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Implementing a Peer Support Intervention to Reduce Off-task Behaviors

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Lehigh University

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Implementing a Peer Support Intervention to Reduce Off-task Behaviors

of Early Elementary Students with Autism

by

Erin E. McCurdy

Presented to the Graduate and Research Committee

of Lehigh University

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Certificate of Approval

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Date

_____

Christine Cole, Ph.D.
Dissertation Director
Professor of School Psychology

_____

Accepted Date

Committee Members:

_____

George DuPaul, Ph.D.
Professor of School Psychology

_____

Brenna Woods, Ph.D.
Associate Professor of Special Education

_____

Todd Harris, Ph.D
Director, Autism Services
The Devereux Foundation

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Abstract

In 2013, the Health Resources and Services Administration and the Centers for Disease

Control and Prevention estimated that currently 1 in every 50 children is diagnosed with

ASD, a level many consider to be an epidemic. Outcomes for children with ASD are

variable and are impacted by several factors including the type of educational services

they receive. Although inclusive education is viewed as a best practice for children with

ASD due to its many benefits, disruptive off-task behaviors of these students often

threaten their access to the general education classroom. Peer-mediated intervention

(PMI) is an evidence-based strategy that has been shown to have many benefits and few

limitations. In the present investigation, a multiple-baseline design across participants

was used to evaluate the effects of a simple PMI on the off-task behaviors and work

completion of four young elementary-age students with ASD in inclusion classrooms.

Results indicated that the PMI resulted in decreased off-task behavior and increased work

completion for all four students with ASD. Decreases in off-task behavior generalized to

a second non-treatment setting for three of the four participants. Limitations and future

directions are discussed.

CHAPTER 1

Statement of the Problem

The prevalence of children with Autism Spectrum Disorders (ASD) has continued to rise over the past decade, suggesting a possible autism epidemic (Dawson & Faja, 2008). According to a report released in March 2013 by the Health Resources and Services Administration (HRSA) and the Centers for Disease Control and Prevention (CDC), the prevalence of ASD in school-aged children has increased from 1.2% in 2007 to 2% in 2011-12. This suggests that 1 in every 50 children is now affected by ASD (Blumberg et al., 2013). ASD is a developmental disorder characterized by deficits in social functioning and language and communication, as well as the presence of unusual interests and behaviors that affects all racial, ethnic, and socioeconomic groups (CDC, 2010; Dawson & Faja, 2008; Mash & Wolfe, 2002). Many children with ASD engage in challenging behaviors such as self-injury, physical aggression, and/or disruptions to the environment (Matson & Minshawi, 2007; McClintock, Hall, & Oliver, 2003).

Variability in symptoms and prognosis is a prominent feature of ASD (Ben-Itzchak & Zachor, 2007; Gillberg, 1991). Some children develop language and learn to speak in full sentences while others fail to ever gain language; some children respond to behavioral interventions while others do not; and finally, some make maximum positive gains in all deficit areas while others make minimal to no gains (Ben-Itzchak & Zachor, 2007; Gillberg, 1991). Numerous studies have examined the long-term outcomes for individuals with ASD. A recent review by Perkins and Berkman (2012) indicated that, as adults, some individuals with ASD were able to live without formal supports, but the majority needed additional supports. In fact, many of the adults with ASD were

unemployed or underemployed, unable to live independently, and had difficulties creating friendships and social supports (Perkins & Berkman, 2012).

Due to the inconsistent and overall poor outcomes for adults with ASD, researchers have attempted to identify factors that improve long-term outcomes for individuals with ASD (Baghdadli, Assouline, Sonie, Pernon, Darrou, Michelon, et al., 2012). One primary characteristic that has been identified is the acquisition of language (Baghdadli et al., 2012; Ben-Itzchak & Zachor, 2007; Gillberg, 1991; Lovaas, 1987; McEachin, Smith, & Lovass, 1993). In addition to within-child characteristics that predict language acquisition which include motor imitation skills, initial language age, initial mental age, joint attention, and non-verbal cognitive ability (Bono, Daley, & Sigman, 2004; Kjeller, Hedvall, Fernell, Gillberg, & Norrelgan, 2012; Maljaars, Noens, Scholte & van Berckelaer-Onnes, 2012; Stone & Yoder, 2001; Thurm, Lord, Lee, & Newschaffer, 2007), studies have also demonstrated a positive correlation between language development and inclusion with typical peers (Harris, Handleman, Gordon, Kristoff, & Fuentes, 1991; Stahmer, Akshoomoff, & Cunningham, 2011; Stahmer & Carter, 2005; Stahmer & Ingersoll, 2004). Because findings indicate that children enrolled in inclusive educational programs show gains in communication, involving students with ASD in inclusive settings with typical peers may improve long-term outcomes for these students.

Inclusive Educational Practices

Historically, inclusion has been used to define where an individual is educated. However, more recently, inclusion has been conceptualized as the presence, participation, acceptance, and achievement of a student with disabilities in a general education classroom or activity (Humphrey, 2008). Prior to 1975, public schools assumed little

responsibility for educating students with disabilities and these students were primarily educated in segregated settings. However, in 1975 the Education for All Handicapped Children Act was passed, requiring all schools receiving public funding to provide children with disabilities equal access to education, and mandating they be educated in the least restrictive environment (LRE). This law was later renamed the Individuals with Disabilities Education Act (IDEA; Merrell, Ervin, & Gimpel, 2006).

The most recent revision of IDEA (2004) mandates that children with disabilities be educated in general education classrooms with their typical peers to the maximum extent possible. The law also states that children with disabilities may only be removed from general education and placed in special education when, due to the nature or severity of the disability and with the appropriate supports and services, they cannot receive a satisfactory education in the general education classroom (IDEA, 2004).

Inclusion is viewed by many as an appropriate practice due to the potential benefits to children with ASD that are directly associated with the core symptoms of ASD. Examples include the increased opportunity for social interactions with typical nondisabled peers; the possibility of developing friendships; the gains in communication, social, and adaptive behavior skills; and the participation in age-appropriate activities that may enhance social competence and ultimately lead to successful post-school adjustment (Hunt, Goetz & Anderson, 1986; Hunt & McDonnell, 2007; McDonnell, Thorson, & McQuivey, 1998).

Despite the legislation and the many benefits of inclusion, as of 2011, only 34.5% of students with ASD were included in the general education classroom full time (U.S. Department of Education, 2011). One reason for the low percentage of students with

ASD who are fully included is that significant barriers may arise during the implementation of inclusive practices. One of the initial barriers is gaining the support of the school administration and staff. Many schools never consider placing students with ASD in general education because of the additional provision in IDEA 2004 that allows for the removal of children with disabilities from general education setting if the nature or severity of the child's disability inhibits his or her learning. Other schools may consider including students with ASD in general education classrooms, but may require the child to "earn" his or her way into inclusive setting, thereby refusing to allow the child access to the general education (Merrell et al., 2006).

Another potential barrier to inclusion of children with ASD in general education classrooms is the presence of disruptive or off-task behaviors. Many students with ASD exhibit loud or repetitive behaviors, and have high levels of inattention. Disruptive, off-task behaviors exhibited by these students with ASD often interrupt the instructional environment and result in decreased opportunities for learning, not only for the target student, but for other students in the class as well. For students with ASD who demonstrate these types of disruptive behaviors, the result may be a decision by school personnel to place the student in a segregated special education classroom (Arceneaux & Murdock, 1997; Sterling-Turner, Robinson, & Wilczynski, 2001). For many students with ASD, it is critical that evidence-based interventions be implemented to help reduce their disruptive behaviors and ultimately allow them access to general education settings.

Evidence-based Interventions for Disruptive Behaviors

A variety of intervention strategies have been used in an attempt to decrease the disruptive, off-task behaviors of children with ASD. Some of the most commonly-used

interventions include the use of paraprofessionals, positive reinforcement, visual schedules, social stories, and self-management.

Paraprofessionals. The use of paraprofessionals involves having trained adults accompany and provide support to the student and/or general education teacher in inclusive general education settings. The paraprofessional may be assigned to work with only one student at a time or may provide support for a small group of students (Brown, Farrington, Knight, Ross, & Ziegler, 1999; Gerber, Finn, Achilles, Boyd-Zaharia, 2001; Symes & Humphrey, 2011). A recent review of empirical research examining the effects of paraprofessional-implemented interventions found successful outcomes for 92% of the interventions (Rispoli, Mandy, Lang, & Ganz, 2011). The review also found that the paraprofessionals were able to implement a variety of interventions that had positive effects on disruptive, off-task behaviors of students with ASD (Rispoli et al., 2011).

Positive reinforcement. Another empirically-supported intervention is the use of positive reinforcement in the form of verbal praise, prizes, tokens to trade in for desired items, or food to increase desired behaviors and/or decreased undesired behaviors of students with ASD. With this strategy, an adult or peer provides positive reinforcement to the child with ASD following the occurrence of appropriate behavior or the nonoccurrence of inappropriate behavior (Kay, Harchik, & Luiselli, 2006; Mangus, Henderson, & French, 1986). Matson and Boisjoli (2008) reviewed the empirical literature on the use of positive reinforcement with students with ASD, specifically token economies, from 1970-2006. The review found that this strategy has been used to increase a variety of target behaviors including social initiation, academic tasks, and food

refusal, that the findings of all studies reviewed were positive, and that the results demonstrated the efficacy of the strategy.

Visual schedules. Another popular intervention strategy that has been shown to have empirical support for reducing off-task behaviors for children with ASD is the use of visual schedules (Dettmer, Simpson, Smith-Myles, & Ganz, 2000; Dooley, Wilczenski, & Torem, 2001). This intervention is based on the rationale that, if the child with ASD knows what to expect next, he or she may be less anxious and more motivated to get to the activity, and therefore will more likely to stay on-task (Dettmer et al., 2000; Dooley et al., 2001). In a recent review of effective strategies for inclusion of students with ASD, Crosland and Dunlap (2012) indicated that the use of visual schedules resulted in fewer prompts by teachers and support staff, increased on-task behavior, and increased responding by the students.

Self-management. Finally, self-management is a strategy that has been used successfully to decrease off-task and increase on-task behaviors of students with ASD. One example of self-management is self-monitoring in which the child is taught to observe and record instances of his or her own behavior, and may be rewarded for meeting certain goals. Self-monitoring is a commonly-used strategy because it allows the individual to control his or her own behavior, rather than relying solely on a parent or teacher (Koegel, Koegel, Hurley, & Frea, 1992; Newman, Tuntigian, Ryan, & Reinecke, 1997).

Self-management has solid empirical support. Two studies examined the overall effects of self-management for individuals with ASD. First, Lee, Simpson, and Shogren (2005) conducted a meta-analysis of 11 single-subject studies including 34 participants.

The study analyzed percent nonoverlapping data (PND) to examine the effectiveness of the intervention on various problem behaviors, and determined that, with a mean PND of 81.9%, self-monitoring is an effective intervention. Similarly, Southall and Gast (2011) reviewed 24 empirical studies that examined the effects of self-management on various target behaviors. The study found that, across multiple variables including child age, setting, and components of the intervention, self-monitoring was effective in teaching social and communication skills and decreasing stereotypic behavior.

   Limitations of commonly-used intervention strategies. Although each of these intervention strategies has been demonstrated to produce reductions in disruptive, off-task behaviors of children with ASD, there are some disadvantages to their use. First, they are often implemented by the teacher and require much time and effort, thereby decreasing the time the teacher can spend engaged in teaching (Hoff & Robinson, 2002). Second, use of paraprofessionals, visual schedules, and self-monitoring in particular do not offer social interaction opportunities between the student with ASD and their typical peers. Because social deficits are a core characteristic of ASD, it may be important to offer the student any opportunity possible to have successful social interactions with peers. Lastly, a possible issue with using these interventions is that they are often require the presence of an adult such as a paraprofessional who must remain in close proximity to the child with ASD, which may be stigmatizing for these student in inclusive settings (Brown, Farrington, Knight, Ross, & Ziegler, 1999).

Peer-mediated Interventions

   Despite the empirical support for these interventions, as well as the common practice of using them within general education classrooms, more socially acceptable

alternatives may be interventions that involve peers (Chan, Lang, Rispoli, O'Reilly, Sigafoos, & Cole, 2009). According to the National Professional Development Center on Autism Spectrum Disorders, peer-mediated intervention (PMI) meets the criteria for being an evidence-based practice for promoting communication/language and social skills within the preschool- and elementary-age population (Wong, Odom, Hume, Cox, Fettig, Kucharczyk et al., 2014). There are a variety of reasons to involve peers in intervention with students with ASD. First, peers are readily available across a variety of settings. In any classroom, there are multiple peers who may be willing to participate in an intervention (Chan et al., 2009). Another advantage of involving peers is that they naturally affect each other's behavior (Fowler, 1988; Hoff & Robinson, 2002). Because peers are present in many settings throughout the school day, their presence may help to promote maintenance and generalization of any positive behavior change. In essence, the peers themselves may serve as cues for the child with ASD to remember the appropriate behaviors he or she learned during the intervention (Hoff & Robinson, 2002). An additional benefit of involving peers is that they can effectively meet the students' needs while saving valuable teacher time. Having a peer assist in an intervention for a student with ASD allows the teacher to spend more time teaching and meeting all students' needs, which is both time and cost effective (Chan et al., 2009; Christensen, Young, & Marchant, 2004; Hoff & Robinson, 2002). Additionally, if an intervention provides students with increased opportunities to respond and to receive feedback, it may result in a higher level of attention (Hoff & Robinson, 2002). Finally, results indicate that involving peers in classroom interventions can result in academic, cognitive, affective,

and social gains across heterogeneous groups of peers as well as the individuals receiving the intervention (Chan et al., 2009; Hoff & Robinson, 2002).

One simple peer support strategy that has been shown to decrease disruptive, off-task behaviors displayed by children in the classroom is peer prompting of appropriate behaviors. Arcenneaux and Murdock (1997) provided an example of this strategy in their investigation of the effects of prompting by a familiar peer on the loud, birdlike noises made by a boy with developmental disabilities during silent reading times. In this study, a typical peer who got along well with other students and enjoyed helping peers was taught by the general education teacher to prompt the student with disabilities to focus on the academic activity whenever he made birdlike noises. During silent reading, the peer pulled her desk next to the student with disabilities and, when he emitted the noises, she simply pointed to the book he was reading to refocus his attention.

An ABAB design was used to evaluate the effects of the intervention. During baseline, the student with disabilities emitted an average of 16.67 sounds per session. When the intervention was implemented, the number of sounds decreased to an average of 7 per session. A return to baseline showed a slight increase in sounds and, in the final phase, he only emitted an average of 2.60 sounds per session. Follow-up data at 3.5 and 5 weeks showed only 0.67 and 0.4 sounds per session, respectively. Although the results were promising, the study involved only one student and the student did not have a diagnosis of ASD.

In a more recent study, McCurdy and Cole (2013) replicated and extended the work of Arceneaux and Murdock (1997) to students with ASD by evaluating the effects of a similar peer support strategy on the off-task behaviors of three boys with ASD, ages

7 to 11 years old, in general education classrooms. In this study, peer supporters were taught to remind their buddy with ASD of the desired behaviors and give him verbal encouragement (e.g., "I know you can do it.") at the beginning of each class period. Then, whenever the student with ASD displayed the target off-task behavior, the peer lightly tapped the materials or the desk to refocus the student with ASD to the task. Using a multiple-baseline design across participants, results indicated the peer support strategy was effective in reducing the off-task behaviors of all three students with ASD in the inclusion settings. While the two younger participants demonstrated an immediate reduction in off-task behavior, the older student did not respond as quickly and required an additional component to be added to the intervention. This student's peer buddy reported feeling anxious about how other students in the class perceived her and often missed opportunities to prompt the student with ASD so a MotivAider was introduced to remind her to prompt the student with ASD. With this additional component, reductions in off-task behavior were also observed for the older student.

Involving peers to promote desired behaviors of students with ASD in inclusive settings may be particularly beneficial, as this intervention encourages involvement with typical peers, addressing the core social skills difficulties of students with ASD. Additionally, involving a peer rather than an adult removes the stigmatization of having a paraprofessional hover over the child in a general education setting. Finally, if the student's behavior can be successfully redirected by a peer, the student may be included in more classes, even when a paraprofessional is unavailable. Despite the possible benefits of involving peers and the positive outcomes of the two previous investigations, no additional studies were found that examined the use of peer prompting to reduce

disruptive behaviors of individuals with ASD. Additionally, neither of these studies

examined the generalization of the intervention effects or the effects of the intervention

on the academic work of the student with ASD. Finally, there was some indication in the

McCurdy and Cole (2013) study that the peer support intervention may be more effective

with (or more acceptable to) younger students (i.e., more rapid reduction in off-task

behavior, did not require the use of MotivAider).

Therefore, the purpose of this study is to extend the work of Arceneaux and

Murdock (1997) and McCurdy and Cole (2013) by evaluating the effects of this simple

peer support intervention with younger children with ASD in a general education

classroom. Several gaps in the current research literature on PMI will be addressed

including evaluating the intervention with younger (i.e., 1st- and 2nd-grade) students,

assessing generalization effects and impact on work completion, and examining

procedural integrity.

