Self-Monitoring: A Behavioral Intervention for Children Attending Head Start

Samantha Riggleman
University of Nevada, Las Vegas, rigglems@gvsu.edu

Follow this and additional works at: https://digitalscholarship.unlv.edu/thesesdissertations
Part of the Special Education and Teaching Commons

Repository Citation
https://digitalscholarship.unlv.edu/thesesdissertations/3100

This Dissertation is brought to you for free and open access by Digital Scholarship@UNLV. It has been accepted for inclusion in UNLV Theses, Dissertations, Professional Papers, and Capstones by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.
SELF-MONITORING: A BEHAVIORAL INTERVENTION FOR CHILDREN
ATTENDING HEAD START

By

Samantha Riggleman

Bachelor of Science
Shenandoah University
2010

Master of Arts in Teaching
Mary Baldwin University
2013

A dissertation submitted in partial fulfillment
of the requirements for the

Doctor of Philosophy - Special Education

Department of Educational and Clinical Studies
College of Education
The Graduate College

University of Nevada, Las Vegas
August 2017
This dissertation prepared by

Samantha Riggleman

entitled

Self-Monitoring: A Behavioral Intervention for Children Attending Head Start

is approved in partial fulfillment of the requirements for the degree of

Doctor of Philosophy - Special Education
Educational and Clinical Studies

Joseph Morgan, Ph.D.
Examination Committee Chair

Kathryn Hausbeck Korgan, Ph.D.
Graduate College Interim Dean

Kyle Higgins, Ph.D.
Examination Committee Member

Cori More, Ph.D.
Examination Committee Member

Scott Loe, Ph.D.
Graduate College Faculty Representative
ABSTRACT

Self-Monitoring: A Behavioral Intervention for Children Attending Head Start

by

Samantha Riggleman

Dr. Joseph Morgan, Examination Committee Chair
Assistant Professor of Special Education
University of Nevada, Las Vegas

Addressing the needs of preschoolers with behavioral problems is important, as these issues often have long-term impacts on the outcomes of students (Fox et al., 2002). Self-monitoring strategies and techniques have the potential to improve the outcomes of this population of children. Self-monitoring requires students to pay attention to a specific aspect of their behavior and record whether the behavior being monitored has occurred or not occurred (Amato-Zech et al., 2006). Although preschoolers are capable of self-monitoring (Otero & Haut, YEAR), it is not widely used in early childhood education settings for increasing compliance or appropriate behaviors. A component of self-monitoring is self-recording, defined as the ability to monitor and accurately record one’s behavior.

The purpose of this study was to examine the effects of self-monitoring on appropriate, teacher preferred behavior in preschool-age children who are at risk for developing more serious problems. The participants were not currently experiencing behavioral challenges at a clinical level or at a rate that the participant would be eligible for a diagnosis pertaining to their behavior.

Results of this study suggest that preschools (ages 4 and 5) can successfully self-monitor their behavior in multiple settings. However, the findings indicated that self-monitoring did not have a significant impact on increasing appropriate teacher preferred displays of behavior. The
participants and teachers indicated favorable results and positive attitudes toward use of the intervention and likelihood that they would use the intervention again on the social validity questionnaire. Although the intervention did not appear to have a significant impact on increasing teacher preferred behaviors, additional research should be conducted on behaviors that are frequently displayed and of sufficient concern.
ACKNOWLEDGEMENTS

I would like to thank my advisor, Dr. Joseph Morgan, for his mentorship and expertise throughout this process. Because of his guidance, I have learned many valuable skills that I will take with me throughout my career. I am grateful for the time he invested in my personal and professional growth. I would like to thank Dr. Higgins for serving as a member on my committee. Her attention to detail has helped me become a more organized and succinct writer. I would like to thank Dr. More for her feedback and input throughout the research process. I would also like to thank Dr. Loe for his knowledge and input of the study. The support and dedication of my committee members made a difference in my writing and is truly appreciated.

I must also thank my friend and colleague, Jennifer Buchter. I am grateful that she has always lent an ear to listen to the many hurdles throughout the entire process. She has provided continuous support and words of encouragement. I would like to thank the teachers who implemented the study, without you this study would not have happened.

Finally, I would like to thank my son. Without him, I would never have found the purpose of completing this study or continuing my education. To my partner, Gerry, this endeavor could not have been completed without you. I want to thank you for your support throughout the entire process. I would also like to thank the friends and family that believed and supported me throughout the journey.
# TABLE OF CONTENTS

ABSTRACT ........................................................................................................... iii

ACKNOWLEDGEMENTS ........................................................................................ v

LIST OF TABLES .................................................................................................... ix

LIST OF FIGURES .................................................................................................. x

CHAPTER ONE  INTRODUCTION ................................................................. 1
  Preschoolers At-Risk .................................................................................. 2
  Characteristics of Preschoolers At-Risk ..................................................... 4
  Outcomes of Preschoolers with Behavior Challenges .......................... 5
  Current Interventions in Early Childhood Education Settings .......... 5
  Self-Monitoring Interventions to Address Behavioral Problems in Early Childhood Education ................................................................. 6
  Characteristics of Self-Monitoring Interventions ..................................... 8
  Impact of Self-Monitoring on Typical Students ....................................... 8
  Impact of Self-Monitoring on Students with Disabilities .................... 9
  Self-Monitoring with Preschoolers in Early Childhood Education .......... 9
  Statement of the Problem ......................................................................... 10
  Significance of Research ......................................................................... 12
  Limitations .................................................................................................. 13
  Definitions .................................................................................................. 14
  Conclusion ................................................................................................... 17

CHAPTER TWO  REVIEW OF LITERATURE ............................................... 18

CHAPTER THREE  METHODOLOGY ........................................................ 74
  Overview ..................................................................................................... 74
  Research Questions .................................................................................... 75
  Participants .................................................................................................. 76
  Setting ......................................................................................................... 82
  Instrumentation .......................................................................................... 84
  Eligibility Measure ..................................................................................... 85
  Preschoolers’ Ability to Self-Monitor Dependent Variable Measure ...... 85
  Observations of Appropriate Teacher Preferred Behavior .................. 86
  Teacher Fidelity to Instruction ................................................................. 87
  Social Validity ............................................................................................. 88
  Materials ...................................................................................................... 90
  Training ....................................................................................................... 90
  Interrater Observer Training .................................................................... 92
  Design and Procedures ............................................................................ 93
  Baseline Procedures ................................................................................. 93
  Intervention Procedures .......................................................................... 94
APPENDIX L  PRESCHOOLER SOCIAL VALIDITY QUESTIONNAIRE .......... 168
APPENDIX M  SELF-MONITORING TRAINING SCRIPT ........................... 170
REFERENCES ..................................................................................... 173
CURRICULUM VITAE ............................................................................. 190
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Results of Rock (2005)</td>
<td>52</td>
</tr>
<tr>
<td>Table 2</td>
<td>Participant Demographic Data</td>
<td>80</td>
</tr>
<tr>
<td>Table 3</td>
<td>Demographics of Teachers</td>
<td>81</td>
</tr>
<tr>
<td>Table 4</td>
<td>Demographics of Paraprofessionals</td>
<td>81</td>
</tr>
<tr>
<td>Table 5</td>
<td>Student Demographics, School (2016-2017)</td>
<td>83</td>
</tr>
<tr>
<td>Table 6</td>
<td>Teacher Procedural Fidelity of Intervention</td>
<td>103</td>
</tr>
<tr>
<td>Table 7</td>
<td>Participant Prompt Description</td>
<td>107</td>
</tr>
<tr>
<td>Table 8</td>
<td>Social Validity Scale Teacher and Paraprofessional Responses</td>
<td>116</td>
</tr>
<tr>
<td>Table 9</td>
<td>Social Validity Scale Descriptive Statistics of Teacher Responses</td>
<td>118</td>
</tr>
<tr>
<td>Table 10</td>
<td>Social Validity Scale Participants Responses</td>
<td>120</td>
</tr>
<tr>
<td>Table 11</td>
<td>Social Validity Scale Descriptive Statistics of Participants Responses</td>
<td>121</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure 1</th>
<th>Participant Compliance with Self-Monitoring Intervention</th>
<th>106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2</td>
<td>Total Instances of Preferred Behavior</td>
<td>110</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Total Instances of Current Behavior</td>
<td>112</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

As more young children enter early childhood programs, many lack the necessary social and behavioral skills to succeed in these educational environments. Delays in social emotional development in preschoolers can affect their ability to achieve academic and behavioral success in schools (Cooper, Masi, & Vick, 2009). Preschoolers who display problem behaviors and receive free or reduced lunch are at a greater probability of developing long lasting behavior challenges, including emotional and behavioral disorders (EBD) (Fox, Dunlap, & Powell, 2002). Those who are at risk for school failure and maladaptive behaviors often have long-term life issues that may include underemployment, legal problems and incarceration, drug use, and a later diagnosis of EBD (Kauffman & Landrum, 2013). To circumvent these negative outcomes, early intervention that is focused on behavior and social-emotional interactions is critical for preschoolers who are at-risk.

Until recently, behavior problems in early childhood were considered to be typical for this developmental period (Kendziora, 2004). While the majority of preschoolers display temper tantrums, noncompliance, poor impulse control, and high activity levels at some point throughout their development, a large percentage typically outgrow them or learn effective replacement skills or develop alternative, more appropriate, behaviors (Campbell, 1997). For those children who do not outgrow or learn appropriate skills, there can be adverse outcomes related to early behavior problems (Campbell, 1997). Preschoolers who are at-risk can continue to display challenging behaviors without interventions and can face serious negative short and long-term outcomes.
With more funding and support from state and federal governments to address the unmet need for high-quality preschool (U.S. Department of Education, 2015), there are more opportunities to provide early intervention and identification services to those who are at risk. While there are interventions that address social-emotional development in early childhood education, they often lack a focus on teaching children responsibility for addressing their own behavior. Self-monitoring is one intervention that has been used with older students to improve attention and academic productivity, as well as decrease off-task behaviors in the classroom (Amato-Zech, Hoff, & Doepke, 2006). Additionally, self-monitoring has proven a useful intervention for students with behavioral issues (Bruhn, et al., 2015; Webber, Scheuermann, McCall, & Coleman, 1993). Self-monitoring typically involves self-observation and self-recording. Self-observation requires students to pay attention to a specific aspect of their behavior and record whether the behavior being monitored has occurred or not occurred (Amato-Zech et al., 2006). While there are numerous studies citing the benefits and outcomes of students who learn to self-monitor (Amato-Zech et al., 2006; Blood et al., 2011; Bruhn et al., 2015; Haas-Warner, 1991; Bruhn, McDaniel, & Kreigh, 2015), there are limited studies that use self-monitoring in early childhood settings, specifically for challenging behaviors. However, Robson (2010) cited that preschoolers are capable of learning this set of skills and research, while limited, has shown promise regarding its effectiveness for preschoolers (Bailas & Boon, 2010; Haas-Warner, 1991). By implementing the components of self-monitoring, it is hypothesized that early intervention can increase the appropriate behaviors for preschool-age children.

**Preschoolers At-Risk**

Early problem behaviors are often related to successful later school experiences (Hamre & Pianta, 2001; Webster-Stratton, 1997). Therefore, it is important to intervene early with
challenging behaviors to diminish the chances of long-lasting negative outcomes. Children who display challenging behaviors are at increased risk of developing more intense problem behaviors and subsequent academic and behavioral difficulties later in their school careers (Fox, Dunlap, & Cushing, 2002). Behavior problems are more likely to continue and manifest as more intense behaviors throughout elementary and early adolescence (Hamre & Pianta, 2001).

Preschoolers who are developmentally at risk due to prematurity or low birth weight are at increased risk of developing problem behaviors when there are additional risk factors or developmental delays (Fox, Dunlap, & Cushing, 2002). Living in one-parent homes, limited English proficiency, and moving frequently are environmental risks for behavior problems (Fox et al., 2002).

A concern of professionals in early childhood is that preschoolers who are at-risk do not receive appropriate services, as their challenges may not be severe enough to qualify or teachers do not feel a referral for services is warranted (Bekar, Shanmoon-Shanok, Steele, Levy, deFressine, & Giuseppone et al., 2016). A result of not receiving services or being identified as needing services in early childhood can be expulsion from the preschool center (Hoover, Kubicek, Rosenberg, Zundel, & Rosenberg, 2012). Expulsions of preschoolers often reflect unmet social-emotional needs of children in preschool settings. Data indicates that expulsions and suspensions occur regularly in preschool settings, with as many as 8,710 preschoolers per year receiving this consequence (NAEYC, 2016). This is a problematic issue given research indicating that these practices can influence a number of adverse outcomes across development, health, and education (Lamont, Devore, Allison, Ancona, Barnett, Gunther et al., 2013; Petras, Masyn, Buckley, Ialongo, & Kellam, 2011). The U.S. Department of Education (2013) recently released a policy statement on expulsion and suspension policies in early childhood settings and
set recommendations for states. Those recommendations included implementing positive behavior interventions and supports, screening young children for developmental and behavioral milestones, and providing preschool staff and teachers with professional learning opportunities focused on social-emotional and behavioral development (U.S. Department of Education, 2013).

**Characteristics of Preschoolers At-Risk**

It is estimated that the prevalence of aggressive conduct problems in early childhood is between 10 and 25% (Kauffman & Landrum, 2013). Similarly, 20% of kindergarten teachers reported in a national survey that at least half of their class had problems with social skills (Rimm-Kaufman, Pianta, & Cox, 2000). Specific risks such as significant levels of poor academic functioning were identified as one characteristic of preschoolers at risk (Trout, Epstein, Nelson, & Reid, 2006). Children who demonstrate difficult temperament such as impulsiveness, distractibility, irritability, inflexibility, and attention deficit problems are more likely to display problem behaviors (Brier, 1995). Also, preschoolers who exhibit externalizing problem behaviors such as aggression, destructiveness, and conduct problems have a high probability of developing EBD (Nelson et al., 2007).

While none of these risk factors alone is likely to lead to the onset of problem behaviors, several of these variables working together could lead to a greater chance of later identification as having EBD. Nelson et al. (2007) found that internalizing behavior patterns (i.e., shy or timid, fearful, socially withdrawn), externalizing behavior patterns (i.e., overactive, impulsive, stubborn, temper outbursts, aggressive), child maladjustment, and family functioning were the most predictive of problem behaviors. Likewise, difficult children and children who destroyed their own toys were the best predictors of later problem behaviors (Nelson et al., 2007). Recognizing preschoolers who exhibit at-risk characteristics for social skills deficits can lead to
early interventions in addressing social-emotional development (Whitted, 2011). Therefore, given the prevalence of risk factors associated with preschoolers who are at risk, it appears that there is a need for identifying and intervening with this population of students to ensure their future academic success.

**Outcomes of Preschoolers with Behavior Challenges**

Preschool-age children who display behavior problems at an early age are more likely to develop serious antisocial problems in adolescence and adulthood (Webster-Stratton, 1997). Nelson et al. (2007) indicated that outcomes of behavior problems in early childhood can lead to truancy, peer and teacher rejection, low academic achievement, and school discipline. Children with emotional and social problems and early onset conduct problems are at high risk for academic failure, school absences, and eventual conduct disorders, school dropout, and delinquency (Webster-Stratton, Reid, & Stoolmiller, 2008; Whitted, 2011). Also, children with conduct problems and social skills deficits are more likely to be disliked by their teachers and thereby receive less instruction (Webster-Stratton, Reid, & Stoolmiller, 2008; Whitted, 2011), leading to gaps in learning.

**Current Interventions in Early Childhood Education Settings**

Current interventions in early childhood education settings focus on social emotional development, often through parent and teacher trainings. Researchers found that teachers in early childhood settings often lack the knowledge of evidence-based practices, such as using specific verbal praise (Vo, Sutherland, & Conroy, 2012). To support young children at risk, early childhood teachers should be taught to improve their use of effective instructional practices (Vo, et al., 2012). A positive outcome of training early childhood teachers to use praise is that it influences teacher-child interactions for preschoolers at risk for social-emotional deficits.
(Fullerton, Conroy, & Correa, 2009; Vo, Sutherland, & Conroy, 2012). Social skills instruction using a set curriculum that focuses on conflict resolution, sharing, and empathy/caring in the early childhood classroom is another effective intervention for reducing defiance, off-task behavior, resistance to classroom rules, and non-compliant behaviors often exhibited by young children at risk for social skills deficits (Flook, Goldberg, Pinger, & Davidson, 2015; Richardson, Myran, & Tonelson, 2009).

A limitation of the current interventions used in early childhood education settings is that they do not allow for the child to take ownership and responsibility for the intervention (De Haas-Warner, 1992). McLeroy, Norton, Kegler, Burdine, and Sumaya (2003) suggest that if individuals have responsibility implementing an intervention on one’s own behavior than they are more likely to have higher participation and ownership. Participation carries with it feelings of ownership and builds a strong base for the intervention. The interventions are often teacher-led and directed and focus on the teacher’s interactions with the child. These interventions also often do not teach preschool-age children the appropriate replacement behaviors. An intervention that eradicates these limitations often cited in early childhood education is the use of self-monitoring to reduce problematic behaviors.

**Self-Monitoring Interventions to Address Behavioral Problems in Early Childhood Education**

Self-regulation skills include one’s ability to manage, monitor, and assess one’s behavior and are essential to functioning in complex social and academic settings (Otero & Haut, 2015). Although preschoolers are capable of self-monitoring (Otero & Haut), it is not widely used in early childhood education settings for prosocial or appropriate behaviors. A component of self-monitoring is self-recording, defined as the ability to monitor and accurately record one’s
behavior. A change in one’s behavior during self-monitoring can be independent of the accuracy of self-recording (Nelson, 1977). However, the accuracy of self-recording can be increased if the student knows their accuracy can be checked and is reinforced (Barlow, Hayes, & Nelson, 1984).

A benefit of self-monitoring is teaching students to assume behavioral self-control while decreasing off-task behavior and increasing productivity (Otero & Haut, 2015; Wood, Murdock, Cronin, Dawson, & Kirby, 1998). Another benefit is that self-monitoring is cost effective and can be implemented by classroom teachers without outside assistance or consultation, making the use of self-monitoring optimal in school settings (Amato-Zech et al., 2006; Wood et al., 1998). Self-monitoring also encourages the child to be responsible for their own behavior independently (Haas-Warner, 1991). This is particularly important, as a goal in education is to foster self-reliance and independence. The ability to use self-management strategies, including self-monitoring, is a skill that becomes valuable for success into adolescence and adulthood.

Lastly, self-monitoring places the responsibility on the student rather than the teacher, thus increasing the likelihood of generalization and internalization of self-regulatory skills (Otero & Haut, 2015). Self-regulatory skills are important for preschool-age students to learn, as children with lower levels of self-regulation early in life are at risk for higher levels of behavioral problems both at home and at school (Sawyer, Miller-Lewis, Searle, Sawyer, & Lynch, 2015). For example, children with greater levels of self-regulation may be better able to calm themselves during a frustrating task or when required to follow rules at school and, therefore, are less likely to exhibit behavioral problems.

Self-monitoring can be taught using video modeling or direct instruction, and has been found to decrease disruptive behaviors (Blood et al., 2011; Nuernberger, Varo, & Ringdahl, 2013) and increase on-task behaviors (Amato-Zech et al., 2006; Blood et al., 2011). Self-
monitoring research on preschoolers has focused on academic preparedness and on-task behaviors for children who are typically developing. These interventions provide instruction to preschool and elementary-age students who have been identified as at-risk for developing problem behaviors to decrease off-task behaviors or increase the percentage of compliance behaviors (Haas-Warner, 1991).

**Characteristics of Self-Monitoring Interventions**

Self-monitoring interventions include the use of self-recording checklists and cards, prompts and cues to self-record, accuracy checks, training, and reinforcement (Webber, Scheuermann, McCall, & Coleman, 1993). In a literature review, Bruhn, McDaniel, and Krehn (2015) found that self-monitoring interventions could be used with students who have a range of disabilities (e.g., ADHD, EBD, learning disabilities, intellectual disabilities) and ages ranging from 5 to 16 years of age. Self-monitoring interventions can vary greatly on the use of reinforcement, feedback, and function-based support (Bruhn et al., 2015). Authors also found that in all 41 studies cited, researchers documented improvements in behavior as a result of self-monitoring (Bruhn et al., 2015).

**Impact of Self-Monitoring on Students without Disabilities**

Self-monitoring is used to develop self-regulation skills in students (Amato-Zech et al., 2006). The focus of self-monitoring for learners without disabilities has been to promote on-task behavior in elementary-age students (Amato-Zech et al., 2006; Blood, Johnson, Ridenour, Simmons, Crouch, et al., 2011) and decrease disruptive behaviors of both elementary-age students and adolescents (Blood et al., 2011; Nuernberger, Vargo, & Ringdahl, 2013) in classroom settings. Self-monitoring interventions in preschool settings have shown effectiveness in increasing on-task behavior during independent pre-readiness tasks (Haas-Warner, 1991) and
increasing compliance behaviors of kindergarten students not identified as having a disability (Bailas & Boon, 2010).

**Impact of Self-Monitoring on Students with Disabilities**

Self-monitoring for students with disabilities has a strong research base that supports using the intervention for off-task behavior (Coyle & Cole, 2004), social initiations (Deitchman, Reeve, Reeve, & Progar, 2010; Newman & Ten Eyck, 2005), and academic accuracy in task attendance (Holifield, Goodman, Hazelkorn, & Heflin, 2010). Self-monitoring has been effective for preschool students with autism at developing positive social interactions (Strain, Kohler, Storey, & Danko, 1994). Dunlap, Clarke, Jackson, Wright, Ramos, and Brinson (1995) trained two elementary-age students with emotional and behavioral problems to use self-monitoring through direct instruction. Both students had significantly higher percentages of intervals of task engagement and lower disruptive behaviors than observed in baseline (Dunlap et al., 1995). Self-monitoring interventions have been used for students with disabilities in middle and high school (Davis et al., 2014; Peterson et al., 2006). Self-monitoring interventions for students with disabilities usually are individualized and targeted to meet each student’s targeted behavior.

**Self-Monitoring with Preschoolers in Early Childhood Education**

Self-monitoring interventions are used for learners with and without disabilities in early childhood education. Self-monitoring interventions for preschoolers focus on increasing on-task behavior (Haas-Warner, 1991) and school readiness (Dunlap et al., 1995). Given prompts, preschoolers are capable of responding to self-monitoring in the classroom setting and increase on-task behaviors (Haas-Warner, 1991; Miller, Strain, Boyd, Jarzynka, & McFetridge, 1993). However, there is limited research available using self-monitoring in early childhood to increase student implementation of appropriate behaviors.
While many of the aspects are like self-monitoring interventions with older students, Otero and Haut (2015) suggested several possible adaptations that may need to be made to maximize the effectiveness of self-monitoring with young children. First, preschoolers may need to be trained in separate rooms to minimize distractions (Otero & Haut, 2015). Another feature that may need to be differentiated are the self-recording sheets; the self-recording sheets used in self-monitoring interventions in early childhood often require the use of pictures instead of words to express the desired behavior. Lastly, children in early childhood settings may also need to be given tangible reinforcement for accuracy of recording (Otero & Haut, 2015).

**Statement of the Problem**

Addressing the needs of preschoolers with behavioral problems is important, as these issues often have long-term impacts on the outcomes of students (Fox et al., 2002). Self-monitoring strategies and techniques have the potential to improve the outcomes of this population of children. However, there is currently limited research in the area of implementing self-monitoring strategies in early childhood education settings to improve appropriate behaviors (e.g., on-task behavior, prosocial skills). While research suggests that preschoolers are capable of metacognition and self-monitoring (Robson, 2010), there is a lack of evidence supporting the implementation of self-monitoring strategies on appropriate behaviors in early childhood education settings. This is particularly true in research focused on preschoolers at-risk for the development of behavioral problems.

The research proposed in this study is important, as students need to display appropriate behaviors in order to be successful in elementary school and later grades. Students who (a) are aware of their own behavior and (b) take responsibility in meeting the requirements through a self-monitoring intervention are more likely to internalize and generalize those behaviors (Otero
& Haut, 2015). The proposed research will expand the understanding of how preschoolers self-monitor their behavior and fill a gap in the research literature related to self-monitoring for appropriate behaviors. Early childhood education teachers and preschoolers will benefit from the findings as educators can begin helping preschool-age students to self-monitor their behavior and increase appropriate behaviors in the educational environment.

The specific research questions in this study are:

Research Question 1: What are the effects of a self-monitoring intervention on the behavior of young children identified as being at risk for behavioral problems in early childhood settings?

Research Question 2: What are the effects of a self-monitoring intervention on increasing the appropriate behavior of young children identified as at risk for the development of behavioral problems?

Research Question 3: To what degree did young students considered at risk for behavior problems generalize their appropriate behaviors in the school setting?

Research Question 4: To what degree did young students considered at risk for behavior problems maintain their appropriate behaviors in the school setting?

Research Question 5: What were the teacher perceptions regarding implementation of self-monitoring to increase appropriate behaviors of young children considered at risk for behavior problems?

Research Question 6: What effect did the self-monitoring instruction have on the perceptions of young children at risk for behavior problems related to their use of appropriate behaviors?
Significance of Research

While older children can be proficient at using self-monitoring for academics and behavior-related tasks and research indicates that preschoolers can be taught self-monitoring skills, there is a lack of research focused on engaging preschoolers in the self-monitoring process to address behavioral problems. Typically, self-monitoring is not taught to preschool-age children for appropriate classroom behaviors; however, it is a skill necessary for overall school success (Otero & Haut, 2015). Children with and without developmental delays in preschool can be taught to self-monitor.

