ABSTRACT

Using High-p Intervention to Reduce Difficulties in
Task Transition for Children with Autism

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Difficulties with task transition is a problem that cannot be neglected as it interferes with instruction times. This study extended the use of high probability request sequence (high-p) intervention to reduce challenging behavior and latency to transition for children with autism. Using ABAB design, the efficacy of high-p intervention was evaluated. The intervention had some impact on the reduction of challenging behavior and latency to transition from a preferred to a non-preferred activity. However, the high degree of variability and overlap of the data indicated that high-p was ineffective in reducing difficulties in task transition overall.

Using High-p Intervention to Reduce Difficulties in
Task Transition for Children with Autism

by

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A Thesis

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CHAPTER ONE

Introduction

Autism Spectrum Disorder (ASD)

Autism is an emerging phenomenon in the medical field that cannot be neglected. It has been considered a critical public health concern with the spending of $35 billion for diagnostic and intervention services every year (Ganz, 2007). According to the Center of Disease Control and Prevention (2016), 1 in 68 children aged eight years are diagnosed with autism and have to live with this lifelong developmental disorder. Signs for autism can be detected as early as age 18 to 24 months (Center of Disease Control and Prevention, 2016).

Autism was first noticed when a boy who was non-verbal and spent his day rocking back and forth was found wandering in the wilderness of France in 1799 (Webber & Scheuermann, 2008). In the 1940s, psychiatrists Hans Asperger and Leo Kanner pioneered the in depth study on children who had social interaction problems (Kanner, 1943; Lovaas, 1987). Since then, autism has been defined by more specified trademarks. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM), autism is a developmental disorder characterized by different degrees of impairment in communication skills, social interaction, and restricted, repetitive, and stereotyped patterns of behavior (American Psychiatric Association, 1994, 2013). There are also similar conditions to autism that differ in some ways like Asperger's syndrome, high functioning autism, and pervasive developmental disorders. However, in the most

recent edition of the DSM V autism and pervasive developmental disorder were combined into one umbrella term, Autism Spectrum Disorder (ASD) (Wong et al., 2015).

Impairment in communication skills in children with ASD can vary from lack of spoken language to impairments in the ability to maintain a conversation. For example, children with autism may show disengagement from their parents by giving no eye contact (Landry & Bryson, 2004). The absence of verbal communication and the explicit failure to attend to speech at their developmental stage are strong indications of autism. Approximately 50% of children with autism fail to develop speech (Keen, 2003). Some children on the autism spectrum may develop speech and most do not have difficulty in pronunciation of words. However, many have difficulty in carrying a conversation with peers and adults (Lord et al., 2000). Many children with ASD tend to have difficulty using language effectively and will focus on limited words or topics. Many have problems understanding jargon and idioms. The concept of nonverbal language; such as intonation of speech and body language may also be challenging for them to grasps.

Another trademark of ASD is the child's social correspondence deficits. Children with autism may show little to no interest in interaction with people (Weiss & Harris, 2001). As a result, they may not be able to engage in joint attention or play appropriately. A typically developing child who acquires joint attention will be able to play with a toy and respond to a caregiver's voice when called. People with impaired joint attention may not follow the point or gaze of another person. The absence of joint attention can make it difficult for communication partners to notice or respond appropriately to the communicative attempts of children with autism. This was evident in a study by Yoder, Warren, Kim, and Gazdag (1994), where four children with

developmental disabilities participated in an intervention involving a milieu teaching method to facilitate intentional requesting. Additional research on joint attention and play was conduction in a special education classroom where there are 55 preschoolers analyzed in two groups: children with autism and a mix group of children with disabilities such as Down Syndrome, cerebral palsy, ADHD, and emotional/behavioral disorder. The results revealed that children with autism showed less play and joint attention in the classroom. Children with autism were also observed to be more passive when eating or drinking.

Another distinct and noteworthy characteristic of autism is restrictive repetitive behaviors (RRB). Among 760 infants with developmental disabilities tested, children with autism performed the highest amount of stereotypic behavior (Metson, Dempsey, and Fodstad, 2009). In the study conducted by Lord (1995), 87.5% children diagnosed with autism was reported by their parent to perform at least some type of restricted and repetitive behavior. However, RRB received the least attention in research and literature (Richler, Huerta, Bishop, & Lord, 2010). This may be due to the fact that people perceived RRB as a part of social, communicational skills deficit (Richler et al., 2010). Nevertheless, RRB has greatly affect children's and family's daily function and are quoted among the most stressful behaviors for parents to comprehend and handle (Bishop, Richler, and Lord, 2006).

RRB can be divided into two major categories; repetitive sensorimotor (RSM) and insistence on sameness (IS; Richler et al., 2010). RSM includes behavior such as spinning objects, waving, banging, rocking, and bouncing. These behaviors may be more common than IS behaviors in very young children with ASD. Instance on sameness

refers to difficulties with changes in routine, and resistance to trivial changes in the environment (Cuccaro et al., 2003). These children with autism have a rigid idea of how things should happen, look, feel, and smell. They also insist in having the same routine (Richler et al., 2010). For example, Khoo (2016) reported about a child with autism who only drink from a specific small blue cup. When that cup was broken, he suffered from severe dehydration and had to be admitted to the hospital because of his refusal to drink from any other cup. In an in-depth interview, some parents mentioned how preferred activities can be aversive after a few tweaks and changes in the routine (Howlin & Rutter, 1987). Inability to cope with changes in routines can be a significant obstacle for children with ASD. If activities and environments are not held constant, the child may react by engaging in challenging behaviors (Richler et al., 2010). Some challenging behavior of children with autism can be more extreme—even devastating—such as the self-injurious behavior, physical aggression, tantrums, hitting and biting.

Task Transition

Typical pre-school children spent 20-35% of class time transitioning from one activity to another (Sainato, Strain, Lefebvre, & Rapp, 1987). This is due to the nature of changes in the environment that may be aversive to young learners. In addition, pre-school aged children are still learning to regulate their behavior properly and does not understand the expectation of transition (Hemmeter, Ostrosky, Artman, & Kinder, 2008). Therefore, it is likely that they exhibit challenging behavior such as crying, clinging to caregivers, and active avoidance when there is little instructional control which is commonly the case in transition times (Kern, Wolery, &Aldridge, 2007). Well planned transition activities such as singing a song while transitioning or following the leader are

usually effective strategies in helping typical developing children to transition (Thelen & Klifman, 2011). However, children with autism have greater problems in transitioning between activities due to their resistance to change. Moreover, children with autism are more likely to display challenging behavior due to their insistence of sameness (Cale, Carr, Blakeley-Smith, & Owen-DeSchryver, 2009). Difficulties in transitioning from one activity to another is an important issue to address because it is a basic requirement for children with ASD to be able to learn in school and therapy settings as well as to participate in the community.

Transition has been defined as changes in activity or settings to another (McCord et al., 2001). There are two main reasons for difficulty in transitioning. First, the child may lack the prerequisite skills to transition independently (MacDuff, Krantz, & McClannahan 1993; Tulis, Canella-Malone, & Payne, 2015). This often happens in the case of children with moderate to severe autism who require repetitive and systematic instruction to acquire specific skill sets, such as transition routines. Second, difficulty in transitioning may be related to challenging behavior emitted during the transition. Various challenging behaviors have been documented in the context of task transition among children with autism. These include self-injury (McCord, Thompson, & Iwata, 2001), noncompliance (Banda and Kubina 2006), or other disruptive behavior (Flannery and Horner 1994).

Failure to achieve smooth transition between activities can negatively impact parents, therapists, teachers, and most importantly the child himself. Presumably, after transition difficulty, refocusing on the learning task at hand would likely prove to be difficult. Researchers have sought to find the best strategies for transitioning though

different methods (Tulis et al., 2015). Among the treatments and therapies available, Applied Behavior Analysis (ABA) is currently the most recognized treatment for children with autism (Sallows & Graupner, 2005; Harvey, Boer, Meyer, & Evans, 2009). As a result, ABA treatments may be well-suited to improve task transition skills.

Applied Behavior Analysis (ABA)

Applied Behavior Analysis is the science that is devoted to understanding the human behavior through looking at environmental variables and developing a technology that is effective to improve behaviors of social significance (Baer, Wolf, & Risley, 1968). ABA began with John Watson in 1913 when he stated that all behavior can be controlled by environmental settings and started a movement called behaviorism. B.F. Skinner then outlined the principles of behavior (Cooper, Heron, & Howard, 2007; Skinner, 1953). It is not until the 1960s when Baer, Risley, and Wolf started to apply the principles of behaviorism to human subjects. Over the year the field of ABA has emerged and more evidenced based practice has been formed. Still, we based today's ABA work and ethics on Bear, Wolf, and Risley's (1968) seven dimensions of ABA.

Applied

Applied refers to the social significance of the behavior studied with immediate importance to the subjects. For example, a non-applied researcher may study eating behaviors of people to see the metabolic processes that occurs, while an applied researcher may study the eating behavior of a person. The applied researcher would look at whether the person eats too much or too little, too frequent or to seldom. Then he finds

the best intervention, and help the person to change the behavior so that the behavior will be more beneficial to the person and more acceptable to the society.

Behavioral

Behavioral means that the behavior studied is observable and measureable. An observer will be able to see changes in a behavior and proof that the behavior has certainly change by taking data on it. A method mentioned by Baer, Wolf, and Risley (1968) to measure the behavior is to not only ask the question "was the behavior changed?" but also, "whose behavior?". A change in what is measured may not reflect the behavior change of the client.

Analytic

A behavior specialist is analytical when he demonstrates experimental control over the occurrence and nonoccurrence of the behavior. This is established using experimental designs, such as a reversal design. In a reversal design, the experimenter observes the behavior prior to intervention, and then implements the intervention, measuring behavior change. Then the experimenter removes the intervention and measures the behavior again. Finally, the experimenter implement the intervention again to improve the behavior and demonstrate that experimental control has been established.