Research Questions and Hypotheses

1. *What are the effects of a peer support intervention on the off-task behaviors of 1st-
   and 2nd-grade students with ASD in a general education classroom?* Based on the
   results of Arceneaux and Murdoch (1997) and McCurdy and Cole (2013), it is
   hypothesized that implementation of the peer support intervention will result in
   reduced off-task behaviors of the four students with ASD as compared with baseline
   levels.

2. *What are the effects of a peer support intervention on the work completion of the 1st-
   and 2nd-grade students with ASD in a general education classroom?* Based on the
   results of McCurdy and Cole (2013), it is hypothesized that implementation of the

peer support intervention will result in increased work completion by the four students with ASD as compared with baseline levels.

3. *Assuming a reduction in off-task behaviors and an increase in work completion of the 1st- and 2nd-grade students with ASD during the intervention condition, is there also a reduction in off-task and an increase in work completion during a generalization (i.e., non-intervention) class period as compared with baseline levels?* It is hypothesized that the reduction in off-task behaviors and increase in work completion will generalize to another class period due to the use of PMI that has been found to promote generalization (Hoff & Robinson, 2002).

4. *Is the peer support intervention implemented with integrity (i.e., 75% accuracy or above) by the typical peers in the general education classroom following training?* Based on observations during the McCurdy and Cole (2013) study, it is hypothesized that the intervention will be implemented with integrity, defined as providing a prompt to the student with ASD within one interval following the occurrence of off-task behavior.

5. *Assuming the peer support intervention is implemented with a high level of integrity (i.e., 75% accuracy or above) during the intervention condition, do the typical peers spontaneously use the peer support intervention during another generalization (i.e., non-intervention) class period in which the students with ASD are displaying off-task behavior?* Based on previous findings (Hoff & Robinson, 2002), it is hypothesized that the peer supporters will use the peer support intervention in the generalization class period.

6. Is the peer support intervention viewed as acceptable and feasible to the teachers as measured by the IRP-15? It is hypothesized that the teachers will rate the peer support intervention as highly acceptable and feasible on the IRP-15 (McCurdy & Cole, 2013).

7. *Is the peer support intervention viewed as acceptable to the student participants (i.e., students with ASD and typical peer supporters) as measured by the CIRP?* It is hypothesized that the students with ASD and their typical peers will rate the peer support intervention as highly acceptable on the CIRP (McCurdy & Cole, 2013)

CHAPTER II

Review of the Literature

This chapter will review the literature regarding individuals with ASD that is relevant to the proposed study. First, the core symptoms of ASD (i.e., social impairment, language delays/impairment, restrictive/repetitive and disruptive behaviors) and the most common interventions utilized to address these symptoms will be discussed. Next, the history of inclusion in education, as well as the benefits and barriers to inclusion will be addressed, followed by strategies to increase access to the inclusive setting (i.e., paraprofessionals, positive reinforcement, visual schedules, self-management). The literature related to peer-mediated interventions will then be reviewed including benefits and empirical studies examining the effects of peer-mediated interventions. The chapter will conclude with a description of the purpose of the current study and identification of the gaps in the literature that will be addressed by the study.

Characteristics of ASD

Since autism was first described in 1943 by Leo Kanner, the prevalence of individuals with diagnosed with Autism Spectrum Disorders (ASD) has continued to increase (Dawson & Faja, 2008; Rutter, 2011). According to a report released in March 2013 by the Health Resources and Services Administration (HRSA) and the Centers for Disease Control and Prevention (CDC), the prevalence of autism spectrum disorder (ASD) in school-aged children has increased from 1.2% in 2007 to 2% in 2011-2012, or 1 in every 50 children (Blumberg et al., 2013; HRSA &CDC, 2014). The recent increases in ASD prevalence were greatest for boys and adolescents, aged 14-17. Autism is a developmental disorder characterized by marked impairments in social functioning

and language/communication, and the presence of unusual interests and repetitive and/or challenging behaviors that affects all racial, ethnic, and socioeconomic groups (American Psychiatric Association [APA, DSM-5], 2013; CDC, 2010; Dawson & Faja, 2008; Mash & Wolfe, 2002).

Social impairment. Social impairment, ranging from mild to severe, is consistent across all ASDs and includes marked impairment in the use of nonverbal communication, impaired social/emotional reciprocity, impaired peer relationships, and impaired sharing of interests (APA, 2013). More mild instances of social impairment may include difficulty making eye contact, odd facial gestures or body postures, while more severe social impairment can include complete lack of awareness of the presence of others and/or social isolation (Constantino, 2011). Researchers have recently noted signs early in infancy, such as limited engagement in joint attention, which may indicate social impairments later in childhood (Bedford, Elsabbagh, Giliga, Pickles, Senju, Charman, & Johnson, 2012).

Poor social skills can have implications for the long-term outcomes for individuals with ASD. Not surprisingly, impaired social skills impede learning opportunities during peer interactions and make it difficult for children with ASD to develop real friendships with peers (Licciardello, Harchik, & Luiselli, 2008). Children with social skills impairments have also been shown to be at risk for emotional, behavioral, and learning problems (Luiselli, McCarty, Coniglio, Zorilla-Ramirez, & Putnam, 2005). Additionally, deficiencies in social skills during childhood are predictive of difficulty in obtaining and maintaining employment, delinquency, and mental illness during adulthood, while in contrast, those with appropriate social skills have more access

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to higher education and more lucrative employment during adulthood (Luiselli et al., 2005). These findings indicate that social skills should be a primary area for intervention with children with ASD.

Just as one would not expect children to learn academic skills without formal education, it cannot be expected that children with ASD will learn social skills without assistance and direct teaching (Luiselli et al., 2005). A wide range of approaches for social skills interventions have been identified, which include behavior modification, peer-mediated training, social stories, pivotal response training, joint attention training, and buddy system, and fall into general categories of peer-mediated, adult-mediated, and combination approaches (Reichow & Volkmar, 2010; Wang, Parrila, Cui, 2012). In a review of social skills interventions, school-based interventions were found to meet criteria for evidence-based practices, while social skills interventions for preschool and adolescents still required more research to meet criteria for evidence-based practices (Reichow & Volkmar, 2010). In a recent meta-analysis, researchers found that on average, social skills interventions were effective and the grand mean effect size suggested that social skills interventions can significantly improve the social performance of individuals with ASD (Wang et al., 2012).

Language/communication impairment. Although social impairment is the most common symptom of ASD, delay in the development of functional language is often the first recognized sign of ASD in very young children (Tager-Flusberg, Paul, & Lord, 2005). Communication impairment can be demonstrated in a variety of ways in individuals with ASD; some individuals are nonverbal and never acquire the ability to talk, some have delayed language and develop language well after the expected

developmental time, and others learn to say some words but never develop full language (Paul & Gilbert, 2011).

When examining the development of language in children with ASD, the majority of studies have had to rely on parental report of the history of language in their child as most children are not diagnosed until around the age of 3 or 4 (Tager-Flusberg et al., 2005). Through these approaches, however, researchers have been able to identify some behaviors in children with ASD that are displayed as early as age 1 which include decreased responsiveness to their name, someone speaking, and to the sound of their mother's voice (Klin, 1991; Lord, 1995; Osterling & Dawson, 1994). In addition to children who have delayed language development, there is also a subset of children diagnosed with ASD who develop language normally until 12 to 18 months of age and then experience a regression in language (Lord, Shulman, & DiLavore, 2004), defined as after a normal pattern of language development, the children gradually stopped learning new words and failed to engage in communication previously used (Lord et al., 2004).

Language is an important area of intervention for young children with ASD as research has demonstrated that if children do not acquire speech as their primary means of communication by school age, they have poor outcomes with regards to independence and integration (Howlin, 2005). Many interventions have been implemented to promote language development in young children with ASD. In a review of interventions for individuals with ASD, Bodfish (2004) identified three approaches that have empirical validation including discrete-trial training (DTT), naturalistic approaches, and augmentative/alternative communication (AAC). DTT was a method first employed by Lovaas and used principals of operant conditioning and drill-like activities to shape,

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prompt and reward language (Tsiouri, Schoen-Simmons, & Paul, 2012). In 2009,

Reichow and Wolery reviewed research using DTT, and found that DTT resulted in

significant improvement in expressive language for children, and when compared to other

methods, DTT always demonstrated greater gains in both expressive and receptive

language (Reichow & Wolery, 2009).

Naturalistic approaches to teaching language have developed following research

findings that while DTT results in the development of expressive language, the

generalization of these effects is severely limited (Bodfish, 2004). These interventions

are conducted in naturally occurring settings, such as schools, home and community

settings (Koegel, 2000). Naturalistic approaches involve the inclusion of specific

motivational procedures, meeting the child at their level and interests, increasing

opportunities for child-initiated expressive language, and incorporating parents, teachers

and peers as therapists (Koegel, 2000).

Finally, AAC approaches include the use of the Picture Exchange Communication

System (Bondy & Frost, 1994), sign language, communication books, and computer

devices (Bodfish, 2004; Ganz, Earles-Vollrath, Heath, Parker, Rispoli, & Duran, 2012).

In a recent meta-analysis, AAC methods were found to have significant effects on

communication goals as well as behavior and social goals for children with ASD (Ganz,

et al., 2012). Even though AAC methods are used primarily with children with ASD who

are nonverbal, the use of these interventions has been found to increase verbal

communication in addition to nonverbal communication (Bondy & Frost, 1994; Charlop-

Chirsty, Carpenter, Le, LeBlanc, & Kellet, 2002; Ganz et al., 2012; Kravits, Kamps,

Kemmerer, & Potucek, 2002).

Behavioral impairment. Restricted, repetitive and/or disruptive behaviors are the third core feature of individuals with ASD (Bodfish, 2011; McCracken, 2011). Restrictive and repetitive behaviors can include stereotyped motor movements (e.g. handclapping and rocking), self-injurious behaviors (e.g. head banging and arm biting), rituals or routines (e.g. touching/tapping and hoarding), insistence on sameness and resistance to change, and preoccupations (Bodfish, 2011). Disruptive behaviors can include difficulty engaging in tasks, off-task behavior, angry outbursts, oppositional and impulsive behaviors, aggression and property destruction (McCraken, 2011). Both restrictive and repetitive and disruptive behaviors can be maintained by access, escape, tangible or sensory (Frea & Hepburn, 1999).

Current research estimates that a majority (up to 93%) of children with ASD exhibit one or more disruptive behaviors and, in general, children who are higher functioning exhibit less severe challenging behaviors that those who are lower functioning as IQ is a significant predictor of the presence of challenging behaviors (McTiernan, Leader, Healy, & Mannion, 2011; Murphy, Healy, & Leader, 2009). As more than half of individuals with ASD engage in challenging behaviors, it is important to identify interventions that are effective in reducing these behaviors. Interventions for challenging behaviors tend to fall into two categories, behavioral interventions and pharmacological interventions (McCracken, 2011).

Although most researchers agree that behavioral interventions are the primary treatment method for ASD, pharmacotherapy has been used to enhance the effects of behavioral interventions (Filipek, Steinberg-Epstein, & Book, 2006; Matson & Dempsey, 2007; Matson & Minshawi, 2006, McCracken, 2011). Medications that have shown

increasing evidence of their effectiveness in reducing challenging behaviors include

psychostimulants, α-agonists, atomoxetine, and antipsychotics (McCracken, 2011). An

important aspect to consider when deciding whether or not to use pharmacological

treatments is the potential benefits versus the sides effects of the medications (Matson &

Dempsey, 2007; McCracken, 2011).

The most commonly-implemented intervention for reducing restrictive/repetitive

and challenging behaviors is functional communication training (FCT; Tiger, Hanley, &

Bruzek, 2008). FCT builds on the premise that an inverse relationship has been found

between communication ability and engaging in challenging behaviors (Mancil, 2006).

There are three stages to implementing FCT (Mancil, 2006; Tiger et al., 2008). The first

step requires conducting a functional behavior assessment to determine the function of

the behavior (e.g. attention, escape, tangible, or sensory). The second step is to replace

the challenging behavior with a communicative response which requires teaching the

child to use verbal language, a picture card, gesture or assistive technology to express

their need. And finally, all instances of challenging behavior are ignored and the child is

prompted to use their communicative response (Mancil, 2006; Tiger et al., 2008). A

recent review of the FCT literature with children with ASD identified eight studies

published between the years 1985 and 2005, which included 22 participants between the

ages of 2.7 and 13 years of age (Mancil, 2006). The challenging behaviors targeted

included aggression, self-injurious behaviors, destroying property, tantrums, body

rocking, hand flapping, oppositional behavior, and walking away. All of the studies in

the review reported that the intervention successfully reduced the challenging behaviors

and increased the communicative responses for all participants. However, a limitation

was that six of the eight studies were conducted in clinical settings, and only two involved adults from the natural setting in implementing the intervention (Mancil, 2006).

As discussed previously, the core symptoms of ASD include social and language impairment and the presence of repetitive/challenging behaviors (APA, 2013). Each of the symptoms can manifest differently in each child with ASD; however, numerous interventions have been identified that can address the symptoms across the spectrum. Evidence-based interventions include behavior modification (Reichow & Volkmar, 2012, Wang et al., 2012), social stories (Reichow & Volkmar, Wang et al., 2012), DTT (Tsiouri et al., 2012), naturalistic approaches (Bodfish, 2004), AAC (Ganz et al., 2012), pharmacotherapy (Filipek et al., 2006; McCracken, 2011), and FCT (Tiger et al., 2008).

When considering the core symptoms, a question arises as to how these symptoms interact and affect one another. In recent study of 109 children, ages 3-16, Matson, Hess, and Mahan (2013) found that both challenging behaviors and verbal communication skills affected social skills. The results demonstrated that children with fewer challenging behaviors and better verbal communication skills had significantly better social skills. An interesting finding of the study was that challenging behaviors were found to be the greatest predictor of social skills, with the presence of challenging behaviors adversely affecting social skills significantly more than poor verbal communication (Matson et al., 2013). These findings suggest that intervening with challenging behaviors may be the most efficient target for producing the greatest overall impact on children with ASD.

History of Inclusion

As the prevalence of ASD has continued to rise, an increased emphasis has been placed on the education of children with ASD (Conroy, Asmus, Boyd, Ladwig, & Sellers, 2007). Historically, children with disabilities were viewed as difficult, dangerous, untreatable, and uneducable, and therefore, they were excluded from public school settings (Ferraioli & Harris, 2011; Osgood, 2008). The public schools were responsible for identifying children with disabilities and the children were sent to institutions or segregated schools. The segregated settings did not place children based on age, child need or disability, but rather placed large groups of children with disabilities with varying needs into one classroom setting, with a teacher who lacked the education and training to work with and educate children with special needs (Ferraioli & Harris, 2011; Osgood, 2008).

In the early 20th century, compulsory education began and slowly schools began to create segregated classes within the public school system (Friend & Bursuck, 2009; Winzer, 1993). Children with disabilities and special education needs were no longer being sent to institutions or segregated schools, but they were still isolated from their typical peers as the majority of special education classrooms were in the basements or backs of schools far from the regular education classrooms (Winzer, 1993). As public schools began to take responsibility for educating children with disabilities, the teachers in general education classrooms raised their expectations for the students within their classrooms, which resulted in more students being placed in special education classrooms (Friend & Bursack, 2009). The public schools continued to view the children in special education as incapable of learning academic material, regardless of their disability, and

therefore, the students in special education spent their time learning manual skills, such as weaving and beading (Friend & Bursack, 2009).

As the number of students in special education placements continued to grow, so did concerns about the nature of special education (Salend & Duhaney, 2011). In 1968, Lloyd Dunn published an article that challenged the notion that segregated special education was necessary for all children with disabilities (Dunn, 1968; Osgood, 2008; Salend & Duhaney, 2011). Following the publication of this article, a movement developed led by educators challenging the status quo of special education (Osgood, 2008). Finally, in 1975, Public Law 94-142 or the Education for All Handicapped Children Act was passed (Crockett, 1999; Friend & Bursack, 2009; McLeskey, Landers, Williamson, & Hoppey, 2012; Osgood, 2008).

Public Law 94-142, later renamed the Individuals with Disabilities Education Improvement Act (IDEA), has experienced multiple revisions and reauthorizations, and defines the federal guidelines for special education (Friend & Bursack, 2009). This legislation guaranteed students with disabilities a free and appropriate public education (FAPE); schools could no longer exclude students merely because they had a disability. Instead, the school was required to educate the student in the least restrictive environment (LRE), which for many was the general education classroom, using an individualized education plan (IEP), which outlined the goals for education and the supports and services that were required to help the student be successful in the LRE (Friend & Bursack, 2009). If schools did not comply with the federal law, parents now had the right to pursue due process (Friend & Bursack, 2009).

The LRE mandate emphasized the importance of educating students with disabilities in general education classrooms with the option of separate classrooms in instances when such a placement was deemed more effective or could better meet the student's needs (Crockett, 1999). When making decisions about educational placement for students with ASD, school personnel must consider the student's age, ability, behavior, communication abilities, and personal preferences (Zager & Shamow, 2005). Because the abilities of students with ASD vary greatly, their educational placement should always be made on an individual basis. The most common placements for students with ASD are placement in a segregated program specializing in autism or developmental disabilities, full day placement in a special education program in a public school, self-contained special education placement with mainstreaming into general education classes, regular education classroom with pullout for individualized/specialized instruction, and full day integration in the general education classroom with necessary supports (Zager & Shamow, 2005).