Currently, self-monitoring is not used explicitly for challenging behaviors in early childhood settings. Since children are capable of learning how to self-monitor, it is important that research explore the specific ways that preschoolers can be taught to self-monitor (Haas-Warner, 1991; Miller, et al., 1993). This study will investigate the use of direct instruction to teach self-monitoring with preschool-age children at risk for social-emotional deficits to increase their appropriate behaviors and generalize those behaviors to other settings. Early intervention is imperative for children at risk for social-emotional deficits in order to increase their success and decrease their probability of further issues related to their education in later years (i.e., disability diagnosis, behavioral problems, academic deficits). Self-monitoring can be an early intervention for young children that would increase appropriate behaviors, which could lead to improved outcomes.
Limitations

The limitations of this study are:

1. During baseline data collection, preschool teachers implemented the consequences that were typically used in the classroom when the preschooler engaged in inappropriate interactions.

2. Data were collected from 4- and 5-year old children. Thus, the results cannot be generalized to older or younger children.

3. The design of single-subject research limits the generalizability of findings, or external validity. The findings of this study may not be applicable to children attending other types of early childhood programs, such as general education and/or self-contained programs serving students with a variety of disabilities.

4. The participants were selected through center director nomination. Thus, the population represented may reflect teacher or director bias.

5. The eligibility criteria used the total score Ages & Stages Questionnaire: Social-Emotional (ASQ: SE) to determine young children at risk; however, the questionnaire is a parent rating scale and may not reflect the teacher’s concerns.

6. Parents of all participants completed the 36-month ASQ: SE; yet, all participants were ages 4 or 5 at the time of the study, therefore, the behavior could have changed over time.

7. The participants in the study did not display their target behavior at a high frequency, thus using momentary time sampling did not accurately reflect the instances of the behavior.
8. The use of self-monitoring was implemented four times for Participant D. An intervention implemented over a longer time period may yield different results.

9. Teachers reported that the behaviors targeted for intervention did not necessarily warrant the self-monitoring intervention. Addressing behaviors deemed necessary for intervention may have impacted the outcomes of the study.

**Definitions**

**Appropriate (preferred) behaviors.** Behaviors that are appropriate for a child’s developmental level and/or cultural background and that do not interfere with learning new skills, socially isolate a child, cause injury to self or others, or cause damage to the physical environment (Conroy, 2004).

**Child at-risk.** Children who face multiple risks including, but not limited to, inconsistent parenting, complications during birth, and early exposure to poverty or low socioeconomic (SES) environments (Trout, Epstein, Nelson, & Reid, 2006). While exposure to risk factors alone does not lead to the onset of problem behavior, when a child is presented with multiple risk factors it can lead to the development and maintenance of problem behavior due to environmental or developmental stressors (Nelson, Stage, Duppong-Hurley, Synhorst, & Epstein, 2007).

**Child with a developmental disability or delay.** A child aged three through five who (a) is experiencing developmental delays as defined by the state and as measured by appropriate diagnostic instruments and procedures in one or more of the following areas: physical, cognitive, communication, social or emotional, or adaptive development; and (b) needs special education and related services (IDEA, 2004).
Child without a developmental disability or delay. A child under the age of six who does not demonstrate delays in the following areas: physical, cognitive, communication, social or emotional, or adaptive development (IDEA, 2004).

Direct and explicit instruction. Direct instruction is a teaching method where each step of a strategy is presented and explained and the goals of instruction and the benefits of learning the strategy are clearly stated (Sawyer, Graham, & Harris, 1992).

Early childhood education classroom. Early childhood education classrooms provide a high quality-learning environment intended to positively affect developmental changes in children prior to their entry into elementary school (National Head Start Association, 2007). Center-based, teacher-directed, and child-initiated activities are the primary instructional strategies used in the early childhood education settings.

Emotional and behavioral disorder. A condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child’s educational performance:

(A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.

(B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

(C) Inappropriate types of behavior or feelings under normal circumstances.

(D) A general pervasive mood of unhappiness or depression.

(E) A tendency to develop physical symptoms or fears associated with personal or school problems (IDEA, 2004).
Inappropriate (current) behaviors. Behaviors that can cause injury to self or others, cause damage to the physical environment, interfere with learning new skills, and/or socially isolates a child. Examples include (but are not limited to) hitting, biting, throwing things, threatening, whining, refusing to respond to a request, or not responding to peers attempts to play (Conroy, 2004).

Preschool-age children. Children ages 36-60 months who are not eligible for kindergarten (Studts, van Zyl, 2013).

Prompting hierarchy. A systematic progression of providing prompts including least-to-most prompting (e.g., verbal, verbal plus modeling, verbal plus physical prompt; Horner & Keilitz, 1975).

Regular attendance. A pattern of attending school on the designated days and times and having less than 3 absences a month (Head Start Performance Standard, 2006).

Self-Monitoring. Self-monitoring is a self-management procedure where a person systematically observes his or her own behavior and then records the occurrence or nonoccurrence of the target behavior (Bialas & Boon, 2010).

Serious emotional disturbance. A severe emotional disorder that:

1. Is exhibited by a person for at least 3 months;
2. Adversely affects academic performance; and
3. Includes one or more of the following:
   a. An inability to learn which is not caused by an intellectual, sensory or health factor;
   b. An inability to engage in or to maintain interpersonal relationships with peers and teachers;
c. Inappropriate behavior or feelings;
d. A general and pervasive mood of unhappiness or depression;
e. A physical symptom associated with a personal or academic problem; or
f. The expression of fears regarding personal or academic problems (NAC, 2016).

Conclusion

While self-monitoring is used for both children with and without disabilities in a range of settings and behaviors, researchers have yet to explore the impact of self-monitoring on increasing appropriate behaviors in preschool settings. Failure to provide early intervention for children displaying behavior problems in preschool can result in poor academic development, increased acting out, and frustration (Reid & Patterson, 1991). Self-monitoring is an intervention that has many benefits such as low teacher time, cost-effectiveness, and increased responsibility of the student (Amato-Zech et al., 2006). By implementing self-monitoring interventions for preschoolers displaying problem behaviors, practitioners will have access to an effective intervention that can be incorporated into early childhood education settings. The goal is for preschoolers to learn to monitor and record their own behavior in order to effectively change any negative or challenging behaviors.
CHAPTER 2
REVIEW OF RELATED LITERATURE

Young children in preschool who display a pattern of inappropriate or challenging behaviors are at increased risk of developing more intense problem behaviors and subsequent academic and behavioral difficulties later in their school years (Poulou, 2015). Intervening early is imperative to change the potential negative trajectory and outcomes associated with problem behaviors (Wert, Bauman, & Nottis, 2010). Self-monitoring is an intervention that has shown effectiveness for students in K-12 environments with a variety of behaviors (Bruhn, McDaniel, & Kreigh, 2015). Currently, there is limited research in the area of implementing self-monitoring strategies in a preschool setting to improve classroom behaviors. While research has suggested that young children are capable of metacognition and self-monitoring (Robson, 2010), there is a lack of evidence to suggest that self-monitoring strategies could be beneficial in a preschool setting.

Early childhood education, such as preschool, is critical for a student’s successful academic and social-emotional development. It is in these settings that preschoolers learn to navigate the academic environment, work with peers, and learn to follow classroom expectations (Menzies & Lane, 2011). Therefore, early intervention for students with behavioral problems is key to support young children and effectively responding to their behavior (Menzies & Lane, 2011; Trout, Epstein, Nelson, Reid, & Ohlund, 2006). Researchers suggest that 12% to 16% of 1- and 2-year old children demonstrate a significant delay in social-emotional competency and 37% of those children continue to exhibit problem behaviors into their preschool years (Conroy & Brown, 2004). Preschool-age students need to have effective proactive early intervention that addresses behavior, specifically their interactions with peers and teachers (Conroy & Brown,
Mathiesen and Sanson (2000) found that it is possible to identify risk factors for behavior problems as young as 18 months, allowing for guidance in early intervention efforts. These risk factors include social and emotional adjustment, overactive-inattentive, and regulation (Mathiesen & Sanson). The ability to self-regulate and monitor one’s own behavior is an important skill to develop in early childhood as it has an effect on social adjustment and school readiness; young children who lack self-regulatory skills find it difficult to learn and relate socially to others (Hartas, 2011).

Self-monitoring is a procedure where a person systematically observes his or her own behavior and then records the occurrence or nonoccurrence of a target behavior (Biales & Boon, 2010). Self-monitoring can be a valuable component of an intervention package that might also include consequence-based contingencies such as reinforcement. Self-monitoring is important as a student-directed strategy that can promote independence, motivation, engagement, self-reliance and self-determination to increase learning (Biales & Boon, 2010). Self-management is used to teach children to pay attention to their own behavior, use appropriate play and social interactions, and participate in classroom routines; it also can be used to teach children what is expected of them, keep track of whether or not children completed these tasks, and monitor their own behavior and control their own actions.

De Hass-Warner (1991) cited many advantages to using self-management techniques such as ready availability for teachers, as implementation and maintenance by the teacher may require minimal time; the techniques of self-management may be generalized to other situations; and teaching children to control their own behavior may results in more durable behavioral changes. For preschoolers, it has been questioned if they are cognitively capable of reflecting and monitoring their own behavior. However, Robson (2010) found that children ages 3-5 can
display metacognition and self-regulatory behavior both when engaged in activities and also later when reflecting upon what they have done. Using a class wide curriculum teaching self-regulatory skills can show greater improvements in social competence (Flook, Goldberg, Pinger, & Davidson, 2014).

**Literature Review Procedures**

A search of several electronic databases was conducted, including: Education Full Text, Academic Search Premier, Child Development & Adolescent Studies, ERIC, Professional Development Collection, PsycARTICLES, PsycINFO, Academic Search Main Edition, and MainFile. The search terms used were: self-monitoring; self-monitoring or self-management and early childhood; early intervention, behavior problems, and early childhood; behavior intervention and students with disabilities; and direct instruction and self-monitoring. Another step in the search process involved obtaining articles from the reference lists of the obtained articles.

**Inclusion Criteria**

Studies were included in the review only if they met the following criteria: (a) published between 1990 and 2015, (b) peer-reviewed original research, (c) used a single-subject design that met the quality indicators within single-subject research set by Horner, Carr, Halle, McGee, Odom, & Wolery (2005), and (d) contained participants who were in typical school settings. Studies were excluded from the review if they included case designs, meta-analysis, or descriptive research. A total of forty-eight articles were found; after reviewing the inclusion criteria, twenty-six articles were used for inclusion.
Early Intervention for Young Children with Behavior Problems

Young children in preschool settings who are at risk for delays in social and emotional development exhibit problem behaviors that can interfere with learning and have educational and social implications (Park & Scott, 2009). The number of children ages three through five served under the Individuals with Disabilities Education Act (IDEA, 2004) in the United States in Fall 2012 was 736,195 (U.S. Department of Education, 2014). Of those children, 0.4 percent of 3-5 year olds were served under the category of emotional disturbance (U.S. Department of Education, 2014). The number of children who were served under IDEA Part B ages 6 to 21 in 2012 for the United States was 5,699,640 (U.S. Department of Education, 2014). Of those students, 6.2% were served under the diagnosis of emotional disturbance (U.S. Department of Education, 2014). Little attention has been paid to the early onset of behavior problems in preschoolers (Poulou, 2015); however, there are many risk factors (e.g., low SES, child’s gender, family size, child temperament, child’s IQ, high stressful life events) that can be predictors of later externalizing problems (Wichstrom et al., 2011). Due to the definition of an emotional disturbance not applying to preschoolers as preschoolers can display rapid changes in behavior, there is still a need for early detection of emotional and behavioral difficulties through early intervention (Egger & Angold, 2006). Identified risk factors for preschool age children can serve as a basis for young children to be identified early to receive early intervention. While the understanding of diagnosable emotional disturbances and delays varies from early childhood and K-12, evidence-based practices and interventions can be effective for young children with modifications (Kauffman & Landrum, 2013). Several evidence-based behavioral interventions for young children include antecedent-based interventions (Park & Scott, 2009) and teacher
based interventions that incorporate coaching early childhood teachers on effective strategies for problem behaviors in an early childhood classroom (Vo, Sutherland, & Conroy, 2012).

**Behavior Interventions for ECE At-Risk for Behavior Problems**

Park and Scott (2009) investigated the use of function-based interventions and ways in which functional behavior assessment (FBA) informed developed interventions for children enrolled in Head Start programs age 4 and 5 in the east central part of the United States. Two Head Start teachers and one preschool teacher participated in the study. All teachers had at least 5 years of working in the preschool setting. Three preschool children also participated in the study. The criteria used for selection of participants were that they had to be enrolled in a Head Start program, referred by their teacher for recurring problem behaviors, currently not receiving services in special education, and both the parent and teacher consented to the child’s participation in the study. All three students in the study were African American. One student was a 5-year-old boy (Donny) who engaged in high levels of disruptive behaviors such as talk outs and arguing with peers or teacher. Another participant was a 4-year-old boy (Dion) who had difficulty staying on task during large-group activities. The third participant in this study was a 4-year-old girl (Korana) who displayed high rates of disruptive behaviors.

For two of the participants (Donny and Korana) disruptive behaviors were the dependent variable (Park & Scott, 2009). Disruptive behaviors were defined as repeated verbal outbursts, inappropriate bodily contact with another peer, and being off task. The dependent variable for Dion was on-task behavior. On-task behavior was defined as sitting in a designated space, keeping his hands and feet to himself, and participating in the class activity. The dependent measure for all participants was a 10-second partial interval recording system for disruptive behavior.
There were four phases to the intervention. The first phase included the FBA procedures of assessment and hypothesis development (Park & Scott, 2009). Structured interviews were conducted with the teacher to learn about student preferences and abilities, prior interventions that had been attempted, frequency and intensity of the problem behavior, and any associated environmental events likely to predict the occurrence of the problem behavior. Indirect and direct measures were used to identify variables associated with the problem behaviors. Direct observations using an A-B-C assessment recording form were used to describe the environmental stimuli of the student behavior. Hypothesis statements were developed to predict the occurrence of behavior during phase 2.

Phase 2 of the intervention was verifying hypotheses via brief structural analyses (SA) for each student. In this step, antecedents were manipulated. The hypothesized antecedent variables were systematically introduced and withdrawn and student behavior was monitored for corresponding change. All SAs occurred in the student’s classroom during typical ongoing routines. Hypotheses were verified when manipulations of hypothesized antecedents resulted in predictable changes in student behavior. A procedural fidelity checklist included the specific variables and steps required for each condition. Phase three of the procedures was to develop the antecedent-based interventions. The antecedent-based interventions were developed collaboratively between the teacher and first author. Interventions involved manipulating environmental factors. The last phase, phase 4, was the social validity component of the intervention. Social validity was assessed using an informal interview format with the three teachers. Teachers were asked about the assessment and intervention process, willingness to implement strategies, and intrusiveness on classroom routines.
Using a single-subject reversal design, the study included baseline (A) and intervention (B) with an ABAB treatment design (Park & Scott, 2009). Assessment for Donny leading to intervention development included structured interviews with his teacher and mother and direct observations. The results of the SAs showed that high-interest activities were associated with a consistent decrease in disruptive behaviors. The mean during baseline for Donny was 64% of disruptive behaviors. Proximity to the high-interest book resulted in a decrease in behaviors from 64% in baseline to 21%. Disruptive behaviors were seen to increase immediately and returned to high levels of responding (mean of 62%) during a return to baseline condition. The intervention effects were reintroduced with the high interest book and decreases in lower levels of disruptive behaviors were observed (mean=16%). A second withdrawal phase was used and Donny had high levels of responding (mean=73%).

For the second student, Dion, functional assessment procedures for phase 1 included a structured interview with his teacher and direct observations (Park & Scott, 2009). The SA demonstrated that a high-interest space marker was associated with on-task behavior during 87% of intervals compared to 52% of intervals with the low-interest space marker. The high-interest space marker was introduced as the antecedent-based intervention. The mean percentage of intervals in the first intervention phase was 69%; on-task behavior decreased to 58% during withdrawal then increased to a mean of 87% when intervention was implemented again.

Assessment methods for the third participant, Korana, included structured interviews with the preschool teacher and mother and A-B-C direct observations (Park & Scott, 2009). The intervention developed from the SAs was to use both a therapeutic floor wedge near to the teacher paired with a high-interest mat. Baseline data was recorded with a mean of 75% of intervals of disruptive behavior. During intervention phase Korana’s disruptive behavior
decreased to lower levels (mean=11%); withdrawal phase was implemented and an immediate change in effects were observed (mean=100%). The intervention was reintroduced and there was a noticeable lowering of Korana’s disruptive behavior (mean=7%).

Social validity was measured using a treatment acceptability survey using a Likert scale. All three teachers reported that the assessment process did not affect ongoing classroom activities, was time efficient, and was within their ability to implement the assessment procedures (Park & Scott, 2009). This study demonstrated the results of SA procedures and implementing them into an antecedent-based intervention to improve challenging behavior for young children. All three preschool students indicated decreased levels of inappropriate behaviors or an increased level of on-task behaviors in the classroom setting during the intervention phases. Results of this study provide support for simple instructional modifications and environmental modifications to improve behaviors. Park and Scott suggested that future research be conducted in the effectiveness and efficiency of SA procedures in early childhood settings. Components of effective consultation and evaluation tools to determine the impact of consultation on program outcomes for early childhood are needed (Park & Scott, 2009).

*Behavioral, Emotional, and Social Training: Competent Learners Achieving School Success* (BEST in CLASS) was developed by Sutherland, Conroy, Abrams, and Vo (2010) as a targeted intervention for children at risk for the development of Emotional and Behavioral Disorders (EBD). It was designed to improve teachers’ use of effective instructional practices that positively influence teacher-child interactions and young children’s social and behavioral outcomes. The effective instructional practices selected for inclusion in the BEST in CLASS model include: (a) rules, expectations, and routines; (b) behavior-specific praise; (c) precorrection and active supervision; (d) opportunities to respond; and (e) teacher feedback. The
BEST in CLASS model targeted the needs of young children with problem behaviors that may lead to Emotional and Behavioral Disorders.

The BEST in CLASS model comprised eight teacher-learning modules that included specific information and procedures for conducting the performance-based coaching component of the intervention. Weekly classroom-based coaching visits include an observation session and follow-up coaching meetings provided by individuals trained in the coaching model. The coach observed the teacher collecting video clips of themselves interacting with children and anecdotal data of the teacher’s instructional strategies. Then the teacher and coach held face-to-face coaching meetings to review and complete a weekly coaching plan. The intervention content for BEST in CLASS was delivered through a professional development session and a 14-week coaching process. Vo, Sutherland, and Conroy (2012) conducted a pilot study using BEST in CLASS with a total of 10 early childhood teachers and 19 children (ages 3-5 years). All teacher participants were female. Fourteen children were male and five were female. Fourteen children were African American, two were Caucasian, one was Asian/Pacific Islander, and no information was given for two children. All children scored at risk for future development of Emotional and Behavioral Disorders as indicated by an Early Screening Project. The study took place in 10 early childhood classrooms.

There were four phases of the intervention: pretest, module completion by the teachers, posttest, and maintenance (Sutherland, Conroy, Abrams, & Vo, 2010). Child outcome data were collected using several standardized measures including the Caregiver-Teacher Report Form (STRS-SF), the Social Skills Rating Scale (SSRS), and the Student-Teacher Relationship Scale-Short Form and were administered to the student participants in a pretest-posttest design. Analyzing the difference between the measures from pretest to posttest, the preliminary child
outcomes after the teacher intervention showed significant decreases for externalizing problems \((p=.000; d= -1.03)\), internalizing problems \((p=.01; d= -0.59)\), and total problems \((p=.001; d= -0.95)\).

Using the SSRS for social competence, researchers found a significant decrease for problem behaviors \((p=.000; d= -1.00)\) and a significant increase for social skills \((p=.001; d= 0.95)\).

Using the STRS-SF to examine student-teacher relationships, the data from the pilot study indicated that teacher-child relationships improved from pretest to posttest. Specifically, a significant increase was found for Closeness and a significant decrease was found for Conflict. The preliminary data suggests that teachers can implement the BEST in CLASS model with high levels of integrity and that it has promise for improving interactions between teachers and young children with problem behaviors, as well as promoting the positive outcomes of young children. The BEST in CLASS intervention provides direct instruction and ongoing coaching to early childhood teachers in the use of effective instructional strategies that increase the likelihood that children in their classrooms will display appropriate and adaptive behaviors and decrease the likelihood that they will display problem behaviors. The next step is to establish the efficacy of the BEST in CLASS intervention model using a randomized controlled trial (Sutherland, Conroy, Abrams, & Vo, 2010).

**Evidence-based Behavioral Interventions for Students with Disabilities**

Research cites the basic elements of an effective approach for addressing problem behaviors include individualized functional behavior assessment, environmental modifications, instructional strategies designed to establish alternative responses, and careful arrangements of reinforcers and other consequences (Horner, Carr, Strain, Todd, & Reed, 2002; Strain, Wilson, & Dunlap, 2011). Some researchers have examined the use of these elements with students with
young children with autism for problem behaviors and academic engagement (Strain, Wilson, & Dunlap, 2011).

Children who display challenging behaviors are at an increased risk of developing more intense problem behaviors in the future (Fox, Dunlap, & Cushing, 2002). Effective behavioral intervention efforts use an assessment-based approach to understanding and intervening in a child’s challenging behavior (Fox, Dunlap, & Cushing, 2002). Classroom management styles have an effect on classroom behaviors. Fox, Dunlap, and Cushing suggested that comprehensive behavior support efforts during preschool should continue to focus on preventing problem behavior, developing replacement skills, and responding to challenging behavior in ways that reduce the effectiveness of that behavior.

Webster-Stratton, Reid, and Hammond (2004) aimed to improve the long-term outcomes of children with oppositional defiant disorder (ODD) by evaluating interventions that target multiple risk and protective factions and systems including parent involvement and teacher training. Participants were recruited from families requesting treatment at a parenting clinic. Families entered in three cohorts (50 to 55 per cohort) in the fall over a period of 3 years.

Each family participated in assessments that included parent and teacher reports of child and adult behavior, independent observations of children with parents at home and with peers during a structured play session in a clinical setting, and observations with teachers and peers in the classroom. Children’s social and problem-solving skills were also tested. In all two-parent families, both mothers and fathers participated in the assessments. Only mothers received the weekly telephone calls concerning children’s behavior at home. Assignment to a treatment or control group was conducted by drawing names until each treatment condition was full. Families were assigned at random to one of six conditions: parent training alone (PT); child training alone
(CT); parent training plus teacher training (PT+TT); child training plus teacher training (CT+TT); parent and child training combined with teacher training (PT+CT+TT); and a waitlist control group. Conditions that contained a CT component were capped at six families per group, whereas conditions without the CT component were capped at eight to nine families per group.

For each assessment phase, each parent was observed on two different occasions at home interacting with their child for 30 minutes (in 5-minute intervals) and was instructed to do what they would normally do during that time during each phase of assessment (baseline and two follow-up periods). All observations were coded using the Dyadic Parent-Child Interactive Coding System-Revised. All children were also observed in the classroom for 60 minutes of structured and 60 minutes of unstructured time on four occasions at each assessment phase. Children were also observed for 30 minutes in a playroom in a clinical setting with a same-sex peer.

The criteria for study entry were: (a) the child was between 4 and 8 years old; (b) the child had no debilitating physical impairment, intellectual deficit, or history of psychosis and was not receiving any form of psychological treatment at the time of referral; (c) the primary referral problem was child misconduct that had been occurring for at least 6 months; (d) parents reported more than 10 child behavior problems on the Eyberg Child Behavior Inventory; (e) the child met DSM-IV criteria for ODD; and (f) the child was enrolled in preschool or elementary school. An initial phone screen established that parents reported more than 10 behavior problems on the ECBI. Families then participated in 2- to 3-hour intake interview that consisted of a structured diagnostic interview. The children who participated in the study consisted of 90% boys with a mean age of 70.99 months; 26% of the sample attended preschool, 29% kindergarten, 27% first grade, and 29% second grade. Study parents included 159 families;
25.8% were single mothers whose father had little or no contact with the child. The majority of the remaining 74.2% of the families were married. The children assigned to CT, CT+TT, and CT+PT+TT conditions came to a clinic (Dinosaur School) that was offered in weekly 2-hour sessions for 18 to 19 weeks with two therapists and six to seven children. Weekly letters were sent to teachers and parents explaining the key concepts taught that week and were asked to reinforce the targeted social skills whenever they noticed the child using them. The children were also given weekly homework assignments to complete with their parents.

Teachers and parents were provided weekly good-behavior charts and the children received bonus rewards for bringing their charts to the training sessions each week. In the PT condition, the parents met at the clinic weekly in groups of 10 to 12 parents and 2 therapists for a 2-hour session. Over the course of 22-24 weeks, the parents watched 17-videotaped programs on parenting and interpersonal skills. In the TT condition, the teachers went to the clinic for four full days of group training sequenced throughout the school year. The teacher curriculum targeted teachers’ use of effective classroom management strategies for handling misbehavior, promoting positive relationships with difficult students, and strengthening social skills in all school settings. In the combined conditions (PT+TT, CT+TT, PT+CT+TT), the parent training included information on supporting children’s success at school. The families assigned to the control condition received no treatment and had no contact with the therapists at the clinic during the 9-month waiting period.

There was no significant difference in the number of sessions attended by condition (Webster-Stratton, Reid, & Hammond, 2004). The measures used for parenting positive and negative composite scores were a parenting practices interview, the DPICS-R, CII-Parenting Style, and the Parent DDI. For the child conduct problems at home composite score, the ECBI
intensity score was used, independent observations of child in the home using DPICS-R, and the CII-Child. For the child conduct problems at school and with peers’ composite score, the TASB teacher-report measure was used along with the teacher rating scales of the PCSC, MOOSES classroom observation coding system, SHP teacher observation of classroom adaptation, and the DPIS.

Parent and teacher satisfaction with the program were collected using an inventory rating scale. The results were calculated using a six-group analysis of covariance (ANCOVA) with pretest scores as covariates for corresponding posttest scores. All intervention approaches produced significant improvements in parent, teacher, and child behavior compared with controls. There was a high rating from parents and teachers of the program. The short-term results indicated that the three conditions that included parent components showed large positive effects on parents’ harsh or negative parenting style compared to control parents. Also, the three parent conditions showed moderate positive effects on child negative behaviors at home compared to controls.