Technological

The technological dimension refers to the techniques for behavioral application. The techniques should be clearly identified and described. A study is technological when a typically trained reader would be able to read the study and replicate the intervention procedure to produce the same results.

Conceptual Systems

The field of ABA is systematic because it always strives for relevance to the principles. A behavior analyst should always use methods that are aligned with and according to the behavioral principles when serving clients and their families.

Effective

Interventions used by behavior therapists should always improve the client's behavior sufficiently. When intervention does not work, behavior analyst should continue to seek the ABA literature and continue to modify intervention according to the client's need until it's effective.

Generalization

Behavior analysts should use interventions that are not only effective but can be durable over time and generalized to other settings and environments. Behavior is considered generalized when it transferred across other behaviors too. For example, a child who tantrums when hungry now can say "I'm hungry" or "I need food" at home and at school every time she is hungry. Generalization is the final test that proves the effectiveness of the behavior intervention.

Efficacy of ABA treatments

ABA treatments have been proven to be very effective for children with autism. A study by Ivar Lovaas (1987) in UCLA pioneered the contribution of ABA to children with autism. Lovaas conducted an intensive study for children with severe autism. ABA treatment was implemented for 40 hours per week. As a result, more than 50% of the children participated in the study achieved an IQ of more than 100. This was a

breakthrough for teachers and parents. The study was replicated and proven to be effective as it was generalized in different settings (McEachin, Smith, & Lovaas, 1993; Axelrod, McElrath, & Wine, 2012). Similar subsequent research has found that 40 to 50 percent of children with autism were able to return to mainstream classrooms after receiving ABA therapy (McEachin, Smith, Lovaas, 1993; Rogers & Vismara, 2008). ABA has been proven an effective approach to addressing skill deficits among children with autism. The inability to transition between tasks can present a substantial obstacle for children with ASD; however, behavior analytic interventions may be well-suited to address this intervention need. With better transition skills, children with ASD will be able to improve their behavior and learn more efficiently. Thus, they will be more prepared for the future and achieve a better quality of life.

CHAPTER TWO

Literature Review

Since difficulties with task transition are a problem that cannot be neglected, there has been a growing body of literature on task transition. The purpose of this literature review is to gain a better understanding of the literature regarding behavior analytic interventions targeting transition from activity to activity.

Search Procedures

A systematic electronic search was conducted within the following databases: Academic Search Complete, PsychINFO, ERIC, Education Research Complete, PsychARTICLES, and Psychology and Behavioral Sciences Collection. The term "transition" was paired with "autism" "Asperger" and "pervasive developmental disorder" for a total of three search term pairs (e.g., transition + autism). Boolean operators were utilized. After the electronic search was completed, an ancestry search was conducted on the articles that met the inclusion criteria. One additional article was found (Blair, Fox, & Lentini, 2010). Next, an author search was conducted to see whether more articles within the inclusion criteria can be found but no articles were found. Finally, a journal hand search on *Journal of Autism and Developmental Disorders* and *Journal of Positive Behavior Interventions*. Through this search, two additional articles were found.

Inclusion Criteria and Exclusion Criteria

To be included in this literature review, studies were required to meet the following criteria: (a) published in a peer-reviewed journal; (b) participants had a diagnosis of ASD: autism, ASD, Asperger disorder, or pervasive developmental disorder-not otherwise specified (PDD-NOS); (c) published in English; (d) participants were children younger than 22 years; (e) dependent variable measured challenging behavior during transition and/or acquisition of transition skill, and (f) independent variable consisted of a behavioral and/or educational intervention. A behavioral/educational intervention is one that the independent variables were not using medications or alternative medication, nutritional/supplementary diets, or mega vitamins. It excludes interventions that required highly advanced tools or restricted settings that are unlikely available in educational settings (Wong et al., 2015).

A total of 1,417 articles were identified in the electronic database search. After reviewing the abstract and full text of the journal articles, 1,399 articles were excluded, resulting in 18 articles that fit the inclusion criteria. An additional three articles that fit the criteria were found through the ancestry and journal hand search (Blair, Fox, & Lentini, 2010; Bryan & Gast, 2000; Dooley, Wilczenski, & Torem, 2001). This resulted in a total of 21 studies to be included in the review.

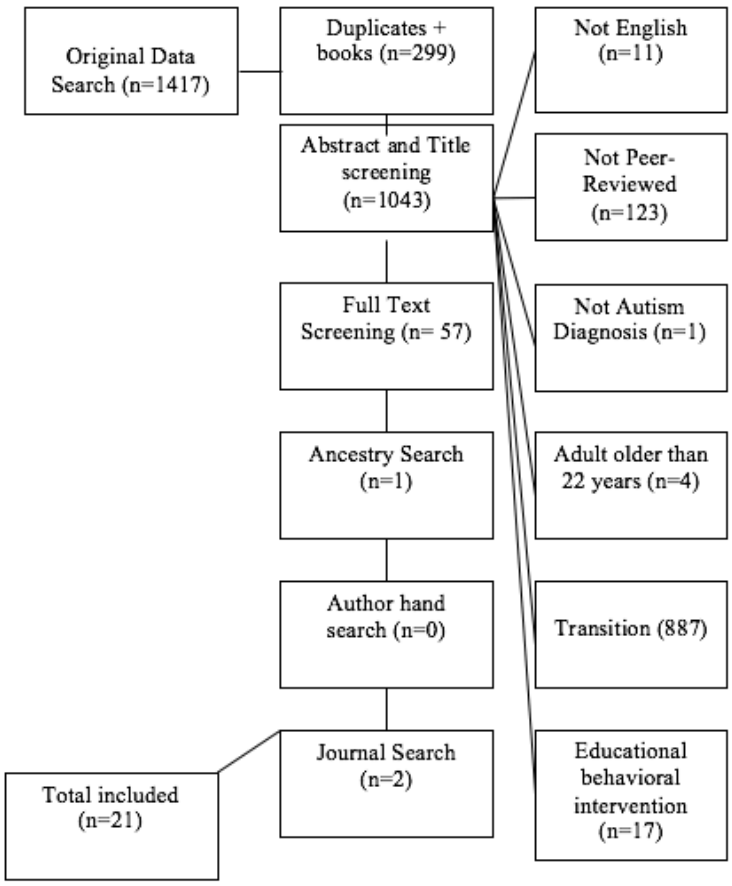

Figure 1. Data extraction process

Data Extraction

Data were obtained based on the following categories: (a) participant characteristics, (b) dependent variables, (c) procedures, and (d) study outcomes. Participant characteristics include (a) the number of participants, (b) gender, (c) age, and (d) diagnoses. Dependent variables include (a) specific dependent variables, (b) interobserver agreement, (c) generalization measures, and (d) maintenance measures. Procedures include (a) setting, (b) implementer, (c) activity preference, (d) functional

analysis, (e) intervention, and (f) treatment fidelity. A summary of the data can be found on table 1.

Results

Table 1

Summarizes the 21 studies included in this review

Study	Participants	Interventions	Dependent Variable	FA Conducted
Angell, Nicholson, Watts, & Blum, (2011)	1 male; 11 years; autism	Powercard Strategy	Latency to transition and challenging behavior	No
Banda & Kubina (2006)	1 male; 13 years; autism and PDD-NOS	High-p task sequence	Latency to transition	No
Blair, Fox, & Lentini (2010)	1 male; 3 years PDD-NOS	Activity schedule & first/then statements	Challenging behavior	Yes
Bryan & Gast (2000)	3 male, 1 female; 6-12 years; autism	Activity schedule	Latency to transition and challenging behavior	No
Cale et al., (2009)	1 male, 2 females; 5-8 years; PDD-NOS and Aspergers	Activity schedule	Challenging behavior	No
Cihak (2011)	4 participants, gender not specified; 6-18 years; autism	Activity schedule and video modeling	Challenging behavior	No

(Continued)

Study	Participants	Interventions	Dependent Variable	FA Conducted
Dooley, Wilczenski, & Torem (2001)	1 male; 3 years; PDD-NOS	Activity schedule	Challenging behavior	Yes
Judge (2015)	1 male; 19 years; Autism	Computed based activity schedule	Latency to transition	No
Mancil, Haydon, & Whitby (2009)	3 males; 6-12 years; autism	Social story	Challenging behavior	No
Mechling & Savidge (2011)	2 males, 1 female; 13-18 years; autism	PDA, activity schedule, and videos	Latency to transition	No
Newman et al., (1995)	3 males; 13-18 years; autism	Activity schedule and self management	Latency to transition	No
Pierce et al., (2013)	4 males; 6-12 years; autism	Activity schedule	Latency to transition	No
Sainato (1987)	3 males; 3-5 years; autism	Peer-mediated antecedent	Latency to transition	No
Schmit (2000)	1 male; 6 years; autism	Photographs	Latency to transition and Challenging behavior	No
Schreibman, Whalen, & Stahmer (2000)	3 males; 3- 6 years; autism	Video	Challenging behavior	No
Siegel & Lien (2014)	3 males, 3-5 years, autism	Photographs	Latency to transition	No

(Continued)

Study	Participants	Interventions	Dependent Variable	FA Conducted
Taber-Doughty, Miller, Shurr, & Wiles (2013)	2 males; 13-18 years; autism	Video modeling	Latency to transition	No
Waters, Lerman, & Hovanetz (2009)	2 males; 6-12 years; autism	Activity schedule, extinction, DRO	Challenging behavior	Yes

Participants

A total of 53 participants were included in the 21 identified studies, with a total of 40 males (75%) and 5 females (9.5%). There were eight participants whose gender was not specified (15.5%).

The participants' ages ranged from three to 19 years. Preschoolers, ranging from 3-5 years old made 25% of the participants (13 children). Most participants were from the elementary school level, ranging from 6-12 years old with 24 children (45%). Next, there were 14 middle school and high school students ranging from 13-18 years old (26%). Lastly, college level age, ranging from 19-22 years old. There are two participants in this category (4%), and both were 19 years old.