When students with disabilities are educated full time in a general education classroom by the general education teacher, receiving any necessary supports in that setting rather than being pulled out for specialized instruction, the students are considered to be fully included (Mastropieri & Scruggs, 2000; Zager & Shamow, 2005). A broader definition of inclusion that has been adopted by some is any situation that brings children with ASD together with their peers for specific educational purposes (Handleman, Harris, & Martins, 2005). No matter how inclusion is defined, it is a highly debated topic among researchers and professionals who work with students with ASD and other disabilities (Kavale & Forness, 2000).

Benefits of Inclusion

Professionals who believe in increased inclusion of students with disabilities argue that educational and quality of life outcomes for those students are optimized when supports for academic and social behavior are as integrated as possible (Freeman, Eber, Anderson, Irvin, Horner, Bounds & Dunlap, 2006). The argument for inclusion began with the article published by Dunn (1968) arguing that segregation from typical peers was not necessary for all students with disabilities (Osgood, 2008; Salend & Duhaney, 2011). Following the passing of PL 94-142, Brown and colleagues (1977) argued that inclusion was necessary to build relationships between students with disabilities and their nondisabled peers. The article noted that keeping the students separate was failing to prepare them for the real world as adults in which they would have to learn to interact with each other (Brown, Wilcox, Sontag, Vincent, Dodd, & Gruenewald, 1977). Researchers early on continued to examine the effects of segregated placements on social and academic outcomes for students with disabilities and found that they had negative effects and produced deficits for students with disabilities (Carlberg & Kavale, 1980; Madden & Slavin, 1983; Epps & Tindale, 1988). More current research has focused on identifying the benefits from inclusive education and comparing the two settings rather than documenting the negative effects of segregated placements.

Social benefits of inclusion. As discussed earlier, social impairment is one of the core features of ASD that is consistent along the spectrum of diagnoses. Multiple studies examining the effects of inclusion have found that students in inclusive settings have better outcomes on measures of social competence than students educated primarily in segregated settings. In a review of 36 studies examining the effects of inclusion on

students with disabilities, Freeman and Alkin (2000) found that students with disabilities whose primary placement was the general education classroom outperformed those students with disabilities in segregated settings on measures of social competence. The review also found that the typical students' level of acceptance of their peers with disabilities was positively correlated with time spent in the general education classroom. Similarly, in a chapter examining the history and future of inclusion, Salend and Duhaney (2007) noted that students with disabilities who were included had increased social interactions, more friendships, better self-concept, and less disruptive behaviors than students with disabilities educated in segregated settings.

Another study followed 40 students, half of whom were in an inclusive setting and the other half were in a self-contained classroom, across 2 years, comparing them on measures of child development and social competence with the Scales of Independent Behavior and the Assessment of Social Competence (Fisher & Meyer, 2002). Participants were assessed on the two measures and matched in pairs based on chronological age and total scores at first testing, and then were reassessed after 2 years of education in their respective settings. The results of the study showed that the students who were educated in the inclusive setting made statistically significant gains on the both the developmental and social competence measures, while those in the restrictive setting did not make significant gains on either measure (Fisher & Meyer, 2002).

McDonnell and colleagues (2003) conducted an exploratory study to evaluate the impact of inclusive education on the achievement of students with developmental disabilities and their typical peers. The study used a quasi-experimental pretest-posttest design and included 14 students with disabilities ranging from first through fifth grade

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and spread throughout urban, suburban, and rural school districts. The students' progress was assessed using the Scales of Independent Behavior-Revised. The results of the study demonstrated a significant increase on the measure of adaptive behavior for 13 of the 14 students in the study (McDonnell, Thorson, Disher, Mathot-Buckner, Mendel, & Ray, 2003).

An additional study examined the effect of type of peer group on behaviors associated with happiness in five students with disabilities (Logan, Jacobs, Gast, Murray, Daino, & Skala, 1998). The study used an alternating treatments design to compare happiness behaviors (smiles, eyes open) during small group activities in an inclusive setting with typical peers and a segregated activity with only peers with disabilities. The study found that when controlling for teacher behavior, time of day, position of the child, materials, activities, number of peers in each group, and peers composing the groups, the children with disabilities had higher levels of happiness behaviors during inclusive activities with typical peers than in groups with only other peers with disabilities. This suggests that students with disabilities may be happier in inclusive settings than the segregated classrooms (Logan et al., 1998).

More recently, Lyons, Cappadocia, and Weiss (2011) examined the social characteristics of students with ASD across inclusive and non-inclusive classroom settings. A total of 146 parents of students with ASD who were enrolled in inclusive and segregated educational settings completed The Parent Perception Measure-Socialization subscale. The scale uses a 5-point Likert scale to measure social competence, where higher scores indicate greater social competence. In addition to the survey, parents were also asked to indicate the number of friends their child had both in and out of school, and

to rate the quality of their child's friendships on a single 5-point Likert scale, where higher scores indicated better quality. After controlling for severity of disability and age, the results of the study showed that students who were included in full inclusion classrooms were rated as having greater social competence and more friendships inside school (Lyons et al., 2011).

Overall, results of the studies examining the effects of inclusion on social outcomes suggest that students with disabilities benefit from placement in the general education classroom. As studies have documented the importance of strong social skills on the long-term outcomes for students with ASD (Licciardello et al., 2008; Luiselli et al., 2005), these benefits should not be overlooked. All efforts should be made to capitalize on the social benefits offered within the general education classroom.

Academic benefits of inclusion. In addition to the social benefits of inclusion for children with disabilities, research has found academic benefits associated with placement in the general education classroom. In their review, Freeman and Alkin (2000) examined studies that measured academic attainments of school-age children with disabilities who were included in general education settings. The review found either the achievement of the included students was significantly better than those who were not included or there was no significant difference between the two groups in each of the nine studies. Freeman and Alkin noted that, in at least one of the studies that found no significant difference, it was stated that a second year of data collection may have indicated a significant difference in favor of inclusion. However, even the lack of a significant difference between the groups is argued to lend support to the inclusion

movement, as achievement is equivalent across settings and the inclusive setting offers additional social benefits as well (Ormrod, 2006).

Luster and Durrett (2003) presented data from an exploratory study conducted by the state of Louisiana examining the effects on student and district outcomes (e.g. test performance and graduation) of placement in general education classes for the majority of the school day. The study examined the results of 16 districts within the state that were divided into two groups, the least and most inclusive districts based on number of students included for a full day. The results of the study demonstrated a significant difference between the two groups on the 8th-grade English/language arts standardized test, the 8th-grade math standardized test, and the diploma rate of students with disabilities. Students with disabilities in the more inclusive districts were found to perform significantly better on their 8th-grade standardized assessments and were more likely to graduate with a diploma than those students in the least inclusive districts (Luster & Durrett, 2003).

In a similar study, Cole, Waldron, and Majd (2004) examined the effects of inclusive school settings of six districts in Indiana that best represented the various geographic regions of the state and reflected urban, suburban, and rural locations. Inclusion was defined as a school in which students with disabilities received reading and math education in the general education setting. To measure progress, the Basic Academic Skills Samples (BASS), a group administered test that measures mathematics and reading abilities, was administered in the fall and spring of the same academic year. The results of the study found that, when looking at students with disabilities as a whole, there was no significant difference between those in inclusive settings and those in

pullout settings. However, for students with more severe disabilities than a learning

disability, there was a significant difference in achievement in favor of the inclusive

setting (Cole et al., 2003).

Over a 6-year period, a national study was funded by the Office of Special

Education Programs in the U.S. Department of Education, and data were collected on

over 11,000 students with disabilities as they moved from elementary to middle school

and middle to high school, with the purpose of measuring change in the students'

educational, social, vocation, and personal development over time (Blackorby, Wagner,

Cameto, Davies, Levine, Newman, Marder et al., 2005). The sample for the study was

randomly selected from rosters of students in special education ages 6 through 12

provided by local education agencies and state-operated, special schools. Data were

collected through parent interviews, teacher and school surveys, school characteristics

surveys, direct assessment of reading, math, self-concept, and attitudes about school, and

transcripts. At the end of the longitudinal study, the data revealed higher rates of

inclusion were associated with decreased absenteeism and greater academic success of

students with disabilities. Specifically, if students spent close to 75% of academic day in

the general education classroom, their levels of achievement in reading and math was

closer to grade level (Blackorby et al., 2005).

Findings of two recent studies also demonstrated the academic benefits of

inclusion. The first study (Kurth & Mastergeorge, 2010) found significant differences

between the general education and segregated setting for the students with disabilities.

Students who were included with typical peers spent the majority of their educational

time in math and language arts teacher-directed activities and seatwork, while those in the

special education classes spent the majority of their time in individual seat work and were on break for nearly one-third of their instructional time. Controlling for accommodations to the curriculum and materials, data revealed that students in the special education setting had access to the general education curriculum about 0.1% of the time, while those in the general education classroom had access to the curriculum about 87.2% of the time (Kurth & Mastergeorge, 2010).

In the second study (Dessemontet et al., 2012), researchers measured academic achievement three times across 2 school years using a standardized academic achievement test. No significant differences existed between the two groups in mathematics; however, the students with disabilities who were included scored significantly higher on the literacy measure than those students in special schools. The authors conclude from their results that placement in inclusion classrooms is an appropriate alternative to segregated settings (Dessemontet et al., 2012).

Multiple large-scale studies and smaller studies have documented the academic benefits of including students with disabilities. Benefits include high overall achievement (Blackorby et al., 2005; Cole et al., 2003; Dessemontet et al., 2012; Freeman & Alkin, 2000), higher scores on statewide standardized tests (Luster & Durrett, 2003), higher rates of attendance (Blackorby et al., 2005), and a greater likelihood of graduating with a diploma (Luster & Durrett, 2003). Additionally, students who were included had more access to the general education curriculum (Kurth & Mastergeorge, 2010), and were more likely to achieve closer to grade level (Blackorby et al., 2005). Similar to the studies examining social benefits, the evidence related to academic

performance lends support to the belief that placement in the general education classroom is the best placement for most students with disabilities.

Benefits of inclusion for peers. Although research has demonstrated positive effects of inclusion for students with disabilities, it is also important to consider the impact that the presence of students with disabilities will have on their typical peers. Some of the studies that examined the social and academic impact of inclusion on students with disabilities also examined the impact on students without disabilities (Cole et al., 2004; McDonnell et al., 2003). One study found that students without disabilities in inclusive settings made significantly more academic progress in math and reading than the students without disabilities in schools that practiced segregation (Cole et al., 2004). The second study found no significant differences between the academic performance of students without disabilities in the inclusion or comparison classes (McDonnell et al., 2003).

Two large-scale studies examined the outcomes of inclusion on typical peers (Huber, Rosenfeld, & Fiorello, 2001; Idol, 2006). Huber and his colleagues followed 477 students in 1st through 5th grade for 2 years. The participants were divided into three skills groups for math and reading (e.g. high, average, low achieving) based on their scores on a standardized test. Analysis of the data suggested that inclusion affected the groups differently. The students who were classified as low achievers benefited academically in inclusive classrooms across math and reading. Across all three groups, math scores increased significantly as long as there were no more than five students with disabilities included in the classroom (Huber et al., 2001).

In a program evaluation of eight schools, teacher reports were used to measure the impact of inclusion on typical peers (Idol, 2006). Four of the schools in the study were elementary schools and the other four were secondary schools. Teachers were interviewed regarding their thoughts on effects of the presence of students with disabilities on statewide testing, attitudes towards students with disabilities, and social skills. In the elementary schools, 36% of teachers reported an increase across all students on statewide test scores, the others reported no change; in two schools, the educators reported improved attitudes towards students with disabilities, and in one school the educators reported that all students exhibited improved social skills. In the secondary schools, 82% of teachers reported no change or improvement on statewide test scores, social behaviors and attitudes towards students with disabilities (Idol, 2006).

In a review of the literature documenting the effects of inclusion on typical peers, Kalambouka, Farrell, Dyson and Kaplan (2007) reviewed 26 studies that conducted a longitudinal study of one school or compared an inclusion setting and a school that practiced segregation. The review examined the impact of inclusion across the types of disabilities of the included students (e.g. cognitive, behavioral, sensory, communication) and across the academic and social outcomes of the typical students. Overall, the results of the review indicated limited or no adverse effects of inclusion on typical peers. Of the 26 studies, 81% reported positive or neutral outcomes for typical peers in academics and social skills (Kalambouka et al., 2007).

Along with the benefits that inclusion offers to students with disabilities, inclusion can improve outcomes for typical peers. Multiple studies have documented the presence of benefits to peers without disabilities including better academic achievement (Cole et

al., 2004; Huber et al., 2001; Idol, 2006; Kalambouka et al., 2007) and improvement in social skills (Idol, 2006; Kalambouka et al., 2007). These studies add more evidence to the argument that inclusion is the best practice for educating students with disabilities.

Barriers to Inclusion

Although empirical research has documented the benefits of inclusion and there is a legislative requirement to place children in LRE, there are children that could be educated in the general education classroom who continue to be placed full time in segregated special education classrooms. There are a number of possible barriers that may interfere with the implementation of inclusion. One of the first issues a school must address is administrative support for inclusive practices. The support and leadership of principals has been documented as necessary for successful school change and inclusionary practices (Cook, Semmel, & Gerber, 1999). Principals directly affect implementation decisions and resource allocation, as well as supervise school personnel (Cook et al., 1999; Horrocks, White & Roberts, 2008). Therefore, the principal's attitude toward inclusion can be a powerful influence on policy implementation. For inclusion to be successful, the principal needs to create a school climate in which the whole school embraces success and achievement for all students, and must ensure that resources for curriculum and instruction support this ideal (Horrocks et al., 2008; Janney, Snell, Beers, & Raynes, 1995). Despite knowledge of how the principal's attitude can directly affect the success or failure of inclusive practices, few studies have examined principal's attitudes toward inclusion and the influences behind those attitudes.

In a survey of 65 principals, researchers asked them to describe their definition of inclusion, their attitudes toward inclusion, and whether they felt that the teachers in

their school were able to handle the demands of teaching students with special needs (Barnett & Monda-Amaya, 1998). The results indicated that the majority of principals defined inclusion as a supportive environment that required shared responsibilities for the child and an attitude of cooperation among the staff. With regard to the teacher's abilities, the majority of the responses indicated that the principals did not feel that the general education teachers were trained to or capable of educating students with disabilities in the general education classroom. Not surprisingly then, the study also found that the principals indicated a low level of support for inclusion. Barnett and Monde-Amaya noted that the low level of support based on the survey data may have indicated the administrators' apprehension regarding the need and ability to provide the appropriate level of support for the students who are included.

In another evaluation of attitudes toward inclusion, 49 principals provided their opinion regarding the inclusion of students with disabilities by rating their agreement with statements on the School Environment Project Questionnaire (Cook et al., 1999). The results indicated that most of the principals agreed with the positive statements regarding inclusion indicating their belief that inclusion is a positive movement. However, despite their positive outlook on inclusion, the principals did not agree with statements that would suggest they were in favor of supporting inclusion in their school setting. The majority of principals disagreed with the statement that general education teachers had the skills and training to teach all students regardless of disability status, and the majority agreed with the statement that teachers cannot meet the needs of students with disabilities in the general education classroom. Finally, only one-third of principals

agreed that mandated resources should be protected for included students (Cook et al., 1999).

Praisner (2003) surveyed 408 elementary school principals to investigate relationships regarding attitudes toward inclusion, variables such as training and experience, and placement perceptions using the Principals and Inclusion Survey. Approximately 21%, or one in five, principals had a positive attitude about inclusion. With regards to the relationship between attitude towards inclusion and other variables, more positive attitudes about inclusion positively correlated with placement in less restrictive environments. More experience with teaching students with disabilities, as well as increased number of in-service training hours and special education credits positively correlated with a positive attitude score (Praisner, 2003).

Finally, in a more recent survey of principals, 571 principals across elementary, middle, and high schools completed the Principal's Perspective Questionnaire, which assess personal and professional characteristics, placement decisions, and specific attitudes about inclusion (Horrocks et al., 2008). Similar to the earlier studies, the results indicated that the principals had positive attitudes towards the inclusion of students with ASD in general education classrooms. Interestingly, the study found a correlation between positive attitude about inclusion and previous experience in teaching and supervising children with ASD, and not surprisingly, a previous positive experience with inclusion was positively correlated with a positive attitude towards inclusion. Principals in elementary schools were more likely to recommend higher levels of inclusion than those in middle and high school settings. Another surprising finding was that length of service in the same district was negatively correlated with holding the belief that a child

with ASD could be successful in the general education classroom. The authors note that this may be indicative of principals who were educated prior to the inclusion movement (Horrocks et al., 2008).

Researchers have stated that attitudes toward inclusion vary as a function of proximity to the implementation of inclusion, and since principals are distal, their attitudes should be more positive (Cook et al., 1999). Therefore, when examining barriers to inclusion, it is important to consider the opinions of general and special education teachers, the individuals directly responsible with implementing inclusionary practices. Teachers' attitudes about inclusion are especially important because research has demonstrated that teachers with more positive attitudes about inclusion and more experience in inclusive setting have higher rates of concern for the success of their included students (Cook, Tankersley, Cook, & Landrum, 2000).