It appeared that the CT and CT+TT interventions generalized across settings to improve parent relationships at home. Conditions that included teacher training showed significant effects on teacher behavior compared to controls. Authors suggested that the results of this study were promising to show the utility of using treatments that strengthen protective factors as a strategy for preventing and reducing conduct problems.

A study assigned to Head Start programs and elementary schools serving low-income populations trained teachers to deliver the Incredible Years Dinosaur School Curriculum (Webster-Stratton, Reid, & Stoolmiller, 2008). The curriculum utilized positive classroom behavior management strategies would result in more positive and responsive teacher and less
harsh or critical discipline (Webster-Stratton, Reid, & Stoolmiller, 2008). In the intervention schools, all children enrolled in Head Start, kindergarten, or grade one classrooms received the IY social, emotional, and problem solving curriculum (Dinosaur School) as their prevention intervention. Control schools followed their usual school curriculum. One hundred and twenty classrooms in Head Starts and 14 elementary schools were involved in the project.

Eighty-six percent of parents of children who attended Head Start and 77% of elementary school families signed consent forms for their child to participate. Children were assessed in the fall and retested in the spring at the end of the school year. At each assessment period, children, parents, and teachers completed report measures and children and teachers were observed in the classroom by independent observers. The Incredible Years (IY) Child Training curriculum (Dinosaur School) was developed to treat children who were diagnosed with oppositional defiant disorder. Training for the teachers involved how to deliver the Dinosaur School curriculum and also effective classroom management strategies. The strategies included preventing or reducing the development of conduct problems, ways to increase parent involvement, and promoting social skills. A selection criterion for behavior problems that was used was those children who had a higher than average number of behavior problems. Intervention teachers participated in 4 days of training spread out in monthly workshops. Half of the training focused on classroom management strategies, ways to promote self-regulation, and how to develop individual behavior plans.

The Dinosaur Social Skills and Problem Solving Curriculum was designed to promote children’s social competence, emotional self-regulation, and school behavior. The Dinosaur Curriculum used a format of 30 classroom lessons per year and had a different version for preschool and early elementary. The seven units of the curriculum are: (1) learning school rules;
(2) how to be successful in school; (3) emotional literacy, empathy, and perspective taking; (4) interpersonal problem solving; (5) anger management; (6) social skills; and (7) communication skills. Teachers followed lesson plans that covered each of the content areas at least 2 times a week. The control classrooms continued the regular Head Start and elementary school curriculum.

The assessment used to code teachers’ interactions with children as well as children’s interactions with teachers and peers was the Multiple Option Observation System for Experimental Studies (MOOSES). The Teacher Coder Impressions Inventory (TCI) evaluated teacher’s style and classroom management strategies using a series of Likert questions rating teacher style. The School readiness and Conduct Problems: Coder Observation of Adaptation-Revised (COCA-R) measure is an observation version. Following a 30-minute observation, coders respond to 36 items to obtain an overall school readiness score. The Classroom Atmosphere Measure (CAS) is a 10-item questionnaire completed by observers rating the general classroom atmosphere. To measure children’s problem-solving skills or solutions in response to hypothetical problem situations, the Wally Problem Solving and Feelings Tests were used. The Teacher-Parent Involvement Questionnaire (INVOLVE-T) is a 20-item teacher questionnaire that measures the extent to which parents participate in school activities, seem comfortable with the teacher and school environment, value education, and support the teacher. Lastly, there were two questionnaires for the teacher and parent on their satisfaction about the Dinosaur curriculum.

A multi-level random intercept and slope model was used within a pre-post ANCOVA model to allow for both classroom and teacher-level variation in intercept and post on pre-regression. Four of 5 constructs had significant main effects such that teachers in the intervention
condition became less harsh/critical and inconsistent/permissive, more warm/affectionate, and placed more emphasis on social/emotional teaching. Effect sizes ranged from medium to large: warmth/affectionate (.51), inconsistent/permissive (.63), harsh/critical (.67), social/emotional teacher (.96), and effective discipline (1.24) for Head Start teachers. On the COCA-R, there was a greater improvement in school readiness in the intervention than the control condition.

Results showed that there was a greater improvement in classroom atmosphere in the intervention than the control condition (d=1.03). On the Wally Problem Solving and Feelings Tests, children in the intervention condition showed significantly greater improvement than children in the control group on the number of different positive strategies generated (p<.01). Teachers were very satisfied with both the training they received and the curriculum implementation in their classrooms; parents were also satisfied with the program. The authors stated that the study showed promise for improving young children’s overall school readiness and reducing conduct problems. A strength of the study was very high intervention implementation integrity. A limitation was that the authors could not determine whether the child behavior improvements occurred outside the classroom environment and whether they generalized to the home environment. Further study should include parent report of behavior change.

Fullerton, Conroy, and Correa (2009) examined the effectiveness of training using behavioral consultation designed to increase early childhood teachers’ use of specific praise statements, effects of teachers’ use of specific praise statements on the appropriate and problem behaviors of young children at risk for EBD, and the generalization of teacher and child behaviors across activities. Four early childhood teachers and four children participated in this study at a university-based early childhood center. The teachers’ primary concern for each child
was noncompliance. Also, parents were concerned about their child’s behavior at home and in school.

Teachers completed the Caregiver-Teacher Report Form (CTRF). Teachers’ use of specific and nonspecific praise statements served as the primary dependent variable for this study. Teachers’ use of specific praise was defined as positive declarative statements specifically directed to the target child that described the child’s behavior. The frequency of the teacher’s use of specific and nonspecific praise statements were measured during each observation session that lasted approximately 5 minutes. The researcher observed and coded engagement and compliance behaviors for the child participants. Engagement was defined as participating in an activity, interacting with peers and teachers, and looking at or using materials. Compliance was defined as completing an instruction or beginning to follow the instruction within 5 seconds after the teacher request had been given. To measure child engagement, a 6-second partial interval recording system was used. The study had three phases: preexperimental, baseline, and training/intervention/generalization.

A single-subject multiple-baseline design across 2 participants, replicated by 2 participants was used. In the preexperimental phase, authors met with each of the teacher participants to identify target children who met the study criteria. The primary author then completed the BDI-S for each target child and the classroom teacher completed the Child Behavior Checklist-Teacher Report Form on each of the target children. During the baseline phase, the teacher and child behaviors were observed during the targeted transition activities. Teachers were instructed to conduct business as usual and respond to problem behaviors demonstrated by the child, as they typically would respond.
Following the establishment of a stable baseline, each teacher received an individual training session by the researcher in the use of specific praise. Training sessions lasted an average of 1.5 hours. The teacher had a training booklet developed by the authors. At the end of each training session, the teacher and author completed a treatment fidelity checklist to ensure that all training steps were completed. Immediately following completion of the training, the teacher was instructed to post the specific praise statement cards in a location that was easy to view to serve as a visual reminder for using the specific praise statements during the targeted transition activity. During the intervention phase, the researcher provided feedback to the teacher to review the teacher’s use of specific praise statements during the session and provide encouragement for the use of specific praise statements. Generalization probes during the baseline and intervention phases of the investigation were conducted to determine if the teachers’ use of specific praise statements and any changes in the children’s behavior generalized to a second transition activity in the classroom.

Both teacher and child participants’ data were graphed and visually analyzed. For teacher-child dyad 1, the rate of specific praise statements used by teachers dramatically increased following intervention. The percentage of complaint responses were relatively low during the baseline condition for the child behavior in dyad 1; however, once the intervention phase was implemented and the teacher’s use of specific praise statements increased, the child in dyad 1 demonstrated a significant increase in the percentage of compliant responses. The level of engagement for the child in dyad 1 was highly variable. For teacher-child dyad 2, both specific and nonspecific praise statements occurred at very low rates by the teacher during baseline. Following training and intervention, the teacher’s rate of specific praise statements increased.
For the child’s compliance behavior in dyad 2, baseline compliant responses were variable and low; once intervention was implemented, compliance increased dramatically and stabilized. Child 2’s engagement occurred at a high percentage of intervals during baseline, but became more stabilized during intervention. For the teacher’s rate of specific praise statements for teacher-child dyad 3, the statements significantly increased from baseline to intervention. Child 3’s compliant responses and percentage of time the child was engaged increased during intervention. Lastly, the teacher’s rate of specific praise statements in teacher-child dyad 4 increased during the intervention condition. The compliant responses increased during intervention for child 4 as well as the percentage of engagement. For generalization, all teacher-child dyads, the teachers’ rate of specific praise statements increased in the generalization setting following implementation of intervention.

Teachers completed a social validity questionnaire to obtain information regarding their satisfaction with the intervention using a 5-point Likert scale. The results indicated that teachers in dyads 1 and 2 found the training to be somewhat time-consuming whereas the teachers in dyads 3 and 4 indicated that the training was not at all time-consuming. Three teachers indicated that the intervention was very helpful to the classroom whereas 1 teacher indicated that it was helpful. All four teachers increased their rate of specific praise statements following training with no additional coaching sessions.

Authors stated that the findings support research on the use of specific praise statements as an efficient and effective intervention. The authors cited that future research should focus on the effects of specific praise statements on young children with atypical development. Additionally, research should focus on whether the teacher’s use of specific praise statements generalized to other children in the class.
Summary

There is limited research available on early interventions for young children at risk for increased academic and behavioral difficulties. Often, teachers in early childhood lack the knowledge of risk factors and evidence based behavioral interventions for young children with challenging behaviors (Yoshikawa & Zigler, 2000). However, using antecedent-based interventions and teacher training are two interventions that can be effective with young children at risk. The use of function-based interventions using functional behavior assessments (FBAs) in Head Start programs can be effective in decreasing disruptive behaviors and increasing on-task behaviors (Park & Scott, 2009). Sutherland, Conroy, Abrams, and Vo (2010) implemented teacher-learning modules for teachers who taught young children at risk. Preliminary child outcomes of the pilot study showed significant decreases in externalizing problems, internalizing problems, and total problems (Sutherland, Conroy, Abrams, & Vo, 2010).

The use of combined parent and teacher trainings can strengthen protective factors for children who have been identified as having multiple risk factors for continued behavioral difficulties (Webster-Stratton, Reid, & Hammond, 2004). Specifically, within the teacher curriculum, targeting teacher’s use of effective classroom management strategies was shown to be effective in more positive and responsive teaching and less harsh or critical discipline (Webster-Stratton, Reid, & Hammond, 2004). Another evidence-based behavioral intervention for students with disabilities included a scripted curriculum revolving around school rules, problem solving, and social skills (Webster-Stratton, Reid, & Stoolmiller, 2008). Lastly, providing early childhood teachers with behavioral consultation increases teachers’ use of specific praise statements towards young children who display at-risk behaviors (Fullerton, Conroy, & Correa, 2009).
Self-Monitoring for Typical Learners

Self-monitoring is a strategy commonly used to develop self-regulation skills in students (Amato-Zech, Hoff, & Doepke, 2006). The focus of self-monitoring for typical learners has been to promote on-task behavior (Amato-Zech, Hoff, & Doepke, 2006; Blood, Johnson, Ridenour, Simmons, Crouch, et al., 2011) and reduce disruptive behaviors (Blood et al., 2011; Nuernberger, Vargo, & Ringdahl, 2013) in classroom settings. Nearly 20 years of research and literature support the use of self-monitoring as an effective intervention within the classroom (Bruhn, McDaniel, & Kreigh, 2015).

Early Childhood Education and Elementary School

Self-monitoring research for young children has focused on academic preparedness and on-task behaviors for children who are typically developing. These interventions provide instruction to preschool and elementary-age students who have been identified as at-risk for developing problem behaviors, are off-task, or to increase the percentage of compliant behaviors. Specifically, research on young children in preschools has often only focused on increasing on-task behaviors with the use of self-monitoring.

In a study designed to examine if preschoolers could respond to self-monitoring training adapted to their developmental level, De Hass-Warner (1991) created a self-monitoring intervention for two preschoolers with poor on-task behavior during independent pre-readiness tasks. The goal of the study was to evaluate the effectiveness of the self-monitoring intervention by determining if preschool students’ on-task behavior increased when using a self-monitoring strategy. The study took place in an Easter Seal Society preschool program where 50% of the students were identified as having a disability. There were two participants in this study were typically developing preschoolers Alexa and Walton. Alexa was a 5-year, 2-month old girl who
displayed poor task initiation, on-task behavior, and completion of work. Walton was a 4-year, 11-month-old male who did not initiate or complete a task without a teacher or aide sitting beside him or giving verbal prompts. Observed behavior for Alexa was excessive talking with peers, concern with other children’s work, looking around the room, and initiation of nonrelated tasks. Walton also disrupted his peers and displayed poor social behavior.

De Hass-Warner (1991) defined pre-readiness skills as including visual, perceptual, and motor tasks including numbers and letters, coloring, cutting, and pasting. The tasks incorporated classification concepts, number values, and typical preschool art projects. To answer the research questions, a multiple baseline across subjects design was used. During the baseline phase, the teacher introduced the task to the children in the class; the pre-readiness task lasted for 15-minutes. The teacher stated the directions and modeled an example. Percentage of on-task behavior was measured using a 30-second interval time sampling procedure. The observers recorded a “+” for behavior meeting the definition of on-task behavior and a “-“ for not meeting the definition. The dependent variable of on-task behavior was defined as occurring when the subject was completing the activity while focused on the task by looking at and/or touching the materials needed to complete the task, without looking around the room, being out of seat, or talking to the teacher or peers. Baseline data were collected over a 10-day period. When the target behavior of Alexa reached a stable trend, intervention began. Baseline collection continued for Walton. As Alexa showed an increase of on-task behavior, the intervention was introduced to Walton.

The independent variable incorporated three components of behavioral self-management: self-talk, self-appraisal, and self-recording (de Hass-Warner, 1991). A story was read about a preschooler who had difficulty completing tasks without talking, looking around the room, or
getting out of his seat. Alexa was trained in a separate room to complete the protocol. During the training, the researcher told Alexa the story, modeled the procedure, the child practiced the procedure until mastery of the technique was observed, and the researcher gave positive feedback. A self-recording sheet was taped to the table and the child was given a pre-readiness task to complete. A tape-recorder emitted a low-frequency tone every 30 seconds. Alexa would whisper to herself “Was I doing what I was supposed to be doing?” and colored in the appropriate box for on-task behavior or drew a line through the box if she was not on task. The self-monitoring training lasted for approximately one 20-minute session. The student was observed for a 15-minute period using the 30-second-interval time sampling procedure. The observer would ask the student their opinion of performance with the task after the 15-minutes. Verbal praise was given for appropriate on-task behavior. As Alexa reached criterion, Walton was trained with the same procedure.

The data were analyzed by taking an average of on-task behavior during baseline and intervention conditions. Mean on-task behavior during baseline was 24% for Alexa and 14% for Walton. Mean on-task behavior during intervention for Alexa was 87% and for Walton was 67%. Both Alexia and Walton learned the self-monitoring procedure without difficulty; Alexia was able to explain the procedures to the researcher. The preschool teacher was asked open-ended social validity questions and stated that she was pleased and surprised by the effectiveness of the intervention. The preschool teacher also stated that the intervention was unobtrusive, cost and time effective, and provided immediate results. Both subjects were happy with their task completion. Generalization was not measured for this intervention. Fading of the prompts during independent seatwork was not given due to time constraints. The author suggested that future self-monitoring research with preschoolers should determine accuracy of the subjects’ appraisals.
through comparison of the subjects and observers’ recordings. The opportunity for preschoolers to be more self-reliant can be encouraged through self-monitoring.

In a study designed to increase the percentage of compliance behaviors of kindergarten students at risk for developmental disabilities, Bialas and Boon (2010) designed a self-monitoring procedure to determine if self-monitoring would be effective with this population and to determine if compliance behaviors could be maintained when the intervention was faded. Three male kindergarten students who all had deficits in academic-preparedness behaviors age 5.5 years to 5.7 years participated in this study. Individual percentage of compliance to classroom-preparedness skills served as the dependent variable and was calculated by dividing the total number of displayed behaviors by the total number of possible target behaviors, then multiplying by 100; the behaviors associated to academic-preparedness, in this study, included listening to directions and repeating directions to the teacher.

Teachers used an observation checklist to measure each participant in each session (Bialas & Boon, 2010). The checklist measured the two target behaviors associated with classroom-preparedness. During small group instruction sessions immediately followed by whole group instruction in the content areas of reading, mathematics, and language arts, the checklist was used. The observer would mark the sign “+” or “-” for each target behavior on the checklist during the observation period.

Researchers utilized a multiple baseline across participants design to answer the research questions. The number of sessions in baseline, intervention, and maintenance were determined by stable responses for at least three consecutive data points. There were one to two sessions per day with each session lasting a maximum of 30 minutes per student. During the baseline phase, teachers intervened and prompted the students according to the normal classroom discipline.
procedures. A training session took place on the first day following baseline before the intervention. The training session introduced the students to the self-monitoring checklist. In the training session, the researcher explained to the participant why they would be monitoring their own behavior and that they could earn rewards for good behavior. The students were taught how to use the self-monitoring checklist and record their success on a graph. All self-monitoring procedures were modeled for the student by the researcher. The student also completed a sample checklist and graph before they began the intervention.

During intervention, each student was expected to meet an established criterion for mastery before the next participant could be introduced to the intervention; mastery was defined at meeting 100% of demonstrated target behaviors for three consecutive days (Bialas & Boon, 2010). On the second day of intervention, after the training session, the researcher checked for understanding of the picture prompts on the self-recording card. The participant then began the procedure to monitor and record his behaviors. The participant could be reminded of the picture prompts by the researcher and to record if he was not actively recording. The procedures continued over consecutive sessions until the criterion had been met for the intervention for each student. After stable baseline was assessed for one participant, the intervention began for that participant while behaviors for the other two participants continued to be measured. Once mastery of 100% of demonstrated target behaviors for three consecutive days was met, intervention began on student two. The same procedure was followed for the third student. Two maintenance probes were taken for all students once a week for two weeks. The teacher followed baseline procedure and no checklists were provided to the students during the maintenance probe. Social validity data was obtained using a survey completed by the general education teacher to assess how the participants compared to their peers before and after the intervention.
The students were given an oral survey to determine how they felt about the self-monitoring intervention.

Visual analysis of the graphs suggested that all three students improved and showed an increase in their percentage of compliance for classroom preparedness behaviors after the intervention. During the maintenance phase, all three students’ percentage of compliance was higher than in baseline and remained consistent with their behavior during intervention. The visual analysis of the data suggested that the self-monitoring intervention was effective for all three students at risk for developmental disabilities. The data analysis also suggested that the students could generalize the skill to more than one content area and maintain the skills after the self-monitoring intervention was removed. Bialas & Boon (2010) concluded that this intervention showed self-monitoring could be effective for kindergarten students at risk for developmental disabilities. The researchers stated that a limitation of this study is the generalizability of the data. Due to the young age of the participants, the researchers only focused on two behaviors at one time. The researchers also did not provide data for maintenance over long periods of time. The authors suggested for future studies to be conducted collecting data during the maintenance phase over a longer period (Bialas & Boon, 2010). Also, each student’s reinforcers may need to be determined for the reward to be effective.

In a study designed to ascertain the differential effects of the delivery of contingent positive reinforcement within a self-monitoring intervention on the on-task behaviors of at risk students in a general education classroom, Otero and Haut (2015) used an alternating treatment design comparing self-monitoring alone and self-monitoring with reinforcement. The researchers also examined whether the students’ on-task behaviors and accuracy of self-monitoring were affected by offering tangible reinforcement for accuracy of recording. On-task behaviors were
defined as any time the student was appropriately engaged during instructional time. Three
students, who were off-task for an average of 50% of the time, were nominated by their teachers
to participate in the study. One student was Hispanic and the other two students were Caucasian;
one student was in the third grade, one student in the fourth grade, and one student in the fifth
grade. The study took place in a general education classroom. Baseline began once all consent
forms were signed. Otero and Haut used on-task behavior and accuracy as dependent variables in
this study. On-task behaviors were measured using momentary time sampling procedures and
were recorded on a behavior-tracking chart.

Accuracy of student recordings was also used as a dependent variable and was measured
to determine the ability of the student to record their own behavior (Otero & Haut, 2015).
Accuracy was determined by dividing the number of agreements by the number of agreements
plus disagreements and multiplying by 100. Feedback for accuracy was only provided during the
reinforcement condition. The materials that were used throughout the study were a MotivAider, a
self-monitoring recording form, a card indicating the condition, a visual image of the student
engaging in the target behavior, and small rewards. The MotivAider was set to vibrate at 1-
minute intervals each intervention session.

During the phase on self-monitoring alone, no verbal or tangible reinforcement was
provided. In the condition self-monitoring with reinforcement, the components of the condition
were the same as self-monitoring alone but following the intervention period the student received
feedback. A match score of the student’s data with the investigator’s of at least 80% was
reinforced. After the three training sessions following baseline, the intervention began. Students
began self-monitoring in their general education classroom.
Intervention data were collected twice per week over six to eight weeks for a total of 12 sessions (six sessions for each condition). The classroom teacher decided the times that intervention data were collected. Before beginning a session, the researcher provided the student with all the necessary materials and set the MotivAider to one-minute intervals. The conditions were manipulated randomly to account for environmental confounds such as the time and day of the observation as well as classroom activities. Baseline data were recorded during instructional periods using a time sampling procedure. Students were observed for 20-minute sessions broken into 1-minute intervals. This method of measurement was used for all phases of the study. Baseline phases varied in length due to students being nominated at various times throughout the study. Students began training prior to intervention when they had established a low and stable baseline. The training sessions were three short sessions. After the training, intervention was applied in the general education environment and the conditions were alternated. During the training phase, the investigators met with the students to identify the target behavior and provide a description of its importance. The students used role-play for both the on and off-task behaviors. Pictures of the students engaged in the target behavior were taken. Rewards and reinforcers were self-selected by the students during the training session. A maintenance phase was not completed due to time constraints.

Visual analysis of level, trend, and variability were used to analyze the data. Student 1 dramatically increased on-task behavior from baseline to intervention. Student 1 had a mean average of on-task behaviors in baseline of 37%. There was limited variability between the two conditions for Student 1, with self-monitoring with reinforcement slightly more favorable overall (95%; self-monitoring alone 91.7%). Student 1 also had a high accuracy rate (92.5% accuracy for self-monitoring alone and 92.5% accuracy in self-monitoring with reinforcement). Student 2
had an on-task behavior increase from 36.76% in baseline to 53.3% with self-monitoring alone and 78.3% on-task when provided a reinforcer; however, Student 2’s accuracy for both conditions was fairly low (56.7% for self-monitoring alone and 75.8% for self-monitoring with reinforcer). Student 3 increased his on-task behaviors from 47.14% in baseline to 73.3% on-task during self-monitoring alone condition and 80.8% during self-monitoring with reinforcement. Student 3’s accuracy rate was 65% in self-monitoring alone and 80% during the condition self-monitoring with reinforcement.

Two teachers completed the social validity rating scales. One teacher reported a very noticeable difference in her student’s behaviors and found the intervention to be easy to implement and not demanding of teacher time. The other teacher reported that it was difficult to discern the effectiveness of the intervention because her student’s behavior was not noticeably different to her. The teacher did agree that the intervention was not time consuming. All three students completed social validity questionnaires. All students agreed that the intervention helped them to stay on-task.

The authors stated that it is important to note that accuracy of recording may be an important indicator of on-task behavior, as when accuracy increased, so did the percentage of time on-task (Otero & Haut, 2015). There was not a discernable amount of difference between the two conditions in this study based on the use of reinforcement. The authors recommended that self-monitoring intervention packages should include the core elements of selecting and defining a target behavior, self-observation, and self-recording. Reinforcement could be added if the effectiveness of the self-monitoring intervention is determined questionable. The authors suggested that additional research is needed to further examine the impact of reinforcement as a component of a self-monitoring intervention.
Rock (2005) evaluated the effectiveness of a combined self-monitoring of attention (SMA) and self-monitoring of performance (SMP) intervention using the ACT-REACT model for both students with and without disabilities using a multiple baseline across subjects with an embedded reversal. ACT-REACT is a six-step strategy developed by the author; the steps include articulate goals, create a work plan, take pictures, reflect using self-talk, evaluate progress, and ACT again (Rock, 2005). Teachers were asked to nominate their students who were disengaged from the learning process daily; nine elementary students were referred to participate in the study. Of those nine students one student was gifted, two were considered “typical” learners, and six students had differing labels of exceptionality. Of the six students with exceptionalities, one student was identified as having Asperger syndrome, one student was identified as having Floating Harbor syndrome with speech and language impairment, one student was identified as having a learning disability and attention-deficit/hyperactivity disorder (ADHD), and one student was identified as having a learning disability. Another student was identified as developmentally delayed with speech and language impairments, and another student was identified as having ADHD. The students’ ages ranged from 7 years old-13 years old and grades 2-5. Only one student received external reinforcement for participation in this study where he could earn gel pens and mechanical pencils. The study took place in an inclusive general education classroom.

The author defined chronic disengagement during independent seatwork as more than 45% of the time off-task (Rock, 2005). Academic disengagement was defined as a student not participating in math-related independent seatwork assignments and was recorded using frequency counts. The materials that were used in this study were a graphic organizer, a timing device, a self-monitoring think sheet, a recording instrument, and instructional materials specific
to independent seatwork. Five minute self-recording intervals of attention and 30-45 minute self-recording intervals of performance were incorporated to systematically teach students to keep a record of their behavioral and academic progress. The nine students were separated into three groups. For group 1, academic disengagement data were collected. The observer recorded a tally mark each time a student was disengaged during the 45-minute time allotted for independent math seatwork. If the student’s disengaged behavior lasted longer than 1 minute, another occurrence of off-task behavior was recorded by tally. The type of problem behavior was also recorded. The frequency data was converted to rate data by dividing the frequency of academically disengaged behaviors by the number of minutes observed each day. For groups 2 and 3, academic engagement data (time on task) was recorded. Academic engagement was defined as a student participating in reading or math related assignments. A momentary time-sampling strategy was used in which observers recorded whether the student was engaged or disengaged at the end of each 1-minute interval. If the observer recorded disengagement, the specific act of student disengagement was noted to measure non-targeted problem behaviors. Observations were conducted daily throughout each math or reading period. Math productivity and accuracy data were also collected. Graduate assistants collected interobserver agreement (IOA) data during each phase of the study across the dependent variables. During baseline, no procedures were in place. The observer was seated in the back of the classroom while the students worked independently on math seatwork or on reading assignments. Students would self-check at 5-minute intervals. A combined self-monitoring of attention (SMA) and self-monitoring of performance (SMP) approach was implemented.