Among the participants, 46 (87%) were diagnosed with autism, five (9%) with PDD-NOS, one (2%) with Asperger's syndrome, and one participant (2%) with both autism and PDD-NOS. One participant was also diagnosed with both epilepsy and ADHD.

Dependent Variables

The studies included in this review implemented behavior analytic interventions to improve task transition. Task transition not only included the mastery of stopping one activity and beginning another within a reasonable amount of time, but also completing this task transition without challenging behavior. Included studies addressed both acquisition of task transition as well as challenging behavior during transition.

Challenging behavior. Ten studies measured challenging behavior during task transition and across 28 participants. Challenging behavior included aggression, inappropriate vocalization, falling on the ground, elopement, off task behavior, and others.

Among those participants, aggression was measured as a dependent variable for 32% of the participants (n=9). Aggression included pinching, slapping, kicking, hitting, pushing, pulling hair, biting, grabbing others by force, shoving other children, scratching, and throwing objects directed to other people. For example, Cihak et al. (2009) used video modeling via a video iPod system to improve transition from one place to another in two children out of four with autism who engaged in aggression. One participant's aggression was defined as hitting and pinching peers when walking down the hallway for transition purpose. Another participant's aggression was pulling the hair of another person or slapping.

Inappropriate vocalization was defined as verbal refusal, whining, crying, yelling, and screaming. Four participants engaged in these behaviors (14%). Two out of three participants in Cale et al. (2009) engaged in inappropriate vocalization. One participant screamed during transition from one class to another. The other participant became upset

every time she had to transition back from speech to the classroom because the class had already started. Inappropriate vocalization included her yelling, crying, and demanding that the class start over again.

Falling on the ground was a common targeted behavior in task transition intervention (Blair et al., 2010; Cale et al., 2009; Schmit et al., 2000; Schreibman et al., 2000). There were five participants (18%) who engaged in falling to the ground while asked to transition from one activity to another.

Off task behavior was defined as engaging in any other behavior that was not related to the task presented, but did not harm others. Two studies (18%) reported off task behavior across five participants (Blair et al., 2010; Bryan & Gast, 2000). One participant's off task behavior was stereotypic behavior (body rocking and hand flapping), playing with objects not related to the activity, laying on the ground, leaning on the teacher, and prolonged temper tantrum (Blair et al., 2010). Bryan and Gast (2000) specifically target off task behavior while transitioning in children with autism using picture activity schedules. Off task behavior was defined as when a student did not complete a step on the task analysis that the experimenter made. This included using materials in other way than it was intended or not engaging in any activities.

Elopement was reported as a dependent variable in one participant (Cihak et al., 2011). In this specific study elopement was defined as running or moving at least 10 feet away from the classmates in the hallway.

Other challenging behaviors included *making a scene* and staring at others (Agell et al., 2011), ignoring teacher's request (Blair et al., 2010), self-injury (Cale et al., 2009) and sitting on the ground (Cihak et al., 2009; Cihak, 2011). There were a total of five

participants with challenging behavior in this other category (18%). Finally, one participant engaged in both aggression and self-injury (Cale et al., 2009).

Latency. More than half of the studies measured latency to task transition as the dependent variable across 35 participants. Four studies measured both latency and challenging behavior (Brian & Gast, 2000; Cale et al., 2009; Cihak, 2011; Schmit et al., 2000) across seven participants.

Interobserver Agreement (IOA)

All of the studies (100%) reported interobserver agreement, with at least 90% accuracy.

Generalization

Half of the studies (n=11) measured and reported generalization. Blair, Fox, and Lentini (2010) stated that teachers were able to generalize intervention to non-trained routine (i.e., a new classroom) which resulted in decreased challenging behavior in the non-trained routines. Brian and Gast (2000) reported generalization at 100% of smooth transition to new activities using picture schedules. New activities were in the student's repertoire but were not used during the experiment.

Maintenance

Six out of the 21 studies (28.5%) measured and reported maintenance. Two studies reported maintenance at two to three weeks after the intervention (Blair et al., 2010; Mancil et al., 2009). Two studies reported maintenance at one month after intervention (Newman, 1995; Schreibman, 2000). Schreibman et al. (2000) reported

that challenging behavior has reduced to an average of 10% across three participants during the one-month follow up. One study did not report maintenance data, but anecdotally reported the decrease in tantrum maintained over time (Schmit, 2000). Cihak et al. (2009) reported the longest maintenance of independent transition after 9 weeks with the mean of 98% accuracy across four participants. Challenging behavior such as aggression, elopement, and sitting on the ground was reduced to 0%.

Settings

Most of the studies (86%) were conducted in the school setting. Of those studies, fifteen occurred within the classroom setting. For example, in classroom transition was moving from one desk to the location of the children's scheduled activity (Siegel & Lien, 2015). One study specifically measured transition across locations in the school, including bus, to the classroom; classroom to the music room; music room to the bathroom; and so on (Cihak et al., 2010). Hallway was accounted as one of the transitional settings inside the school with four studies. Three studies measured transition from the hallway to the classroom (Banda & Kubina 2006; Cale et al., 2009; Cihak, 2011; Cihak et al., 2009). Other locations in school included a high school fitness center (Judge, 2015) and an after school program (Newman et al., 1995).

Two studies were conducted at the participant's home (Dettmer et al., 2000; Schreibman et al., 2000). Three studies were conducted in community settings. These included the grocery store, bowling alley, and school workroom (Taber-Doughty et al., 2013), a shopping mall and a department store (Schreibman et al., 2000), and a large metropolitan area (Dettmer et al., 2000).

Implementer

Seventeen studies (80%) reported that intervention was implemented by the classroom teacher. Five among the 17 studies reported that the teachers were assisted by a therapist (Spriggs, 2015), teacher assistants (Angell et al., 2011), speech and occupational therapist (Cale et al., 2009), experimenter (Siegel & Lien, 2015) and/or a paraeducator (Smicht et al., 2000). One study each reported to be implemented by, a caregiver (Dettmer et al., 2000), experimenter (Schreibman et al., 2000), and nonspecific "instructor" (Taber-Doughty, 2013).

Activity preference

Most studies (86%) did not specify the preference level of activities in which the participant was transitioning from and to. Of those that reported activity preference, three studies (14%) reported transition difficulties from high preferred to low preferred activities (Banda & Kubina, 2006; Detmer et al., 2000; Waters et al., 2009). For example, Waters et al. (2009) measured challenging behavior during transition from playing computer games (high preferred) to doing various academic tasks (low preferred).

Functional Analysis

Among the 21 studies, three studies conducted a functional analysis (FA) across four participants (Blair, Fox, & Lentini, 2010; Dooley, Wilczenski, & Torem, 2001; Waters, Lerman, & Hovanetz 2009). The functional analysis concluded two participants' challenging behavior was maintained by escape (Wathers, et al., 2009). The other two participants' challenging behavior was maintained by multiple functions. One participant's behavior was maintained by both escape and attention (Dooley et al., 2001),

while the other's challenging behavior was maintained by escape, attention, and tangibles (Blair et al., 2010).

Intervention

Activity schedule was found to be the most used intervention (57%). Among those studies, 90% implemented an activity schedule to decrease latency to transition. An activity schedule, which can be comprised of words, pictures, or a combination, is organized to represent a sequence of events. Dooley et al. (2001) used a picture activity schedule consisting of line drawings that represent different settings of daily activities at school. The pictures were placed on a Velcro board. Upon the participant's arrival at school, the teacher reviewed the activity schedule. Participants then had to remove the first picture on the schedule. When the participant completed the activity, he instructed to put the picture inside a jar to receive reinforcement. The same cycle goes to the next picture activity schedule until all the tasks were completed.

Five studies utilized video modeling as an intervention. Video modeling refers to a series of video recordings made by the experimenter for the purpose of teaching or preparing students. Schreibman et al. (2000) used video modeling by recoding the common transition settings in which the participants had difficulty completing. For example, the experimenter videoed the routine of getting out of the house such as the toilet, the sink, and the hallway. The experimenter carried the camera throughout the setting according to the participant's view. Then the participants were asked to watch the video before going to the settings to prepare them of what is to come.

Social stories (Mechling & Savidge, 2011), high-p (Banda & Kubina, 2006), and DRO (Waters et al., 2009) were used in one study and have not been replicated. Social

stories are short stories specifically written for people with developmental disabilities to help them understand what are considered appropriate behaviors in different settings (Gray, 1998). High-p involves quickly presenting 2-5 easy tasks that the child will most likely to perform and has a compliance history, and then a difficult or low-probability (low-p) tasks right away (Davis & Brady, 1993). Differential reinforcement of other behavior (DRO) is the delivery of reinforcement contingent upon responses other than the targeted behavior and when a targeted behavior has not occurred for a certain period of time (Vollmer, Iwata, Zarcone, Smith, & Mazaleski, 1993).

Treatment Fidelity

Twelve studies (57%) reported treatment fidelity with at least 90% accuracy. The remaining nine (43%) of the studies did not report treatment fidelity measures.

Discussion

Conclusions

The current literature has provided various effective interventions to decrease latency from one task to another and challenging behavior during task transition. All of the studies reported positive outcomes. The majority of the studies evaluated the effectiveness of activity schedules.

Limitations of the Literature Review

There are several limitations that must be noted. This review was restricted to studies evaluating treatments among participants with ASD. There may be effective interventions for task transition for participants with other developmental disabilities that are excluded because of this inclusion criterion. Second, this literature review was limited

to participants below the age of 22 years old. Research evaluating transition interventions for adult participants may have yielded different interventions and results. Finally, only literature published in English were evaluated. Some relevant studies may have been excluded due to this criterion.