In a review of all research on teachers attitudes completed between 1958 and 1995, Scruggs and Mastropieri (1996) presented the data from 28 studies which included 10,560 teachers and school personnel. Overall, 65% of the participants supported inclusion as a desired practice, but there was less support when the specifics of inclusion were included in questionnaires. Approximately half of the teachers indicated that they would be willing to teach students with disabilities, but only 38% felt that they had the training and the ability to handle the education of students with moderate to severe disabilities. More special education teachers than general education teachers felt that students with disabilities and their typical peers would benefit from inclusionary practices, but interestingly, more general education teachers indicated that they had witnessed students with disabilities benefitting from placement in the general education

classroom. With regards to the amount of work inclusion would create for general education teachers, 81% agreed that including a student with special needs would create more work for them, almost half indicated that they would feel "imposed upon" if they had students included in their classrooms, while only one-third stated that they had the time to complete the extra work that would be required if they had a student with disabilities included in their classroom. Similarly to surveys completed by principals, the majority of general and special education teachers felt that general education teachers did not have sufficient training or expertise to help students with disabilities to be successful when included (Scruggs & Mastropieri, 1996).

In the same study in which principals were surveyed regarding their attitudes toward inclusion, Cook and his colleagues (1999) also surveyed special education teachers. The special education teachers were in agreement with the principals that inclusion was a good practice, but with regard to the rest of the questions, the attitudes of the two groups differed significantly. Special education teachers did not feel that general education teachers had the ability to teach students with special needs and therefore felt that they should be heavily involved in the inclusion process. In addition, they felt the achievement of the included students would not increase in general education classrooms. Finally, they felt that resources needed to be protected and allocated to support students with disabilities who are included (Cook et al., 1999).

Marks-Wolfson and Brady (2009) examined the attitudes of 199 teachers and how it impacted their beliefs about students with disabilities. The teachers completed the Teacher Attribution Scale, Teachers' Sense of Efficacy Scale, Interaction with Disabled Persons Scale, a brief COPE, and Life Orientation Test. Teachers who had high self-

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efficacy regarding their ability to teach children with special learning needs were more likely to blame the curriculum or their own teaching abilities for lack of progress by the included student. Additionally, teachers who had more sympathy for students with disabilities were more likely to believe that a lack of learning in the general education classroom was due to factors in the child's control and that those factors would be difficult to change. Finally, the study revealed that teachers who had more training were less likely to view the child as having control over their disability and poor learning (Marks-Wolfson & Brady, 2009).

While implementing a university-school district partnership, Causton-Theoharis and colleagues (2011) surveyed the teachers and staff regarding their opinions on what made inclusion difficult, and their findings were consistent with the other studies presented in the review. Teachers stated that they did not have the time to plan for included students nor did they have time to collaborate with other teachers. The teachers indicated that they felt collaboration was necessary for inclusion to be successful, but stated that when actually implemented there was little or no time to achieve the desired level of communication and planning. In addition to the lack of time, teachers who were supportive of the inclusion efforts found the negative attitudes of other teachers to be a detriment to the process. The teachers reported that the negative attitude expressed by some of the teachers made it difficult for the other teachers to stay positive about the process because those teachers did not aide in the process and actually became a hindrance (Causton-Theoharis, Theoharis, Bull, Cosier, & Dempf-Aldrich, 2011).

In the most recent evaluation of opinions and attitudes about inclusion, Segall and Campbell (2012) surveyed 196 education professionals, including general education

teachers, principals, special education teachers and school psychologists, across 33 schools. The participants complete the Autism Inclusion Questionnaire, which includes five sections: demographic information, knowledge of ASD, opinions about inclusive education, classroom behaviors, and classroom practices. Across all the participants, general education teachers reported the least positive attitudes towards inclusion. Additionally, general education teachers had less knowledge about ASD, awareness of practice, and use of strategies than special educators and school psychologists. The authors of the study note that these results indicate the need for increases in educator training as general and special educators as well as school psychologist and administrators are all responsible for effectively implementing inclusionary practices (Segall & Campbell, 2012).

In addition to the views and opinions of administrators and teachers regarding inclusion, there are child characteristics that can negatively affect their time spent within the general education classroom. One of the most common barriers to the general education classroom is challenging behavior, and students who engage in challenging behavior risk being removed from the general education classroom to be placed in segregated settings (Dunlap, Iovannone, Wilson, Kincaid, & Strain, 2010; Emerson, Kiernan, Alborz, Reeves, Mason, Swarbick, Mason, et al., 2001). Students engaging in appropriate behavior is a necessary condition for effective teaching and learning to take place (Baloglu, 2009). Disruptive behaviors have been shown to interrupt academic progress and impede social functioning, and teachers consider controlling student behavior to be one of the greatest deficits in their skills and training (Baloglu, 2009; Jull, 2008). One of the most common punishments for consistently engaging in disruptive

behaviors is removal from the general education classroom (Algozzine & Algozzine, 2008; Jull, 2008). As stated earlier, 64-93% of individuals with ASD engage in challenging behaviors, which therefore puts them at a high risk for exclusion from the general education classroom (McTiernan et al., 2011).

In an effort to understand how students' behaviors affected the teacher's opinions of the student, Cook, Caneron, and Tankersley (2007) collected data from 50 general education teachers who had students with disabilities included in their classroom. The teachers were asked to rate the included students based on their enjoyment in teaching the student, their concern for the student, their preparedness to meet about the student during a last minute meeting, and their desire to have the student removed from their class. Not surprisingly, students with disabilities who displayed higher rates of problem behaviors were more likely to have a high rejection score and a lower attachment score from the teacher (Cook et al., 2007).

Another study examining the relationship between access to the regular classroom and the students with ASD behaviors included 77 children with ASD (Yianni-Coudurier, Darrou, Lenoir, Verrecchia, Assouline, Ledesert, Michelon et al., 2008). Data were collected on each of the children regarding demographics, clinical characteristics using the Aberrant Behavior Checklist (ABC), ASD symptom severity using the Child Autism Rating Scale (CARS), and adaptive behaviors using the Vineland Scale. In addition to child characteristics, data was also collected on the number of hours spent in the regular education classroom and the specialized, segregated setting. The analysis of the data revealed that the only significant factors related to hours spent in the inclusion setting

were symptom severity and three areas on the ABC: uncooperativeness, stereotype/self-injury behaviors, and hyperactivity (Yianni-Coudurier et al., 2008).

Lee, Soukup, Little, and Wehmeyer (2008) used direct observation to determine student and teacher variables that impact the student's access to the general education curriculum. Nineteen elementary students with disabilities in kindergarten through sixth grades were observed using the Access Code for Instructional Structures and Student Academic Response. Two factors that significantly predicted student access to general education were student competing response and teacher management. Student competing response was defined as behaviors that are unacceptable in the academic setting, including aggression, disruption, talking inappropriately, noncompliance, looking around, and self-stimulation and abusive behavior. Teacher management was defined as behaviors that are classroom management activities including verbal directives and nonverbal prompts. Essentially, the results indicated that students who engaged in high rates of disruptive and off-task behaviors were less likely to have access to the general education curriculum and students with disabilities who were included in the classroom of a teacher who had lower classroom management abilities were less likely to have access to the general education classroom (Lee et al., 2008).

As children with ASD engage in high rates of challenging behavior and studies have demonstrated that their behaviors are often the reason they are excluded from general education, the question arises about teachers' self-efficacy and ability to manage disruptive behaviors. The study by Lee and colleagues (2008) demonstrated that when students with disabilities have teachers who have poor skills in classroom management they have less access to the general education curriculum. In an attempt to measure

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general education teachers' perceptions about behavior management and intervention strategies, Tillery, Varjas, Meyers, and Smith-Collins (2009) recruited and interviewed 20 kindergarten and first grade teachers. The interviews revealed that some teachers believe that disruptive behaviors are due to within child characteristics and that the teachers have little ability to change or prevent the behavior. One concerning trend that was discovered in the interviews was that almost all of the teachers lacked training in behavior management. The majority stated that their college training had no specific classes in behavior management rather it was briefly discussed as part of another class. Many of the teachers acknowledged that their schools attempted to provide them training but it usually only occurred after it was identified that there was a need for such training. For example, one teacher stated that one year she had multiple students with behavior problems included in her class, and a few months the administration acknowledged that she needed some support so they hired an outside consultant (Tillery et al., 2009).

Strategies to Increase Access to the Inclusive Setting

When including students who engage in high rates of challenging or disruptive behaviors, the efforts made by the teacher to create a positive and productive learning environment may not be enough to eliminate the problems behaviors (Friend & Bursac, 2009). In order to maximize learning opportunities for all students, it may be important to identify practical classroom interventions that can decrease disruptive off-task behaviors and increase appropriate desired behaviors (Lequia, Machalicek, & Rispoli, 2012). A variety of intervention strategies have been shown to successfully decrease the disruptive, off-task behaviors of children with ASD and increase appropriate, desired

behaviors. Some of the most popular interventions include the use of paraprofessionals, positive reinforcement, visual schedules, and self-management.

Paraprofessional interventions. With the reauthorization of IDEA (2004) and the requirement for LRE, paraprofessionals have often been used as a supplemental aid or service. Based on prior legal decisions, paraprofessionals must be provided to students with disabilities if the service is necessary for the student to receive FAPE and the paraprofessional must be qualified to perform assigned services as indicated in the individualized education plan (IEP; Katsiyannis, Hodge, & Landford, 2000). Research has demonstrated that an increase in the number of paraprofessionals required to work with students with disabilities has paralleled an increase in the number of students with disabilities who are included in general education (Katsiyannis et al., 2000). In an attempt to understand the day to day activities of paraprofessionals, Riggs and Mueller (2001) interview 23 paraprofessionals in an elementary school. During the interviews, 60% of the paraprofessionals indicated that they were assigned as one to one support for a student, and all indicated that they spent more than 50% of their time providing direct instruction to students. Other activities that were identified during the interviews were clerical tasks, student monitoring, accompanying students, assisting with classroom projects, and behavior management of students (Riggs & Mueller, 2001).

In the last decade, as the number of paraprofessionals in schools has continued to rise, researchers have started to examine whether the use of paraprofessionals is having detrimental effects for the students they are assigned to work with each day. Researchers state that when paraprofessionals are used to deliver instruction it should be supplemental rather than the primary source of instruction, however, this is not happening (Giangreco,

Broer, Suter, 2011). Paraprofessionals are becoming increasingly more responsible for providing instruction to students with disabilities and making instructional and curricular decisions, which would be considered unacceptable if it was happening for students without disabilities (Giangreco, 2010).

In addition to providing levels of instruction for which they are untrained, paraprofessionals have also been found to create a dependence on adults as well as interfere with teacher engagement with the student (Cook et al., 2007; Giangreco, 2010; Giangreco, Broer, & Edelman, 1999; Giangreco et al., 2011; Giangreco, Yuan, McKenzie, Cameron, & Fialka, 2005). Often paraprofessionals are assigned to work with students with challenging behaviors, and one of their primary responsibilities is participating in behavior management, but the presence of paraprofessionals has also been shown to provoke problem behaviors as students will express their dislike for the paraprofessionals by engaging in undesirable behavior (Giancreco et al., 2005; Giangreco, 2010; Giangreco et al., 2011). Another detrimental effect of the presence of paraprofessionals is the stigmatization and isolation of the student and interference with peer relationships (Giancreco et al., 2005; Giangreco, 2010; Giangreco et al., 2011). At times, the student and paraprofessional work so closely together that the student does not feel the need to develop other relationships, or the peers view the paraprofessional a physical barrier to interacting with the student. Additionally, some students with disabilities have expressed embarrassment about having to work with a paraprofessional and feeling as though it makes them standout in negative ways (Giancreco et al., 2005; Giangreco, 2010; Giangreco et al., 2011).

Positive reinforcement interventions. The most common intervention strategy used to intervene with challenging behaviors is positive reinforcement, which has been shown to be successful in reducing problem behaviors and increasing appropriate behaviors in inclusive environments (Kay, Harchik, & Luiselli, 2006; Matson & Boisjoli, 2008; Matson, Shoemaker, Sipes, Horovitz, Worley, & Kozlowski, 2011). Positive reinforcement is the contingent presentation of a stimulus, immediately following a behavior, that increases the likelihood that the behavior will occur again (Alberto & Troutman, 2006). A positive reinforcement intervention will only be successful if the reinforcer is powerful enough to motivate the individual to engage in appropriate behavior (Bregman, Zager, & Gerdtz, 2005).

One commonly used method of delivering positive reinforcement is the token economy (Friend & Bursack, 2009; Tarbox, Ghezzi, & Wilson, 2006). This intervention strategy is implemented by creating a system in which students earn tokens, either tangibles or points, which they exchange for rewards. The number of tokens earned for each behavior can be individualized based on student motivation (Friend & Bursack, 2009; Tarbox et al., 2006). In a review of the literature, Matson and Boisjoli (2009) discussed empirical studies that implemented token economies with individuals with ASD from 1970-2006. The review demonstrated that token economies are effective interventions for children with ASD because they are flexible and can be tailored to meet the specific needs of each child (Matson & Boisjoli, 2009). Despite the effectiveness of the token economy, the review states that its' popularity has been waning in recent years, and cites many possible reasons including cost and time constraints, lack of applicability to modern settings, excessive control involved, and the rise in the notion that children

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should engage in appropriate behavior due to intrinsic motivation rather than external reinforcers (Matson & Boisjoli, 2009).

Two other commonly used positive reinforcement intervention procedures for reducing challenging behavior and increasing appropriate behavior in inclusive settings are differential reinforcement of alternative behaviors (DRA; Vollmer & Iwata, 1992) and differential reinforcement of other behaviors (DRO; LeGray, Dufrene, Sterling-Turner, Olmi, & Bellone, 2010; Reynolds, 1961). DRA is the process of withholding reinforcers for undesired behaviors and delivering a reinforcer for the desired behavior; the performance of the desired behavior decreases the likelihood that the undesired behavior will occur (Alberto & Troutman, 2006; LeGray et al., 2010; Petscher, Rey, & Bailey, 2009; Vollmer & Iwata, 1992). DRO includes providing a reinforcer when the child is not engaging in the undesired behavior for a specified interval of time; reward is only given for zero occurrences of the undesired behavior (Alberto & Troutman, 2006; LeGray et al., 2010; Reynolds, 1961).

In a study comparing the effects of DRO and DRA, LeGray and his colleagues (2010) used an alternating treatments design to evaluate the relative effectiveness of each approach. Participants in the study were three children referred for behavioral consultation services by their teacher due to ongoing disruptive behavior. Three conditions were evaluated during the intervention phase: DRO, DRA and control. The DRA component of the intervention included a pre-teaching script that defined the appropriate and inappropriate behavior and was used immediately before each DRA session. During the DRO session, the teacher ignored inappropriate behavior and provided a reinforcer following a 30-second absence of the target behavior. Finally,

during the control condition, teachers were instructed to teach in the manner that they routinely used. The results indicated that both DRO and DRA were effective in reducing the disruptive behaviors of the students, but that across all participants, disruptive behaviors were lowest during DRA conditions (LeGray et al., 2010).

In a review of empirical evidence for DRA, researchers reviewed 116 studies dating back to 1977 (Petscher et al., 2009). The review included a total of 336 participants. Of the 336 participants, 80% were children, and 75% had a developmental disability. The targeted behaviors for reduction included aggression, destruction, disruption, food rejection, self-injury, and vocalizations, and the behaviors targeted for increase included communication, compliance, food acceptance, play, task engagement, and transitions. The results of the review indicated that DRA was successful at reducing severe behaviors and replacing undesirable behaviors with appropriate behaviors (Petscher et al., 2009).

Although research has demonstrated the effectiveness of DRO and DRA in reducing challenging behaviors, there are some limitations to the interventions. DRO only focuses on rewarding the absence of the target behavior and provides reinforcement in its absence no matter what other behaviors are occurring. Therefore, it is possible that using this procedure, the teacher could inadvertently reinforce other problem behaviors (Alberto & Troutman, 2006). Additionally, because only the absence of behavior is being reinforced, the student does not learn an appropriate replacement behavior, which is not functional for the student (Alberto & Troutman, 2006). With regards to DRA, the teacher is rewarding the alternative behavior, while ignoring the problem behavior, essentially employing extinction. The danger of using extinction is that it can cause an

increase of the behavior, which may be dangerous in a classroom setting (Alberto & Troutman, 2006). A limitation for both DRO and DRA is that they are dependent on the effectiveness of the reinforcer. If the reinforcer is not motivating for the child, they will not work to earn it (Cooper, Heron, & Heward, 2007). Additionally, if the behavior change does not happen quickly when implementing these procedures, there will be a low rate of reinforcement which may not hold the child's interest long enough to produce the desired effects (Cooper et al., 2007).