After the last day of the first baseline, an individual training session was conducted to teach each student how to use the ACT-REACT self-monitoring procedure. The training session
lasted approximately 45- to 90-minutes. The researcher taught and modeled the six steps of the ACT-REACT self-monitoring strategy in the library. There were six steps included in the self-monitoring strategy. Step one taught students how to use goal setting and goal-attainment activities specific to attention and performance. Semantic representation and task analysis were used to help students develop an understanding of goal-related behaviors. Step two in the training focused on teaching students how to self-record attention and performance data during independent seatwork by using a self-monitoring work plan. Step three consisted of explicit modeling. Visual representations were used to model attention and performance goals set in step one. Visual representation of goals was created through a series of personalized student pictures. In step four, students were taught to continuously reflect on attention and performance goals and use self-talk. The fifth step of the training taught students to evaluate their overall attention and performance during independent seatwork by determining if they had successfully achieved their goals. The last phase of the ACT-REACT training was to help students understand that the use of the strategy was “recursive”. Intervention began once baseline and all training was completed. At the beginning of intervention, timers and materials were passed out to students. After the first phase of intervention, a second baseline occurred in which the students were instructed to not use the ACT-REACT procedures for 3 days for group 1 and 5 days for groups 2 and 3. The researcher employed the same procedures as the initial baseline phase. After the return to baseline, the self-monitoring intervention using ACT-REACT was reintroduced to students. The strategy was briefly reviewed with each student before reinstating the intervention phase. This design was used to evaluate the effectiveness of the intervention on students’ academic engagement, non-targeted problem behavior, productivity, and accuracy.
For group 1, rates of disengaged and problem behaviors were calculated as mean scores. In groups 2 and 3, rates of engagement and problem behaviors were calculated and reported as mean scores. See table 1 for the raw scores of each group. Academic productivity was also calculated for the three students in Group 1. During Intervention 1, all three students’ academic productivity improved; however, their accuracy did not. When the return to baseline phase was implemented, decreases occurred in two of the three students’ academic productivity and accuracy increased or remained constant for all the students. During intervention 2, the productivity data for each student improved, but the percentage of accuracy did not.
Table 1

Results of Rock (2005)

<table>
<thead>
<tr>
<th>Group</th>
<th>Baseline</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D behaviors</td>
<td>P behaviors</td>
<td>D behaviors</td>
<td>P behaviors</td>
</tr>
<tr>
<td>1</td>
<td>.66, .81, .74</td>
<td>13.4, 4.3, 6.9</td>
<td>.17, .10, .26</td>
<td>4.0, 2.4, 2.3</td>
</tr>
<tr>
<td>2</td>
<td>4.6, 4.2, 47.4</td>
<td>16.3, 14.5, 17.7</td>
<td>84.4, 84.6, 91.7</td>
<td>4.3, .2, 0.0</td>
</tr>
<tr>
<td>3</td>
<td>37.4, 34.1, 54.4</td>
<td>20.2, 22.9, 13.8</td>
<td>88.1, 86.7, 88.1</td>
<td>2.6, 10.1, 6.2</td>
</tr>
</tbody>
</table>

Note. D behaviors = disengaged behaviors, P behaviors = problem behaviors
For the three students in Group 2, percentage of academic engagement was recorded. During baseline, two of the three students in Group 2 showed a stable and low trend and one student’s academic engagement during baseline was variable with a downward trend. During Intervention 1 for group 2, the percentage of the three students’ academically engaged behaviors increased to high and stable levels. When the return to baseline phase was implemented there appeared to be a substantial decrease in the students’ academically engaged behaviors. Mean percentages of problem behaviors were also recorded for group 2.

Academic productivity and accuracy for each student in Group 2 was calculated. During the initial baseline, one student in Group 2 did not complete any assigned math problems while the other 2 students’ accuracy was moderate. During intervention 1, all the students’ academic productivity improved; one of the three’s accuracy did not improve. Return to baseline phase increased in one student’s academic productivity and accuracy occurred, another student’s productivity declined but his accuracy improved, and the third student’s productivity and accuracy improved. During Intervention 2 where ACT-REACT was reinstated, the productivity and accuracy data improved for one student, another student’s productivity improved but their accuracy declines slightly, and the third student in Group 2’s productivity and accuracy lowered.

Lastly, in Group 3, the percentages of academically engaged data were collected for three students. During the initial baseline, all three students demonstrated low levels of academic engagement during math independent seatwork. Academic productivity and accuracy data for each student in Group 3 were also collected. During the initial baseline for group 3, all three students completed a low to moderate number of assigned math problems with adequate accuracy. During Intervention 1, all three students in Group 3 improved their academic productivity and their accuracy remained stable. During the return to baseline phase decreases
occurred in productivity and accuracy for two of the students in Group 3 and productivity decreased while the accuracy improved for another student. In the reinstatement phase of ACT-REACT, the productivity and accuracy for two of the three students improved and one student’s data declined.

The author believed that this study implementing the ACT-REACT self-monitoring strategy indicated that it was an effective procedure for increasing academic engagement and productivity for students with and without exceptionalities (Rock, 2005). The students in this study were diagnosed with a wide range of differing disabilities; however, this self-monitoring strategy indicated that students could benefit from a single intervention with slight variations to meet their unique needs. Future research should use neutral observers to control for researcher bias in observations (Rock, 2005).

Current research supports the use of self-monitoring in preschool and elementary grades among typically developing children for increasing academic engagement and productivity (Rock, 2005), compliance (Bailas & Boon, 2010), and on-task behaviors (de Hass-Warner, 1991). Providing a training session to students of how to accurately self-monitor allows for them to understand how to be accurate (Bailas & Boon). It appears that implementation of self-monitoring supports on-task behaviors, compliance, and productivity in preschool and elementary settings. Otero and Haut (2015) recommended that self-monitoring intervention packages should include the core elements of selecting and defining a target behavior, self-observation, and self-recording. Reinforcement could be added if the effectiveness of the self-monitoring intervention is determined questionable.
Self-Monitoring Instruction for Students with Disabilities

Students with disabilities can exhibit an array of challenging behaviors that can impede adaptive functioning in the classroom (Bilias-Lolis, Chafoules, Kehle, & Bray, 2012). Research has shown self-monitoring to be a potent and effective treatment for managing various types of difficult behavior (Amato-Zech, Hoff, & Doepke, 2006; Bilias-Lolis, Chafoules, Kehle, & Bray, 2012; Briesch & Chafoules, 2009). The research indicates the need for self-monitoring instruction for young children, particularly those with or at risk of a disability (Mendez, McDermott, & Fantuzzo, 2002).

The importance of developing self-monitoring is critical to the development of self-reflection, interpersonal appropriateness of social behavior, and the regulation of verbal and nonverbal self-presentation (Allen, 1986). Recent research indicates that children can learn how to self-monitor effectively through the use of interventions designed at their cognitive level (Blood et al., 2011; Dunlap, Clarke, Jackson, Wright, Ramons, & Brinson, 1995). It is imperative to look at self-monitoring instruction programs designed for young children with developmental disabilities and interventions for older children with disabilities to determine efficient and effective means to teach young children with or without disabilities in the early childhood environment how to self-monitor their behavior.

Early Childhood Education and Elementary School

Dunlap, Clarke, Jackson, Wright, Ramos, and Brinson (1995) investigated the effects of a self-monitoring package on academic engagement and disruptive behaviors of two elementary school students with emotional and behavioral disorders. The design used in this study was an alternating treatments, reversal, and multiple baseline design. Both of the students were enrolled in self-contained special education programs for students with severe emotional disturbance and
referred to participate by their teacher. Whitney was a ten-year-old girl who was enrolled in the fourth grade and had been given a diagnosis of Oppositional Defiant Disorder. Bobby was an eleven-year-old boy enrolled in the fifth grade with no formal psychiatric diagnosis. The study took place at two separate public elementary schools. Whitney’s intervention took place during reading class and Bobby’s took place during mathematics, English, and reading.

The behaviors that were measured for both students were task engagement and disruptive behavior. Disruptive behavior was defined as any instance in which the student exhibited inappropriate attempts to attain adult attention, making noises either verbally or nonverbally, leaving seat without permission, negative verbalizations directed to staff, and noncompliant behavior. Task engagement was defined as the student working on an assigned activity according to staff instruction and eyes on materials or on the teacher during verbal instruction. Their teacher, for purposes of self-monitoring, also identified specific target behaviors for each student.

Three observers at each school were trained on procedural fidelity and data collection procedures. Data were collected for task engagement and disruptive behavior using a 15-second partial interval system for Whitney; the first 10 seconds were used for observation and 5 seconds for data recording. A tap recording that observers heard through earphones cued intervals. Direct observational data were collected for 15 minutes in each session throughout every phase of the investigation. Data for Bobby were also collected for 15 minutes per class period using an interval system that consisted of continuous one-minute intervals.

Baseline conditions were normally occurring procedures that took place in the classroom (Dunlap et al., 1995). Prior to the first session of intervention Whitney and Bobby were trained to use the self-monitoring procedures. Training consisted of a 20-30-minute meeting where
student’s individualized self-monitoring form was introduced and reviewed. Students were asked to describe examples of each of the behaviors indicated on the form. Each student practiced the self-monitoring procedures until the students and the behavior consultants were confident that the procedures could be used proficiently.

Whitney participated in two practice sessions and Bobby participated in four. Sessions that included self-monitoring were identical to baseline sessions but with the self-monitoring procedures added. Students were given their individualized self-monitoring forms and were kept at the corner of their desk. An audiotape player was used to play a bell sound at one-minute intervals. Following the sound, the students were expected to complete their form by checking “yes” or “no” to indicate compliance with the behavioral statements. After each session, the completed forms were compared against the observer’s. Both Whitney and Bobby were consistently accurate in the comparisons of their responses with the observer. Whitney received bonus points as part of a classroom-wide system for accuracy in recording and Bobby received verbal praise as well as bonus points and tangible rewards.

Whitney first participated in an alternating treatments comparison of baseline and self-monitoring sessions and then participated in a reversal comparison (Dunlap et al., 1995). The alternating treatments were conducted during the first five days with two fifteen-minute conditions conducted per day yielding an ABBAABBAAB (A-baseline B-15 mins. self-monitoring). Probe data were also collected on follow-up days and were spaced two weeks apart. For Bobby, a multiple baseline across classes design was used. After disruptive behavior stabilized during baseline in math class, self-monitoring was introduced while baseline data continued in English and reading classes. When an effect of self-monitoring became obvious, the intervention was added to English and then reading classes. For Whitney, on-task responding
was consistently greater during the self-monitoring phases and disruptive behavior reduced in the 
self-monitoring phase. Bobby’s self-monitoring was associated with higher rates of task 
engagement and a decrease in the percentage of intervals with disruptive behavior during the 
for elementary students at risk for emotional and behavioral disorders could be effective in 
reducing disruptive behaviors. The authors note that it is important to tailor any self-monitoring 
package to fit the needs to the students (Dunlap et al., 1995). The authors recommend future 
research to incorporate functional assessments with the procedures of self-monitoring in order to 
gain a heightened conceptual understanding of the functional foundations of the procedures.

Blood, Johnson, Ridenour, Simmons, and Crouch (2011) investigated whether video 
modeling, delivered on an iPod (used alone or in combination with self-monitoring) would result 
in increased appropriate behavior during small group instruction. Another purpose of this study 
was to demonstrate the potential use of hand-held technology to facilitate the implementation of 
self-monitoring and video modeling (Blood et al., 2011). There was only one participant for this 
study, Andy. Andy was a 10-year-old male in the 5th grade with emotional and behavioral 
disorders. Andy was diagnosed with Fetal Alcohol Syndrome, Complex Post Traumatic Stress 
Disorder, and Attention Deficit Hyperactivity Disorder (ADHD). He was receiving special 
education services in reading, language arts, writing, and math and modifications in the general 
education classroom for science, social studies, music, and physical education. Andy was 
reported to have difficulties with impulse control and engaged in disruptive behavior across 
settings. The study took place in a special education classroom in a public elementary school.

During the study, other students in the classroom were divided into small instructional 
groups and each group focused on a different academic subject. During the study, Andy
participated in a math group and could earn points to exchange for tangible items throughout the day for completion of his work. The dependent variables were time on-task and occurrence of disruptive behavior. Time on-task was defined as the percentage of intervals that Andy was oriented towards the appropriate math group activity and was considered to be on-task when he was following directions, attending to the teacher or teacher requested task, appropriately manipulating materials, and quietly completing independent work. Disruptive behavior was defined as talking without permission, blurting out, singing, or using inappropriate language.

On-task behavior data were collected using a momentary time-sampling procedure with 15-second intervals. At the end of each 15-second interval, the observer would indicate on a data sheet whether Andy was on-task or off-task when the timer went off. Data for disruptive behavior were collected using partial interval recording with 15-second intervals. Any instance of disruptive behavior observed during the 15-second interval resulted in occurrence of disruptive behavior being recorded for that interval. The duration for each observation period was approximately 20-25 minutes.

The baseline condition consisted of small group math instruction typical to the classroom; no changes were made to the content, routine, or structure of the math group (Blood et al., 2011). Prior to beginning the video-modeling phase, a video sequence was recorded using two same-age peers serving as models. In the video, peers demonstrated appropriate math group behavior including on-task behavior, following directions, and completing work. A narration was added to the video that verbally described the behavioral expectations of the math group while each expectation was demonstrated by the models. The video was loaded onto an iPod and was 4 minutes in length. During the video modeling phase the teacher or paraprofessional would give
Andy the iPod to play the video. The video was watched during transition time before the math group began. This process occurred daily throughout the intervention phases of the study.

In the video modeling plus self-monitoring phase, Andy was taught to differentiate between on-task and off-task behavior and to self-record his behavior using a self-monitoring sheet. Training on self-monitoring procedures took place during three separate 15-minute sessions. Andy was videotaped displaying both on-task and off-task behaviors. Andy then viewed the video of himself at math group and was asked to identify whether he was on-task or off-task at different points in the video during his first session. Andy would respond verbally.

In the second training session, a self-monitoring sheet was introduced and Andy was taught to record his behavior using the sheet. The timer application on the iPod was used and set to loop on 30-second intervals to indicate when he should mark the self-monitoring sheet. In the third training session, Andy watched the video and used the self-monitoring sheet to independently record whether he was on-task or off-task. By this session, he was able to record his behavior on the training video with 100% accuracy. In the video modeling plus self-monitoring phase, Andy was given the iPod with the timer set to loop on 2-minute intervals and the self-monitoring sheet each day at the start of math group. When instruction began, Andy pushed the start button to begin the timer. When the timer went off, Andy would indicate on the self-monitoring sheet whether he was on-task or off-task. This process continued until math group ended.

The materials used for this study were an iPod touch and timer application and a self-monitoring sheet (Blood et al., 2011). The design used for this study was a single-subject changing conditions design (A-B-BC). This study included one phase of baseline, followed by one intervention phase of video modeling alone, and concluded with a second intervention phase.
where video modeling and student self-monitoring were used concurrently. Andy consistently displayed very high rates of on-task behavior and low rates of disruptive behavior. Andy’s mean percentage of intervals on-task was 44% in baseline, 81% with video modeling alone, and 99% with video modeling and self-monitoring combined. Mean percentage of intervals engaged in disruptive behavior was 40% in baseline, 11% with video modeling alone, and 0% with video modeling and self-monitoring combined.

The results of this study showed that Andy responded positively to both the video modeling intervention and the combination of video modeling and self-monitoring compared to baseline. In this study, the effectiveness of video modeling appears to be enhanced with the addition of self-monitoring procedures. This study was conducted with only one student as a pilot study; additional students in multiple settings are necessary in order to demonstrate effectiveness of the intervention and to replicate the findings (Blood et al., 2011).

Gulchak (2008) used a single-subject A-B-A-B reversal design used to demonstrate the cause-effect relationship between behavior and a self-monitoring intervention to ask the following two research questions: (1) Can a student learn to self-monitor his on-task behavior using a handheld computer and (2) can self-monitoring of behavior via a handheld computer improve on-task behavior in the classroom? There was one participant for this study, an 8-year-old male student in third grade, Jay (Gulchak, 2008). Jay was of European-American descent and had been diagnosed with EBD. He was receiving special education services since kindergarten. Jay had an average intelligence and academic achievement scores; however, Jay experienced clinically serious and significant behavioral problems. The study was conducted on a public elementary school campus in a self-contained classroom for students with EBD.
The dependent variable was on-task behavior and was defined as keeping hands away from face, completed work assigned, and raised hand to ask questions (Gulchak, 2008). Observational data were recorded with a handheld computer using a 30-second whole interval recording method. The student was required to remain on-task for the full duration of the interval in order to receive credit for being on-task. A music file would play tones at 30-second intervals to alert the researcher of the interval periods. The researcher wore an earphone to hear the tones. Data collection began five minutes after the start of the reading period and lasted for 30 minutes. Data collection was scheduled for four days per week. The technology used in this study was two Palm Zire 72 handheld computers (one for the student and one for the researcher). The software program used to self-monitor on-task behavior was “HanDBase”. The handheld computers saved all information. During the first baseline phase, no changes were made to the structure of the reading period. The researcher, who sat at the side of the room and used a video recorder to record the participant, recorded on-task behavior.

In the first intervention phase the student received training by the teacher during three 20-minute practice sessions (Gulchak, 2008). In the trainings, on-task and off-task behavior were defined and the student was given examples to judge if they were on-task or off-task behaviors. The handheld computer was introduced to the student and he was shown how to operate it to self-monitor his behavior. Lastly, practice sessions were conducted to record different on-task behaviors during the training sessions. Once intervention began, the student collected self-monitoring data via the handheld computer at 10-minute intervals for the entire one-hour reading period. An alarm would chime at 10-minute intervals to prompt the student to record his on-task behavior. Intervention was implemented after a stable baseline was established. The student would run the report on the handheld computer at the end of the reading class, which
summarized the number of on-task behavior intervals that were recorded and then graph those on a spreadsheet to view his progress. After an increasing trend was established during intervention, taking back the handheld computer and telling the student that it would be returned in a few days reestablished baseline conditions. A decreasing trend was detected 2 days after reestablishing baseline conditions; the handheld computer was returned, and the student was asked to resume the self-monitoring program for the second intervention phase.

Visual inspection of the graphs suggested that self-monitoring with a handheld computer was effective in increasing mean on-task behavior for this student with EBD. The results provide evidence in support of using technology to self-monitor and improve on-task behavior in a classroom. The mean for baseline was 64. During the intervention phase, the mean for the target behavior increased to 90. During the second baseline the mean decreased to 70%, but then increased to 98% when the intervention was reintroduced. This study shows that self-monitoring interventions can be effective for elementary-age students. Additional research on using technology is required to be able to call this method an evidence-based practice similar to pen and paper-based self-monitoring practices. This was a pilot study conducted with one student diagnosed with EBD; future research needs to be conducted to confirm the findings (Gulchak, 2008). Gulchak stated that this new procedure for self-monitoring expanded the research in the application of behavior modification interventions.

While Otero and Haut (2015) investigated the effectiveness of the MotivAider with typically developing elementary age students, Amato-Zech, Hoff, and Doepke (2006) analyzed the effectiveness of the MotivAider for increasing on-task behavior in a self-contained special education classroom for three students with disabilities. This study analyzed the effectiveness of the MotivAider for increasing on-task behavior in the classroom using an ABAB reversal design.
with an extended baseline for the third participant. The participants were selected based on teacher referral of students with low levels of on-task behavior. Three fifth graders participated in the study. Jack and David were both 11-year-old boys who had been given multiple diagnoses of speech and language impairment and specific language disabilities. Allison was an 11-year-old girl who had been given a diagnosis of emotional disturbance and speech and language impairment. The study took place in a self-contained special education classroom. The intervention was conducted during reasoning and writing instruction that lasted 45-minutes.

During the initial baseline phase and the initial intervention phase, students received instruction at a round table (Amato-Zech, Hoff, & Doepke, 2006). During the return to baseline and throughout the rest of the study, students were sitting at desks during instruction. The MotivAider was used for the cue to self-monitor throughout the intervention phase. All participants also used a paper-and-pencil recording system to record whether they are paying attention at the time the MotivAider vibrated. On-task behavior was defined as the student actively or passively attending to instruction or assigned work and the absence of off-task behavior during the observed interval. For off-task behaviors there were three categories: off-task motor, off-task verbal, and off-task passive behaviors.

Data were collected using a 15-s partial interval recording system. If the student engaged in off-task behavior at any time during the interval, the student’s behavior was recorded as off-task rather than on-task for that interval. Direct observations were conducted for 15 minutes per day, two to three times per week for each student. During the initial baseline phase, observations of student behavior were conducted in reasoning and writing and math settings. Teachers were instructed to use their typical procedures for classroom management. Participants were trained to observe and record their on-task behavior during two group-training sessions and two practice
sessions in the classroom. The training sessions were 30 minutes in length. Students were taught to identify on and off-task behaviors using a strategy entitled “SLANT” (Amato-Zech, Hoff, & Doepke, 2006). The acronym stands for Sit up, Look at the person talking, Activate thinking, Note key information, and Track the talker (Amato-Zech, Hoff, & Doepke, 2006). Off-task behavior was defined as the absence of one or more SLANT behaviors. Students practiced self-monitoring of their on-task behavior using the MotivAider.

Once students were able to self-monitor their on-task behavior, intervention was implemented. Students wore the MotivAider during reasoning and writing instruction. When the MotivAider vibrated, students recorded whether they were paying attention at that moment in time by checking “yes, I was paying attention” or “no, I was not paying attention” on a self-monitoring form. After each session, the students returned their completed self-monitoring forms and the MotivAider to the teacher. The MotivAider was set at 1-minute fixed intervals for the first week of the intervention phase; the second week the intervals were set at every 3 minutes. Generalization probes were conducted for 10 to 12% of the sessions and were conducted in the math classroom.

Data indicated that Jack’s mean percentage of on-task behavior increased to a mean of 79% from 53% during implementation of self-monitoring. When the intervention was brought back to baseline, Jack’s on-task behavior decreased to a mean of 74%; however, improved to a mean of 91% when intervention was reintroduced. Generalization data for Jack showed that his on-task behaviors in math increased during self-monitoring phase and remained stable.

For David, his average on-task behavior during baseline was 55% and increased to a mean of 79% during intervention of self-monitoring. When baseline was reintroduced, David’s on-task behavior decreased to 76% yet increased to a mean of 93% upon reinstatement of the
intervention. Generalization data for David indicated that his on-task behavior in math showed that his on-task behavior remained high during intervention and dropped during the return to baseline phase.

Allison’s on-task behavior occurred at a mean rate of 56% during the initial baseline phase and increased to a mean of 89% upon introduction of the self-monitoring intervention. When the intervention was returned to baseline, Allison’s on-task behavior had a mean of 84% intervals observed and increased to 96% when the intervention was reintroduced. Generalization data for Allison indicated that her on-task behavior in math also remained high during intervention and dropped during the return to baseline phase.

This study demonstrated that students with learning and behavioral challenges could effectively use a tactile self-monitoring prompt for behavior change (Amato-Zech, Hoff, & Doepke, 2006). It was reported that the MotivAider was easy and relatively time effective and placed few demands on teachers’ time. The authors stated that further research is needed to explore whether the positive results would maintain over time without additional reinforcement. A limitation of the current study was that the generalization data was only collected during one observation per phase. The authors suggest for future research studies to explore what age ranges and for what behaviors the MotivAider combined with self-monitoring might be most useful.

**Summary**

Using self-monitoring instruction for students with a range of disabilities and ages can be effective at reducing maladaptive behaviors in the classroom setting (Dunlap et al., 1995). Research indicates that self-monitoring packages can have a positive impact on academic engagement and disruptive behaviors for elementary students with emotional and behavioral disorders (Dunlap et al., 1995). The use of video modeling delivered on an iPod or handheld
computer paired with self-monitoring techniques during small group instruction for elementary students is one method of implementing self-monitoring using technology (Blood et al., 2011; Gulchak, 2008). Videotaped self-modeling for students with disabilities can also have a positive effect on off-task classroom behavior (Coyle & Cole, 2004). Multiple and varied opportunities to practice self-monitoring will promote maintenance of self-monitoring skills across multiple environments among children with disabilities. Understanding the positive impact of self-monitoring on children with disabilities supports the need for identification of the most efficient instruction, particularly in an early childhood classroom.

**Using Direct Instruction to Teach Self-Monitoring**

Using direct instruction to teach self-monitoring has been effective in increasing on-task behavior, completion of task and assignments, and decreasing inappropriate behaviors among children with and without disabilities. Self-monitoring instructional sequences typically demonstrate four common steps: (1) identifying the presence of a problem, (2) modeling of appropriate or desired behavior, (3) guided practice using self-monitoring, and (4) independent practice using self-monitoring (Briesch & Daniels, 2013; Wolfe, Heron, & Goddard, 2000).