Future Research

Future research should continue to explore promising interventions. Several interventions included in this review were evaluated by only a few studies. In order to validate the potential on an intervention, multiple studies must replicate the research, finding similar outcomes (Horner & Spaulding, 2010). High-p is one such intervention in need of replication. In general, high-p has been found to be effective in increasing task compliance (Banda, Neisworth, & Lee, 2003; Banda & Kubina, 2006). However, only one study included in this review used a high-p to improve task transition in a child with autism (Banda & Kubina, 2006). Although the results appear to be positive, there was only one participant in the study. More research is needed to evaluate the effectiveness of high-p on task transition for children with autism.

Second, most studies did not specify the activity preference during transition, thus making it unclear as to whether the transition occur during highly preferred activity to highly preferred or from high preferred to low preferred activity. Future research should identify activity preference when evaluating transition or transition challenging behavior.

Third, most of the studies did not conduct a functional analysis. However, functional analysis can be important to understand the function behind difficulties in task transition as it may be maintained by multiple functions (Blair, Fox, & Lentini, 2010;

Dooley, Wilczenski, & Torem, 2001; Waters, Lerman, & Hovanetz 2009). Future research should include functional analysis of challenging behavior during transition.

Finally, almost half of the studies did not generalize across settings and only six studies reported maintenance. Future research should evaluate the effectiveness of interventions and not only inflicting immediate results, but also measure generalization and maintenance of those results.

This study addressed many of these needs for future research. The study continued to evaluate the effectiveness of the high-p by extending and replicating the study conducted by Banda and Kubina (2006).

CHAPTER THREE

Methods

The purpose of this study was to evaluate the effectiveness of the high-p to reduce transition difficulties during task transition. This study replicated Banda and Kubina (2006) to determine if a high-p task sequence presented prior to transition instruction would affect latency during task transition from a preferred to a non-preferred activity. This study also extended the previous study by adding a pre-experimental phase to identify high-p behaviors and verify activity preference. The current study also measured challenging behavior as an additional dependent variable.

Participants

Two participants were selected from a university-affiliated ABA clinic that serves children with developmental disabilities. The participants were selected through therapists' recommendations. Participants were two males ranging from 5-11 years old. Parents and therapists' interviews verified the presence of challenging behavior during task transition.

Robby is a five-year old male diagnosed with a speech impairment and PDD-NOS. Robby has been receiving special education services since he was 3 years old. As a provision to receive special education services, he was categorized by the school system as having a non-categorical early childhood disability diagnosis; specifically, the special education team suspected he may have autism. Robby's challenging behavior includes

noncompliance to transition requests and engaging in tantrums such as hitting, kicking, falling on the ground, and throwing things.

Jack is an 11-year-old male diagnosed with Down syndrome and speech impairment who attended a special education class full time. He is reported to have expressive and receptive language weaknesses. Jack's mom expressed that he would babble and make up his own words. Jack engages in vocal stereotypy behavior. He is reported to be noncompliant at school but not at home. Jack has limited social skills and has difficulties socializing with peers at school because he likes to talk but most people cannot understand him.

Setting

The study took place at a university-affiliated ABA clinic. Sessions were conducted two to four times a week, with each visit lasting 90 minutes. Robby's sessions were administered within the clinic room that was approximately 2.5 x 2.5 meters and contain two child-sized tables, two child-sized chairs, and one adult-sized chair. The tables were placed approximately 1 meter away from each other. Jack's sessions were conducted between a large social room approximately 9 x 4 meters and the clinic room (similar to Robby's). The distance between the two rooms was about 10 meters. The big room contained compartments of play areas and material storages. Jack had to walk through a hallway to the clinic room, which, with a typical walking pace would take Jack approximately 30 seconds to reach.

Materials

The materials consisted of a timer, data collection sheets, pen, and a clipboard for data collection purposes. Materials for the study consisted of age appropriate toys such as sorting shapes and dinosaur toys for Robby and dollhouse for Jack, and academic activities (laminated sheet for tracing name) and dry-erase markers to write their names. A video camera was used to record sessions.

Measurements

Data Collection

Observation data and treatment fidelity were collected live by trained graduate students utilizing data sheets found in Appendix B. However, 80% of the sessions were also recorded in order to allow for later data collection if needed. Data were collected on challenging behavior as well as latency to complete transition. Data were collected on challenging behavior using a 10-second partial interval recording. Robby's challenging behavior was (a) falling on the ground, defined as back, tummy, or head flat on the ground; (b) throwing items; and (c) hitting, defined as forceful hand to any part of the body contact to another person or self. Jack's challenging behavior was elopement which was defined as walking two steps away from the path he is supposed to be walking or any instances of him running.

Latency was defined as the duration of time between the implementer's instruction to transition from a preferred activity to when the participant engaged in the non-preferred activity. For Robby, latency started when the implementer finished the sentence "it's time to write your name" and stopped when Robby successfully traced the letter B with or without prompting. For Jack, it started when the implementer finished the

sentence “it’s time to write your name” and stopped when Jack legibly wrote the letter A with or without prompting.

Interobserver Agreement (IOA)

Before the session, data collectors were trained by the implementer to collect data to ensure the accuracy of data collection. Data collectors were given operational definitions of each target behavior for each participant. Then, implementer gave a brief explanation on how to score use the data collection sheet. IOA was collected for challenging behavior by using the total agreement formula. The total number of intervals with agreement was divided by the total number of intervals, and multiplied by 100%. Latency was also calculated using total agreement approach by dividing the smaller number of the total duration recorded by the larger number and multiplying by 100%. Two data collectors collected data on 36% of the sessions for Robby and 34% of the sessions for Jack. The mean percentage of agreement for Robby’s challenging behavior was 97% (range, 86-100%) and mean percentage of agreement of Robby’s latency was 98.1% (range, 94-100%). The mean percentage of agreement for Jack’s challenging behavior was 97% (range, 89-100%) and mean percentage of agreement of Jack’s latency was 98.3% (range, 92-100%).

Treatment Integrity

To evaluate the procedural integrity of the treatment, a trained graduate student observed 64.5% of sessions. During the observation, the graduate student completed a treatment integrity checklist that outlines the specific steps of baseline and intervention procedures (see Appendix B). To calculate treatment integrity, the number of steps

completed correctly were divided by the total number of steps and multiplied by 100%. Treatment integrity was calculated on 56% of the sessions for Jack and 73% of the session for Robby. Overall treatment integrity for both participants was 97% (range, 90-100%).

Procedures

This study is an extension of the study conducted by Banda and Kubina (2006) using a high-probability request sequencing technique (high-p). An ABAB design was used in this study to evaluate effectiveness of high-p with transition from a preferred activity to a non preferred activity.

Pre-experimental Phase

The pre-experimental phase consisted of four components: (a) informal therapist interview, (b) direct observation, (c) verification of activity preference through free operant preference assessment, and (d) identification of high-p behaviors. During the informal therapist interview and direct observation, the specific transitions associated with transition difficulties (i.e., long latency to transition and/or challenging behavior) were identified. Second, the specific challenging behaviors were operationally defined. Third, the experimented identified activity preferences (low/ high preferred) through therapist interview and verified preferences using a five-minute free operant assessment. Free operant preference assessments were conducted three times. During the free operant assessment, participants were allowed to move among various activities freely. Activities in which participants spend relatively more time and less time were recorded using a 10-

sec partial interval recording in order to identify presumable preferred and non-preferred activities.

The final component of the pre-experimental phase was the verification of high-p responses. The implementer instructed the participants to perform a behavior on the list of 20 potentially high-p responses identified via therapist interview. A potential high-p response was instructed every five seconds. These trials were repeated across five sessions. Instructions that the participant performed within three seconds of instruction 100% of opportunities without any challenging behavior were considered high-p responses. Implementer then randomly selected nine high-p behaviors to rotate during high-p intervention sessions.

Experimental Phase

All sessions consisted of five transition trials. Each trial began with a mini preference assessment where implementer gave two choices of preferred activity to the participants. Once the participant chose a toy, the implementer said "you can play with [insert toy selection]." Each trial involved engagement in a preferred activity for 30 seconds, transition from a preferred to a non-preferred activity, and engagement in the non-preferred activity for 30 seconds.

Baseline. During baseline, the implementer verbally instructed the participant to transition from one activity to another by saying, "it's time to write your name" and waited for one minute. If the participant successfully transitions with one minute without challenging behavior, the implementer provided verbal praise. If the participant failed to transition within one minute, the implementer prompted successful transition using least

to most prompting. The implementer then guided the participants to engage in non-preferred activity for 30 seconds and used least to most prompting in the case of noncompliance or challenging behavior.

Intervention. In the intervention phase, prior to instructing the participant to transition to the non-preferred activity, the implementer instructed participants to complete high-p behaviors until the participant complied with three consecutive high-p instructions right after the 30 seconds of engagement in the preferred activity. If the participant did not comply to the high-p instruction, the implementer continued to give high-p instructions in the sequence until compliance of three consecutive behaviors. If participant failed to comply after the sequence has been repeated twice (18 high-p behaviors), the implementer instructed the participant to transition using least to most prompting. Contingent upon each high-p instruction compliance, the implementer delivered praise. Immediately after compliance with the third consecutive high-p instruction, the implementer instructed the participant to transition to the other activity. If the participant successfully transitioned within one minute without challenging behavior, the implementer provided verbal praise. One minute was allowed for transition for both participants due to the age difference and distance to travel. If the participant emitted challenging behavior, the implementer will prompt successful transition using least to most prompting. If the participant failed to transition within one minute, the implementer prompted successful transition using least-to-most prompting and let participant engaged in the non-preferred activity for 30 seconds. The implementer used least-to-most prompting for noncompliance and/or challenging behavior during the 30 seconds.