Visual schedule interventions. A strategy similar to self-management that has been used to reduce challenging or off-task behaviors is visual schedules (Crosland & Dunlap, 2012; Harrower & Dunlap, 2002). The intervention utilizes line drawings, photographs, and videos to visually communicate upcoming events, facilitate transitions, and increase student independence (Crosland & Dunlap, 2012; Banda & Grimmet, 2008; Lequia et al., 2012). Visual schedules have been identified as a useful strategy specifically with individual with ASD because they supplement verbal instruction and students with ASD have difficulty processing and retaining verbal information (Banda & Grimmett, 2008; Lequia et al., 2012). In addition to reducing challenging behavior, another advantage of using picture schedules that has been documented is that as the students learn to use the visual schedules, they are less likely to be dependent on adult prompts (Koyama & Wang, 2011).

Two recent reviews of the empirical literature on visual schedules collectively assessed studies from 1993-2010 (Banda & Grimmett, 2008; Lequia et al., 2012). In the first review, the majority of the 13 studies reviewed targeted social and transition skills outcomes across 28 children with ASD under the age of 14 (Banda & Grimmett, 2008).

The results revealed that the use of visual schedule interventions was effective with all 28 participants, and generalization, which was reported for six studies, occurred for all learned skills (Banda & Grimmett, 2008). A total of 18 studies were identified for the second review and the primary focus of those studies was challenging behavior (Lequia et al., 2012). The studies included 43 participants, ranging in age from 3 to 18 years of age. The results of the review indicated that, across all participants, visual activity schedules successfully reduced challenging behaviors and increased appropriate behaviors in 41participants. The findings were consistent across age, gender, symptom severity, communication, and type of schedule (e.g., line drawing, photographs, video; Lequia et al., 2012).

Although both reviews indicated that the use of visual schedules can increase appropriate behaviors and reduce challenging behaviors, there are some limitations to using the approach. The first concern is that visual schedules have only been evaluated as part of larger treatment packages that include other components such as reinforcement; therefore, it is impossible to know if the visual schedule is the component responsible for the observed changes in behavior (Banda & Grimmett, 2008; Lequia et al., 2012). Another issue that has been cited with the use of visual schedules, particularly with picture schedules, is that children may rearrange the schedule without the knowledge of adults to avoid nonpreferred activities (Machalicek, Shogren, Lang, Rispoli, O'Reilly, Helinger, & Sigafoos, 2009). A more concerning limitation of using visual schedules is that the intervention may evoke challenging behaviors (Massey & Wheeler, 2000; O'Reilly, Sigafoos, Lancioni, Edrisinha, & Andrews, 2005). Studies have demonstrated that when children with ASD notice that a nonpreferred activity is following the preferred

activity they are currently engaged in, they may engage in challenging behaviors to avoid the next activity (Massey & Wheeler, 2000; O'Reilly et al., 2005). Finally, a critical concern with using visual schedules in inclusive educational settings is that results of at least one study demonstrated the strategy was not as effective in the general education classroom as it was in the segregated special education classroom (Lequia et al., 2012).

Self-management interventions. Another intervention strategy that has been used to reduce problem behaviors and increase appropriate behaviors in students with ASD is self-management. The goal of self-management is to increase the child's independence and decrease the amount of time the teacher needs to spend on decreasing problem behavior (Koegel, Matos-Freden, Lang & Koegel, 2012). It requires the student to evaluate their own performance, monitor their behavior, and deliver their own reinforcement (Vismara & Rogers, 2010). Implementing a self-management intervention will require a lot of initial prep work by the teacher or school personnel. The child must be taught to discriminate between the preferred and undesirable behaviors, the teacher must establish a reinforcement system, and a plan to gradually increase time between reinforcement (Crosland & Dunlap, 2012; Harrower & Dunlap, 2001; Koegel et al., 2012).

There have been two reviews of the literature examining the evidence for using self-management with individual with ASD. The first examined articles published between 1992 and 2001 and demonstrated that there are limited studies that evaluate the efficacy of self-management with students with ASD (Lee, Simpson, & Shoegren, 2007). The review identified 11 articles with a total of 34 participants. The results of the studies were examined using percentage of nonoverlapping data (PND); higher percentage of

PND indicates more effective treatment. The PND for the overall effectiveness of all the studies combined was 81.9%, which indicates an effective intervention, but the range was 0-100%, which is large (Lee et al., 2007).

The second review examined studies implementing self-management interventions with individuals with ASD from 1994-2008 (Southall & Gast, 2011). The study identified 24 studies overall, of which 16 included participants with autism and 8 included participants with high functioning autism or Asperger's. Of the studies including students with autism, all 35 participants using self-management improved and maintained their targeted behaviors. A total of 23 of the 26 participants with high functioning autism or Asperger's increased their target behaviors (Southall & Gast, 2011).

Despite the effectiveness of self-management interventions, there are some limitations. One limitation is that the students tended to stay reliant on the self-management methods for the long term and may need to have the materials at all times (Southall & Gast, 2011). In the literature, most of the studies examined packages and therefore were unable to identify which components were effective, and in most of the studies positive reinforcement procedures were in place prior to the implementation of the self-management interventions which confounded the findings of the studies (Southall & Gast, 2011). Finally, the majority of the studies evaluating self-management interventions have been used to increase social skills; therefore, its effectiveness with reducing challenging behaviors has not been fully established (Koegel, et al., 2012; Lee et al., 2007).

Peer-mediated Interventions

Although each of the above interventions has been shown to be effective, there are limitations to each approach. These limitations include reliance on adults to implement and monitor (Hoff & Robinson, 2002), continued dependence on the intervention (Southall & Gast, 2011), dependence on external motivators (Cooper et al., 2007), and the possibility of evoking challenging behaviors (Alberto & Troutman, 2006; Massey & Wheeler, 2000; O'Reilly et al., 2005). Furthermore, the use of paraprofessionals has been criticized in recent years due to the many drawbacks including stigmatization, over-reliance on adults, and the interruption of interactions with peers (Giancreco et al., 2005; Giangreco, 2010; Giangreco et al., 2011). A group of alternative strategies that has shown promise in facilitating the successful inclusion of children with disabilities with few limitations is peer-mediated interventions (PMI; Carter, Cushing, Clark, & Kennedy, 2005). PMI refers to training peers to deliver academic, behavioral, and social interventions rather than using an adult as the intervention agent (Chan et al., 2009; Harrower & Dunlap, 2001; Crossland & Dunlap, 2012; Hoff & Robinson, 2002). According to the National Professional Development Center on Autism Spectrum Disorders, PMI meets the criteria for being an evidence-based practice within the early childhood and elementary age groups for promoting communication/language and social skills (Wong et al., 2014). Peers are believed to naturally affect each other's behaviors because they mutually reinforce behaviors and norms that are consistent with their own, and PMI build upon this naturally occurring phenomenon (Hoff & Robinson, 2002).

Several different PMI strategies can be used to promote inclusion success for students with disabilities. First, peers can be enlisted to serve as models of selected

behavior (Chan et al., 2009; Hoff & Robinson, 2002). For example, peers can model appropriate behaviors when teachers are providing direct instruction to the student with disabilities, or can serve as models for appropriate classroom behavior such as raising hands and staying on-task. Second, peers can be asked to serve as tutors for academic and developmental skills (Crosland & Dunlap, 2012; Harrower & Dunlap, 2001, Hoff & Robinson, 2002; King-Sears, 2001). This can include peer tutoring in which two students are paired to work on academic material and one student provides assistance, instruction and feedback to the other, and cooperative learning, in which students with disabilities are grouped with typical peers to learn academic material (DuPaul & Eckert, 1998; Harrower & Dunlap, 2001). Third, peers can be taught to monitor and model social behaviors (Chan et al., 2009; Harrower & Dunlap, 2002; Koegel et al., 2012). With training, peers can take on responsibility for initiating interactions, maintaining interactions and responding to interactions with students with disabilities (Chan et al., 2009). Finally, peers can be participants in group-oriented reinforcement, such as token economies (Hoff & Robinson, 2002).

Across all PMI, various benefits have been identified in using peers as intervention agents. The first is that peers are readily available across multiple settings and are able to be present in situations in which adults would be stigmatizing to the student with disabilities (e.g. lunch, recess, bathroom; Chan et al., 2009; Hoff & Robinson, 2002). Another identified advantage is that, in contrast to adult-mediated interventions which have shown to have limited generalizability, PMIs have been show to promote maintenance and generalization of learned skills across settings because the peers can serve as cues for the desired behavior (Hoff & Robinson, 2002; Williams,

Johnson, & Sukhodolsky, 2005). One hypothesis behind the increased generalizability

and maintenance is that by using PMIs, the student with disabilities is provided with the

opportunity to practice skills with multiple people (Chan et al., 2009). Additionally,

using typical peers in interventions with students with disabilities may provide the

opportunity for relationships to be established between the two (Chan et al., 2009).

Teachers also benefit from the use of PMIs. PMIs are proactive and require little

planning time, and can easily be adapted to fit the needs of the classroom and teacher

(Williams et al., 2005). Using peers also relieves the teacher of the sole responsibility for

controlling behavior, which can be burdensome and take time away from curriculum

planning and instruction. By implementing PMI, teachers can regain valuable time,

which can be used in more constructive manner, while still maximizing the amount of

intervention the child receives (Chan et al., 2009; Hoff & Robinson, 2002; Williams et

al., 2005). Furthermore, using interventions such as peer tutoring can increase the

percentage of active learning for all students in the classroom, as well as increase

opportunities to respond, give and receive feedback, be actively engaged, and ask

questions, all of which have been shown to increase academic outcomes (Hoff &

Robinson, 2002).

PMIs have been found to be beneficial for both typical students and students with

disabilities. In a meta-analysis and a review of the literature from 1978 – 2008, 45

studies were identified that examined outcomes of PMI specifically with students with

ASD. Overall the studies included 178 participants with ASD (range 1-48) and 396 peers

(range 1-53). The most commonly used methods for training the peers included verbal

explanation, discussion, modeling, role-play, practice, and ongoing feedback, and the

majority of the studies taught peers to initiate, maintain and respond to interactions, prompt, provide reinforcement, and provide instruction. Of the 45 studies, 37 examined social outcomes for the students with ASD, and only 12 addressed challenging behaviors. The results indicated that 91% of the studies reported positive outcomes, only 9% reported mixed results and no studies reported negative outcomes (Chan et al., 2009, Zhang & Wheeler, 2011). Both the review and the meta-analysis demonstrate the effectiveness of PMI as an intervention for individuals with ASD. One of the major limitations of the studies is the lack of measurement of generalization and treatment integrity (Chan et al., 2009; Zhang & Wheeler, 2011).

Of the 45 identified studies utilizing PMI, 37 of the studies focused on social skills outcomes (Chang et al., 2009; Zhang & Wheeler, 2011). PMI represent the largest and most empirically-supported type of social intervention for children with ASD (Crosland & Dunlap, 2012; Bass & Mulick, 2007; Koegel et al., 2012). However, lack of academic skills and disruptive/off-task behavior are more likely to lead to exclusion of students with ASD from the general education classroom than poor social skills (Algozzine & Algozzine, 2008; Jull, 2008). The various benefits of PMI make it a suitable intervention option for addressing both academic and behavioral concerns of students with ASD included in the general education classroom, but there is a lack of literature addressing both of these areas.

Only nine studies have been identified that evaluate the use of PMI on academic skills and disruptive/on-task behaviors of students with ASD. Six of these studies examined the effects of PMI on academic skills and included class-wide peer tutoring and cooperative learning groups (Carter, Cushing, Clark & Kennedy, 2005; Dugan, Kamps,

Leonard, Watkins, Rheinberger, & Stackhaus, 1995; Hunt, Staub, Alwell, & Goetz, 1994; Kamps, Barbetta, Leonard & Delquadri, 1994; Kamps, Leonard, Potucek, & Garrison, 1995; Wards & Ayvazo, 2006). All seven studies were single subject designs and included 18 students with autism in kindergarten through high school, with the majority in fourth and fifth grade. Three of the studies utilized cooperative learning (Dugan et al., 1995; Hunt et al., 1994; Kamps et al,, 1995), two utilized class wide peer tutoring (Kamps et al., 1994; Ward & Ayvazo, 2006), and one utilized peer feedback and instruction (Carter et al., 2005). The dependent variables in the studies included reading fluency and comprehension (Kamps et al., 1994; 1995), social studies pre/post-tests (Dugan et al., 1995), access to general education curriculum (Carter et al., 2005), physical education skills (Ward & Ayvazo, 2006), and overall academic skills (Hunt et al., 1994). Each of the studies found that the PMI was effective in increasing the target skills for all participants, but none of the studies examined generalization of the skills or treatment integrity.

Another area of weakness in the PMI literature is in the area of disruptive/off-task behavior. Only three studies have been identified in which disruptive/off-task behaviors were the primary dependent variable (Arceneaux & Murdock, 1997; Grey, Bruton, Honan, McGuiness, & Daly, 2007; McCurdy & Cole, 2013). In one study, the effect of cooperative learning on the active and passive engaged time and social interactions of two fourth grade students with autism was evaluated (Grey et al., 2007). The settings for the study included the special education classroom and the inclusion classroom, and data was collected using direct observation through videotaping. The results of the study

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found that the intervention was not effective in increasing task engagement but did increase social engagement of both students (Grey et al., 2007).

A second study by Arceneaux and Murdock (1997) examined the effects of a peer prompting intervention on the disruptive noises of an 8th-grade male with ASD during a silent reading period. A female peer, who had previously expressed an interest in working with students with disabilities, was trained to prompt the student with ASD each time he emitted the disruptive noise. During the reading period, the peer prompter pulled her desk next to the student with ASD, and would prompt him to get his book out of his desk. Each time the student with ASD emitted the disruptive sound, he would be directed back to his materials by the peer prompter who would tap/point to the student's book. The prompt was repeated until the student returned to reading. The study used an ABAB design to evaluate the effectiveness of the intervention. During baseline, an average of 16.67 disruptive noises were emitted, during the first intervention phase, the disruptive noises were reduced to 7.00, during return to baseline, disruptive noises averaged 6.67, and in the last intervention phase, disruptive noises averaged 2.60. Follow-up data was collected at 3 ½ weeks and again at 5 weeks, and the average rates of disruptive noises were 0.67 and 0.40, respectively. No data on generalization or treatment integrity was collected for this study (Arceneaux & Murdock, 1997).

In an attempt to replicate and extend the previous study, McCurdy and Cole (2013) utilized a peer support package to reduce the disruptive/off-task behaviors of three male students with ASD in second, third and fifth grade general education classrooms using a multiple baseline across participants design. The students were nominated by their teachers for inclusion in the study based on their high rates of disruptive/off-task

behaviors during center time and guided reading periods. Peer supporters were nominated by their teachers based on the belief that supporting the student with ASD would not interfere with their learning. Once parental permission and student assent was obtained, baseline data collection started. During baseline, typical classroom practices were ineffective.

For the peer support package, the peer was trained by the first author and a paraprofessional from the school. The peer was trained to recognize disruptive/off-task behaviors, appropriately prompt/redirect the student with ASD back to their work and then provide feedback to the student with ASD. Intervention started once a consistent trend was found in baseline for the first participant and for the second and third participant, intervention started once the previous participant had demonstrated a consistent reduction in disruptive/off-task behaviors. Across all three participants, a reduction in disruptive/off-task behavior occurred from a mean of 72.43% during baseline to a mean of 14.43% during intervention. Despite positive effects for all students, some modifications were needed with the older student pair. The peer buddy reported that she was self-conscious during the intervention because she felt other students were looking at her, and then she forgot to prompt the student with ASD. Two instances of peer supporter retraining were needed and eventually, the peer supporter was given a MotivAider to prompt her to pay attention to the student with ASD. Similarly to the other studies, no data were collected on generalization or treatment integrity (McCurdy & Cole, 2013).

The purpose of the current study is to extend the work of McCurdy and Cole (2013) and examine the effects of the peer support package with younger elementary-age

students with ASD who are included in general education classrooms and are engaging in disruptive/off-task behaviors. The target population for this study was chosen due to the previous study that indicated that peer supporters in older grades may be too self-conscious to effectively deliver the intervention. The proposed study will contribute to the existing literature by examining work completion and generalization of the effects of the intervention to other periods in which the student with ASD is engaging in the target behavior, as well as directly evaluating the integrity with which the peer support package is implemented.

CHAPTER III

Method

Participants and Setting

Five males with ASD who were students in general education classrooms in three elementary schools in an urban school district on the east coast were initially selected for participation in the study. Each of the participants had previously been given an ASD diagnosis by an independent evaluator and all were being served in their school districts under an IEP for an ASD diagnosis. One of the participants was excluded following the first day of observation because his disruptive behavior escalated to dangerous levels and he was removed from the inclusion setting. The remaining four students participated throughout the investigation. All sessions were conducted in the students' general education classrooms during the academic periods that their teachers had identified as having the highest levels of off-task behaviors. There were approximately 28 students and 1 teacher in each classroom.

Students with ASD. Isaac was a 6-year-old boy diagnosed with ASD who participated in a typical 1st-grade classroom full time in School One. Isaac received additional support from the Learning Support teacher for math and reading. His teacher reported that he had average intelligence, but was functioning just below grade level in both reading and math. Isaac enjoyed school, interacted well with adults, and tried his best to please adults by following their directions. However, he struggled with social skills. His teacher reported that he had no friends in the classroom and that he had trouble interacting with peers due to exhibiting inappropriate social skills for his age. Isaac's teacher referred him for intervention due to his high-rate of off-task behaviors

during center time including walking around the room, talking to peers, continuously trying to obtain the teacher's attention by calling out, playing in his desk, putting his head down on the desk, and staring out the window.