Wolfe, Heron, and Goddard (2000) examined the effects of self-monitoring on on-task behaviors, academic performance, and productivity. The participants in this study were four male elementary students with learning disabilities, all 9 years old. Students were selected because they lacked appropriate on-task and written language behaviors as judged by the classroom teacher. All four students were enrolled in a resource room in an urban public school environment. Three students were in third grade and one was in second grade. All students received services for learning disabilities. The study was conducted in a special education resource room during a writing lesson.
There were two primary dependent variables in this study: on-task behavior and written language performance (Wolfe, Heron, & Goddard, 2000). On-task behavior was defined as the percentage of time a student had his eyes on his paper, pencil in his hand, engaged in written expression or interacted with the teacher during the daily observation period. Written language performance was defined as the number of words written during a 10-minute period. Prior to self-monitoring, the students were trained how to do the self-monitoring activities. Training occurred in five stages during one session: (1) orientation/presentation, (2) teacher modeling, (3) group discussion, (4) role play, and (5) practice. The training for self-monitoring on-task involved direct instruction using a script. After direct instruction on what was an example and nonexample of on-task or written language behavior, the students were taught how to monitor these behaviors. The teacher modeled on-task and written language behavior, and the students demonstrated understanding through role-play. The students practiced self-monitoring their own behavior for at least 10 supervised trials with teacher feedback and reinforcement to ensure accuracy of recording on-task and written language.

This study used a reversal (A-B-A-B-A-BC) experimental design, with a self-monitoring changing criterion phase (BC) (Wolfe, Heron, & Goddard, 2000). During the baseline condition, normal classroom procedures were in effect. Data for on-task behavior were recorded during 1-minute intervals using the same procedure the students used. In the first self-monitoring phase, students began to monitor their on-task behavior following instruction. They responded each time they heard the tone to the question, “Am I on-task?” The tone sounded at intervals averaging 60 seconds. The duration of monitoring was 10 minutes. Upon completion of the monitoring time, students totaled the number of “yes” and “no” responses and graphed the number of positive responses on their own graph. During baseline condition 2, conditions in
effect during the first baseline were reinstated. During the second self-monitoring phase conditions in effect during self-monitoring 1 were reinstated. During baseline 3, conditions in effect during baseline 1 were reinstated. In the phase self-monitoring with changing criterion and public posting, self-monitoring procedures in this condition remained the same as in the previous conditions; however, before the students began to write, the experimenter set goals for each student. The changing criterion condition consisted of five phases.

During baseline for Student 1, on-task behavior was an average of 16%. During self-monitoring 1, Student 1 averaged 72.9% (Wolfe, Heron, & Goddard, 2000). Upon return to baseline, Student 1’s on-task behavior decreased to 60%. When he remonitored his on-task behavior in self-monitoring 2, his scores rose to 83.3% on task. During baseline 1, Student 2’s on-task behavior averaged 37.5%.

During self-monitoring 1, Student 2 averaged 80% on task and decreased to an average of 25% in baseline 2. When self-monitoring was reinstated, his scores averaged of 88.3% on-task. Student 2 averaged 65% on-task behavior in the return to baseline. In the final phase, Student 2 averaged 90% on-task behavior. Student 3’s on-task behavior averaged 44.3% in baseline 1.

During self-monitoring 1, the student averaged 98.6% on-task. In baseline 2, Student 3’s on-task behavior fell to 77.5%. When self-monitoring 2 was reintroduced, his scores rose to an average of 98% on-task. Returning to baseline, Student 3 averaged 70% on-task. During the final phases of the study, Student 3 averaged 95.6% on-task.

During baseline 1, Student 4’s on-task behavior averaged 48.6%. During self-monitoring 1, Student 4 averaged 78.3% on-task. In baseline 2, Student 4’s on-task behavior decreased to an average of 46.7%. When self-monitoring for on-task was reintroduced, he averaged 92% on-task. Returning to baseline, Student 4 averaged 97.8% on-task. The students, teacher, and general
education teachers were asked to respond to a questionnaire to determine social validity. There was general consensus that using the self-monitoring activities was a positive experience. All four students responded that they felt that self-monitoring helped them write more. The teacher also viewed the self-monitoring procedures positively.

Wolfe, Heron, and Goddard (2000) stated that there are several implications of this study for students, teachers, and parents, primarily that self-monitoring is a powerful procedure to change behavior. The authors stated that students at all levels should be trained in this procedure. Once learned, students can take this skill with them wherever they need it (Wolfe, Heron, & Goddard, 2000).

Briesch and Daniels (2013) investigated the effectiveness and feasibility of a self-management intervention when used to increase the on-task behavior of at-risk middle-school students using a single-subject multiple-baseline across subjects design. A supplemental intervention phase was introduced for all three participants for the last three weeks following the initial intervention phase to modify the intervention, as there were problems related to inconsistent implementation. The participants included 3 African American students enrolled in seventh grade at an urban, charter middle school in the northeastern United States. Tyler and Jackie were both 12 years old and Dan was 14 years old. None of the students had a diagnosed disability and all were identified by their teachers as possessing the appropriate academic skills to be successful in the classroom. However, all three students were noted to engage in inattentive and disruptive behaviors that interfered with their ability to maintain attention to task.

The materials used in this study were a MotivAider and a self-monitoring sheet. The MotivAider was set to vibrate at a random interval schedule of approximately 5 minutes. The self-monitoring sheet consisted of multiple intervals on which the student recorded their behavior.
when prompted by the MotivAider device. The sheets asked yes or no questions. Observations were conducted in the target classroom prior to introducing the intervention. The classroom teacher was instructed to interact with the class as usual and the students were not informed as to the reason for the observers’ presence.

Following the baseline phase, training was conducted individually with each student (Briesch & Daniels, 2013). The entire training procedure lasted approximately 30 to 40 minutes using a training script. The student and research assistant worked to identify and define the behavior that was preventing the student from being successful in the classroom. The research assistant then provided a rationale for the self-management intervention and facilitated a structured discussion of the antecedents, problem behaviors, and consequences for each student. Examples and nonexamples of replacement behavior for the off-task behaviors noted to be problematic were discussed and role-plays were conducted. Students were also taught how to use the MotivAider and complete self-management. Once students understood the intervention, the intervention began.

The research assistants used baseline data to establish reasonable goals for the students during the first intervention phase. Students were informed that they would earn 1 point for each day that they met their goal and that they could exchange their points for rewards identified through a reinforcement survey. For the first few days, student-rating data were compared with observational data to ensure that students were rating with an acceptable level of accuracy. Modifications were made to the initial intervention. Examples of modifications included replacing individual self-monitoring sheets with spiral-bound self-monitoring booklets, increased point total from 1 to 2, and added student graphing to the intervention. Maintenance observations
were scheduled at 1, 2, and 3-month periods following the same observation procedure in baseline.

During baseline, Tyler was observed to engage in on-task behavior during an average of 57% of intervals (Briesch & Daniels, 2013). During intervention Tyler’s on-task behavior increased to an average of 79% of intervals. Tyler’s mean level of on-task behavior during the modified intervention phase was 83%. Follow-up data collected at 1 (82%), 2 (67%), and 3-month (87%) periods indicated that gains were generally maintained over time. During the initial baseline phase, Jackie was observed to engage in on-task behavior during 58% of observed intervals. Implementation of the self-management intervention resulted in an increase in her level of on-task behavior (M=84%). Follow-up data could not be collected on Jackie as she moved out of the district before it could be collected. During baseline, Dan exhibited low levels of on-task behavior (M=57%). On average, Dan was observed on-task during intervention 81% of observed intervals. Follow up data collected 1 month post intervention indicated maintained effects (M on-task=80%) and were less evident at the 2-month follow up (M on-task=66%).

Results of the intervention suggested that student-directed self-monitoring procedures in combination with goal setting, performance evaluation, reinforcement, and progress monitoring resulted in notable improvement in the on-task behavior of all 3 students. The use of a central intervention coordinator may represent a feasible model for training students and monitoring implementation in general education settings across multiple settings and personnel (Briesch & Daniels, 2013). Some level of classroom support may be needed to ensure consistent implementation of self-management (Briesch & Daniels, 2013).
Summary

Self-monitoring is a skill that contributes to academics and behavior. Students need direct instruction in self-monitoring to have procedural fidelity (Wolfe, Heron, & Goddard, 2000). Research supports instruction in self-monitoring to teach children with and without disabilities to learn to monitor their own behavior. While the research is limited, it does show that interventions that incorporate modeling and guided practice are effective in teaching self-monitoring to students (Wolfe, Heron, & Goddard, 2000). In using direct instruction to teach students to self-monitor their behavior, researchers should give examples and nonexamples of expected behavior (Briesch & Daniels, 2013). Students should also have the opportunity to record their own behavior during training to ensure procedural fidelity (Briesch & Daniels, 2013).

Currently, there are interventions that target the behavioral needs for students with disabilities; however, they are teacher led or directed. Self-monitoring is a skill that uses direct instruction to teach the student to monitor and record their behavior. School-age students with and without disabilities have been successful using self-monitoring as an intervention for behaviors (e.g., off-task, academic productivity, academic preparedness); however, limited research is available on the use of self-monitoring with preschoolers.
CHAPTER 3

METHODOLOGY

Overview

Research indicates that preschoolers who have difficulty in expressing emotions in appropriate ways are often at-risk for underachievement in academics, higher rates of school expulsion, and lower peer acceptance (Trout, Nordness, Pierce, & Epstein, 2003). Therefore, addressing the need to increase appropriate or teacher preferred displays of behavior in preschoolers who are at-risk is imperative for the mitigation of potential negative effects of academic and behavioral difficulties. Current trends in early childhood education focus on social-emotional learning (SEL) as being crucial for the well-being, academic outcomes, and school success of young children (Denham, 2006). Instructional activities related to SEL can include self-management, responsible decision-making, and expressing emotions in appropriate ways (Ashdown & Bernard, 2012). One component of self-management is the use of self-monitoring one’s behavior, although the impact of self-monitoring as it relates to challenging behaviors has not been explored in early childhood education. Research indicates, however, that teaching young children to self-monitor may be a potential method for increasing appropriate or teacher preferred behaviors.

This study examined the effectiveness of using self-monitoring to teach preschoolers identified as at risk for the development of behavior problems to be aware of their behavior within the early childhood education setting. The participants in the study were preschoolers attending a Head Start center. The Head Start center director nominated seven participants for participation in the study. Of the seven participants, two were found ineligible due to having a total score of 5 on the Ages & Stages Questionnaire; another participant moved prior to parental
consent. Four participants ages 4 and 5 were found eligible and participated in the study. A multiple baseline across participants design was used to determine the effects of self-monitoring on increasing identified appropriate teacher preferred behaviors for each participant. Generalization data of the teacher preferred behavior was collected in an alternative setting (i.e., morning and afternoon outside play). Collection of generalization data occurred immediately following the last day of intervention for all participants. Data were collected one and a half weeks following the conclusion of the study to assess for maintenance of the appropriate teacher preferred behavior.

**Research Questions**

The purpose of this study was to examine the effects of self-monitoring on appropriate teacher preferred behavior in preschool-age children who were identified as at risk for developing future behavioral problems. To address this purpose, the following research questions were asked.

Research Question 1: What are the effects of a self-monitoring intervention on the behavior of young children identified as being at risk for behavioral problems in early childhood settings?

It was predicted that preschool students would be able to learn to self-monitor in early childhood education settings.

Research Question 2: What are the effects of a self-monitoring intervention on increasing the appropriate behavior of young children identified as at risk for the development of behavioral problems?

It was predicted that the use of self-monitoring would increase appropriate behaviors in early childhood education settings.
Research Question 3: To what degree did young students considered at risk for behavior problems generalize their appropriate behaviors in the school setting?

It was predicted that preschoolers who learn to self-monitor would generalize their improved behaviors across varied settings in the early childhood education environment.

Research Question 4: To what degree did young students considered at risk for behavior problems maintain their appropriate behaviors in the school setting?

It was predicted that preschoolers who learn to self-monitor would maintain increases in their improved behavior over time in the early childhood education environment.

Research Question 5: What were the teacher perceptions regarding implementation of self-monitoring to increase appropriate behaviors of young children considered at risk for behavior problems?

It was predicted that early childhood education teachers would report satisfaction with the intervention due to the ease of use and implementation, effectiveness of increasing appropriate behaviors, and social significance of preschoolers’ acquired skills.

Research Question 6: What effect did the self-monitoring instruction have on the perceptions of young children at risk for behavior problems related to their use of appropriate behaviors?

It was predicted that participating preschoolers would perceive self-monitoring to be an intervention that increases their appropriate behaviors.

Participants

The purpose of this study was to target preschool age students with some behavioral problems who were at-risk for developing more serious problems, but who were not currently experiencing behavioral challenges at a clinical level or at a rate that the participant would be eligible for a diagnosis pertaining to their behavior. Participants for this study were selected
through center director nomination. The director used parent reports of the *Ages & Stages Questionnaire: Social-Emotional* (ASQ: SE) to nominate preschoolers who had an elevated total score between 20 and 35. All of the participants in the study used the 36-month ASQ: SE. A consent form was sent home to the children’s parents whom the director nominated in English and Spanish requesting access to the ASQ: SE data as part of the research procedures (see Appendix A for the letter). The Head Start center director nominated seven participants for participation in the study. Of the seven participants, two were found ineligible due to having a total score of 5 on the Ages & Stages Questionnaire; another participant moved prior to parental consent. Four participants ages 4 and 5 were found eligible and participated in the study. The four preschoolers’ eligibility was verified through observation data collected during baseline.

The study was implemented in two Head Start classrooms in a large Southwestern city in the United States. Licensed early childhood teachers taught both classrooms selected to participate in the study. Parents of the preschoolers were sent a packet that included a parent recruitment letter, parent permission form, and a youth assent form in English and Spanish (see Appendix B for the complete packet). Parents of eligible preschoolers were asked to sign parent permission forms agreeing to allow their child to participate. In the packet, parents were sent a youth assent form to explain the study to their child; parents were encouraged to review this assent form with their child and complete it at home with their child. The youth assent form asked the preschooler to circle the smiley face if they wanted to participate or a sad face if they did not want to participate. Teachers and paraprofessionals who participated in the study also signed an informed consent form (see Appendix C). Demographic data were collected for each teacher and paraprofessional along with their percentage of procedural fidelity during the implementation of the intervention.
Preschoolers At-Risk

Participants in the intervention (i.e., self-monitoring) were four preschool students who attended a Head Start center in an urban setting. Two teachers and the corresponding paraprofessionals participated based on the number of eligible preschoolers in their classroom. Preschool students were selected through center director nomination using the parent rating scores on the ASQ: SE that were on file for all preschoolers who attend the center; parents provided permission to access that data. The order of participation for the four preschoolers in the study was randomized.

Eligibility criteria. Preschool students chosen to participate were required to meet the following inclusionary criteria in order to participate in the study: (a) age 48-71 months (ages four to five) enrolled in the Head Start program; (b) be currently experiencing behavioral problems within the early childhood environment, and (c) have regular attendance. Only students whose parents provide written permission were included in the study.

The Head Start center director nominated seven participants for participation in the study and all parents signed permission to access the extant data of the ASQ: SE. Of the seven participants, two were found ineligible due to having a total score of five on the Ages & Stages Questionnaire; another participant moved prior to parental consent. The four participants had elevated ASQ: SE total scores between 20 and 30 and were chosen to participate in the study, as the focus was to identify and target those preschoolers who may be at risk for developing behavioral problems. These middle scores indicate elevated risk as the preschooler is sometimes exhibiting a challenging behavior (Squires, Bricker, & Twombly, 2015) and were chosen to see if preschoolers could learn to self-monitor without the confound of severe behavioral problems.
The specific behaviors that were targeted in this study were individually determined based upon the behavior challenges presented by the preschoolers.

Once students were identified, the two lead teachers completed a questionnaire (see Appendix D) for each identified participant to define and target a specific behavioral problem displayed by each individual participant. The questionnaire asked the teacher to identify the top three behavior concerns they had for the participant and to priority rank them based on which behaviors were having the most deleterious impact on the classroom environment and the student’s learning. Using the questionnaire, the lead teacher described what the preschoolers’ behavior looked like, as well as the current behavior expectation within the classroom. At the beginning of the intervention, the researcher verified with the lead teacher that the identified behavior was still an ongoing behavior that they would like addressed. The researcher collaborated with the teacher to operationally define the identified behavior with the teacher so it was be clearly understood and consistently identified by all parties.

Those specific behaviors exhibited by participating preschoolers were individually operationally defined for the teacher and observers. See Appendix E for the table of targeted behavior for each participant along with the definitions of teacher preferred and current displays of behavior of each behavior. Definitions of these behaviors were collected for all four participants prior to the beginning of the study. Formative evaluation of the operationally defined behaviors was conducted with the teacher to ensure that the behavioral problem and the replacement behavior were both accurate and appropriate for the identified setting.

Each participant was observed during videotaped baseline sessions to ensure that the participant displayed a behavior within the preschool setting that could be defined and observed.
Baseline data were collected for all student subjects under current classroom conditions with no additional interventions. Research participant demographic information is presented in Table 2.

Table 2

*Participant Demographic Data*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>Ethnicity</th>
<th>ASQ: SE 36 month score</th>
<th>Targeted Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant A</td>
<td>4 years 5 months</td>
<td>Male</td>
<td>Caucasian</td>
<td>25</td>
<td>cooperative play</td>
</tr>
<tr>
<td>Participant B</td>
<td>4 years 9 months</td>
<td>Female</td>
<td>Latina</td>
<td>30</td>
<td>cooperative play</td>
</tr>
<tr>
<td>Participant C</td>
<td>4 years 5 months</td>
<td>Male</td>
<td>Latina</td>
<td>25</td>
<td>hands to self</td>
</tr>
<tr>
<td>Participant D</td>
<td>5 years 1 month</td>
<td>Female</td>
<td>African American</td>
<td>20</td>
<td>crying when upset</td>
</tr>
</tbody>
</table>

**Teachers**

Two early childhood education teachers participated in the study (see demographic information in Table 3). The teachers were trained on how to implement the intervention according to the procedural fidelity of self-monitoring intervention checklist. Refer to Appendix F for the checklist. The teachers taught the preschooler how to self-monitor through one day of training and implemented the self-monitoring component of the intervention in their classroom environment.
Table 3

*Demographics of Teachers*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Gender</th>
<th>Age</th>
<th>Ethnicity</th>
<th>Education</th>
<th>Years Teaching in ECE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Female</td>
<td>31-40</td>
<td>Caucasian/African-American</td>
<td>Associate’s</td>
<td>17</td>
</tr>
<tr>
<td>B</td>
<td>Female</td>
<td>31-40</td>
<td>African American</td>
<td>Associate’s</td>
<td>10</td>
</tr>
</tbody>
</table>

**Paraprofessionals**

Each classroom had a paraprofessional present to assist with daily interventions. In the two participating classrooms, both paraprofessionals signed an informed consent to participate. Paraprofessionals participated in the training of the implementation of the self-monitoring intervention with their corresponding teachers. The paraprofessionals in each classroom implemented the intervention for the participants when the lead teacher was not present due to absences or break times.

Table 4

*Demographics of Paraprofessionals*

<table>
<thead>
<tr>
<th>Para</th>
<th>Gender</th>
<th>Age</th>
<th>Ethnicity</th>
<th>Education</th>
<th>Years Teaching in ECE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Female</td>
<td>51-60</td>
<td>African-American</td>
<td>Bachelor’s</td>
<td>13</td>
</tr>
<tr>
<td>B</td>
<td>Female</td>
<td>under 30</td>
<td>Latina</td>
<td>some college</td>
<td>7</td>
</tr>
</tbody>
</table>
**Parent Permission**

Parent permission forms were sent home to the parents of preschoolers who met the criteria for participation. The preschoolers whose parents signed the permission forms participated in the study. Parent permission forms and invitation materials were provided in both English and Spanish (see Appendix B). The researcher was available to answer questions by the parents, if needed.

**Participant Assent**

Preschool children identified for inclusion were given a youth assent form to agree to participate in the study; this form was included in the packet to parents containing the parent recruitment and permission form (see Appendix B). Participant assent forms were sent home with the preschooler for their parent(s) to explain what they would be asked to do. Participants had to circle the smiley face to agree to participate in the study for assent and bring it back to the Head Start center.

**Teacher and Paraprofessional Consent**

Consent forms were signed for the two teachers and the paraprofessionals in each classroom to agree to participate in the intervention. The teachers and paraprofessionals signed the consent forms explaining the extent of the study prior to the onset of the intervention (see Appendix C).

**Setting**

This study was conducted in two preschool classrooms on a Head Start campus. The center was located in a large urban city in the Southwestern United States. The Head Start center selected for this study represented the economic, cultural, ethnic, and linguistic diversity of the area. The center was selected based on availability and permission from the administrator.
School

The school campus had a total enrollment of 84 preschoolers being served, with three full day classrooms and one double session classroom. There were a total of four preschoolers with Individualized Education Plans (IEPs) currently attending the center (i.e., 2 for speech, 1 for behavior, 1 for developmental delay). Of the preschoolers who attended the Head Start center, 45.9% identified as Hispanic and 54.1% identified as non-Hispanic. As indicated in Table 5, the preschoolers represented diverse racial backgrounds. Access permission was obtained from the director of the center and can be found in Appendix G.

Table 5

*Student Demographics, School (2016-2017)*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>Biracial/Multi-racial</td>
<td>2</td>
<td>2.4%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>40</td>
<td>47.1%</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>11.7%</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>32</td>
<td>37.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>85</td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The Head Start center had a 2 star QRIS rating score (Nevada Silver State Stars QRIS, 2017). The total number of stars available through the QRIS rating system is five, which indicates the highest quality of early childcare centers. The QRIS is a quality rating and improvement system used to create a culture of continuous quality improvement for the state’s childcare programs. Two-star programs indicate that the program is making a commitment to strengthen their practices and have met twelve quality indicators.
Classroom

Each classroom was designed to reflect best practices for early childhood environments by utilizing the ECERS-R rating scale (Harms, Clifford, & Cryer, 2005). Classrooms at the Head Start center employed one licensed early childhood teacher and one paraprofessional. All classrooms at the school were inclusive, with both preschoolers with and without disabilities. There were no self-contained classrooms. Each early childhood classroom consisted of a small group session, center time, and two outside times in the morning and afternoon. The instructional strategies used in the early childhood education classrooms were teacher directed, child initiated, and center based activities. The full day classes that participated in the study were conducted five days a week from 8 am to 2 pm. Labels, schedules, and words throughout each classroom were in English and Spanish.

Instrumentation

The research questions in this study were answered using data collected from various measures. The first measure was used as a screener to identify eligible participants. Video recordings of student behavior were collected during the specified time of day for each child’s behavior. These videos were used to identify current and teacher preferred behaviors during intervention as defined for each participant, and data collected through these videos measured changes in appropriate, teacher preferred behaviors. Self-monitoring worksheets and observations measured preschoolers’ ability to self-monitor using a compliance checklist and the steps to self-monitor. A social validity questionnaire completed by the teachers and preschool participants was also used as a measure throughout the study.
Eligibility Measure

The Ages & Stages Questionnaire: Social-Emotional (ASQ: SE) (Squires, Bricker, & Twombly, 2015) was used by the center director to identify and nominate preschoolers for inclusion in the study. The ASQ: SE is a questionnaire completed by parents and teachers that measures a child’s self-regulation, compliance, communication, adaptive behaviors, autonomy, affect, and interaction (Squires, Bricker, & Twombly, 2015a). Reliability for the ASQ: SE is 89% and validity is between 71% and 90% (Squires et al., 2015b). Teachers and parents had already completed the questionnaire prior to the beginning of the study; these completed surveys were on file at the Head Start center. The Head Start center director nominated seven participants for participation in the study and all parents signed permission to access the extant data of the ASQ: SE. Of the seven participants, two were found ineligible due to having a total score of 5 on the Ages & Stages Questionnaire; another participant moved prior to parental consent. Four participants ages 4 and 5 were found eligible and participated in the study. The four participants had elevated ASQ: SE total scores between 20-30; the cutoff score was a total score of 59.

Preschoolers’ Ability to Self-Monitor Dependent Variable Measure

Preschoolers were assessed on their compliance of self-monitoring using a self-monitoring sheet (see Appendix H) during the intervention. The self-monitoring sheets were developed with the help of the lead teacher in the classroom and were individualized for each preschooler based on their targeted behaviors as identified through the eligibility screening. The sheets had a combination of pictures and words at the top that addressed their targeted behavior. For example, for participant C the prompt at the top was “Did I keep my hands to myself?” with a picture of hands. There were five rows under the prompt for each interval. Beside each opportunity for self-monitor there was a smiley face with the word yes and a sad face with the
word no. The sheet had a smiley face under the word yes, which indicated if the preschooler was engaging in appropriate teacher preferred interactions based on their targeted behavior. Conversely, the sheet had a sad face under the word no to indicate they were engaging in inappropriate or current interactions. Data collectors recorded during the self-monitoring videotaped sessions: (a) preschoolers’ ability to self-monitor, (b) procedural fidelity of the teacher, and (c) current/teacher preferred behaviors using a checklist of the self-monitoring steps and operationally defined examples of current and teacher preferred behaviors (see Appendix E).

The steps that were recorded for the preschoolers to self-monitor correctly were that the participant: (1) came to the self-monitoring sheet when the timer went off, (2) marked on the self-monitoring sheet, and (3) returned to their previous activity. Each of the three steps was marked as occurring or not occurring (yes or no) during each self-monitoring interval. If the preschooler required a prompt (e.g., verbal, gestural, partial physical) to check in or self-monitor at the end of the interval when the timer went off, that was noted on the self-monitoring data collection sheet along with the type of prompt. There were five intervals of self-monitoring daily during intervention for a total score of fifteen steps (i.e., three steps each interval, five intervals). The number of steps followed correctly was counted for all intervals occurring in the session to obtain a total score; the number of prompts was also counted for the entire session. See Appendix I for the self-monitoring compliance data collection sheet for the participants.

**Observations of Appropriate Teacher Preferred Behavior**

Daily observations of the targeted behavior served as one of the dependent variables. The direct and daily measure was the individualized targeted behavior of the participant and was coded as current or teacher preferred behavior based on the specific targeted behavior skill for each preschooler during the daily observations (see Appendix J for the data collection sheet for
behavior). Videotapes were reviewed to observe the frequency of current or teacher preferred behaviors. The intervals for self-monitoring were three-minutes over a period of 15 consecutive minutes using momentary time sampling. Within each three-minute interval, the occurrence of current and teacher preferred behaviors was recorded at the end of each 15-second increment within the three-minute intervals. The targeted behavior for each participant was operationally defined and included current and teacher preferred interaction examples. For participants A and B, engaging in cooperative play was targeted. Appropriate teacher preferred behaviors associated with that behavior were: asking a peer to share an item, engaging in play or talk in a center with a peer, and making a request to a peer to join a center. The inappropriate or current variations of that behavior were: the preschooler was at a center alone with no peer, the preschooler takes an item from a peer without making a verbal request, and the preschooler runs away from a peer or cries when denied an item from peer or access to a center. Participant C’s targeted behavior was keeping hands to self and Participant D’s was crying when upset instead of using words. See Appendix E for a table of each participant’s behavior broken down into specific examples.