CHAPTER FOUR

Results

Pre-experimental Phase

Therapists' Interview

Robby's therapist indicated that he has difficulty in social language, following instructions, and transitioning from one activity to another. When asked about specific challenging behaviors, she mentioned that Robby often tantrums, falls on the ground, cries while saying 'no', and throws objects. His therapist indicated that challenging behavior occurs during transition from a preferred activity to a neutral activity. Jack's therapist mentioned that Jack often elopes when it is time to transition from one room to another. Jack would run towards the next room or walk up to someone and attempts to engage in conversations.

Direct Observation

During direct observation, the implementer observed Robby's and Jack's normal therapy sessions. During the observation, Robby threw himself on the ground when asked to do puzzles after two minutes of playing ball. Jack eloped when asked to walk from one room to another.

Free Operant Preference Assessment

Both participants allocated responding to two activities during a five-minute free operant preference assessment. When told to play with anything that he wants, Robby

displayed interest in sorting shapes by manipulating it a mean of 50% of the observation period. He also played with dinosaur a mean of 16% of the observational time. Robby did not touch soft toys, bear, or marker and tracing pad for tracing his name. The implementer then identified sorting shapes and dinosaur as Robby's preferred activity and tracing name as the non-preferred activity. IOA for the free operant preference assessment was collected 67% of the sessions with a mean of 96% agreement. Jack played with dollhouse for an average of 99% of the observation period and car for a mean of 51% of the observation period. He flipped the book a mean of 3% of the session. Jack did not touch the ball or paper and markers with instructions to write his name. The implementer identified dollhouse and car as Jack's preferred activity and writing his name as the non-preferred activity. IOA for Jack was also collected 67% of sessions with a mean of 98.5% agreement. Treatment fidelity during the free operant preference assessment was 100% for both participants.

High-p Assessments

Verification of High-p responses resulted in 16 responses for Robby and 14 responses for Jack. Responses from each participant appeared in a bar graph (see figures 5 and 6 in Appendix A).

Baseline

Baseline sessions were conducted until a stable trend has been established for challenging behavior and latency for both participants. The data for each participant are presented in a line graph for visual analysis in Appendix A. Robby displayed challenging behavior a mean of 32% intervals (range, 18.2-42.8%). Robby's mean latency to

transition from preferred to non-preferred activity in baseline was 125 seconds (range, 87-190 seconds). Jack displayed challenging behavior a mean of 29.5% intervals (range, 17-48%). Jack's latency to transition was an average of 99.5 seconds (range, 80-160 seconds).

Intervention

The mean for challenging behavior and latency overall decreased for both participants. Robby's challenging behavior decreased slightly to a mean of 19% of intervals (range, 0-43.4). Jack's challenging behavior also appeared to have decreased with a mean of 21.68% (ranging from 0-44.4%). Robby's mean latency to transition moderately decreased to 81.6 seconds (range, from 61-106) seconds. However, Jack's mean latency to transition decrease was insignificant at 80 seconds (range, 60-120.6 seconds). Interestingly, both Robby and Jack failed to complete all high-p requests during the intervention. Specifically, Robby only completed the high-p requests a total of four out of 60 trials. Jack completed the high-p request a total of 53 trials out of 55.

CHAPTER FIVE

Discussion

This study was conducted to evaluate the effectiveness of high-p intervention to reduce difficulties in transition from a preferred activity to a non-preferred activity. Results suggested that high-p intervention have some effects on the reduction of challenging behavior and latency to transition in both participants. For Robby, high-p slightly reduced latency to transition by a mean of 44 seconds. Moreover, Robby's mean levels of challenging behavior decreased slightly in intervention when compared to baseline. Similarly, Jack's mean latency to transition decreased by 19.5 seconds from baseline to intervention. Moreover, mean levels of challenging behavior were slightly lower in intervention sessions relative to baseline.

Visual inspection of the data indicate several overlapping data points across baseline and intervention conditions; therefore, demonstration of the effect of the high-p intervention is not clear. Moreover, the overall mean decreases in challenging behavior and latency to transition are relatively small; therefore, reducing the social significance of the results. Consequently, the results of this study do not support the effectiveness of a high-p intervention to improve transition from preferred to non-preferred activities.

The present study's result on latency to transition are aligned with the results from Banda and Kubina (2006). The authors implemented a reversal design to evaluate the effects of a high-p intervention on latency to transition and frequency of verbal prompts given by the teacher during transition between tasks. During the intervention

phase, the teacher provided 2-3 high-p request and immediately asked the participant to transition. The mean latency to transition during intervention was reduced from baseline from 3.2 minutes to 2.5 minutes. Overall, Banda and Kubina (2006) concluded high-p intervention to be successful with a reduction on latency to transition of approximately one minute a day. However, according to the visual analysis, similar data were found including overlapping data and variability during baseline and intervention conditions. The most noteworthy reduction in latency to transition in this current study was Robby's, at approximately 44 seconds.

High-p uses the theory of behavioral momentum where engaging in a series of behaviors with the history of compliance to increase the rate of responding of low probability behaviors. This theory is based on physics where momentum is a product of mass times velocity (Nelvin, 1996). For example, a car travelling at 40mph would have more momentum than a bike travelling at the same speed because a car has more mass. Likewise, a car traveling at 100 mph would have a longer latency to stop than a car traveling with lower velocity of 10 mph. The greater the mass and the velocity, the greater momentum there will be. Similarly, in behavioral theory, a stimulus condition that has been paired with a large magnitude of reinforcer is the mass and the rate of responding is the velocity. History of high rates of responding is the velocity that keeps the momentum going. Therefore, a behavior momentum is achieved when high probability responses results in compliance of low probability responses. Applied researchers label this antecedent intervention as high-p. Engagement in high probability task sequence increases the overall rate of responding for a task, even if it is less preferred (Lee, 2005).

High-p request has been highly successful to increase compliance especially in task demands (Davis, Reichle, & Southard, 2000; Davis, Brady, Hamilton, McEvoy, & Williams, 1994; Mace & Belfiore, 1990). However, there are some explanations as to why high-p may not be as effective of an intervention to decrease challenging behavior and latency to transition in the present study. First, Robby did not consistently comply with the high-p requests during intervention. Despite the fact that initial evaluation indicated the selected responses had a high probability of compliance, Robby failed to comply to high-p requests across 93% of trials. This outcome is similar to the findings of Ardoin, Martens, and Wolfe (1999), in which high-p intervention was used to increase compliance during transition. The participants did not complete the high-p instruction because they were distracted or engaging in other activities. Since compliance of high-p behavior is the key factor of the intervention, non-compliance to high-p indicates that there was no intervention in place and behavior momentum could not be achieved.

It is important to note that there is a significant age gap between Robby (5 years old) who is in the early childhood stage and Jack (11 years old) who is in the middle childhood stage. Non compliance and challenging behavior is very common in the early childhood stage as they are still learning appropriate behavior outside the home setting. Non-compliance to the high-p tasks was expected from Robby as it is typical for children his age. On the other hand, Jack complied to 53 out of 55 high-p trials and his data still indicated ineffectiveness of high-p intervention.

Another possible reason is that high-p request may only be effective for certain types of behavior functions. For example, Zarcone, Iwata, Hughes, and Vollmer (1993) evaluated the effects of high-p versus high-p plus extinction versus extinction alone in

increasing compliance for an adult with self injurious behavior (SIB). They found that high-p alone was not effective when challenging behavior was maintained by escape function. In fact, the rate of compliance decrease from baseline. When extinction procedure was added, SIB decreased and compliance increased. Based on this finding it was hypothesized high-p provided opportunities to escape from the low-p behavior. The present study did not conduct a functional analysis. Perhaps the participants' behavioral function was incompatible with high-p intervention. In fact, anecdotal observation of challenging behavior performed by both participants indicated the possibility it was maintained by negative reinforcement in the form of escape from task.

Limitations

One limitation of the study was that a functional analysis was not conducted to determine the function of challenging behavior. Even though a descriptive analysis was used, understanding the reinforcer for non-compliance could give a better understanding to why high-p intervention did produce the desired result for both participants. A second limitation is due to the time constraint. More trials could have been performed to gain stability during intervention. High-p sequence could have been effective if more trials were conducted and a stable pattern was achieved. A third limitation is the variability of research session due to parents' and implementer's time availability. Possibly research three times a week for one hour would have been beneficial for the participants in understanding the contingencies.

Future Research

With the evidence among other studies that high-p request sequence is an effective intervention to some extent, the next research should analyze the components of

high-p request sequence. Even though participants made improvements, the results of high-p intervention are not significant to ease transition from a preferred to a non-preferred activity. Future research should consider conducting a functional analysis to identify the functions of behavior and determine if high-p intervention would be beneficial for all functions of behavior. Another potential research should examine the effectiveness of the high-p request sequence to improve transition in a more natural setting. Furthermore, additional studies are needed to evaluate the ratio of high-p instructions to the low –p instructions. Perhaps the change in ratio would result in a more successful transition. Future research should also evaluate high-p as an intervention package. Perhaps, with combining high-p with activity schedule or differential reinforcements these interventions are deemed to be successful strategies to reduce challenging behavior as a whole (Dohering et al., 2014).

Implication for Practice

Although the high-p procedure has some evidence of effectiveness to reduce challenging behavior and increase compliance among children with autism, the current study did not support its use in improving transition. If interested in utilizing a high-p response sequence, practitioners should consider combining high-p with other evidence based treatments to achieve a more immediate impact.