Isaac's sessions were conducted during reading centers for the intervention period and during math centers for the generalization period. During both of these periods, the students were assigned to work on independent assignments in the same small groups for 15-min segments. All 28 students were in the room, and the teacher led a small reading group during this time. Additionally, during the reading center time, the special education teacher came into the room to lead a small group and she also circulated throughout the room offering support to students who were having difficulty with their work.

Thomas was a 7-year-old boy with a diagnosis of ASD who participated in a typical 2nd-grade classroom full time with no additional supports in School Two. Thomas was identified as a gifted student and participated in gifted education on a weekly basis. He was on grade level for all subjects. Thomas particularly enjoyed science because he was very interested in animals. Despite being a gifted student, Thomas often did not complete his work because he disliked writing. Thomas also had difficulty interacting with his peers. His socials skills were poor and he would often become angry with them when they did not share his restricted interests. His teacher reported that peers avoided him at recess. Similar to Isaac, Thomas was referred for intervention due to his high-rate of off-task behaviors during center time. Thomas' behaviors included continuously calling out to gain the teacher's attention, playing with small toys he brought from home, coloring on his desk, talking to peers, and playing in his desk with materials.

Thomas' sessions were conducted during independent reading centers time for intervention and during independent seat work time for generalization. During center time, the 24 students were divided into small groups to complete various reading assignments during a 30-min period. The teacher led a small reading group in the back of the room and was not available for help. There was a student teacher who would check each student's work when it was completed and give them their next assignment. Independent seat work was assigned as soon as the students came into the room, and students were expected to independently complete a journal entry about the previous evening at home and then complete a one-page worksheet. The teacher circulated the room during this time to offer assistance to children that required it.

Adam was an 8-year-old boy diagnosed with ASD who participated in a typical 2nd-grade classroom with no additional supports in School Three. According to his teacher and the school psychologist, it was believed that Adam had average intelligence, and was on grade level. Adam had not received psychoeducational testing, but was involved with the Instructional Support Team due to concerns about his off-task behavior. Reading was considered a strength for Adam, but he had stated in the past that he disliked math and did experience difficulty with it in the classroom. Adam was able to interact with peers, but often chose to be by himself instead of interacting. Adam was referred for intervention by his teacher due to high-rates of off-task behavior during math. Adam's off-task behaviors included crawling around on the floor, poking peers sitting around him, playing with materials, talking to peers, and walking around the room.

Adam's setting was large group math lesson for the intervention period and small group math centers for the generalization period. During the large group lesson, all 27

students sat on the floor in front of the teacher on a carpet. The students were allowed to choose where they wanted to sit each day. During the lesson, the teacher made it interactive by asking questions and calling on students to come up to the board to complete problems. The children then returned to their desks to complete a worksheet when the group lesson was over. During math centers time, the students were divided into the same small group each day, and worked in teams of two to complete various math challenges related to the math lesson from earlier in the day. The children were allowed to work in locations of their choice around the room, either sitting in desks or on the floor.

Gregory was an 8-year-old boy diagnosed with ASD who participated in a typical 2nd-grade classroom for guided reading and science in School Three. The majority of Gregory's educational time was spent in a self-contained autistic support classroom. Gregory was functioning below grade level for all subjects and had below average intelligence. This was the first year that Gregory was able to be included in a general education classroom because, in previous years, his problem behaviors were deemed too disruptive. Gregory enjoyed interacting with peers, but exhibited limited age-appropriate social skills. Gregory was referred for intervention by his special education teacher due to high rates of off-task behavior in the inclusion classroom. Gregory's off-task behaviors included talking to peers, playing with his shoelaces, looking around the room, and playing with materials on the floor.

The settings for Gregory were large group science lesson for the intervention period and independent language arts seat work for the generalization period. During the science lesson, all 32 students sat on the floor while the teacher read from a book or

taught a new lesson. While the teacher was talking, the students were expected to complete a worksheet with fill in the blanks based on what they were learning during the lesson. During the independent seatwork, the students were expected to write in journals, read books, or complete worksheets. The students sat at their desks to complete the work.

Typical peer supporters. Once the students with ASD were identified, each teacher was asked to nominate three typical students as possible peer supporters. Typical students were considered eligible if the teacher believed they did not need reminders to stay on task, and their learning or work completion would not be adversely affected by participating in the intervention. If the typical peer gave their assent to participate, they were then asked to take home a permission form for their parent's signature. The first peer from each class to return the signed permission form was trained as the peer supporter.

Isaac's peer supporter was Katie. She was a 6-year-old girl whose teacher reported performed well academically and often offered to help other students in the classroom. Thomas' peer supporter was Kyle. He was an 8-year-old boy who the teacher believed would not be distracted by redirecting Thomas and who had no negative interactions with Thomas in the past. Adam's peer supporter was Michael. Michael was an 8-year-old boy who the teacher identified as a top academic performer in the classroom and who often offered to help other students in the class. Finally, Gregory's peer supporter was Megan. Megan was an 8-year-old girl who the teacher identified as a strong student who often attempted to help the students with special needs who were included in the classroom.

Dependent Measures and Observational Procedures

      Off-task behavior. The primary dependent measure was off-task behavior, assessed through direct behavioral observation using the Behavioral Observation of School Students (B.O.S.S; Shapiro, 2003). The B.O.S.S. is a direct behavioral observation code using a 15-sec partial-interval procedure. Some examples of off-task behaviors included looking around the classroom, working on something other than the assigned task, talking to peers about non-work related topics, or playing with materials. Off-task behavior was assessed through direct observation of each participant in the general education classroom 5 days per week. The data collector entered 5 min after the class period began and recorded data for a total of 20 min each day. Data were recorded for off-task behavior with the B.O.S.S. using a 15-sec partial-interval procedure. For comparison purposes, data were also recorded for the off-task behavior of typical peers every 5th interval using the same 15-sec partial-interval procedure (Shapiro, 2003). A different peer was used for each interval using a systematic rotation throughout the room.

      All direct observations were conducted by trained graduate students who were enrolled in doctoral programs in either Special Education or School Psychology, and were naïve to the purpose of the study. Observers sat in the back of the room where they had a clear view of the student and their assigned area or desk. Prior to the study, data collectors received training in the use of the B.O.S.S. Training consisted of practice using the recording system via videotapes of students engaged in academic tasks in the classroom until each achieved 80% agreement with the investigator on the dependent measure. Observations occurred 5 days per week unless a student was absent.

Work Completion. A second dependent measure was work completion. Work completion was defined as the percentage of items completed on assigned work during each designated observation class period. Percentage work completion was calculated by the teacher by counting the number of problems/questions completed by the target student on assigned academic tasks and dividing that by the total number of questions/problems assigned, multiplied by 100. Data on work completion was collected every day in which the student had an assignment during the observed classes.

Generalization. To assess generalization effects, once each week identical data collection procedures for both off-task behavior and work completion were used during 30-min observation sessions in the second academic class period. During this generalization class period, the peer supporter was seated next to the student with ASD, but was not instructed to provide the intervention.

Interobserver agreement (IOA). For the purpose of determining IOA, a second observer simultaneously, but independently, observed 25% of the sessions across all phases of the study. IOA was calculated for off-task behavior by determining the number of agreements, divided by the number of agreements plus disagreements and multiplying the result by 100.

Intervention integrity. For this study, intervention integrity was defined as the peer supporter implementing the prompting intervention as they were trained to do (Sansetti, Dobey, & Gritter, 2011). Intervention integrity was evaluated by the same independent observers during the sessions in which they assessed off-task behavior. More specifically, each time the peer supporter gave a prompt to the focus student, the observer marked the interval on the data sheet in which the prompt occurred. A prompt

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was defined as a physical gesture, such as tapping the desk or worksheet or verbal reminder, which was given to redirect the student with ASD back to their assigned task. The intervention was considered to be implemented with integrity if it was implemented with at least 75% accuracy. Intervention integrity for Isaac was 81.25%, for Thomas was 85.71%, for Adam was 87.50%, and for Gregory was 83.67%.

Intervention acceptability. The Intervention Rating Profile - 15 (IRP-15; Martens, Witt, Elliot, & Darveaux, 1985) was used to assess teachers' perceived acceptability of the intervention. At the conclusion of the study, all four teachers completed the rating form that asks teachers to indicate their degree of agreement or disagreement with each statement using a 6-point likert scale (see Table 1). The measure has been found to be reliable with a Cronbach's alpha of .98 (Martens et al., 1985).

To evaluate the students' (i.e., students with ASD and typical peers) perceived acceptability of the intervention, each student was given a slightly modified version of the Children's Intervention Rating Profile (CIRP, Turco & Elliott, 1986). The CIRP was modified by adding the words "my buddy" to the questions. The six-item CIRP also uses a 6-point likert scale to indicate degree of agreement or disagreement with each of the statements (see Tables 2 and 3). The CIRP has been used in previous research and has been found to be reliable with a coefficient alpha of .89.

Experimental Design and Data Analysis

A multiple-baseline design across participants was used to evaluate the effects of the peer support intervention on the off-task behaviors and work completion of the participants with ASD. In addition, there was a brief reversal phase for the first participant only during which baseline conditions were reinstated for six sessions prior to

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reinstating the intervention conditions. The return to baseline occurred naturally when the peer supporter was removed from the classroom during the intervention period due to a district-wide tutoring study for which she was randomly chosen as a participant. Data for the primary dependent variable (i.e., off-task behavior) were used to make phase change decisions. Following baseline data collection, the intervention was introduced for the first participant when a stable or increasing (deteriorating) trend in off-task behavior was evident. Following the implementation of the peer support intervention with the first participant, a decreasing trend was established prior to introducing the intervention to the next participant. This was repeated for the third and fourth participants (Gast & Ledford, 2010). Work completion and generalization probes were graphed as collateral measures but were not used to make decisions.

All data for off-task behavior and work completion, during both the intervention and generalization periods, were analyzed using visual inspection of graphically displayed data to examine changes in means, trends, and level from baseline to intervention for each participant. In addition, percentage of non-overlapping data (PND; Scruggs & Mastropieri, 1994) was calculated for each participant. PND was calculated by counting the number of data points in the intervention condition that fell outside the range of values for the baseline condition, and dividing that number by the number of data points in the intervention condition, multiplied by 100. Higher PND is associated with a greater impact on the target behavior.

Data for intervention integrity were calculated by subtracting the number of intervals the focus student was off-task and no prompt was given within one interval from the number of intervals the focus student was off-task and a prompt was given within one

interval. This number was then divided by the total number of intervals in which the student was off-task and multiplied by 100.

Procedures

Baseline. During baseline, typical classroom procedures remained in effect. Each teacher was asked to seat the student with ASD and the peer supporter next to each other. No other changes were made to the typical classroom conditions.

Peer training. Once at least three baseline data points were obtained and a stable or increasing trend was established, the peer supporter was trained by the primary investigator and an assistant. Training was conducted during the school day in a quiet room located in the school. First, the investigator explained to the peer supporter what it meant to be "off-task" and defined in simple terms what off-task behaviors the focus student was exhibiting. Next, the assistant displayed examples of the target behavior and other behaviors, and the investigator helped the peer to identify the target behaviors. The peer was then asked to identify the target behaviors without the help of the investigator.

Once the student was able to identify the assistant's target behavior at a rate of 100% accuracy on 10 consecutive trials, the peer was taught how to prompt. To begin, the investigator modeled the appropriate and inappropriate ways to prompt while the assistant displayed the target behaviors. After watching the demonstrations, the peer took the place of the investigator and practiced prompting the assistant. Once the peer had learned the appropriate procedure for prompting to a level of 100% accuracy on 10 consecutive trials, the prompting training sessions were concluded.

Following the prompting training, the investigator talked with the peer about how to give positive encouragement and feedback to the student with ASD during class using

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nonverbal gestures and after class using verbal statements. Again, the investigator modeled appropriate and inappropriate ways to give positive encouragement/feedback and the peer supporter was given opportunities to practice with the assistant. Once the peer learned the appropriate procedure for giving positive encouragement/feedback to a level of 100% accuracy on 10 consecutive trials, training was concluded. All peers were trained using the same training procedures. See Appendix A for more detailed procedures for the training session(s).

Following training, the primary investigator met with the peer supporter on the first day of intervention immediately prior to the intervention period. The peer was reminded to prompt the target student when they were off-task, and was allowed to ask any questions that (s)he may have had still remaining. None of the peers had any questions. This meeting occurred only on the first day of intervention and at no other time during intervention.

Peer support intervention. Following peer training, the intervention began during the next intervention class period. At the beginning of each target academic class period, the peer supporter reminded the focus student of the desired behaviors and gave him verbal encouragement (e.g., "I know you can do it"). Then, during that class period, whenever the focus student displayed the target off-task behaviors, the peer lightly tapped the materials or the desk to bring the student's attention back to the task at hand. If the focus student remained on-task, the peer provided nonverbal forms of encouragement (e.g., thumbs up, smile, head nod, etc.). In the event that the focus student was not redirected back to task by the peer supporter after three attempts, the teacher or instructional aide was directed to intervene; however, this did not occur for any of the

participants. Each of the focus students was successfully redirected within one prompt by the peer supporter throughout the intervention.

During the first intervention session, the peer was observed by the researcher to ensure that the intervention was being delivered as trained. If the peer had not prompted the student with ASD in at least 75% of opportunities, the plan was to retrain the peer using the established protocol. This did not occur for any of the participants.

Return to baseline (Isaac only). Isaac's peer supporter, Katie, was randomly chosen to participate in a district-wide tutoring program and so was removed from the room each day during the reading centers time. During this time, Isaac had no peer supporter and typical classroom procedures (baseline conditions) were reinstated.

Return to peer support intervention (Isaac only). Isaac's peer supporter, Katie, returned to the classroom and the peer support intervention resumed.

Exit interviews. Upon completion of the intervention, all four teachers completed the modified version of the IRP-15 (Martens et al., 1985) and all eight students (i.e., four students with ASD and four typical peers) completed the modified version of the CIRP (Turco & Elliott, 1986) to assess their perceived acceptability of the intervention.

CHAPTER IV

Results

Interobserver Agreement

IOA was collected during 25% of the observations across all phases of the study. Mean IOA for off-task behavior across all sessions was 83.33% (range = 76.9% - 100%). No booster sessions were required as IOA never fell below 75%.

Off-task Behavior

Intervention class period. Data for the off-task behavior of each participant with ASD in the intervention class period are shown in Figure 1 and mean number and range of peer prompts are provided in Table 1. For Isaac, the mean for off-task behavior during baseline was 61.11%, but levels decreased to a mean of 13.02% during the peer support intervention condition. During the return to baseline phase, off-task behavior increased to baseline levels with a mean of 67.35%, but again dropped to an even lower mean of 9.58% during the second peer support intervention phase. During intervention, Katie provided an average of 6.91 (range 1-23) prompts per session. Isaac's off-task behavior was slightly lower than that of his typical classmates in both intervention conditions (M = 16.66%; 18.06). The peer support intervention produced an immediate change in level that maintained for the duration of the intervention. The PND for Isaac was 100%.

For Thomas, off-task behavior decreased from a baseline mean of 54.46% to a mean of 10.12% during the peer support intervention condition. Thomas' level of off-task behavior was slightly higher than that of his classroom peers (M = 5.28%). An immediate change in level was observed from the final baseline session to the first peer support intervention session, and the reduction in off-task behavior remained steady for

the remainder of the intervention condition. The PND for Thomas was 100%. Kyle

provided Thomas with an average of 5.22 (range 0-7) prompts per session.

For Adam, off-task behavior decreased from a baseline mean of 65.01% to a

mean of 24.94% during the peer support intervention condition. Similar to Thomas,

Adam's off-task behavior remained slightly higher than that of his peers' (M = 16.67%)

during the intervention phase and the behavior was slightly variable. The implementation

of the peer support intervention produce an immediate change in level and the PND for

Adam was 100%. Michael provided an average of 5.42 (range 1-10) prompts per session.

Finally, for Gregory, off-task behavior decreased from a mean of 67.31% during

baseline to 32.64% during the peer support intervention. Although an immediate level

change occurred when the intervention was implemented, Gregory's off-task behavior

was variable during the intervention phase. Gregory's off-task behavior during

intervention was higher than that of his peers (M=23.61%) and his PND was 88.89%.

Gregory had two missing data points that occurred on days when he was absent from

school due to illness. Megan provided an average of 17.25 (range 15-20) prompts per

session.

Generalization class period. Data for off-task behavior in the generalization

class period are also show in Figure 1 and mean number and range of peer prompts are

provided in Table 1. Isaac's reduction in off-task behavior during the intervention period

did not generalize to the non-intervention period. Isaac's off-task behavior in this

generalization period remained consistent from a mean of 56.71% during baseline and to

a mean of 56.25% when peer support was implemented in the intervention period.

Thomas' reduction in off-task behavior did generalize to the non-intervention period. Thomas' off-task behavior in the generalization period decreased from a mean of 51.04% during baseline to a mean of 26.38% when peer support was implemented in the intervention period.