**Teacher Fidelity to Instruction**

Interrater reliability to the teacher and paraprofessional fidelity of instruction and participant behavioral data was collected on 25% of each phase (i.e., baseline, intervention, generalization, maintenance) by reviewing the videotape of the teacher’s self-monitoring training with the preschooler and intervention implementation. Teachers and paraprofessionals were trained on implementing self-monitoring with the participants and given a checklist of the steps needed to effectively use self-monitoring (see Appendix F for the procedural fidelity checklist for teachers). Procedural fidelity of the self-monitoring steps was collected every time the intervention was implemented and reviewed for accuracy of steps. There were 13 steps of the
self-monitoring intervention for the teachers and paraprofessionals to follow with fidelity. Specifically, the steps included reviewing the steps of self-monitoring with the preschooler prior to implementation, setting the timer for 3 minutes, prompting the preschooler to self-monitor when the timer went off if necessary, and setting the timer for another 3 minutes. Each session was videotaped and reviewed by a doctoral student to ensure that the teacher was correctly following the procedural fidelity. If procedural fidelity fell below 100%, the teacher was coached and retrained in the missing steps. A second doctoral student viewed 25% of the recorded sessions to calculate interrater reliability.

Social Validity

Participating teachers and paraprofessionals were asked to complete a brief questionnaire on the outcomes of the intervention and the ease of conducting the intervention to assess social validity. The social validity questionnaire included eight demographic questions. The teachers were then asked 11 additional questions using a 5-point Likert scale asking them to rank each statement specific to the intervention on the degree that they agreed or disagreed. Lastly, one open-ended question was asked to teachers on any specific changes they would recommend if the intervention were to be completed again in the future. Questions on the survey asked the teacher if they liked participating in the intervention, the likelihood that they would want to repeat the intervention, and if they viewed the intervention to have social significance. The social validity questionnaire was given one week after the generalization phase. The data were reported through descriptive statistics on each question. The survey was distributed in person. See Appendix K for the teacher social validity questionnaire.

Social validity was collected for the two main teachers and the paraprofessionals in the classrooms and was measured by a 5-point Likert-type scale on a questionnaire. The purpose of
the questionnaire was to measure the teachers’ and paraprofessionals’ perceptions of the self-monitoring intervention and the reported ease of implementing the intervention in their classroom, the time requirements of the intervention, and if they would use self-monitoring again in the future in their classroom. The possible responses were: strongly agree, agree somewhat, neutral, disagree somewhat, and strongly disagree. Data were scored using a 5-point system, with higher scores indicating greater agreement (strongly disagree=1, strongly agree=5) and the mean, range, and variance for each scale item was calculated.

Participating preschoolers were also given a social validity questionnaire to complete with their teacher. The social validity questionnaire was completed with all participating preschoolers at the conclusion of the study at the Head Start center. The teacher read each question to the preschooler and helped them complete the questionnaire. The questionnaire asked 5 questions using a 3-point Likert scale that were specific to the intervention and 2 open-ended questions asking what their favorite and least favorite part of self-monitoring was; responses to these questions were provided orally by the participating preschooler and transcribed by the researcher. See Appendix L for the participant social validity questionnaire. Social validity was collected for the four preschool participants as measured by a 3-point Likert-type scale and 2 open-ended questions on a questionnaire. The purpose of the questionnaire was to measure the participants’ perceptions of the self-monitoring intervention, the ease of learning the steps of intervention, effectiveness, and their favorite and least favorite part of the intervention. The possible responses were: yes/very much, a little bit, or not at all/no.
Materials

All sessions during baseline, training, intervention, generalization, and maintenance were videotaped; an iPad was used to tape each participant. Additionally, daily self-monitoring checklists were used for preschoolers to self-monitor their behavior.

The self-monitoring sheets had a combination of pictures and words at the top that addressed their targeted behavior identified by the lead teacher and researcher; participants used a crayon to circle the smiley face for yes or the sad face for no on the self-monitoring sheet. While each checklist was individualized for each participating student based on his or her behavior, the self-monitoring checklist had the same general format including the operationally defined behavior and five rows, one for each observational interval.

Within these rows, there was a yes column with a smiley face or no column with a sad face for the preschooler to circle with a crayon when the timer goes off or when prompted by the teacher using least to most prompting in order to determine if they displayed current or teacher preferred behavior during the time frame. The self-monitoring sheets for each participant can be found in Appendix H. The self-monitoring checklists was printed on an 8 ½ X 11 inch sheet of paper with colored-picture prompts that were attached to a clipboard. The clipboard was located in a central location in the classroom (i.e., on a table near a teacher, top of a lowered shelf or bookcase). The teachers and paraprofessionals used the timer on their phone during the intervention to measure 3-minute intervals for a total of 15-minutes.

Training

Teachers and paraprofessionals were trained on how to (a) use self-monitoring during the intervention and (b) train participants in the self-monitoring procedure. During the training, Head Start teachers and paraprofessionals implemented the components of the fidelity checklist and
steps of the self-monitoring procedure with the opportunity for feedback related to their implementation of steps. Participating teachers and paraprofessionals had a chance to practice using the self-monitoring training script with the researcher. The training session was held at the Head Start center during a teacher workday. The teachers sat at a table while the researcher modeled how to train the preschoolers individually in the self-monitoring procedures. The researcher modeled the intervention with the participating teachers and paraprofessionals. Using the procedural fidelity checklist, the teachers practiced with the researcher implementing the components of the self-monitoring intervention. During the practice session with the teachers and paraprofessionals, corrective feedback was provided. Time was provided for specific questions regarding the implementation of the intervention. Training on implementing self-monitoring lasted one session with the participating teachers and paraprofessionals for approximately 30 minutes.

Participating preschoolers were taught individually how to self-monitor by their teacher. The training for self-monitoring lasted approximately 15 minutes per day for one day in the area that the preschooler used the self-monitoring procedure. Once preschoolers were taught how to self-monitor for one practice session, the intervention began. The teacher conducted the self-monitoring training and the training was videotaped to ensure procedural fidelity. See Appendix M for the self-monitoring training script. During training, the teacher clarified for the preschooler what behavior was being monitored as well as what behaviors were not (Bruhn, Waller, & Hasselbring, 2015). During the training, the participant practiced the procedures at the same interval as they occurred during intervention (Bruhn et al., 2015b).

Each student was told that the use of self-monitoring was only for the specified location (i.e., centers). The student was taught to make a mark using a crayon in either the yes column
with the smiley face or the no column with the sad face for each behavior when the timer goes off. The timer was set and scheduled to go off every 3 minutes for a total of 15 minutes. Preschoolers were provided with a recording sheet and a cue. When cued, the student noted whether he or she was engaged using current or teacher preferred behaviors at the time of the cue (Menzies & Lane, 2011).

After answering the question for himself or herself, the preschooler used a self-recording sheet on the clipboard designed specifically for them and put a mark using a crayon in the box for either yes labeled with a smiley face or no labeled with a sad face. Their chart was individualized depending on their targeted behavior.

**Interrater observer training**

Two doctoral students studying special education with experience teaching children with disabilities participated in collecting interrater reliability data. Using the procedural fidelity checklist (see Appendix F), both observers were trained on the self-monitoring intervention using the fidelity checklist used by the researcher. IOA data were also gathered on each individual participant’s behavior using the data sheet found in Appendix J for a minimum of 25% of the videotaped sessions and included at least one check during each condition: (a) baseline, (b) intervention, (c) generalization, and (d) maintenance. Dividing the number of agreements by the number of agreements plus disagreements combined collected point-by-point reliability data (total number of agreements/number of agreements + disagreements). The procedural fidelity checklist for the teachers was completed by the doctoral students for each self-monitoring implementation to ensure that the teachers were following all steps of the self-monitoring intervention correctly. The doctoral students also completed the data collection sheet
for each participant during all conditions (i.e., baseline, intervention, generalization, maintenance) to ensure reliability and agreement in the observation of behaviors.

The number of steps that were followed correctly were totaled and divided by the total number of steps. The results were multiplied by 100 to calculate a percentage. Procedural fidelity was collected daily to ensure the steps of self-monitoring were implemented correctly. The procedural fidelity could not fall below 100%; if it did, the teacher was retrained and coached in the steps of the intervention that were missed.

**Design and Procedures**

A single subject multiple baseline across participants design was used to determine the effectiveness of self-monitoring on increasing appropriate teacher preferred behavior. There were two levels of randomization within the design (i.e., order of participants to begin intervention, start date of intervention). The impact of this intervention was measured using daily observations with generalization and maintenance probes. Direct and daily measures of the targeted appropriate teacher preferred behavior and preschoolers’ ability to self-monitor were collected through videotaping. Preschoolers’ abilities to engage in self-monitoring and the changes across the intervention were collected along with social validity from the Head Start teachers, paraprofessionals, and participants.

**Baseline Procedures**

Baseline data were collected for the preschoolers under current classroom conditions during morning center time with no additional interventions related to current behavior being implemented. Baseline procedures were implemented daily for all participants. The first participant was in baseline for a total of five days, as opposed to the establishment of a stable level and trend to calculate a single subject effect size (Gast, 2010; Shadish, Hedges, Horner, &
Odom, 2015). During baseline, the preschool teacher did not discuss self-monitoring of teacher preferred or inappropriate variations of current behaviors with the student. When a student engaged in inappropriate interactions or current behaviors during baseline, the preschool teacher implemented the consequence that would typically be used in the classroom. The researcher came into the classroom daily to videotape during center time to capture the preschooler’s targeted behavior. During baseline, momentary time sampling was used over 3 minute intervals for a total of 15 minutes to collect data related to the preschooler’s instances of current and teacher preferred versions of their targeted behavior when the timer went off. Preschoolers did not use the self-monitoring checklist. The participants were videotaped over 15-minute sessions. All preschoolers were recorded during morning centers between the times of 10 am to 11:30 am. While the specific interval for each participant was individualized based on each participant’s schedule and behavior, all data collection occurred during this time period. For example, Participant A was recorded daily from 10 a.m. -10:15 a.m., Participant D was recorded daily from 10:15 a.m. -10:30 a.m., Participant B was recorded from 10:45 a.m. -11:00 a.m., and Participant C was recorded from 11 a.m. - 11:15 a.m. The preschooler’s instances of current and teacher preferred behaviors were observed and recorded at the end of each of five 3-minute observation intervals distributed throughout the 15-minute baseline session using the coding of current or teacher preferred interactions specific to their targeted behavior.

**Intervention Procedures**

After one day of training on how to self-monitor, the first preschooler (Participant A) entered the intervention phase. The researcher used an iPad to capture the self-monitoring skills and behaviors during the prescribed time for each participant. When the preschooler began the self-monitoring phase, the teacher reviewed the steps of the self-monitoring procedure and their
individualized targeted behavior. Teachers reminded the preschooler the behavior expectations of the setting (i.e., centers) before beginning the self-monitoring intervention. Preschoolers then monitored their behavior in the designated setting using systematic prompting of least to most (i.e., first verbal prompt, then partial physical, next full physical) and a timer that was on the teacher’s phone. When the timer went off at 3-minute intervals, the preschooler went to the checklist and identified if they were engaging in teacher preferred or current behaviors of their targeted behavioral skill. The teacher verbally prompted the preschooler to do so if they did not respond to or hear the timer. The preschooler put a mark using a crayon in a column (i.e., yes/smiley face or no/sad face). The teacher gave verbal praise for the student completing the self-monitoring sheet and reset the timer. The preschooler did not need to mark the self-monitoring sheet accurately in their behavior displayed when the timer went off as self-recording can have effects even when the participants do not record accurately (Marshall, Lloyd, & Hallahan, 1993), and this particular study focused on determining whether or not young children could learn to self-monitor and this learning’s impact on teacher preferred and current behaviors. The preschooler then returned to playing in the center or activity.

Daily during the intervention, the teacher working with the preschooler put a new self-monitoring checklist and crayon in the specified location (i.e., table, top of bookshelf) and set the timer on their phone for 3-minutes at the beginning of the designated time. The teacher continued to monitor preschoolers’ behavior during the intervention. When the timer went off, the preschooler came to the checklist to self-monitor. If the preschooler did not come when the timer went off, the teacher used prompting in the least to most prompting hierarchy for the preschooler to go to the checklist to self-monitor. For example, if the teacher used a timer that vibrated when the time was up and there was no sound attached or the preschooler did not independently self-
monitor if there was a sound to the timer a prompt would be given. If the teacher used prompting it was coded by the observer that a prompt was needed. The teacher asked the preschooler if he/she was implementing teacher preferred or current behaviors at the end of the interval. The preschooler put a mark using a crayon on the checklist circling the smiley face or sad face. Once the preschooler self-monitored, the teacher(s) and paraprofessionals would occasionally provide positive verbal praise and prompt the preschooler to return to their activity if they had not already done so independently. The teacher then reset the timer for 3-minutes.

Once the intervention began for Participant A, the start date of intervention when Participant B began was determined by randomly generating a number that was between 3 and 5 days in intervention. Participant C and D followed the same procedure. The start date of Participant B was three days following the start date of Participant A; the number of days randomly assigned for the start date was four days of intervention for Participant B and then intervention was introduced to Participant C. Participant C was in intervention for four days before the intervention was introduced to Participant D. Participant D was in intervention for four days before generalization procedures were introduced. This method was used in order to calculate an effect size using single-subject methodology (Koehler & Levin, 1998; Shadish, Hedges, Horner, & Odom, 2015). The order of participants for intervention was chosen at random by putting their names into a database and allowing the computer to generate the order.

**Interval Recording Procedures**

Teachers and paraprofessionals were trained on how to implement the self-monitoring checklist. Momentary time sampling was used to record if the preschooler was engaging in a teacher preferred or current behavior when the timer went off. Three-minute intervals were used over a period of 15 consecutive minutes for the preschooler to use self-monitoring. When the
timer went off (every 3 minutes for 15 minutes) the participants recorded if they had teacher preferred or current displays of their targeted social skill.

The number of each interaction (i.e., teacher preferred/current) over the total number of possible interactions for each session was measured for the dependent variable. The number of times a prompt was needed and the type of prompt was also reported. Interval recording monitors the percent of time that a behavior occurs during the observation period (Cooper, Heron, & Heward, 2007). To calculate the total score, the number of instances of teacher preferred and current instances of each participant’s targeted behavior was counted out of a total score of 60 possible instances for all phases (i.e., baseline, intervention, generalization, maintenance).

**Generalization and Maintenance Assessment Procedures**

The purpose of a generalization phase was to determine if a preschooler’s increases in appropriate teacher preferred behavior occurred in settings other than the intervention. This phase was also to determine if the preschooler could self-monitor in different settings other than intervention. The same procedures during intervention were used for generalization. The teacher prompted the preschooler to self-monitor during this time when the timer went off. Generalization data were collected on all participants in a different setting than intervention immediately following the last day of intervention. The generalization setting for all participants was morning outside play and afternoon outside play. Generalization data were collected on instances of current and teacher preferred behavior using 3-minute momentary time sampling for a total of 15 minutes. Each preschooler had two generalization probes collected. The intervals for self-monitoring during the generalization phase were three-minutes over a period of 15 consecutive minutes. Within that time frame, intervals were further broken down to 15-second
intervals. At the end of the 15-second intervals within the 15 minutes, the occurrence of current or teacher preferred behavior were then recorded.

After the intervention phase was completed for all preschoolers, two maintenance probes were taken for all preschool participants one and a half weeks following the conclusion of the study. Prior to the maintenance probes, all participants did not have any instances of self-monitoring. Each probe collected the instances of current and teacher preferred behavior using 3-minute momentary time sampling for a total of 15 minutes two days in a row on the targeted behaviors. The maintenance phase also collected the preschoolers’ ability to self-monitor with compliance after the conclusion of the intervention. The teacher followed intervention procedures during the maintenance probes.

**Treatment of the Data**

Data from eligibility measures, baseline, intervention, generalization, maintenance, and social validity questionnaires were used to answer the research questions. Various analyses were used on the data, including visual analysis of the single subject graphs and single-subject effect size, teacher reports, and observational data reflecting preschoolers’ behavior interactions. Data collected were used to answer the research questions:

Research Question 1: What are the effects of a self-monitoring intervention on the behavior of young children identified as being at risk for behavioral problems in early childhood settings?

Analysis: Data were collected during the training session and intervention on the procedural fidelity of the teachers and compliance of the self-monitoring intervention for each participant. Observational data were also collected and reported on the participant’s behavior of self-monitoring.
Research Question 2: What are the effects of a self-monitoring intervention on increasing the appropriate behavior of young children identified as at risk for the development of behavioral problems?

Analysis: Visual analyses of the single-subject graphs and mean scores were used. Teacher reports were also collected. Tau-U was also calculated to report single-subject effect size.

Research Question 3: To what degree did young students considered at risk for behavior problems generalize their appropriate behaviors in the school setting?

Analysis: Visual analyses and mean scores of the generalization probes were used.

Research Question 4: To what degree did young students considered at risk for behavior problems maintain their appropriate behaviors in the school setting?

Analysis: Visual analyses and mean scores of the maintenance probes were used.

Research Question 5: What were the teacher perceptions regarding implementation of self-monitoring to increase appropriate behaviors of young children considered at risk for behavior problems?

Analysis: Descriptive statistics were reported (mean, mode, variance) from the social validity Likert-type survey.

Research Question 6: What effect did the self-monitoring instruction have on the perceptions of young children at risk for behavior problems related to their use of appropriate behaviors?
Analysis: Descriptive statistics were reported (mean, mode, variance) from the social validity Likert-type survey. The open-ended questions were analyzed for common themes.
CHAPTER 4

RESULTS

Addressing the needs of preschoolers with behavioral problems is important, as these issues often have long-term impacts on the outcomes of students (Fox et al., 2002). Self-monitoring strategies and techniques have the potential to improve the outcomes of this population of children. However, there is currently limited research in the area of implementing self-monitoring strategies in early childhood education settings to improve appropriate behaviors (e.g., on-task behavior, prosocial skills). While research suggests that preschoolers are capable of metacognition and self-monitoring (Robson, 2010), there is a lack of evidence supporting the implementation of self-monitoring strategies on appropriate behaviors in early childhood education settings. This is particularly true in research focused on preschoolers at-risk for the development of behavioral problems.

The purpose of this study was to examine the effects of self-monitoring on appropriate teacher preferred behavior in preschool-age children who are at risk for developing more serious problems. The participants in this study were not currently experiencing behavioral challenges at a clinical level that would make them eligible for a diagnosis pertaining to their behavior.

The Head Start center director nominated seven young children for participation in the study and all parents signed permission to access the extant data of the ASQ: SE. Of the seven participants, two were found ineligible due to having a total score of 5 on the Ages & Stages Questionnaire; another participant moved prior to parental consent. Four participants ages 4 and 5 were found eligible and participated in the study. The four participants had elevated ASQ: SE total scores between 20-30 and were chosen to participate in the study, as the focus was to identify and target those preschoolers who may be at risk for developing behavioral problems.
These middle scores indicate elevated risk, as the preschooler is sometimes exhibiting a challenging behavior (Squires, Bricker, & Twombly, 2015b).

**Teacher Fidelity to Instruction**

Teachers and paraprofessionals were trained on the implementation of the self-monitoring intervention with the participants and given a checklist of the steps needed to effectively use self-monitoring (see Appendix F for the procedural fidelity checklist for teachers). There were 13 steps to the procedural fidelity of self-monitoring for the teachers and paraprofessionals to follow for each interval. In the study, there were five intervals of self-monitoring for a total of 65 steps. See Table 6 for the total score out of 65 for the teachers’ procedural fidelity during the implementation of the intervention with each participant. In this table, there was no discretion relative to who implemented the self-monitoring component (i.e., teacher, paraprofessional). When the number was below 65, the teacher or paraprofessional was coached immediately following the self-monitoring implementation on the specific step that was missed to ensure that procedural fidelity remained high. Data were collected on the occurrence or nonoccurrence of each step of the procedural fidelity checklist for the teachers during intervention conditions for each participant; no data were collected during baseline as the teachers were not implementing intervention procedures. The only step that was missed by both teachers and paraprofessionals was for the teacher to review with the preschooler the steps of self-monitoring prior to implementation. This step was to be followed for each interval; if teachers missed this step of implementation for each of the five intervals during a single session, it would reflect within the total score as missing multiple steps.
### Table 6

**Teacher Procedural Fidelity of Intervention**

<table>
<thead>
<tr>
<th>Date of Video</th>
<th>Total Score out of 65 (i.e., 13 steps per interval, 5 intervals)</th>
<th>Date of Video</th>
<th>Total Score out of 65</th>
<th>Date of Video</th>
<th>Total Score out of 65</th>
<th>Date of Video</th>
<th>Total Score out of 65</th>
<th>Date of Video</th>
<th>Total Score out of 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/18</td>
<td>65</td>
<td>4/24</td>
<td>65</td>
<td>4/28</td>
<td>65</td>
<td>5/4</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/19</td>
<td>64</td>
<td>4/25</td>
<td>62</td>
<td>5/1</td>
<td>65</td>
<td>5/5</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/20</td>
<td>64</td>
<td>4/26</td>
<td>63</td>
<td>5/2</td>
<td>63</td>
<td>5/8</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/24</td>
<td>65</td>
<td>4/27</td>
<td>64</td>
<td>5/3</td>
<td>65</td>
<td>5/9</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/26</td>
<td>65</td>
<td>5/1</td>
<td>65</td>
<td>5/5</td>
<td>65</td>
<td>5/11</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/27</td>
<td>65</td>
<td>5/2</td>
<td>64</td>
<td>5/8</td>
<td>65</td>
<td>5/17</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/28</td>
<td>65</td>
<td>5/3</td>
<td>65</td>
<td>5/9</td>
<td>65</td>
<td>5/18</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/1</td>
<td>65</td>
<td>5/4</td>
<td>65</td>
<td>5/10</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/2</td>
<td>65</td>
<td>5/5</td>
<td>65</td>
<td>5/11</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/3</td>
<td>65</td>
<td>5/8</td>
<td>65</td>
<td>5/17</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/4</td>
<td>65</td>
<td>5/9</td>
<td>65</td>
<td>5/18</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/5</td>
<td>65</td>
<td>5/10</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8</td>
<td>64</td>
<td>5/11</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/9</td>
<td>65</td>
<td>5/17</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/10</td>
<td>65</td>
<td>5/18</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/11</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/12</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/13</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. For all of the steps missed for all participants, the specific step missed was: Teacher reviewed with preschooler the steps to self-monitoring prior to implementation.

The procedural fidelity was high for all teachers and paraprofessionals who implemented the self-monitoring intervention. The overall mean score of fidelity for the teachers and paraprofessionals for Participant A was 64.4, Participant B 64.6, Participant C 64.3, and 63.8 for Participant D. On the whole, the teachers’ and paraprofessionals’ percentage of implementation...
was near 100% of procedural fidelity for Participants A, B, and C and was slightly lower for Participant D.

Two doctoral students studying special education with experience teaching children with disabilities participated in collecting interrater reliability data on the teacher’s procedural fidelity of implementation for the components of the self-monitoring intervention (see Appendix F). The two UNLV doctoral students previously trained in the data collection procedures scored 25% of the videos, which were randomly selected using a random number selector from www.randomizer.org. Point-by-point interrater observer agreement (IOA) was calculated by taking the number of agreements divided by the total number of agreements plus disagreements multiplied by 100 (Gast, 2010). The percentage of interobserver agreement was 100% for the teacher’s procedural fidelity.

**Participant Compliance with Self-Monitoring Intervention**

Figure 1 shows the participant’s individual compliance of the components of the self-monitoring intervention. There were three steps for each of the five intervals recorded for each session of the intervention (i.e., came to self-monitoring sheet when timer went off, marked on self-monitoring sheet, returned to previous activity) for a total of 15 steps per day. The number and level of prompts made by the teacher or paraprofessional to self-monitor were also noted and recorded in Table 7. Participant A had high compliance throughout the entire intervention and missed the specific step of coming to the self-monitoring sheet when the timer went off for one session. While the total verbal prompts were high, approximately 4 a session, Participant A did not need a higher level of prompting (e.g., gestural) after the fourth day of intervention.

Participant B’s compliance was an average of 10/15 for the first half of the intervention, but for the last 7 days of implementation the compliance was 100%. For Participant B, the same
step was missed for each interval (i.e., coming to the self-monitoring sheet when the timer went off); therefore, the total score was 10 out of 15. The number of verbal prompts averaged 2 prompts per self-monitoring interval. The number of gestural prompts decreased from 14 on the first day of implementation to 3 gestural prompts on the last day of implementation.

Compliance for Participant C was almost 100% throughout implementation; there were four instances in which compliance was not 100%. For Participant C, the only missed step was not coming to the self-monitoring sheet when the timer went off. The total number of verbal prompts varied; however, at the end of the self-monitoring implementation Participant C needed less prompts.