APPENDICES

APPENDIX A

Figures

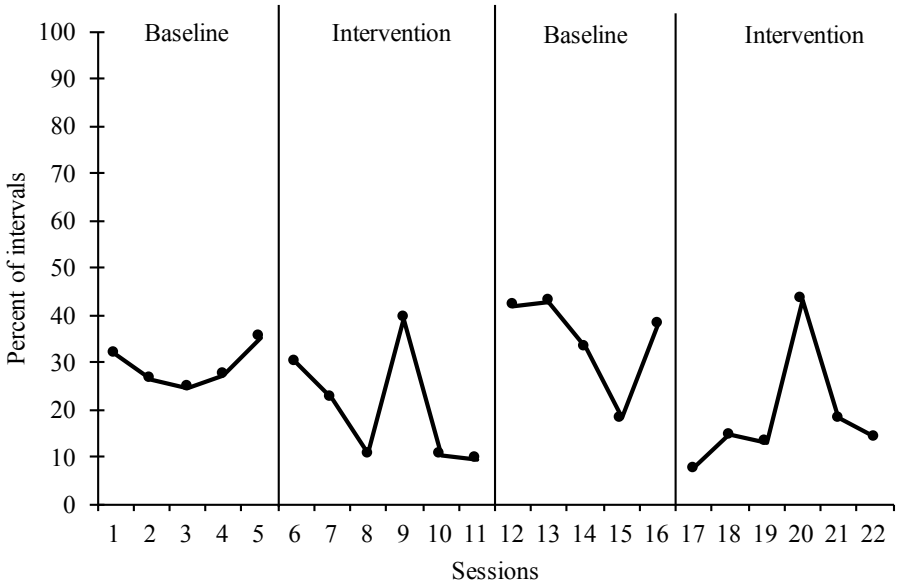

Figure A.1. Robby's percentage of interval of challenging behavior during transition from a preferred to a non-preferred activity.

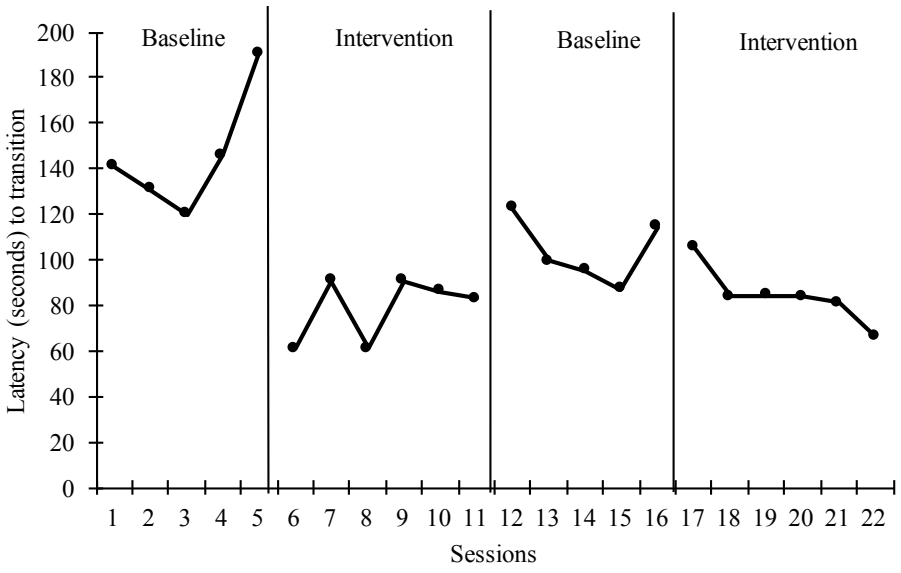

Figure A.2. Robby's average time to transition from a preferred to a non-preferred activity.

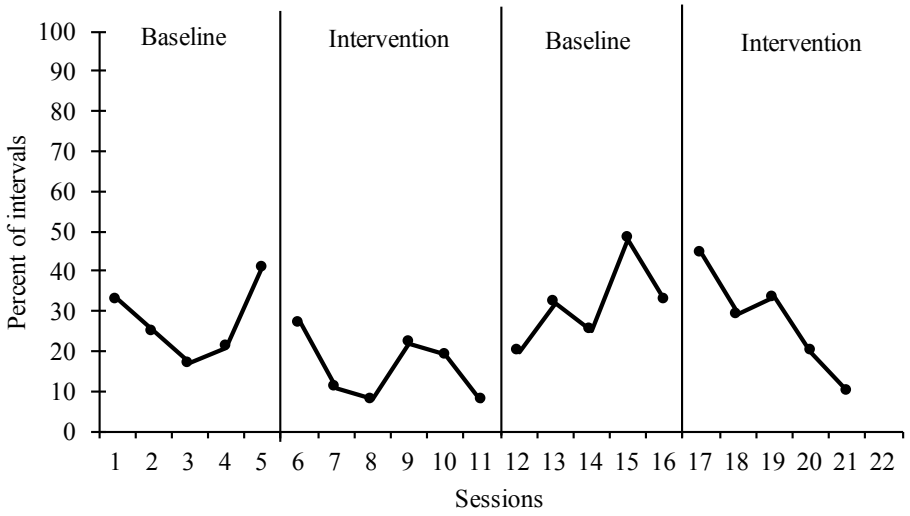

Figure A.3. Jack's Percentage of interval of challenging behavior during transition from a preferred to a non-preferred activity.

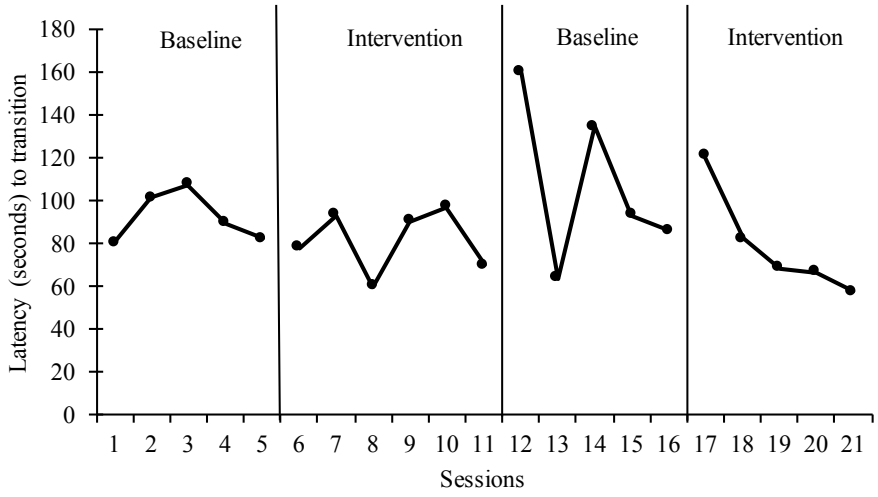

Figure A.4. Jack's average time to transition from a preferred to a non-preferred activity.

APPENDIX B

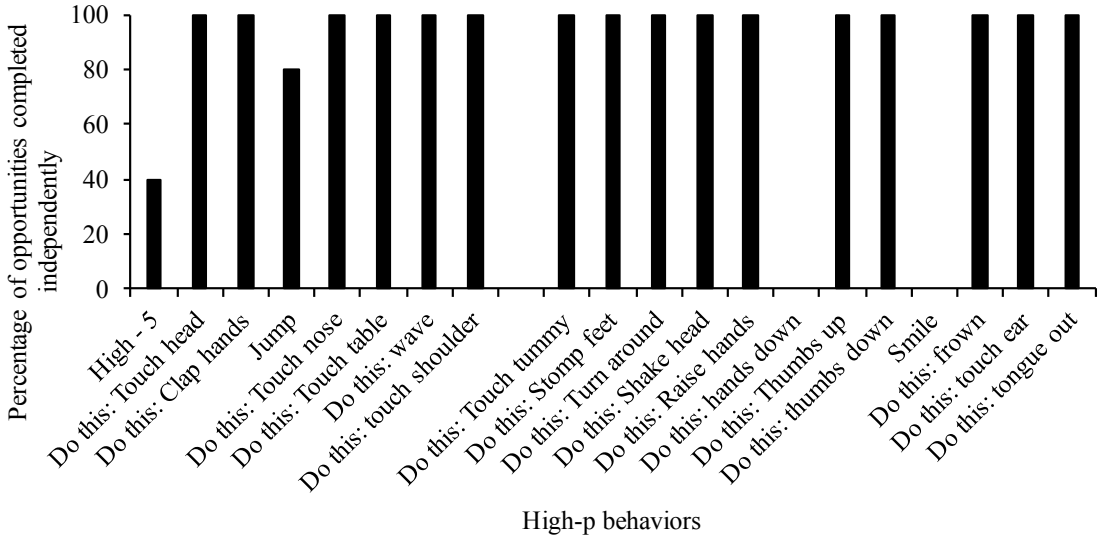

Figure B.1. Robby's High-p verification

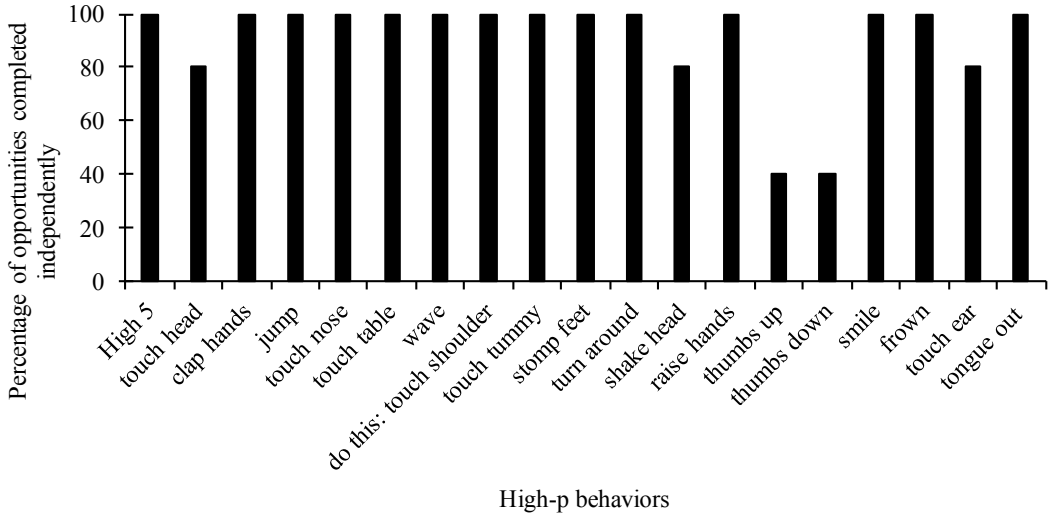

Figure B.2. Jack's High-p verification

APPENDIX C

Data Sheets

Data Sheet C.1.