Similar to Thomas, Adam also demonstrated a decrease in off-task behavior during the generalization period. Adam's off-task behavior decreased in the noon-intervention period from a mean of 64.5% during baseline to a mean of 8.33% when peer support was implemented in the intervention period.

Although Gregory demonstrated a decrease in off-task behavior during the intervention period, his reduction in off-task behavior did not generalize to the non-intervention period. Gregory's off-task behavior in the generalization period actually increased from a mean of 52.03% during baseline to a mean of 71.88% when peer support was implemented in the intervention period.

Work Completion

Intervention class period. Data for the work completion of each participant with ASD are shown in Figure 2. For Isaac, his work completion increased from a mean of 35% during baseline to a mean of 96.42% during the peer support intervention condition. During the return to baseline condition, Isaac's work completion dropped to a mean of 18.06% and then increased again to a mean of 100% when the intervention was re-implemented. Isaac's work completion was steady during both intervention phases. The implementation of the intervention produced an immediate level change both times and the PND for Isaac was 90.48%.

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Thomas's level of work completion increased from a mean of 64.29% during baseline to a mean of 86.98% during intervention. With the exception of one day, Thomas demonstrated a steady performance for work completion. Despite an immediate level change between conditions, the PND for Thomas was 0%.

Similar to Thomas and Isaac, Adam's work completion increased from a mean of 62.50% during baseline to a mean of 100% during the peer support intervention condition. Adam also demonstrated an immediate level change between conditions with a steady performance during intervention, but had a PND of 0%.

Finally, Gregory's work completion increased from a mean of 25.56% during baseline to a mean of 40.00% during intervention. Gregory's performance was variable in both conditions. He demonstrated an immediate level change, but his PND was 0%.

Generalization class period. Data for work completion in the generalization class period are show in Figure 2. In the generalization period, Isaac demonstrated a slight increase in work completion from a mean of 50.00% during baseline to a mean of 55.00% during the intervention phases. Thomas also demonstrated an increase in work completion during the generalization period from a mean of 83.33% during baseline to a mean of 100% during intervention. In the generalization class period, Adam showed no change in his mean work completion between baseline and intervention, as the mean for both phases was 100%. Despite his increase in work completion during the intervention period, Gregory showed no improvement in work completion during the generalization period. His mean for both phases in the generalization period was 0%.

Treatment Acceptability

Results of the IRP-15 and the CIRP are displayed in Tables 2, 3, and 4.   With regard to the teachers' ratings of the intervention using the 6-point likert scale, the scores ranged from 5-5.75 and the overall mean was 5.38. The scores indicated that the teachers found the intervention acceptable to highly acceptable for decreasing off-task behavior and increasing work completion. Additionally, they found the intervention feasible and would recommend it to other teachers.

The peer supporters' scores also fell in an acceptable range. The range for statements worded positively was 1 to 1.5 with an overall mean of 1.31. The range for statements worded negatively was 5.5 to 5.75 and the overall mean was 5.63. All peers reported that the intervention would be good to use with other students and that they enjoyed helping their buddy.

The students with ASD also indicated that they enjoyed having a peer to help them stay on task. They, too, felt that having a peer supporter would help other students in their classroom. The range for statements worded positively was 1 to 1.5 and the overall mean was 1.13. The range for statements worded negatively was 5.5 to 6 and the overall mean was 5.75.

CHAPTER V

Discussion

Research Question 1: What are the effects of a peer support intervention on the off-task behaviors of 1st- and 2nd-grade students with ASD in a general education classroom? The peer support intervention was effective in reducing the off-task behavior of students with ASD to a level similar to that of their classroom peers. All participants showed an immediate reduction in off-task behavior during the first session in which the intervention was implemented. For three of the four participants, off-task behavior continued at levels below those observed during baseline throughout the intervention phase. The results of this study further extend the work of Arceneaux and Murdoch (1997) and McCurdy and Cole (2013) by demonstrating that this simple peer support intervention can effectively reduce the off-task behavior of 1st- and 2nd-grade students with ASD included in general education classrooms. The reversal phase for Isaac and the lack of change in peer comparison data across all participants provides stronger evidence that the reduction in off-task behavior was directly related to the implementation of the peer support intervention.

The setting for Isaac and Thomas was a period in which the majority of the class was instructed to engage in independent seat work focused on reading activities while the teacher led small reading groups in the back of the classroom. Both boys had a difficult time with the lack of teacher supervision, and when they were even slightly off-task, there was no one to redirect them back to the task so they tended to spend the remainder of the period engaged in off-task behavior. The peer support intervention provided Isaac and Thomas with the redirection back to task that they apparently needed.

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For Adam and Gregory, the setting was large group instruction followed by independent seatwork. Both boys become distracted during the large group instruction looking around the room, playing with things on the floor, and talking to peers around them. Both frequently received multiple prompts from the teacher to pay attention and they often missed important instructions for the independent seatwork. For these participants, sitting next to their peer supporter, who provided them with redirection each time they became distracted, also allowed them to receive the instruction they needed to complete their seatwork.

Research Question 2: What are the effects of a peer support intervention on the work completion of the 1st*- and 2*[nd]*-grade students with ASD who are included in a general education classroom?* With regard to work completion, all four students with ASD demonstrated an increase in work completion during the intervention period. The three students who were included full time, Isaac, Thomas, and Adam, exhibited the largest increase in work completion; although Gregory's work completion increased, it was much more variable. Only Thomas demonstrated a slight increase in work completion during the generalization period.

It is possible that the three students who were included full time were more capable of doing the work with simple prompts to stay on-task. All three had average intelligence and were on, or just slightly below, grade level in their respective subjects. Gregory had below average intelligence and was significantly below grade level in reading. He may have required additional instructional support from an adult to help him complete the assignments. Therefore, the majority of his uncompleted work may have been due to his lack of ability, rather than due to his off-task behavior.

Research Question 3: Assuming a reduction in off-task behaviors and an increase in work completion of the 1ˢᵗ- and 2ⁿᵈ-grade students with ASD during the intervention condition, is there also a reduction in off-task and an increase in work completion during a generalization (i.e., non-intervention) class period as compared with baseline levels? This investigation aimed to extend the work of the previous studies by examining the generalization of the peer support intervention and the effects of the intervention on work completion in the target and generalization periods. For two of the students, Thomas and Adam, the effects of the peer support intervention did generalize to a second period of inclusion in which the peer was not trained to implement the intervention. Both of these students were included all day and received no additional academic support. For Gregory and Isaac, the intervention did not generalize to this non-intervention period. Gregory was included for only two periods a day and his teacher stated that his inclusion was primarily for access to typical peers, rather than for the purpose of academics.

One explanation for why there was generalization for Thomas and Adam was the fact that they were either on- or above grade level. Therefore, their off-task behavior may have been easy to redirect and just having the peer near them may have served as a reminder to stay on-task. For Isaac and Gregory, there may have been no generalization because their off-task behavior may have been due to their inability to do the work during that period. Both were below grade level in the academic subject for the generalization period. It is possible that the off-task behavior may have been due to their inability to do the work, and therefore, they engaged in off-task behaviors to keep themselves busy during the period.

Research Question 4: Is the peer support intervention implemented with integrity (i.e., 75% accuracy or above) by the typical peers in the general education classroom following training? Across all participants, the peer supporters implemented the intervention with greater than 75% accuracy. None of the peer supporters had an implementation higher than 87.50%, but no refresher trainings were required, as they never fell below 75% for any of the individual data collection sessions. These results indicate that even when the intervention is not implemented with 100% accuracy, it can still be effective in reducing off-task behavior. One explanation for why this may occur is that, following some experience with the peer prompting, the typical peer may have served as a reminder to the student with ASD to get back to task even without implementing the prompt. When the student with ASD was off-task, they may have noticed the peer and redirected themselves before a prompt was needed. Additionally, it is also possible that the student with ASD may have started engaging in more covert off-task behavior, such as quickly glancing around the room, which was missed by the peer, but when the off-task behavior became more overt, the prompt was provided.

Research Question 5: Assuming the peer support intervention is implemented with a high level of integrity (i.e., 75% accuracy or above) during the intervention condition, do the typical peers spontaneously use the peer support intervention during another generalization (i.e., non-intervention) class period in which the students with ASD are displaying off-task behavior? Although the intervention was implemented during the intervention period with integrity across all participants, and two of the participants showed a reduction in off-task behavior during the generalization period, only one peer supporter used the intervention during the generalization period. Adam's peer supporter,

Michael, was the only peer who engaged in prompting without being instructed to do so. One reason this may have occurred is that Adam's intervention and generalization periods were both math subjects and therefore, due to the similarity between these period, the peer may have felt it was a continuation of the intervention condition. However, despite the lack of intervention implementation, there was still a reduction for Thomas as well, suggesting that it is possible for the peer to simply serve as a reminder to stay on-task.

Research Questions 6 and 7: Is the peer support intervention viewed as acceptable and feasible to the teachers as measured by the IRP-15, and to students with ASD and typical peers as measured by the CIRP? The intervention was found to be highly acceptable to everyone who participated in the study. Adam's teacher requested that additional peers be trained to support Adam during multiple periods throughout the day, as well as supporting other students in the classroom who had high rates of off-task behavior. Thomas' teacher stated that she wanted to implement the intervention with another student in the classroom diagnosed with ADHD.

Isaac's peer was the only peer who stated that she did not want to be a peer supporter after the completion of the study. She stated that she enjoyed helping Isaac, but that it was very hard. It was discovered during her exit interview that the classroom teacher was asking her to not only monitor Isaac's off-task behavior but to ensure that he was providing the correct answers on his assignments. It is possible that this expectation was too high for a 1st-grade student and it was overwhelming for her.

Summary Interpretation of Results

When examining the results for all three independent variables across all four participants, the question arises for which students the peer support intervention is most effective. Thomas and Adam both demonstrated decreases in off-task behavior in both the target and generalization periods and increase in work completion rates. Both of these students were had average to above average intelligence, were included all day in the general education classroom and were graded on their work in the same manner as their typical peers. Additionally, they were held to the same expectations for behavior and work completion as the other students in the classroom. Isaac also had average intelligence and was included all day, but he received modified assignments and was given more latitude with behavioral and academic expectations. Although the other students in the classroom were expected to complete the full assignment and do some extra credit work, Isaac's teacher just wanted him to stay on-task for the period and complete half of the work. Finally, Gregory was included only for the interaction with typical peers. His academic work was not graded, and he was not expected to retain the information being taught during the lessons. Gregory demonstrated the smallest change in off-task behavior and work completion of all the participants and there was no generalization. This suggests that the peer support intervention may be more effective for students who are included all day and have more investment in the general education classroom. Along similar lines, the intervention may be more effective for students who have average to above average intelligence.

Limitations and Future Directions

The first and most obvious limitation of the current study is the small number of participants with ASD. The students were chosen because they were engaging in high rates of off-task behavior and were included in the general education setting for at least two class periods a day. There was more variability between the participants than previous studies, but more research is needed to examine how students across the autism spectrum respond to the peer support intervention. Future studies should examine how students with mild, moderate, and severe symptoms of ASD respond to the peer support intervention.

Another limitation of the study is that it did not include any initial academic assessment to ensure that the students with ASD were capable of completing their work. The study relied on the information from the teachers who stated that they believed the students with ASD had the academic skills to complete the seatwork. There were no data collected regarding whether or not the peer supporter was helping the student with ASD with their work. As limited academic ability may have contributed to lack of work completion for Gregory, initial academic assessment could have provided a key piece of information. Future research should ensure that the off-task behavior of the students with ASD is not due to the fact that they are unable to complete the work without additional instructional support. Future studies should examine the effects of the intervention on students with ASD with varying levels of academic abilities.

Similarly, another limitation of the current study is that although work completion data were collected, the accuracy of the work was not considered. The teachers reported whether the students completed each of the problems on the worksheet, but not whether

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they were correct or incorrect. The decision was made to focus on completion rather than accuracy because, prior to the study, many of the students were not completing their work. Therefore, it was considered an improvement for them to simply complete the work. Additionally, it was believed that if the students were completing the work, they would be trying to the best of their ability to complete it accurately. Future research should consider how the peer support intervention affects academic accuracy as well as productivity.

Another limitation is that no IOA data were collected for work completion. Teachers simply collected the students' work and provided the investigator with the number of problems completed out of the total number assigned. Future studies should include IOA on work completion.

A major limitation of the current study was the difficulty in recruiting data collectors. Due to this difficulty, IOA was only collected on 25% of the observations, and data collectors recorded data on intervention integrity, which may have compromised their naivety regarding the purpose of the study. Although results indicated acceptable levels of IOA in this study, ideally future replications would include more data collectors and IOA checks.

Finally, due to the lack of data collectors for the study, generalization probes were only collected weekly. This resulted in very few generalization probes, which makes it difficult to draw solid conclusions from the generalization data. Although the data show that the effects for two students did generalize, these results should be interpreted with caution.

An additional area for future research is whether the peer support intervention could be implemented throughout the day. The current study only examined two class periods, but it is possible that, with proper training, one or more peer supporter(s) could support the student with ASD throughout the day. At the end of the study, Adam's teacher requested that another peer be trained; the teacher stated that he planned to have one peer to help Adam in the morning and another in the afternoon.

In addition to examining more class periods, future research should examine the long-term maintenance of intervention effects. The intervention is naturally faded as the student with ASD increases their on-task behavior, but future studies should examine whether it is possible to maintain effects of the intervention if the peer supporter is no longer sitting with or near the student with ASD, and for how long.

Future research could also examine if the intervention could be effective with students with ASD included in general education in the kindergarten setting. The youngest students in this study were in 1st grade. Therefore, it is unknown if the peer support intervention can be effective with younger students.

Another area for future research would be to compare the differential effects of this intervention for students diagnosed with low functioning ASD and high functioning ASD. The current study found that the intervention was least effective for the student with ASD who had a lower intelligence. It is possible that this intervention is most effective for students with average to above average intelligence.

Finally, no data were collected in this study regarding the effects of the peer support intervention on the peer supporter. No detrimental effects were reported by the teachers or the peers, but during the interview with Isaac's peer, she did report that she

did not want to be a peer supporter any longer. Future research should examine the effects of being a peer supporter on the off-task behavior and work completion of the peer. Additionally, future research should examine providing reinforcement to the peer supporter. In the current study, the teacher praised the peer supporter occasionally and randomly, but this was not a planned part of the intervention and was not done with consistency.

Overall, the results of this study demonstrate that the simple peer support intervention was effective in reducing off-task behavior and increasing work completion for all participants. In addition, generalization of the reduction in off-task behavior was observed for two of the four students. The intervention was simple and easy to use, and was viewed as acceptable by teachers, students with ASD, and the peer supporters. Due to the minimal training required to implement the intervention and the lack of time required on the part of the teacher, the intervention may be a cost-effective approach for decreasing off-task behavior and increasing work completion for students with ASD included in inclusive general education settings.

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Table 1

Mean Number and Range of Peer Prompts per Session

	Intervention		Generalization	
Students	Mean	Range	Mean	Range
Issac	6.91	1-23	0	N/A
Thomas	5.22	0-7	0	N/A
Adam	5.42	1-10	2	0-4
Gregory	17.25	15-20	0	N/A

Table 2

Teachers' Mean Responses to the Intervention Rating Profile-15

Question	Mean Response
1. This was an acceptable intervention to decrease off-task behavior.	5.5
2. Most teachers would find this intervention appropriate for decreasing off-task behavior.	5.5
3. This intervention was effective in reducing the student's off-task behavior.	5
4. I would recommend the use of this intervention to other teachers.	5.25
5. The student's off-task behavior was severe enough to warrant use of this intervention.	5.75
6. I would be willing to use this intervention with other students.	5.5
7. This intervention does <u>not</u> result in negative side-effects for students	5.5
8. This intervention would be appropriate for a variety of students.	5.25
9. This intervention is consistent with those I have used before in the classroom.	5
10. The intervention is a fair way to handle the student's off-task behaviors.	5.5
11. This intervention is reasonable for off-task behavior.	5.75
12. I like the procedures used in this intervention.	5.5
13. This intervention was a good way to handle the student's off-task behavior.	5.25
14. Overall, this intervention was beneficial for the student.	5

Table 3.

Target Students' Mean Responses to the Children's Intervention Rating Profile

| Question	Mean Response
1. My supporter was fair.	1
2. My supporter caused problems for me in the classroom.	6
3. There are better ways to handle my distractions than the buddy system.	5.5
4. The buddy system would be good to use with other kids.	1.5
5. I liked having a buddy to help me to remember to do my work.	1
6. I think that having a buddy would help other kids to remember to do their work.	1

Table 4.