Participant D’s compliance remained high throughout implementation of self-monitoring. On three sessions, Participant D missed coming independently to the self-monitoring sheet when the timer went off. Participant D did not need a higher prompt, other than verbal, after the first self-monitoring session. Also, the number of total verbal prompts across 5 intervals remained low; there were several intervals in which Participant D did not need any prompting to self-monitor when the timer went off. The step that was missed for all participants if their total score was below 15 was coming independently to the self-monitoring sheet when the timer went off.
Figure 1. Participant compliance with self-monitoring intervention. The squares within the figures represents the total steps followed correctly (total of 15 steps for 5 intervals). The triangles represents the number of prompts needed by each participant to self-monitor.
## Table 7

**Participant Prompt Description**

<table>
<thead>
<tr>
<th>Type of Prompts</th>
<th>Participant A</th>
<th>Participant B</th>
<th>Participant C</th>
<th>Participant D</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 verbal</td>
<td>9 verbal; 14 gestural</td>
<td>14 verbal; 4 gestural; 2 partial physical</td>
<td>5 verbal, 2 gestural</td>
<td></td>
</tr>
<tr>
<td>5 verbal; 3 gestural</td>
<td>9 verbal; 13 gestural</td>
<td>10 verbal; 2 gestural</td>
<td>3 verbal</td>
<td></td>
</tr>
<tr>
<td>4 verbal; 2 gestural</td>
<td>11 verbal; 11 gestural</td>
<td>8 verbal; 1 gestural</td>
<td>6 verbal</td>
<td></td>
</tr>
<tr>
<td>8 verbal; 1 gestural</td>
<td>11 verbal; 2 gestural</td>
<td>8 verbal</td>
<td>4 verbal</td>
<td></td>
</tr>
<tr>
<td>2 verbal</td>
<td>14 verbal; 7 gestural</td>
<td>7 verbal; 1 gestural</td>
<td>5 verbal</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>11 verbal; 2 gestural</td>
<td>9 verbal</td>
<td>3 verbal</td>
<td></td>
</tr>
<tr>
<td>1 verbal</td>
<td>9 verbal; 2 gestural</td>
<td>10 verbal; 1 gestural</td>
<td>5 verbal</td>
<td></td>
</tr>
<tr>
<td>2 verbal</td>
<td>9 verbal; 1 gestural</td>
<td>7 verbal; 1 gestural</td>
<td>4 verbal</td>
<td></td>
</tr>
<tr>
<td>2 verbal</td>
<td>7 verbal; 2 gestural</td>
<td>9 verbal; 3 gestural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 verbal</td>
<td>7 verbal; 5 gestural</td>
<td>2 verbal; 1 gestural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 verbal</td>
<td>11 verbal; 3 gestural</td>
<td>10 verbal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 verbal</td>
<td>9 verbal; 2 gestural</td>
<td>9 verbal; 3 gestural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>10 verbal; 1 gestural; 2 partial physical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 verbal</td>
<td>5 verbal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 verbal</td>
<td>9 verbal; 3 gestural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 verbal</td>
<td>10 verbal; 3 gestural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 verbal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 verbal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 verbal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analysis of Behavior Measures

Daily observations of the targeted behavior served as one of the dependent variables. The direct and daily measure was the individualized targeted behavior of the participant and was coded as current or teacher preferred behavior based on the specific targeted behavior skill for each preschooler during the daily observations (see Appendix J for the data collection sheet for behavior). Videotapes were reviewed to observe the frequency of current and teacher preferred behaviors. The intervals for self-monitoring were five 15-second intervals within a three minute time span, lasting for a total interval period of 15 consecutive minutes. At the end of the 15-second intervals within the 15 minutes, the occurrence of current or teacher preferred behavior was then recorded. The targeted behavior was broken down into current or teacher preferred interaction examples (see Appendix E).

Data were graphed on a line graph. Visual analysis was used to identify differences in level, trend, and variability to determine effects of the intervention. Additionally, Tau-U was calculated to establish single-subject effect size. Tau-U is a method for measuring data non-overlap between two phases that can control for trend by calculating a percent of non-overlapping minus overlapping data (Parker, Vannest, Davis, & Sauber, 2011). This index is well suited for small datasets (Parker et al., 2011). The formula to calculate Tau-U is Tau-U=S_P-S_B/mn (Pustejovsky, 2016); however, an online calculator was used to calculate Tau-U (Vannest, Parker, Gonen, & Adiguzel, 2016).

Interrater Observer Agreement

Two doctoral students studying special education with experience teaching children with disabilities participated in collecting interrater reliability data on each individual participant’s behavior (see Appendix J). The two UNLV doctoral students previously trained in the data
collection procedures scored 25% of the videos, which were randomly selected using a random number selector from www.randomizer.org. Point-by-point interrater observer agreement (IOA) was calculated by taking the number of agreements divided by the total number of agreements plus disagreements multiplied by 100 (Gast, 2010). The percentage of interobserver agreement was 98% across all four participants for the instances of current and teacher preferred behavior for each participant.

**Displays of Teacher Preferred Behaviors**

As indicated in Figure 2, visual inspection of the level, trend, and variability showed that there was very little change between the baseline conditions and intervention on teacher preferred behaviors for all participants; however, Participant B’s data showed less variability in intervention than during baseline. The level and trend for the rest of the participants remained the same during all phases. The aggregated Tau-U of non-overlap effect size for teacher preferred behaviors are -.2168. The findings of the Tau-U suggest that there was not a significant difference between the baseline and intervention phases for teacher preferred behaviors.

The average number of teacher preferred behaviors displayed by Participant A in baseline was 3.8 and decreased slightly to 3.5. Participant B displayed teacher preferred behaviors an average of 19.5 and decreased to 4.4 in intervention. Participant C displayed an average of teacher preferred behaviors 56.5 during baseline conditions and slightly increased to 58.9 out of a total score of 60. Lastly, Participant D had an average of 59.2 displays of teacher preferred behaviors and decreased slightly to 55.8 during intervention.
Figure 2. Total instances of teacher preferred appropriate behavior.
Displays of Current Behaviors

Figure 3 displays the total instances of current behaviors for each participant. Using visual analysis, Participant B and D had higher levels of variability in baseline than in intervention. Participant A did not show a significant difference in level, trend, or variability in baseline and intervention. Participant C also did not display a significant different in level, trend, or variability using visual analysis for current behaviors.

The aggregated Tau-U of non-overlap effect size is .1659. The findings of the Tau-U suggest that there was not a significant difference between the baseline and intervention phases for current instances of behaviors. The average displays of current displays of behavior during baseline for Participant A were 56.2 and increased slightly to 56.5 during intervention. Of a total score of 60, Participant B had an average of 40.4 instances of current displays of behavior and an increase of 55.5 in intervention. Participant C had an average of 2 instances of current displays of behavior during baseline and a decrease of an average of 1 in intervention. There was a decrease for Participant D of current behaviors (average of .67 during baseline and 0 in intervention).
Figure 3. Total instances of current behavior displayed.
Analysis of Generalization

Two generalization data probes were taken for all participants immediately following the conclusion of the intervention. The generalization probes were taken during the morning outside play and afternoon outside play on two different days. Using visual analysis, Participant A, C, and D showed little change in their generalization probes in comparison to their intervention data for the total instances of teacher preferred behaviors. Participant B had a slight increase during the first generalization probe for displays of teacher preferred behavior; however the participant had a larger increase of teacher preferred behaviors on the second generalization probe. In fact, the displays of teacher preferred behaviors were the most frequent among all the phases for Participant B during the second generalization probe. For the instances of teacher preferred behavior, Participant A had an average of 1 during the generalization probes, Participant B had an average of 26, Participant C had an average of 59, and Participant D had an average of 60.

Using visual analysis, Participant A showed similar frequencies during both generalization probes when compared to their intervention data. Participant B had fewer instances of displays of current displays of behavior during the second probe in generalization and had a slight decrease in current behaviors as compared to their respective intervention data in the first generalization probe. Participant C had little change in the total instances of current behavior displayed during the first generalization probe as compared to their respective intervention data and had a slight increase of instances of current behavior during the second probe. Participant D had little change in the total instances of current behavior displayed during both generalization probes as compared to their respective intervention data. In the two generalization probes, Participant A had an average of 59 instances of current behavior,
Participant B’s average was 34, Participant C had an average of 1, and Participant D had an average of 0.

**Analysis of Maintenance**

Maintenance probes were taken one and a half weeks following the last day of intervention for all participants during the time of day that they had previously completed the self-monitoring intervention. Using visual analysis, Participant B, C, and D remained stable in the frequencies of the total instances of teacher preferred behavior displayed as compared to their respective intervention data. Participant A was stable in the first probe of maintenance, but on the second probe there was a higher frequency for teacher preferred behaviors. The average instances of teacher preferred behavior during maintenance for Participant A was 7.5, Participant B had 6.5, Participant C had 55, and Participant D had an average of 60. The total possible instances of teacher preferred behavior were 60.

During the maintenance phase, Participant A had a slight decrease of current displays of behaviors on the second probe and remained stable on the first probe as compared to intervention data. Participant B had little variability during maintenance for current behaviors. Participant C had an increase on the second probe for total instances of current behavior, whereas, the first probe was stable. There was no change in number of occurrences of current behavior for Participant D between intervention and maintenance; for this participant the data remained consistent in total instances of current behaviors. For the two maintenance probes, Participant A had an average of 52 instances of current displays of behavior, Participant B had 53.5, Participant C had 5, and Participant D had 0.
Social Validity Measures

At the completion of the study, the two lead teachers and the paraprofessionals in the classrooms, as well as the four child participants, were asked questions related to the intervention using a questionnaire. Data from the questionnaires were evaluated by entering all answers into an Excel spreadsheet. For items that required the teachers, paraprofessionals, and participants to choose an answer using a forced-choice format, descriptive statistics were applied to analyze the distribution of responses. Additionally, average scores, standard deviations, and ranges were calculated for all individual items in the questionnaires that had a Likert-type response format.

Teachers and Paraprofessionals

The results of the social validity questionnaire for the teachers and paraprofessionals found that the lead teachers both strongly agreed that they understood the intervention steps. Also, both teachers also agreed somewhat that they would use self-monitoring in the future with their preschool class. Table 8 displays all respondents’ answers to the Likert-type questions asked in the questionnaire. Teacher A agreed somewhat or strongly agreed to all of the questions while Teacher B felt neutral, agreed somewhat, or strongly agreed to the questions. Paraprofessional A reported neutral on all of the questions and Paraprofessional B answered the questions on the social validity questionnaire using the choices of neutral, agree somewhat, and strongly agree.

Table 9 shows the descriptive statistics (i.e., mean, range, mode, variance, standard deviation) for each question on the social validity questionnaire. All of the questions were answered neutral, agree somewhat, or strongly agree. The range for all of the questions was 3-5; no teachers or paraprofessionals marked disagree somewhat or strongly disagree to the questions on the questionnaire. Using the mode to show the most frequent responses, the two questions that
had the most answers of strongly agree were: I understood the intervention steps and the time requirements of this intervention are reasonable. See Table 9 for the descriptive statistics for all questions. Overall, teachers and paraprofessionals viewed self-monitoring favorably; however, the majority did not believe that the target behavior was of sufficient concern to warrant the use of this intervention.

Table 8

*Social Validity Scale Teacher and Paraprofessional Responses*

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Teacher A</th>
<th>Teacher B</th>
<th>Paraprofessional A</th>
<th>Paraprofessional B</th>
</tr>
</thead>
<tbody>
<tr>
<td>The intervention focuses on important behaviors.</td>
<td>Strongly agree</td>
<td>Agree somewhat</td>
<td>Neutral</td>
<td>Agree somewhat</td>
</tr>
<tr>
<td>The target behavior is of sufficient concern to warrant the use of this intervention.</td>
<td>Strongly agree</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>I believe that this intervention is effective in increasing teacher preferred behaviors.</td>
<td>Agree somewhat</td>
<td>Agree somewhat</td>
<td>Neutral</td>
<td>Agree somewhat</td>
</tr>
<tr>
<td>I understood the intervention steps.</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Neutral</td>
<td>Agree somewhat</td>
</tr>
<tr>
<td>The intervention is easily incorporated into my classroom system.</td>
<td>Strongly agree</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Agree somewhat</td>
</tr>
<tr>
<td>I believe that I can accurately implement this intervention in my classroom.</td>
<td>Strongly agree</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Agree somewhat</td>
</tr>
<tr>
<td>I have the necessary materials to implement this intervention accurately.</td>
<td>Strongly agree</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Agree somewhat</td>
</tr>
<tr>
<td>Statement</td>
<td>Strongly agree</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------</td>
<td>---------</td>
<td>---------</td>
<td>----------------</td>
</tr>
<tr>
<td>The time requirements of this intervention are reasonable.</td>
<td>Strongly agree</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Self-monitoring was an effective intervention for increasing teacher preferred behaviors.</td>
<td>Agree somewhat</td>
<td>Agree somewhat</td>
<td>Neutral</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The self-monitoring component was an effective method to increasing teacher preferred behaviors.</td>
<td>Agree somewhat</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>I would use self-monitoring in the future with my preschool class.</td>
<td>Agree somewhat</td>
<td>Agree somewhat</td>
<td>Neutral</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>
Table 9

*Social Validity Scale-Descriptive Statistics of Teacher and Paraprofessional Responses*

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Mean</th>
<th>Range</th>
<th>Mode</th>
<th>Variance</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The intervention focuses on important behaviors.</td>
<td>4</td>
<td>3-5</td>
<td>4</td>
<td>.67</td>
<td>.82</td>
</tr>
<tr>
<td>The target behavior is of sufficient concern to warrant the use of this intervention.</td>
<td>3.5</td>
<td>3-5</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I believe that this intervention is effective in increasing teacher preferred behavior.</td>
<td>3.75</td>
<td>3-5</td>
<td>4</td>
<td>.25</td>
<td>.5</td>
</tr>
<tr>
<td>I understood the intervention steps.</td>
<td>4.25</td>
<td>3-5</td>
<td>5</td>
<td>.92</td>
<td>.96</td>
</tr>
<tr>
<td>The intervention is easily incorporated into my classroom system.</td>
<td>3.75</td>
<td>3-5</td>
<td>3</td>
<td>.92</td>
<td>.96</td>
</tr>
<tr>
<td>I believe that I can accurately implement this intervention in my classroom.</td>
<td>3.75</td>
<td>3-5</td>
<td>3</td>
<td>.92</td>
<td>.96</td>
</tr>
<tr>
<td>I have the necessary materials to implement this intervention accurately.</td>
<td>3.75</td>
<td>3-5</td>
<td>3</td>
<td>.92</td>
<td>.96</td>
</tr>
<tr>
<td>The time requirements of this intervention are reasonable.</td>
<td>4</td>
<td>3-5</td>
<td>5</td>
<td>1.33</td>
<td>1.56</td>
</tr>
<tr>
<td>Self-monitoring was an effective intervention for increasing teacher preferred behaviors.</td>
<td>4</td>
<td>3-5</td>
<td>4</td>
<td>.67</td>
<td>.82</td>
</tr>
<tr>
<td>The self-monitoring component was an effective method to increasing teacher preferred behaviors.</td>
<td>3.75</td>
<td>3-5</td>
<td>3</td>
<td>.92</td>
<td>.96</td>
</tr>
<tr>
<td>I would use self-monitoring in the future with my preschool class.</td>
<td>4</td>
<td>3-5</td>
<td>4</td>
<td>.67</td>
<td>.82</td>
</tr>
</tbody>
</table>

**Participants**

Data were scored using a 3-point system, with higher scores indicating greater agreement (yes/very much=3, not at all/no=1) and the mean, range, and variance for each scale item was
calculated. Table 10 reflects each participant’s responses to the social validity questionnaire including the open-ended questions. Table 11 presents the means for each item for all participants. Overall, the majority of participants circled the smiley face for yes that the self-monitoring was easy to learn. All four participants stated that they enjoyed using self-monitoring and ranked it favorable to use self-monitoring again. For the item asking if self-monitoring helped them one participant said no, it did not help while three participants circled yes it did help. Overall, all participant responses were favorable towards the use of self-monitoring.
Table 10

*Social Validity Scale Participants Responses*

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Participant A</th>
<th>Participant B</th>
<th>Participant C</th>
<th>Participant D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think that self-monitoring was easy to learn?</td>
<td>Yes/very much</td>
<td>Not at all/no</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
</tr>
<tr>
<td>How much did you like using self-monitoring at school?</td>
<td>A little bit</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
</tr>
<tr>
<td>How much did you enjoy using self-monitoring?</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
</tr>
<tr>
<td>How much do you think self-monitoring helped you?</td>
<td>Not at all/no</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
</tr>
<tr>
<td>Would you like to use self-monitoring again?</td>
<td>A little bit</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
<td>Yes/very much</td>
</tr>
<tr>
<td>What was your favorite part of self-monitoring?</td>
<td>Going to check in.</td>
<td>When I got to use the blue crayon to circle.</td>
<td>I love to check in because it made me happy.</td>
<td>The happy face.</td>
</tr>
<tr>
<td>What was your least favorite part of self-monitoring?</td>
<td>The sad face.</td>
<td>Nothing-wasn’t a part I didn’t like to do.</td>
<td>The school.</td>
<td>The sad face.</td>
</tr>
</tbody>
</table>

The common themes for the participants’ favorite part of self-monitoring included the words “checking in” and referred to the act of self-monitoring. One participant liked when a certain color crayon was used to self-monitor. The fourth participant liked the happy face that symbolized yes for engaging in the teacher preferred targeted behavior. For the question asking their least favorite part of self-monitoring, two participants stated they did not like the sad face that indicated whether or not they were not engaging in the teacher preferred interaction of their
targeted behavior. One participant stated that there was nothing that they did not like about self-monitoring while another participant simply stated “the school” when asked what their least favorite part of self-monitoring was.

Table 11

*Social Validity Scale-Descriptive Statistics of Participants Responses*

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Mean</th>
<th>Range</th>
<th>Mode</th>
<th>Variance</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think that self-monitoring was easy to learn?</td>
<td>2.5</td>
<td>1-3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>How much did you like using self-monitoring at school?</td>
<td>2.75</td>
<td>2-3</td>
<td>3</td>
<td>.25</td>
<td>.5</td>
</tr>
<tr>
<td>How much did you enjoy using self-monitoring?</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>How much do you think self-monitoring helped you?</td>
<td>2.5</td>
<td>1-3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Would you like to use self-monitoring again?</td>
<td>2.75</td>
<td>2-3</td>
<td>3</td>
<td>.25</td>
<td>.5</td>
</tr>
<tr>
<td>Total Survey Results for Social Validity for Participants</td>
<td>2.7</td>
<td>1-3</td>
<td>3</td>
<td>.5</td>
<td>.6</td>
</tr>
</tbody>
</table>
CHAPTER 5

DISCUSSION

Young children who display challenging behaviors may be at risk of developing emotional and behavioral difficulties that can continue into adolescence and adulthood. The percentage of children who continue to exhibit challenging behaviors into their preschool years is estimated at approximately 10% (Kuperschmidt, Bryant, & Willoughby, 2000). Long-term negative outcomes of challenging behaviors can include academic failure, social rejection, drug abuse, and incarceration (Benedict, Horner, & Squires, 2007). Research has indicated that this developmental pathway toward serious conduct disorders or antisocial behavior is established in the preschool period (Webster-Stratton, 2000). However, evidence suggests that early intervention can reduce the severity and limit the long-term impact of behavior disorders (Harrington & Clark, 1998). For children identified as at risk, early interventions can counteract risk factors while enhancing person strengths, thereby altering a trajectory of increased behavioral problems, low self-esteem, and academic failure (Keiley, Bates, Dodge, & Pettit, 2000; Webster-Stratton & Reid, 2003). The importance of early intervention cannot be stressed enough; not only is it to respond to early onset behavioral problems, but also to teach appropriate replacements to those behaviors (Evans, 2004).

Currently, early intervention programs are guided by the developmental-ecological theory that asserts the importance of supporting children’s acquisition of age-appropriate competencies within relevant social contexts (Coolahan, Fantuzzo, Mendez, & McDermott, 2000). The typical focus of interventions in early childhood is based around teacher-student interactions (Hughes, Cavell, & Wilson, 2001) and parent trainings (Bayer, Hiscock, Ukoumunne, Price, & Wake, 2008), but has little focus on teaching young children skills to identify and monitor their own
behaviors. The preschool period can be an optimal time to identify and reduce early signs of problems before they develop into permanent patterns.

This study involved four preschoolers who had elevated scores between 20 and 30 on their parent rating scores of the ASQ: SE in a local Head Start. The Head Start center was located in the Southwest United States. The participants were chosen by the center director as having elevated parent rating scores and displaying a behavior of concern in the classroom. The participants were randomly assigned in the order of participation and the start date in intervention. The teachers and paraprofessionals in the classrooms were trained on how to teach the preschoolers the steps of the self-monitoring intervention and how to implement it in their classroom for the duration of the study. Results of the study indicated that young children could be taught to self-monitor their behaviors within an early childhood education setting. However, the intervention did not appear to have a significant impact on the teacher preferred and current displays of behaviors exhibited by students. Even with these findings, both teachers and paraprofessionals and participating students stated that they found self-monitoring to be an effective intervention that they would be willing to use again.

**Acquisition of Self-Monitoring**

Participating teachers were given a questionnaire to complete that identified the targeted behaviors of the preschoolers. While all participants had elevated scores on the ASQ: SE, the scores were not so elevated that behavioral problems may have impacted the participating preschoolers’ ability to self-monitor their behaviors. The acquisition of self-monitoring measure was designed to assess the ability of the preschoolers to follow the steps needed to complete self-monitoring. A total of three steps were used for the preschoolers: come to the self-monitoring sheet when the timer goes off, make a mark on the self-monitoring sheet, and return to previous
activity. The teachers and paraprofessionals were also measured on their ability to follow the self-monitoring steps for implementation. The steps included reviewing the steps of self-monitoring with the preschooler, setting the timer for 3 minutes, continuing to monitor the preschooler’s behavior, prompting the preschooler to self-monitor when the timer went off, and resetting the timer for another 3 minute interval. It was predicted that preschool students would be able to learn to self-monitor in early childhood education settings. Data on the preschooler’s behavior was recorded and coded as instances of current or teacher preferred behavior based on their targeted behavior of concern. It was predicted that the use of self-monitoring would increase appropriate behaviors in early childhood education settings.

A major question in this study was to determine if four preschoolers identified as at-risk by their parent completed ASQ: SE scores could learn and use self-monitoring. The findings of this effort may be summarized as follows: given prompts, preschoolers in this study were capable of being taught to and implement self-monitoring in the preschool setting. A promising aspect of this study was the ease with which the preschoolers learned to self-monitor, as well as their willingness to use the procedure. One caveat to the level of prompting required for preschoolers to engage in self-monitoring is that teachers often had their timers on vibrate, so students could not always hear the timer when it went off. While results of this study indicate that young children were not able to independently self-monitor (De Haas-Warner, 1991), this could be due to the mode of the timer used by the teacher. Future research should explore the implementation of self-monitoring with a timer that young children can hear to better ascertain their ability to self-monitor independently. Although total independence may not be possible for all preschoolers, the opportunity to be more self-reliant should be afforded them.
The teachers’ procedural fidelity of intervention was high for all participants. The only step missed by all teachers and paraprofessionals was to review with the preschooler the steps to self-monitoring prior to implementation. This step was intended to be repeated for each interval; however, the preschoolers’ compliance remained high even when the teacher did not review the steps to self-monitoring prior to implementation. While collectively the teachers’ and paraprofessionals’ percentage of implementation was near 100% of procedural fidelity for Participants A, B, and C, it was slightly lower for Participant D. These results may have been due to the fact that Participant D was only in intervention for a total of four days as compared to the other participants who were in intervention for a longer period of time. The teachers and paraprofessionals of Participants A, B, and C had more practice in implementing the self-monitoring steps than with Participant D.

**Impact on Displays of Behavior**

Preschool teachers report children’s challenging behaviors as their greatest concern (Joseph & Strain, 2003), but estimates show that fewer than 10% of young children who show early signs of problem behaviors receive services (Kazdin & Kendall, 1998). These data suggest that preschool teachers do not have the training or resources to implement research-based strategies related to behavioral interventions. Teachers often report deficiencies in managing classroom behaviors; Merrett and Wheldall (1993) found that 72% of teachers were displeased with the training they received in classroom behavior management. Also, 37% of Head Start staff identified classroom behavior problems as a major concern for Head Start children (Piotrkowski, Collins, Knitzer, & Robinson, 1994). This is particularly important in relation to the current study. The two lead teachers identified the targeted behavior using a questionnaire for each participant and verified the operational definitions for current and teacher preferred behaviors.
While they identified those behaviors, the targeted behaviors for all of the participants occurred at a lower frequency than they originally indicated. For example, the lead teacher for Participant D remarked that the behavior of crying instead of using words happened “all the time”; however, during the study the behavior had a very low frequency of occurrence. Even though the teachers identified the behaviors for each participant, the teachers marked on the social validity questionnaire that they did not necessarily think that the behavior warranted the intervention.

Identifying problem or challenging behaviors in preschool age children remains difficult, as the definition for a behavior problem does not account for normal variations of child development (Poulou, 2015). Unfortunately, young children at risk may not receive services due to a teacher not recognizing the need for early intervention nor having the skills related to operationally defining a behavioral problem in a way that supports intervention. Less than 50% of Head Start teachers have college degrees in child development, education, or related fields and very few have had training in behavior management or ways to promote social and emotional competence (Scott & Nelson, 1999). While the impact of self-monitoring on the display of current and teacher preferred instances of behavior for the preschoolers suggested that self-monitoring alone does not make a significant change on the specific targeted behaviors used, it may need to be paired with another behavior management or social skill package. Also, the current study did not identify a replacement behavior in exchange for the targeted behavior; it only measured the impact of self-monitoring alone on teacher preferred and current displays of behaviors.

**Teacher and Preschoolers’ Perceptions of Self-Monitoring**

Parents tend to rate their children as having more problem behaviors than do teachers (Berg-Nielsen et al., 2012); however, parents have some advantages to providing information as
they have observed the behavior of the child across time and situations (Culp et al., 2001). Also, teachers also serve as a different role in the child’s life (Major, Seabra-Santos, & Martin, 2015). It is important when gathering information for behaviors to consult both sources of information. The current study used a parent rating scale to determine eligible participants for the study, but did not rely on the teachers to provide a similar rating scale. The teachers and paraprofessionals who participated in the study did not believe that the target behavior was of sufficient concern to warrant the use of a self-monitoring intervention. Although the behavior for the participants was not significant to the teachers, all participant responses were favorable towards the use of self-monitoring.