High – P Verification Checklist (Robby)

High P	1	2	3	4	5
High - 5					
Do this: Touch head					
Do this: Clap hands					
Do this: Jump					
Do this: Touch nose					
Do this: Touch table					
Do this: wave					
Do this: touch shoulder					
Do this: Touch tummy					
Do this: Stomp feet					
Do this: Turn around					
Do this: Shake head					
Do this: Raise hands					
Do this: hands down					
Do this: thumbs up					
Do this: thumbs down					
Do this: Smile					
Do this: Frown					
Do this: touch ear					
Do this: tongue out					

Note: Put a check mark for correct responses and an x for incorrect responses.

Data Sheet C.2.

High – P Verification Checklist (Jack)

High P	1	2	3	4	5
High - 5					
Do this: Touch head					
Clap hands					
Jump					
Touch nose					
Touch table					
wave					
Do this: touch shoulder					
Touch tummy					
Stomp feet					
Turn around					
Shake head					
Raise hands					
Hands Up					
Thumbs up					
Thumbs down					
Smile					
Frown					
Touch ear					
Tongue out					

Note: Put a check mark for correct responses and an x for incorrect responses.

Data sheet C.3

High – P Responses Treatment Fidelity

Implementer prepared 15-20 potential high-p instructions	
Implementer instruct the participant to perform instruction every 5 seconds	
If participant perform correct implementer provides verbal praise. If participant perform an incorrect response, implementer moves on to the next instruction.	
Implementer ignores any challenging behavior	
Instructions that the participant performs within three seconds of instruction 100% of opportunities without challenging behavior is considered a high-p response.	

Data Sheet C.4.

Free Operant Preference Assessment Data Sheet

10	**20**	**30**	**40**	**50**	**60**	
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	**1**
10	**20**	**30**	**40**	**50**	**60**	
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	**2**
10	**20**	**30**	**40**	**50**	**60**	
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	**3**
10	**20**	**30**	**40**	**50**	**60**	
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	**4**
10	**20**	**30**	**40**	**50**	**60**	
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	**5**

1 (_____) = ___/____ =_____% **2**(_____) = ___/____ =_____%

3 (_____) = ___/____ =_____% **4** (_____) = ___/____ =_____%

5 (_____) = ___/____ =_____%

Data Sheet C.5

Treatment Fidelity Sheet

Baseline

Item	Correct/Incorrect
Ask the participant to make a choice of preferred activity before every trial.	
Implementer instructs participant to engage in preferred activity for 30 seconds	
Implementer state the SD "it's time to write your name" and wait for 1 min. Any challenging behavior or other behavior during the 1-minute transition period will be ignored.	
Upon successful transition **within 1 minute**, implementer provides verbal praise.	
If participant does not complete transition within **1 min**, implementer use **least to most** (**verbal, gestural, physical**) prompting to facilitate transition.	
Implementer uses **least to most** prompting on non-preferred task and let participant engage in non-preferred activity for 30 seconds.	
Upon challenging behavior during non-preferred task, implementer uses least to most prompting.	
Implementer ignores all other behavior no consequences will be provided	
Implementer blocks for safety for severe challenging behavior.	
Percentage correct	

Data Sheet C.6.

Treatment Fidelity Sheet

Intervention

Item	Correct/Incorrect
Ask the participant to make a choice of preferred activity before every trial.	
Implementer instructs participant to engage in preferred activity for 30 seconds	
Implementer instructs participant to complete previously-identified high-p behaviors until the participant complies to 3 consecutive requests. If participant does not comply, implementer go through the list 2x and then instruct participant to transition.	
Implementer provides verbal praise after every high-p behavior that participant complies.	
If participant does not comply, implementer rotate through the high-p list twice, then instruct participant to transition	
Implementer states the SD "it's time to write your name" and wait for 1 min. Any challenging behavior or other behavior during the 1-minute transition period will be ignored.	
After 1 minute, implementer use least to most prompting	
Implementer let participant to engage in non preferred activity for 30 seconds.	
Upon successful transition, implementer provides a verbal praise plus high preferred reinforcer	
Upon challenging behavior during non-preferred task, implementer uses least to most prompting.	
Implementer blocks for safety for severe challenging behavior.	
Percentage correct	

Data Sheet C.7.

Data Collection Sheet – Challenging Behavior (Partial Interval Recording)

Participant: __________________ Date: ___________________

Procedure: ___________________ Observer: _______________

Challenging behavior: _____________________

Duration	0-10 sec	11-20 sec	21-30 sec	31-40 sec	41-50 sec	51-60 sec
CB						

Duration	0-10 sec	11-20 sec	21-30 sec	31-40 sec	41-50 sec	51-60 sec
CB						

Duration	0-10 sec	11-20 sec	21-30 sec	31-40 sec	41-50 sec	51-60 sec
CB						

Duration	0-10 sec	11-20 sec	21-30 sec	31-40 sec	41-50 sec	51-60 sec
CB						

Duration	0-10 sec	11-20 sec	21-30 sec	31-40 sec	41-50 sec	51-60 sec
CB						

Duration	0-10 sec	11-20 sec	21-30 sec	31-40 sec	41-50 sec	51-60 sec
CB						

Data Sheet C.8.

Data Collection Sheet – Latency

Participant: _____ Date: _____
Procedure: _____ Observer: _____
Challenging behavior: _____

Session 1

Trials	1		2		3		4		5	
Latency	start	stop	start	stop	start	stop	start	stop	start	stop

Session 2

Trials	1		2		3		4		5	
Latency	start	stop	start	stop	start	stop	start	stop	start	stop

Session 3

Trials	1		2		3		4		5	
Latency	start	stop	start	stop	start	stop	start	stop	start	stop

Session 4

Trials	1		2		3		4		5	
Latency	start	stop	start	stop	start	stop	start	stop	start	stop

Session 5

Trials	1		2		3		4		5	
Latency	start	stop	start	stop	start	stop	start	stop	start	stop

REFERENCES

Ardoin, S. P., Martens, B. K., & Wolfe, L. A. (1999). Using high-probability instruction sequences with fading to increase student compliance during transitions. *Journal of Applied Behavior Analysis*, *32*, 339-351.

American Psychiatric Association. (2013). *DSM 5*. American Psychiatric Association.

Angell, M. E., Nicholson, J. K., Watts, E. H., & Blum, C. (2011). Using a multicomponent adapted power card strategy to decrease latency during interactivity transitions for three children with developmental disabilities. *Focus on Autism and Other Developmental Disabilities*, *26*, 206-217.

Axelrod, S., McElrath, K. K., & Wine, B. (2012). Applied behavior analysis: Autism and beyond. *Behavioral Interventions,27*, 1-15.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of applied behavior analysis*, *1*, 91-97.

Banda, D. R., & Kubina, R. M. (2006). The effects of a high-probability request sequencing technique in enhancing transition behaviors. *Education and Treatment of Children, 29*, 507-516.

Banda, D. R., Neisworth, J. T., & Lee, D. L. (2003). High probability request sequences and young children: Enhancing compliance. *Child & Family Behavior Therapy, 25,* 1.

Bishop, S. L., Richler, J., & Lord, C. (2006). Association between restricted and repetitive behaviors and nonverbal IQ in children with autism spectrum disorders. *Child neuropsychology*, *12*, 247-267.

Blair, K. S. C., Fox, L., & Lentini, R. (2010). Use of positive behavior support to address the challenging behavior of young children within a community early childhood program. *Topics in Early Childhood Special Education*, *30*, 68-79.

Bryan, L. C., & Gast, D. L. (2000). Teaching on-task and on-schedule behaviors to high-functioning children with autism via picture activity schedules. *Journal of autism and developmental disorders*, *30*, 553-567.

Cale, S. I., Carr, E. G., Blakeley-Smith, A., & Owen-DeSchryver, J. S. (2009). Context-based assessment and intervention for problem behavior in children with autism spectrum disorder. *Behavior Modification*, *33*, 707-742.

Centers for disease control and prevention; CDC estimates 1 in 68 school-aged children have autism; no change from previous estimate. (2016). *Politics & Government Business,* 19.

Cihak, D. F. (2011). Comparing pictorial and video modeling activity schedules during transitions for students with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *5*, 433-441.

Cihak, D., Fahrenkrog, C., Ayres, K. M., & Smith, C. (2010). The use of video modeling via a video iPod and a system of least prompts to improve transitional behaviors for students with autism spectrum disorders in the general education classroom. *Journal of Positive Behavior Interventions*, *12*, 103-115.

Cuccaro, M. L., Shao, Y., Grubber, J., Slifer, M., Wolpert, C. M., Donnelly, S. L., ... & Pericak-Vance, M. A. (2003). Factor analysis of restricted and repetitive behaviors in autism using the Autism Diagnostic Interview-R. *Child psychiatry and human development*, *34*, 3-17.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). Applied behavior analysis. New Jersey: Pearson Education Inc.

Davis, C. A., & Brady, M. P. (1993). Expanding the utility of behavioral momentum with young children: Where we've been, where we need to go. Journal of Early Intervention, *17*, 211-223.

Davis, C. A., Brady, M. P., Hamilton, R., McEvoy, M. A., & Williams, R. E. (1994). Effects of high-probability requests on the social interactions of young children with severe disabilities. *Journal of Applied Behavior Analysis*, *27*, 619-637.

Davis, C. A., Reichle, J. E., & Southard, K. L. (2000). High-probability requests and a preferred item as a distractor: Increasing successful transitions in children with behavior problems. *Education & Treatment of Children*. *23*, 423-440.

