
	2	100	6/6	10	100	9/9	32	100	35/35		
	5	86	6/7	14	95	21/22					
	8	86	6/7								
Total		90	18/20		97	30/31				97	83/86
Dalton											
	2	60	3/5	13	88	7/8	27	93	28/30		
	5	100	3/3	19	95	21/22					
	8	91	10/11	21	100	25/25					
	11	100	7/7								
Total		88	23/26		96	53/55				94	104/111
Mya											
	2	89	8/9	16	100	24/24	25	97	34/35		
	5	92	12/13	19	97	30/31					
	8	100	11/11								
	11	82	9/11								
Total		91	40/44		98	54/55				96	128/134
								Overall Total		95	422/444

Note. (%) = Percent agreement; (A/A+D) = Agreements divided by agreements plus disagreements; (Day) = School day number

Table F.5

IOA for Child One's Self-Initiated Socially-Desirable Behavior across Phases by School Day and Totals

	Baseline			BST & EPF			Maintenance			Total All Phases	
Child One	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	(%)	(A/A+D)
Evie											
	2	-	-	7	92	12/13	32	96	27/28		
	5	85	11/13	8	92	12/13					
				14	-	-					
Total		85	11/13		92	24/26				93	62/67
Larry											
	2	-	-	10	-	-	32	91	20/22		
	5	89	8/9	14	100	11/11					
	8	100	9/9								
Total		94	17/18		100	11/11				94	48/51
Jaden											
	2	100	8/8	13	-	-	27	95	19/20		
	5	86	6/7	19	100	17/17					
	8	86	6/7	21	100	18/18					
	11	100	10/10								
Total		94	30/32		100	35/35				97	84/87
Marcus											
	2	92	11/12	16	100	24/24	25	96	22/23		
	5	100	10/10	19	-	-					
	8	100	3/3								
	11	100	9/9								
Total		97	33/34		100	24/24				98	79/81
								Overall Total		95	273/286

Note. (%) = Percent agreement; (A/A+D) = Agreements divided by agreements plus disagreements; (Day) = School day number; (-) = Absent the day of secondary observer's observation

Table F.6

IOA for Child Two's Self-Initiated Socially-Desirable Behavior across Phases by School Day and Totals

	Baseline			BST & EPF			Maintenance			Total All Phases	
Child Two	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	Day	(%)	(A/A+D)	(%)	(A/A+D)
Kejuan											
	2	93	13/14	7	92	12/13	32	97	33/34		
	5	-	-	8	90	9/10					
				14	100	14/14					
Total		93	13/14		95	35/37				95	81/85
Mills											
	2	89	8/9	10	82	9/11	32	92	11/12		
	5	89	8/9	14	92	11/12					
	8	100	5/5								
Total		91	21/23		87	20/23				90	52/58
Nieko											
	2	100	6/6	13	80	4/5	27	92	23/25		
	5	100	3/3	19	100	18/18					
	8	-	-	21	94	17/18					
	11	100	12/12								
Total		100	21/21		95	39/41				96	83/87
Tommy											
	2	100	3/3	16	100	7/7	25	100	21/21		
	5	-	-	19	95	19/20					
	8	100	11/11								
	11	100	8/8								
Total		100	22/22		96	26/27				99	69/70
									Overall Total	95	285/300

Note. (%) = Percent agreement; (A/A+D) = Agreements divided by agreements plus disagreements; (Day) = School day number; (-) = Absent the day of secondary observer's observation