Peer Supporters' Mean Response to the Children's Intervention Rating Profile

| Question	Mean Response
1. My buddy was fair.	1.5
2. My buddy caused problems for me in the classroom.	5.5
3. There are better ways to handle my buddy's distractions than the buddy system.	5.75
4. The buddy system would be good to use with other kids.	1
5. I liked helping my buddy remember to do his work.	1.5
6. I think that having a buddy would help other kids to remember to do their work.	1.25

Figure Caption

Figure 1. The percentage of intervals of off-task behavior for the target students and peer

supporters with generalization probes.
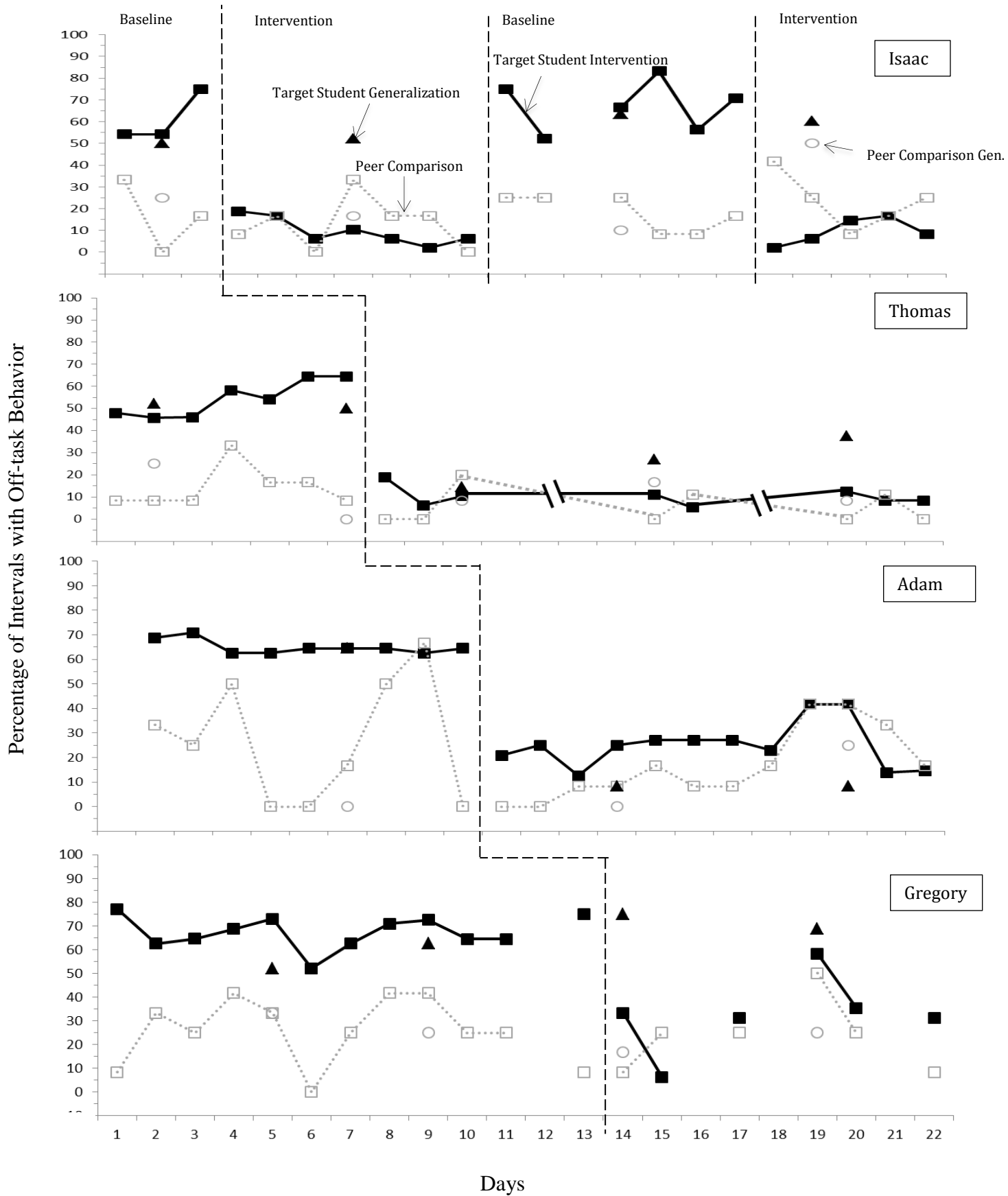
Figure Caption

Figure 2. Percentage of work completion for target students with generalization probes.
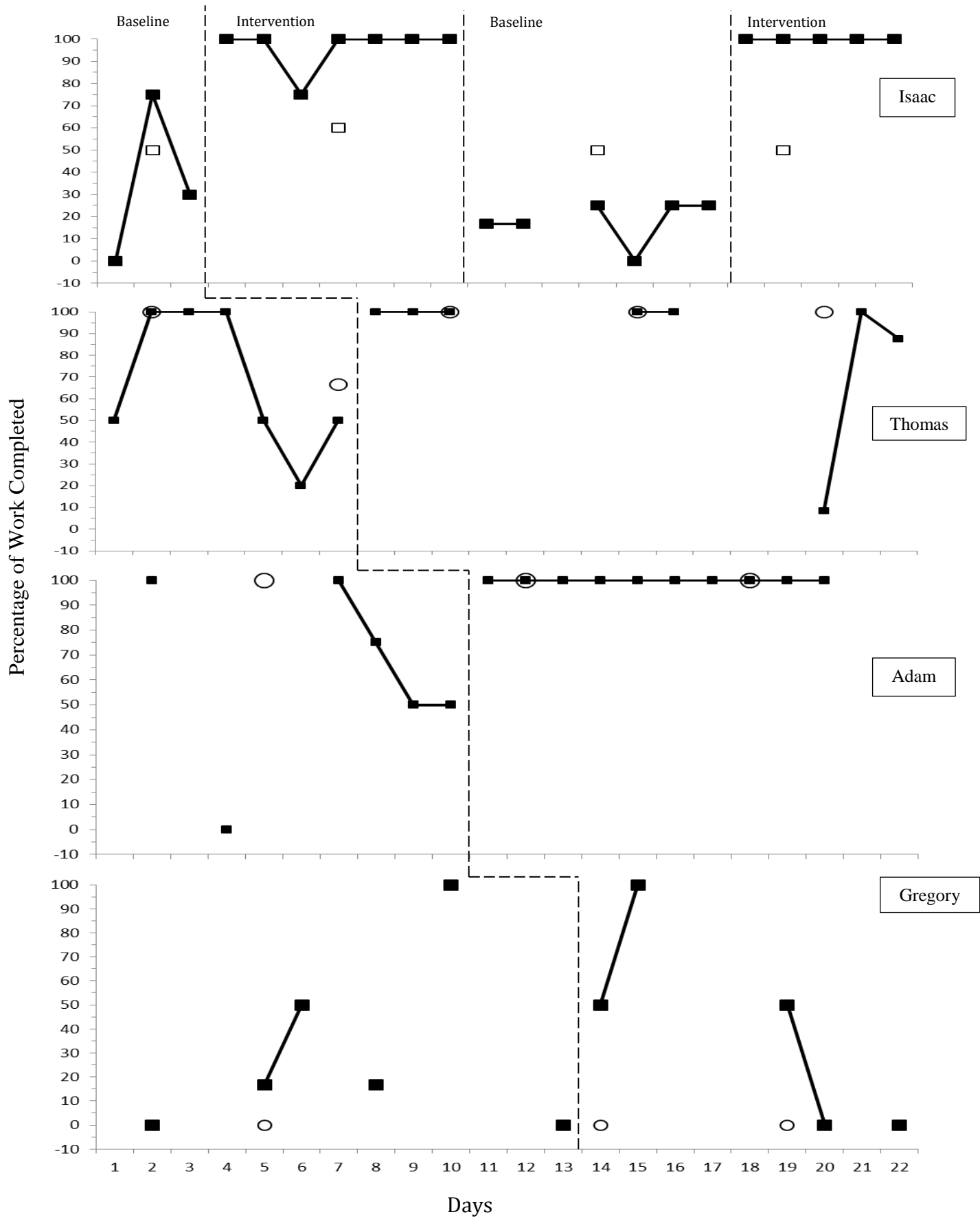
Appendix A: Training for Peer Prompters

Training will occur in one session with one peer at a time.

Individuals taking part in Training: Researcher, Assistant, and Child

Step 1: Introductions. After short introductions, training will begin. Initially, the

researcher and child will discuss what is off task behavior. The researcher will

define the behavior that the target child is displaying in the classroom. Then the

researcher and assistant will display examples and non examples and ask the child

to identify the behaviors. When the student successfully identifies examples of the

behavior 10/10 times, the researcher will move on.

Step 2: After introducing the behavior, the researcher will instruct the peer how to prompt

the target child. The researcher will demonstrate the role of the peer prompter

and the assistant will imitate the target child. When the target child displays the

off-task behavior, the prompter will simply tap the material that the child should

be focused on, if the child does not stop displaying the behavior, the prompter will

tap the materials again. This will be demonstrated 5 times for the peer.

Step 3: After the demonstration, the peer will practice prompting the assistant while the

researcher observes. The assistant will display the behavior and at least 3 times

will not be immediately be redirected. When the peer prompts the assistant

appropriately 10/10 times, prompting training will be over.

Step 4: Finally, the peer will be instructed on how to provide nonverbal encouragement to

the student with ASD. The primary investigator will provide examples of how to

give thumbs up, smile, or quiet clap. The assistant will then engage in on-task

behavior and the peer will have the opportunity to practice provided nonverbal

encouragement.

Following the training session, the peer will be observed in the classroom interacting with

the target child. If the peer prompts the target child appropriately throughout the class,

data collection will begin. If the peer prompter prompts the child inappropriately or fails

to prompt the child three times, a revised training will take place and then a repeat of the

observation.

Greeting	____ Introduce self and assistant ____ Talk about helping ____ Provide examples of when you have needed help ____ Ask student to provide examples of when they have needed help ____ Identify the student they will be helping ____ Explain that the student needs help staying on-task in the classroom	
Off-task/on-task behaviors	____ digging in desk ____ talking to peers ____ playing with materials ____ Behavior individualized to student with ASD ____ Behavior individualized to student with ASD	___ Completing school work ___ Raising hand ___ Looking at teacher
Providing Prompts	____ digging in desk ____ talking to peers ____ playing with materials ____ calling out ____ out of seat ____ Flipping through book pages ____ Staring out window ____ Doodling ____ Behavior individualized to student with ASD ____ Behavior individualized to student with ASD	
Giving nonverbal encouragement	____ Completing school work ____ Raising hand ____ Looking at teacher ____ Reading out loud	

Appendix C: Data Collection Form

Moment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Active On															
Passive On															
Partial															
Motor Off															
Verbal Off															
Passive Off															
Peer Prompt															

Moment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Active On															
Passive On															
Partial															
Motor Off															
Verbal Off															
Passive Off															
Peer Prompt															

Moment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Active On															
Passive On															
Partial															
Motor Off															
Verbal Off															
Passive Off															
Peer Prompt															

Moment	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Active On															
Passive On															
Partial															
Motor Off															
Verbal Off															
Passive Off															
Peer Prompt															

Erin McCurdy was born in Reading, Pa in 1983 to Barry and Rosemary McCurdy. She was raised in Wyomissing, Pa with her younger sister, Cally, and her younger brother, Casey. She attended Wyomissing Area Jr./Sr. High School, where she was a motivated student and athlete. She graduated in 2002 with honors. The following is her vita which details her additional accomplishments.

Education

Ph.D., 2014   Lehigh University, Bethlehem, PA
- School Psychology
- APA accredited, NASP approved program
- GPA: 3.86
- Dissertation: Implementing a Peer Support Intervention to Reduce Off-task Behaviors of Early Elementary Students with Autism

M. Ed., 2009   Lehigh University, Bethlehem, PA
- Human Development
- GPA: 3.87
- Qualifying Project: Use of a Peer Support Intervention for Promoting the Academic Engagement of Students with Autism in General Education Settings

B.S., 2006   University of Pittsburgh, Pittsburgh, PA
- Psychology *magna cum laude*
- GPA: 3.6

Certifications and Licenses

Educational Specialist II (PA) - School Psychology
Certified Functional Behavior Assessment Trainer (PA)
Certified Behavioral Specialist (PA) - Autism

Clinical Experience

07/13 to 07/14   **Predoctoral Intern- Kennedy Kreiger Institute Pediatric Developmental Disorders Clinic**
Supervisors: Nancy Grace, Ph.D, BCBA-D, licensed psychologist
           Steven Lindauer, Ph.D., BCBA-D, licensed psychologist
- Provide consultation and behavioral intervention to caregivers of children with developmental disorders
- Consult with school, medical and other professionals to provide continuity of behavioral intervention

Clinical Experience (cont'd)

01/10 to 06/13   **Behavioral Specialist Consultant- Autism Resource and Community Hub**
<u>Supervisors</u>: Karen Kampmeyer, PhD, licensed psychologist
- Conducted Functional Behavior Assessments in home, school and community settings
- Created and implemented behavior modification system to children with autism spectrum disorders in home, school, and community settings
- Taught parents, teachers, and caregivers how to implement behavioral interventions to modify challenging behaviors

09/08 to 08/10   **School-Based Practicum- Allentown School District**
<u>Supervisors:</u> Cindy Ilgenfritz, Ed.S, Ilsa Loetzbeier, Ed.S, Debra Cybuck, Ed.S
- Conducted comprehensive psychoeducational evaluations to determine special education eligibility for students ages 4 to 16
- Conducted functional behavioral assessments
- Consulted with teachers to develop and implement interventions to improve students' behavior and classroom performance
- Provided short-term individual psychotherapy for students with emotional and/or behavioral difficulties

Research Experience

08/08 to 12/10   **Graduate Assistant: Autism Services, Education, Research and Training (ASERT) training grant**
<u>Supervisors</u>: Linda Bambara, EdD and Christine Cole, PhD
- Assisted in completing a literature review of community based inclusion for adults with autism
- Assisted in the development of a training manual for programs designed for adults with autism

09/06 to 06/08   **Data Collector- Project Achieve**
<u>Co-PI's</u>: George DuPaul, PhD and Lee Kern, PhD
- Administered the subtests from the Woodcock Johnson test of Achievement, Diagnostic Indicators of Basic Early Literacy Skills (DIBELS), Early Numeracy Skills Assessment (ENSA), and the Bracken to preschool through first grade students at risk for ADHD.

Teaching Experience

06/11   **Guest Lecturer, Albright College**
- Presented on basics of research methods to an undergraduate class in applied psychology

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Teaching Experience (cont'd)

08/08 to 12/10   **Trainer: Autism Services, Education, Research and Training (ASERT) grant**
- Conducted multiple trainings to teach practitioners working with individuals with autism how to conduct an FBA and use the data from the FBA to create an individualized treatment plan
- Conducted multiple trainings to teach practitioners how to use antecedent intervention strategies
- Conducted multiple trainings to teach parents of children with autism the basics of conducting an FBA and how to use that knowledge to increase their child's appropriate behavior

08/10   **Guest Lecturer, DeSales University**
- Presented on alternatives to self-stimulatory and self-injurious behaviors to a graduate class in education

06/10   **Guest Lecturer, Lehigh University**
- Presented on conducting a functional behavior assessment in the school setting to a graduate class in school counseling

06/09   **Guest Lecturer, Lehigh University**
- Presented on conducting a functional behavior assessment in the school setting to a graduate class in school counseling

Publications

In preparation

> Bambara, L., Cole, C., Kunsch, C., Kokina, A., & **McCurdy, E**. (*in preparation)* Community inclusion of adults with autism

Published

> **McCurdy, E.** & Cole, C. (*2013*). Use of a peer support intervention for promoting the academic engagement of students with Autism in the general education setting. *Journal of Autism and Developmental Disorders, accepted.*

> Papay, C., Bambara, L., Kokina, A., Kunsch, C., **McCurdy, E.,** Cole, C., et al. (2010). *Community inclusion for adults with autism: Guidance for providers in Pennsylvania*. Bethlehem, Pa: Author

Presentations

McCurdy, E. & Cole, C. (February, 2014). *Including Students with Autism: A Peer Support Intervention.* Paper to be presented at the National Association of School Psychologists 2014 Annual Convention, Washingtion, DC.

McCurdy, E. & Cole, C. (February, 2012). *Use of a peer support intervention for promoting the academic engagement of students with autism in general education setting.* Poster presented at the National Association of School Psychologists 2012 Annual Convention, Philadelphia, Pa.

Grant, C. & McCurdy, E. (February, 2011) *Making G.R.E.A.T., a community specific gang prevention program, even greater.* Paper presented at the National Association of School Psychologists 2011 Annual Convention, San Francisco, CA.

McCurdy, E. & Grant, C. (February, 2011) *Gang involved youth and the role of the school psychologist.* Paper presented at the National Association of School Psychologists 2011 Annual Convention, San Francisco, CA.

Bambara, L.M., McCurdy, E., & Kokina, A. (July, 2010). *Community Inclusion of adults with autism: A review of the intervention literature.* Paper presented at the annual Autism Society of America conference, Dallas, TX.

Bambara, L. M., Burgess, C., Cole, C., Kunsch, C., & McCurdy, E. (December, 2009). *Community inclusion of adults with autism: What do we know from research?* Paper presented at the Annual TASH conference, Pittsburgh, PA.

McCurdy, E. (March, 2010) *Using Peer Prompting to Reduce Disruptive Behaviors in Inclusive Settings.* Poster presented at the Annual NASP conference, Chicago, IL.

Professional Organizations

National Association for School Psychologists (NASP), student affiliate
American Psychological Association (APA) Division 16, student member
The Association for Severely Handicapped (TASH), student affiliate
Autism Society of Berks County, member
Autism Society of Lehigh Valley, member