Dettmer, S., Simpson, R. L., Myles, B. S., & Ganz, J. B. (2000). The use of visual supports to facilitate transitions of students with autism. *Focus on Autism and Other Developmental Disabilities*, *15*, 163-169.

Doehring, P., Reichow, B., Palka, T., Phillips, C., & Hagopian, L. (2014). Behavioral approaches to managing severe problem behaviors in children with autism spectrum and related developmental disorders: a descriptive analysis. *Child and adolescent psychiatric clinics of North America*, *23*, 25-40.

Dooley, P., Wilczenski, F. L., & Torem, C. (2001). Using an activity schedule to smooth school transitions. *Journal of Positive Behavior Interventions*, *3*, 57-61.

Flannery, K. B., & Horner, R. H. (1994). The relationship between predictability and problem behavior for students with severe disabilities. *Journal of Behavioral Education*, *4*, 157-176.

Ganz, M. L. (2007). The lifetime distribution of the incremental societal costs of autism. *Archives of pediatrics & adolescent medicine*, *161*, 343-349.

Gray, C. A. (1998). Social stories and comic strip conversations with students with Asperger syndrome and high-functioning autism. In E. Schopler & G. B. Mesibov (Eds.), Asperger syndrome or high-functioning autism? Current issues in autism (pp. 167–198). New York, NY: Plenum Press.

Harvey, S. T., Boer, D., Meyer, L. H., & Evans, I. M. (2009). Updating a meta-analysis of intervention research with challenging behaviour: Treatment validity and standards of practice. *Journal of Intellectual and Developmental Disability*, *34*, 67-80.

Hemmeter, M., Ostrosky, M., Artman, K., & Kinder, K. (2008). Moving Right Along . . .: Planning Transitions to Prevent Challenging Behavior. *YC Young Children, 63*, 18-25. Retrieved from http://www.jstor.org/stable/42730994

Horner, R., & Spaulding, S. (2010). Single-case research designs. In N. J. Salkind (Ed.), Encyclopedia of research design (pp. 1386–1394). Thousand Oaks, CA: SAGE.

Howlin, P., Rutter, M., Berger, M., & Berger, M. (1987). *Treatment of autistic children* (pp. 91-91). Chichester: Wiley.

Judge, J. P. (2015). The effects of a computer-based fitness schedule on independent transitioning for a student with autism. *Palaestra*, *29*, 17-22.

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous child*, *2*, 217-250.

Keen, D. (2003). Communicative Repair Strategies and Problem Behaviours of Children with Autism. *International Journal Of Disability, Development & Education*, *50*, 53.

Kern, P., Wolery, M., & Aldridge, D. (2007). Use of songs to promote independence in morning greeting routines for young children with autism. *Journal of autism and developmental disorders*, *37*, 1264-1271.

Khoo, I. (2016). Internet Helps Find 'Lifesaving' Blue Cup For Boy With Autism. Retrieved November 19, 2016, from http://www.huffingtonpost.ca/parents/

Landry, R., & Bryson, S. E. (2004). Impaired disengagement of attention in young children with autism. *Journal of Child Psychology and Psychiatry*, *45*, 1115-1122.

Lee, D. L. (2006). Facilitating Transitions Between and Within Academic Tasks: An Application of Behavioral Momentum. *Remedial and special education*, *27*, 312-317.

Lord, C. (1995). Follow-up of two-year-olds referred for possible autism. *Journal of child psychology and psychiatry*, *36*, 1365-1382.

Lord, C., Risi, S., Lambrecht, L., Cook Jr, E. H., Leventhal, B. L., DiLavore, P. C., ... & Rutter, M. (2000). The Autism Diagnostic Observation Schedule—Generic: A standard measure of social and communication deficits associated with the spectrum of autism. *Journal of autism and developmental disorders*, *30*, 205-223.

Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology, 55*, 3-9. doi:10.1037/0022-006X.55.1.3

MacDuff, G. S., Krantz, P. J., & McClannahan, L. E. (1993). Teaching children with autism to use photographic activity schedules: Maintenance and generalization of complex response chains. *Journal of Applied Behavior Analysis*, *26*, 89-97.

Mace, F., & Belfiore, P. (1990). Behavioral momentum in the treatment of escape-motivated stereotypy. *Journal of Applied Behavior Analysis*, *23*, 507-514.

Mancil, G. R., Haydon, T., & Whitby, P. (2009). Differentiated effects of paper and computer-assisted Social Stories™ on inappropriate behavior in children with autism. *Focus on Autism and Other Developmental Disabilities*, *24*, 205-215.

Matson, J. L., Dempsey, T., & Fodstad, J. C. (2009). Stereotypies and repetitive/restrictive behaviours in infants with autism and pervasive developmental disorder. *Developmental Neurorehabilitation, 12*, 122-127.

McCord, B. E., Thomson, R. J., & Iwata, B. A. (2001). Functional analysis and treatment of self-injury associated with transitions. *Journal of Applied Behavior Analysis*, *34*, 195-210.

McEachin, J. J., Smith, T., & Ivar Lovaas, O. (1993). Long-term outcome for children with autism who received early intensive behavioral treatment. *American Journal of Mental Retardation*, *97*, 359-359.

Mechling, L. C., & Savidge, E. J. (2011). Using a personal digital assistant to increase completion of novel tasks and independent transitioning by students with autism spectrum disorder. *Journal of autism and developmental disorders*, *41*, 687-704.

Nevin, J. A. (1996). The momentum of compliance. *Journal of Applied Behavior Analysis*, *29*, 535-547.

Newman, B., Buffington, D. M., O'Grady, M. A., McDonald, M. E., Poulson, C. L., & Hemmes, N. S. (1995). Self-management of schedule following in three teenagers with autism. *Behavioral Disorders*, 190-196.

Pierce, J. M., Spriggs, A. D., Gast, D. L., & Luscre, D. (2013). Effects of visual activity schedules on independent classroom transitions for students with autism. *International Journal of Disability, Development and Education*, *60*, 253-269.

Richler, J., Huerta, M., Bishop, S. L., & Lord, C. (2010). Developmental trajectories of restricted and repetitive behaviors and interests in children with autism spectrum disorders. *Development and psychopathology*, *22*, 55-69.

Rogers, S. J., & Vismara, L. A. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child & Adolescent Psychology*, *37*, 8-38.

Sainato, D. M., Strain, P. S., Lefebvre, D., & Rapp, N. (1987). Facilitating transition times with handicapped preschool children: A comparison between peer-mediated and antecedent prompt procedures. *Journal of Applied Behavior Analysis*, *20*, 285-291.

Sallows, G. O., & Graupner, T. D. (2005). Intensive behavioral treatment for children with autism: Four- year outcome and predictors. *American Journal on Mental Retardation*, *110*, 417-438.

Schmit, J., Alper, S., Raschke, D., & Ryndak, D. (2000). Effects of using a photographic cueing package during routine school transitions with a child who has autism. *Mental Retardation*, *38*, 131-137.

Schreibman, L., Whalen, C., & Stahmer, A. C. (2000). The use of video priming to reduce disruptive transition behavior in children with autism. Journal of positive behavior interventions, *2*, 3-11.

Siegel, E. B., & Lien, S. E. (2015). Using Photographs of Contrasting Contextual Complexity to Support Classroom Transitions for Children With Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities*, *30*, 100-114.

Skinner, B. F. (1953). *Science and human behavior*. New York: Simon and Schuster.

Spriggs, A. D., Knight, V., & Sherrow, L. (2015). Talking picture schedules: Embedding video models into visual activity schedules to increase independence for students with ASD. *Journal of autism and developmental disorders*, *45*, 3846-3861.

Taber-Doughty, T., Miller, B., Shurr, J., & Wiles, B. (2013). Portable and accessible video modeling: Teaching a series of novel skills within school and community settings. *Education and Training in Autism and Developmental Disabilities*, 147-163.

Thelen, P., & Klifman, T. (2011). Using daily transition strategies to support all children. *YC Young Children*, *66*, 92.

Tullis, C. A., Cannella-Malone, H. I., & Payne, D. O. (2015). Literature Review of Interventions for Between-Task Transitioning for Individuals with Intellectual and Developmental Disabilities Including Autism Spectrum Disorders. *Review Journal of Autism and Developmental Disorders*, *2*, 91-102.

Vollmer, T. R., Iwata, B. A., Zarcone, J. R., Smith, R. G., & Mazaleski, J. L. (1993). The role of attention in the treatment of attention-maintained self-injurious behavior: Noncontingent reinforcement and differential reinforcement of other behavior. *Journal of Applied Behavior Analysis*, *26*, 9-21.

Waters, M. B., Lerman, D. C., & Hovanetz, A. N. (2009). Separate and combined effects of visual schedules and extinction plus differential reinforcement on problem behavior occasioned by transitions. *Journal of Applied Behavior Analysis*, *42*, 309-313.

Webber, J., & Scheuermann, B. (2008). *Educating students with autism: A quick start manual*. Austin, Tex: PRO-ED.

Weiss, M. J., & Harris, S. L. (2001). Teaching social skills to people with autism. *Behavior modification*, *25*, 785-802.

Wong, C., Odom, S. L., Hume, K. A., Cox, A. W., Fettig, A., Kucharczyk, S., ... & Schultz, T. R. (2015). Evidence-based practices for children, youth, and young adults with autism spectrum disorder: A comprehensive review. *Journal of autism and developmental disorders*, *45*, 1951.

Yoder, P. J., Warren, S. F., Kim, K., & Gazdag, G. E. (1994). Facilitating Prelinguistic Communication Skills in Young Children with Developmental Delay II Systematic Replication and Extension. *Journal of Speech, Language, and Hearing Research*, *37*, 841-851.

Zarcone, J., Iwata, B., Hughes, C., & Vollmer, T. (1993). Momentum versus extinction effects in the treatment of self-injurious escape behavior. Journal of Applied Behavior Analysis, *26,* 135-136.