For the preschoolers, the majority of the four participants circled the smiley face for yes that self-monitoring was easy to learn. All four participants stated that they enjoyed using self-monitoring and ranked it favorable to use self-monitoring again. For the item asking if self-monitoring helped them one participant said no, it did not help while three participants circled yes it did help. Overall, all participant responses were favorable towards the use of self-monitoring. Self-monitoring could be an intervention that promotes the development of independence in young children, especially since the preschoolers viewed it favorably. During the intervention of self-monitoring the removal of stimulus control from the teacher was given to an alterative individual-controlled stimulus (Hume, Loftin, & Lantz, 2009). Thus, placing the preschool participants in charge of completing the self-monitoring portion of the intervention.

Conclusions

Based on the results of this study, several conclusions can be made regarding the impact of a self-monitoring intervention on the teacher preferred and current displays of social behaviors displayed by young children in an early childhood setting.
1. Preschool age children can be taught to independently self-monitor their behavior. Data from this study indicate that all four participants had high fidelity to the self-monitoring intervention, with all four using fewer prompts as the intervention progressed.

2. The implementation of a self-monitoring intervention alone did not have a significant impact on the frequency of teacher preferred or current behaviors displayed by young children in the early childhood environment.

3. Preschool age children could implement self-monitoring in settings other than the intervention setting (e.g., outside play) with high compliance.

4. After one and a half weeks of no instruction, 4 and 5 year olds were still able to implement self-monitoring with a high compliance.


6. Head Start teachers understood the intervention steps of self-monitoring and viewed the intervention favorably.

**Recommendations for Further Study**

Research supporting self-monitoring as an effective intervention for preschool age children is still limited. More research is required to investigate the benefits and potential modifications to the self-monitoring intervention for young children; thus, based on the results of this study several areas of future research are suggested.

1. While the results of the current study were not significant related to changes in behavior in early childhood education settings, it is recommended that future research
explore the incorporation of a social skills training prior to self-monitoring to provide strategies on increasing appropriate behavioral interactions (Strain et al., 1994).

2. The current study used a parent rating scale to nominate preschoolers for participation. Future studies should incorporate a home setting aspect if using questionnaires based on parents’ concerns (Strain et al., 1994).

3. While in the current study the teachers and paraprofessionals prompted multiple times, the prompting schedule should be faded to teach increased independence using the skill (De Haas-Warner, 1992). Future research should explore the impact of this fading of prompts.

4. Another recommendation is a replication of this study should be conducted over a longer period. The fourth participant in the current study was in intervention for a total of 4 days; future research should expand the time of the last participant in intervention.

5. The focus on the current study was not to determine accuracy in self-monitoring; however, reliability of the participants’ self-monitoring should be compared to the observers’ recordings to determine accuracy of the self-monitoring (De Hass-Warner, 1991).

6. Future research should be conducted on the impact of using reinforcement on behaviors while self-monitoring with preschoolers, as the current study did not use any reinforcement (Davis, Ducus, Bankhead, Haupert, Fuentes, & Zoch, 2014).

7. Lastly, additional research on self-monitoring with preschool-age children should use different types of timers (i.e., iPod Touch, MotivAider, audiotape player with prerecorded beeps) to determine if there is a difference in response. In the current study,
the teachers set the timer, this should be compared to the preschoolers setting the timer themselves to determine the range of independence (Bruhn, McDaniel, & Kreigh, 2015).

**Summary**

Self-monitoring is defined as students keeping a record of their own behavior. Research supports the use of self-monitoring across behavior, disabilities, and settings (Graham-Day, Gardner, & Hsin, 2010; Peterson et al., 2006; Levendoski & Cartledge, 2000); however, there is limited research of the use of self-monitoring in preschool settings. An important goal in education is for students to become independent in monitoring and managing their own behavior. The steps for implementation include identifying and defining a target behavior, collecting baseline data, and teaching the student how to use self-monitoring (Rafferty, 2010).

Emotional expression and regulation includes an individual’s ability to express emotions appropriately and regulate them in productive ways (i.e., being aware of feelings, monitoring them) so that they aid in coping (Denham et al., 2012). Results of this study demonstrate that preschool-age children are capable of learning how to self-monitor with teacher prompting. The results of the current study also demonstrate that the behaviors that are to be targeted need to occur frequently enough to be monitored (Rafferty, 2010). Additionally, additional research should be conducted on supporting early childhood educators on the accurate and precise definition of potential behavioral problems that occur in early childhood education settings. This study contributes to the literature supporting the use of self-monitoring with preschoolers (De Hass-Warner, 1991). Early displays of challenging behavior in preschoolers should be met with early intervention in order to reduce the impact of long-term negative outcomes associated with displays of challenging behavior. Careful considerations of the limitations and recommendations
for future research of the present study can help teachers decide if self-monitoring is an appropriate intervention within the early education setting.
APPENDIX A

PARENT PERMISSION FORM TO GAIN ACCESS TO ASQ: SE-2 DATA
Parent Permission Form to gain Access to ASQ: SE-2 Data

My name is Samantha Rigglesman and I am a doctoral student at the University of Nevada, Las Vegas. I am working with preschoolers at your child’s school to learn more about how 4 and 5 year olds learn to monitor their behavior. During the project, your child will be asked to complete a self-monitoring sheet daily during their assigned time over a period of 15 minutes in their classroom. Self-monitoring asks students to think of their behavior at a certain time and mark yes or no if they were doing that behavior. At the end of the study, your child will be asked a few questions on if they enjoyed self-monitoring.

Preschoolers will be selected for the project based on their scores on the Ages & Stages Questionnaire: Social-Emotional 2nd Edition (ASQ: SE-2). You have already completed this questionnaire and it is on file with the Director. I am asking permission to access their scores on the ASQ: SE-2 to find preschoolers who might benefit from this project.

If you would like for your child to help with this project and use their ASQ: SE-2 scores to determine their eligibility to participate, please write your child’s name and sign on the line at the bottom of the page.

You will receive further notification if your child is found eligible for the project.

With your permission, I am looking forward to working with your child on this project.

Sincerely,

Samantha Rigglesman, M.A.T, BCBA
Doctoral Student
University of Nevada, Las Vegas

Child’s name: ________________________

Parent(s) name: ________________________

Parent(s) signature: ________________________

Date: ________________________

#1013565-2, Expiration: 03-11-2018
Formulario de permiso de los padres para obtener acceso a ASQ: SE-2 Data

Mi nombre es Samantha Riggleman y soy estudiante de doctorado en la Universidad de Nevada, Las Vegas. Estoy trabajando con niños de edad preescolar en la escuela de su hijo para aprender más acerca de cómo los niños de 4 y 5 años aprenden a controlar su comportamiento. Durante el proyecto, su hijo se le pedirá que complete una hoja de auto-monitoreo diariamente durante el tiempo asignado durante un período de 15 minutos en su clase. El auto-monitoreo le pide a los estudiantes que piensen en su comportamiento en un momento determinado y que marquen sí o no si están haciendo ese comportamiento. Al final del estudio, su hijo se le harán algunas preguntas sobre si disfrutan de autocontrol.

Los niños preescolares serán seleccionados para el proyecto basado en sus calificaciones en el Cuestionario de Edades y Etapas: 2ª Edición Social-Emocional (ASQ: SE-2). Ya ha completado este cuestionario y está archivado con el Director. Estoy pidiendo permiso para acceder a sus calificaciones en el ASQ: SE-2 para encontrar a niños preescolares que podrían beneficiarse de este proyecto.

Si desea que su hijo / ayude con este proyecto y use sus calificaciones de ASQ: SE-2 para determinar su elegibilidad para participar, escriba el nombre de su hijo y firme en la línea en la parte inferior de la página.

Recibirá notificación adicional si su hijo es elegible para el proyecto.

Con su permiso, estoy deseando trabajar con su hijo en este proyecto.

Sinceramente,

Samantha Riggleman, M.AT, BCBA
Doctorando
Universidad de Nevada, Las Vegas

El nombre del niño: ___________________________

Nombre de los padres: ________________________________

Firma de los padres: ____________________________

Fecha: _____________________________________
APPENDIX B

PARENT PACKET (PARENT RECRUITMENT LETTER, PARENT PERMISSION FORM, YOUTH ASSENT)

ENGLISH AND SPANISH
Dear Parent or Guardian,

My name is Samantha Riggleman and I am working with Head Start preschoolers to teach them to self-monitor their behavior and document what effect that has on their behavior in the classroom. Self-monitoring is when a preschooler observes or thinks about their behavior and records it on a sheet.

What will my child do?
Your child will complete a self-monitoring sheet daily during their assigned time over a period of 15 minutes in their classroom. At the end of the study, your child will be asked a few questions on if they enjoyed self-monitoring.

How will information be kept?
Only the research team will have access to any data associated with the study. The videos will be uploaded using One Drive, a secure Microsoft cloud, that only the research team will be given access to.

Why is this important?
Your child’s participation will help me and others understand preschoolers’ ability to self-monitor their behavior and its effect on their behavior.

Will my child or I receive anything for our time?
There is no financial compensation for your child’s time.

What is the next step?
After the parent permission form and youth assent forms are signed, I will observe your child in their classroom. Then, their teacher will teach them how to self-monitor their behavior in the classroom.

Who do I contact if I have questions?
If you have any questions about this study, please contact Joseph Morgan or me by phone or email. My phone number is 702-895-2464 and my email address is rigglema@unlv.nevada.edu. Joseph Morgan’s phone number is 702-895-3329 and his email address is joseph.morgan@unlv.edu. Please note that I cannot guarantee the confidentiality of information sent by email.

Attached is a form for you to send back to me if you choose to allow your child to participate in the study. There is also a youth assent form for you to read over with your child for them to choose to participate.

Thank you in advance for your help.

Samantha Riggleman, M.AT, BCBA
Doctoral Student
University of Nevada, Las Vegas

Joseph Morgan, Ph.D.
Assistant Professor
University of Nevada, Las Vegas
TITLE OF STUDY: Self-monitoring: A Behavioral Intervention for Children Attending Head Start

INVESTIGATOR(S): Joseph Morgan, PhD; Samantha Riggleman, M.A.T

CONTACT PHONE NUMBER: Joseph Morgan, 702-895-3329

Purpose of the Study
Your child is invited to participate in a research study. The purpose of this study is to see if preschoolers can learn how to self-monitor their behavior and if self-monitoring is effective for increasing appropriate behaviors for preschool students attending Head Start.

Participants
Your child is being asked to participate in the study because he or she fit these criteria: Your child is (a) between the ages of 4 and 5 years old; (b) attends the selected Head Start; (c) has regular attendance (i.e., a pattern of attending school on the designated days and times and having less than 3 absences a month); and (d) currently experiencing behavioral problems within the early childhood environment. Your child also scored in the median range on all preschoolers attending the Head Start center on the Ages & Stages Questionnaire previously completed by a parent.

Procedures
If you allow your child to volunteer to participate in this study, your child will be asked to do the following: (a) participate in a training session on how to successfully complete the self-monitoring steps, (b) complete the self-monitoring sheet during their assigned time over a period of 15 minutes, and (c) complete a brief questionnaire asking if they enjoyed self-monitoring. The Head Start teacher in your child’s classroom will conduct the self-monitoring training and intervention. The teacher will set up a videotape in his/her classroom and record the training and intervention sessions. The research team will observe your child on the videotape to measure fidelity of instruction. It is anticipated that the study will last for ten weeks. Your child will be screened for participation in the study using their score on the Ages & Stages Questionnaire: Social-Emotional 2nd Edition that was previously completed. After screening, your child will begin the baseline phase of the study. In this phase, your child will have no additional intervention and the teacher in the classroom will conduct the class as they typically would. During the intervention, your child will first learn how to self-monitor for approximately 10 minutes during noninstructional time in the classroom for one day. Then, they will self-monitor their behavior every three minutes for fifteen minutes (five times) during noninstructional time in
the classroom. At the end of the study, your child will be asked to self-monitor their behavior in a different setting than they previously did (e.g., during large group, small group, free play) every three minutes for 15 minutes. They will also be asked to self-monitor two times after 2 weeks of no intervention to see how well they maintained the skill of self-monitoring.

**Benefits of Participation**
There may be direct benefits to your child as a participant in this study, such as learning how to self-monitor. There may be an increase in your child’s appropriate classroom behaviors.

**Risks of Participation**
There are risks involved in all research studies. This study may include only minimal risks. The only risk found within this research study is the possibility that confidentiality might be breached through observations of the videotape for the purposed of measuring teacher fidelity and preschooler behavior. The confidentiality may be breached if a member of the research team recognized one of the students during observations.

The probability that this risk may occur is not likely. The severity if it does occur is extremely low. If privacy is breached, it is not reversible.

**Cost /Compensation**
There will not be financial cost to you to participate in this study. The study will take up to 20 minutes a day over a period of approximately ten weeks of your child’s time. Your child will not be compensated for their time.

**Contact Information**
If you or your child has any questions or concerns about the study, you may contact Joseph Morgan at 702-895-3329. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794, or via email at IRB@unlv.edu.

**Voluntary Participation**
Your child’s participation in this study is voluntary. Your child may refuse to participate in this study or in any part of this study. Your child may withdraw at any time without prejudice to your relations with the university. If your child does not want to participate or withdraws during the study it will not affect their peers or their peer relationships towards nonparticipating children in their classroom. You or your child is encouraged to ask questions about this study at the beginning or any time during the research study. Lack of participation will not result in prejudice from your child’s school.

**Confidentiality**
All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link your child to this study. All records will be stored in a locked facility at UNLV for 7 years after completion of the study. After the storage time the information gathered will be destroyed and/or deleted.
**Participant Consent:**
I have read the above information and agree to participate in this study. I am at least 18 years of age. A copy of this form has been given to me.

__________________________________________________________  ____________________________________________
Signature of Parent                                         Child’s Name (Please print)

__________________________________________________________
Parent Name (Please Print)                                   Date

Videotaping:
I agree for my child to be video taped for the purpose of this research study.

__________________________________________________________
Signature of Participant                                     Date

__________________________________________________________
Participant Name (Please Print)
ASSENT TO PARTICIPATE IN RESEARCH
Self-monitoring: A Behavioral Intervention for Children Attending Head Start

1. My name is Samantha Riggleman.

2. I am asking you to take part in a research study because I am trying to learn more about how to teach you to record your behavior and how monitoring your behavior can change it.

3. If you agree to be in this study your teacher will teach you the steps to self-monitor.

4. Your teacher will videotape you as you play with your friends at school and monitor your behavior. They will videotape you for up to 30 minutes each day for up to 10 weeks.

5. There may not be any direct benefits to joining our study but I am asking you to help because I want to learn more about how to teach self-monitoring and how monitoring your behavior can change it.

6. Please talk this over with your parents before you decide whether or not to participate. I will also ask your parents to give their permission for you to take part in this study. But even if your parents say “yes” you can still decide not to do this.

7. If you don’t want to be in this study, you don’t have to participate. Remember, being in this study is up to you and no one will be upset if you don’t want to participate or even if you change your mind later and want to stop.

8. You can ask any questions that you have about the study. If you have a question later that you didn’t think of now, you can call me at 702-895-3329 or ask me next time. If I have not answered your questions or you do not feel comfortable talking to me about your question, you or your parent can call the UNLV Office of Research Integrity – Human Subjects at 702-895-2794 or toll free at 877-895-2794.

9. Circling the smiley face at the bottom left means that you agree to be in this study. Circling the sad face at the bottom right means that you do not want to be in this study. You and your parents will be given a copy of this form after you have signed it.

Circle the smiley face if you agree to help with this study:

Smiley Face

Circle the sad face if you do not want to help with this study:

Sad Face

________________________  _________________________
Child’s name               Date
Estimado padre o tutor,

Mi nombre es Samantha Riggleman y estoy trabajando con los alumnos de pre-escolar de Head Start para enseñarles a auto-monitorear su comportamiento y documentar qué efecto tiene este en el salón de clases. Autocontrol es cuando un niño en edad preescolar observa o reflexiona sobre su comportamiento y lo anota en una hoja.

¿Qué quieres que haga mi hijo?
Su hijo completará una hoja de auto-monitoreo diariamente durante el tiempo asignado durante un período de 15 minutos en su salón de clases. Al final del estudio, a su hijo se le harán algunas preguntas sobre si disfrutó auto-monitorearse.

¿Cómo se mantendrá la información?
Sólo el equipo de investigación tendrá acceso a cualquier dato asociado con el estudio. Los videos se cargarán utilizando One Drive, un sistema seguro de Microsoft, el cual sólo dará acceso al equipo de investigación.

¿Porque es esto importante?
La participación de su hijo me ayudará y a otras personas a entender la habilidad de los alumnos de pre-escolar de auto-monitorear su comportamiento y el efecto de esta en su comportamiento.

¿Mi hijo o yo recibiremos algo para nuestro tiempo?
No hay compensación económica por el tiempo de su hijo.

¿Cuál es el próximo paso?
Después de ser firmados el formulario de autorización de los padre y el formulario de consentimiento de los alumnos, Yo observaré a su hijo en su salón de clases. Luego, su maestro le enseñará a auto-monitorear su comportamiento en el salón de clases.

¿A quién debo contactar si tengo preguntas?
Si tiene alguna pregunta sobre este estudio, por favor comuníquese con Joseph Morgan o conmigo por teléfono o correo electrónico. Mi número de teléfono es 702-895-2464 y mi dirección de correo electrónico es rigglema@unlv.nevada.edu. El número de teléfono de Joseph Morgan es 702-895-3329 y su dirección de correo electrónico es joseph.morgan@unlv.edu. Tenga en cuenta que no puedo garantizar la confidencialidad de la información enviada por correo electrónico.

Adjunto a este documento se encuentra un formulario para que lo envíe de regreso si es que usted decide permitir que su hijo participe en el estudio. También hay un formulario de consentimiento del alumno para que usted lo lea con su hijo y el/ella decida si quiere participar.

Gracias de antemano por su ayuda.

Samantha Riggleman, M.AT, BCBA
Estudiante de Doctorado
Universidad de Nevada, Las Vegas

Joseph Morgan, Ph.D
Profesor Asistente
Universidad de Nevada, Las Vegas
FORMULARIO DE AUTORIZACIÓN DE LOS PADRES

Departamento Educativo y de Estudios Clínicos

TÍTULO DEL ESTUDIO: Auto Monitoreo: Intervención de Comportamiento para Niños que Asisten a Head Start

INVESTIGADORES: Joseph Morgan, PhD; Samantha Riggleman, M.AT

NÚMERO DE TELÉFONO: Joseph Morgan, 702-895-3329

Propósito del Estudio
Su hijo(a) esta invitado a participar en un estudio de investigación. El propósito de este estudio es ver si estudiantes de preescolar pueden aprender como auto monitorear su comportamiento y si este auto monitoreo es efectivo para aumentar comportamientos de clase apropiados en estudiantes de preescolar que asisten a Head Start.

Participantes
Se le está pidiendo a su hijo(a) participar en este estudio porque él o ella cumple los siguientes requisitos: su hijo(a) a) está entre las edades de 4 y 5 años; b) atiende el programa Head Start seleccionado; c) tiene una asistencia regular; y (d) está experimentando problemas de comportamiento en un ambiente de educación infantil. Su hijo(a) también obtuvo una puntuación en el rango intermedio de entre todos los alumnos de preescolar que atienden Head Start en el cuestionario “Ages and Stages” que los padres previamente contestaron.

Procedimiento del Estudio
Si usted permite que su hijo(a) voluntariamente participe en este estudio, se le pedirá a su hijo que haga lo siguiente: (a) participar en una sesión de capacitación sobre cómo completar correctamente los pasos de auto monitoreo (b) completar la hoja de auto monitoreo durante el tiempo asignado en un periodo de 15 minutos, (c) contestar un breve cuestionario sobre si disfrutó hacer auto monitoreo. La maestra de Head Start en el salón de clases de su hijo(a) realizará las sesiones de entrenamiento e intervención de auto monitoreo. La maestra(o) colocará una cámara de video en el salón de clases y grabará las sesiones de entrenamiento e intervención. El equipo de investigación observará a su hijo(a) en video para medir la fidelidad de la instrucción. Se prevé que el estudio durará 10 semanas. Su hijo será evaluado para participar en el estudio usando su puntuación en el Cuestionario de Edades y Etapas: 2ª Edición Social-Emocional que fue completado previamente. Después de la selección, su hijo comenzará la fase basica del estudio. En esta fase, su hijo no tendrá ninguna intervención adicional y el maestro en el aula conducirá la clase como lo harían normalmente. Durante la intervención, su hijo primero aprenderá a auto-monitorizar durante aproximadamente 10 minutos durante el tiempo no instructivo en el salón de clase durante un día. Luego, ellos monitorearán su comportamiento cada tres minutos durante quince minutos (cinco veces) durante el tiempo no instructivo en el salón de clases. Al final del estudio, a su hijo se le pedirá auto-monitorizar su comportamiento en un ambiente diferente al que previamente lo hicieron (por ejemplo, durante un grupo grande, un grupo pequeño, y un juego libre) cada tres minutos durante 15 minutos. También se les pedirá auto-monitorizar dos veces después de 2 semanas de no intervención para ver lo bien que mantuvieron la habilidad.

Iniciales del Participante ______

1 of 4
TÍTULO DEL ESTUDIO: Auto Monitoreo: Intervención de Comportamiento para Niños que Asisten a Head Start

Beneficios por su Participación
Puede haber beneficios directos para su hijo(a) como participante de este estudio, tales como aprender cómo auto-monitorearse. Puede haber un aumento en los comportamientos apropiados de su hijo(a) en la clase.

Riesgos de su Participación
En todos los estudios de investigación existen riesgos. Este estudio puede incluir únicamente riesgos mínimos. El único riesgo encontrado en este estudio de investigación es la posibilidad de que la confidencialidad de la información de su hijo(a) pueda ser violada a través de las observaciones hechas a los videos que tienen el propósito de medir la fidelidad de la instrucción y el comportamiento de los alumnos de preescolar. La confidencialidad puede ser violada si un miembro del equipo de investigación reconoce a uno de los alumnos durante las observaciones. La Probabilidad de que este riesgo pueda ocurrir es mínima. La gravedad si esto llegara a ocurrir es extremadamente baja. Si la privacidad es violada, no es reversible.

Costo/Compensación
No habrá ningún costo económico para usted por participar en este estudio. El estudio tomará máximo 20 minutos diarios durante un periodo de aproximadamente diez semanas del tiempo de su hijo(a). Su hijo(a) no será recompensado por su tiempo.

Información de contacto
Si usted o su hijo(a) tienen alguna pregunta sobre este estudio, pueden contactar a Joseph Morgan al 702-895-3329. Para preguntas con respecto a los derechos de las personas en un estudio de investigación, cualquier queja o comentario sobre la forma en que el estudio está siendo realizado, puede ponerse en contacto con la Oficina para la Integridad de los Estudios de Investigación para seres humanos de UNLV (the UNLV Office of Research Integrity- Human Subjects) al 702-895-2794, o sin costo al 877-895-2794, o por correo electrónico a IRB@unlv.edu.

Participación Voluntaria
La participación de su hijo(a) en este estudio es voluntaria. El/Ella puede negarse a participar en este estudio o en cualquier momento durante su participación en este estudio. Su hijo(a) puede retirarse en cualquier momento, sin haber ningún perjuicio en sus relaciones con la universidad. Usted o su hijo(a) son motivados a hacer todas las preguntas acerca de este estudio, en su inicio o en cualquier momento durante la investigación.

Confidencialidad
Toda la información obtenida en este estudio será totalmente confidencial. No se hará referencia en materiales escritos o orales que podrían vincular a su hijo a este estudio. Toda la información se almacenará bajo llave en instalaciones de UNLV durante 7 años después de haber finalizado el estudio. Después del tiempo de almacenamiento, la información recopilada será destruida y/o eliminada.

Participante Consentimiento:
He leído la información antes mencionada y estoy de acuerdo en participar en este estudio de investigación. Tengo al menos 18 años de edad. Se me ha entregado una copia de esta forma.

Firma del padre

Nombre del niño (por escrito)

Nombre del Padre (por escrito)

Fecha

Iniciales del Participante ______

2 of 2
TÍTULO DEL ESTUDIO: Auto Monitoreo: Intervención de Comportamiento para Niños que Asisten a Head Start

Grabación de Video:

Estoy de acuerdo en permitir que mi hijo(a) sea video grabado para propósitos de este estudio de investigación.

Firma del Participante

Fecha

Nombre del Participante (Por Escrito)

Iniciales del Participante ______

3 of 2
CONSENTIMIENTO DE PARTICIPACIÓN EN ESTE ESTUDIO DE INVESTIGACIÓN

Auto Monitoreo: Intervención de Comportamiento para Niños que Asisten a Head Start

1. Mi nombre es Samantha Riggleman.

2. Te estoy pidiendo que participes en un estudio de investigación porque estoy tratando de aprender más acerca de cómo enseñarte a registrar tu comportamiento y cómo el controlar tu comportamiento puede cambiario.

3. Si tu estás de acuerdo en participar en este estudio, tu maestro te enseñarás los pasos de auto-monitoreo.

4. Tu profesor(a) te grabará en video mientras juegos con tus amigos en la escuela y observas tu comportamiento. El/ Ella te filmará por hasta 30 minutos cada día durante un máximo de 10 semanas.

5. Puede que no tengas ningún beneficio directo por unirte a nuestro estudio, pero te estoy pidiendo que me ayudes porque quiero aprender más sobre cómo enseñar auto-monitoreo y cómo el monitorear el comportamiento puede cambiario.

6. Por favor, habla de esto con tus papás antes de decidir si quieres participar o no. También le pediré a tus papás que den su permiso para que participes en este estudio. Pero incluso si tus papás dicen que "sí", tu puedes todavía decidir no hacerlo.

7. Si no deseas participar en el estudio, no tienes que hacerlo. Recuerda, estar en este estudio depende de ti y nadie se molestará si no quieres participar o si cambias de opinión más tarde y no quieres seguir participando.

8. Puedes hacer cualquier pregunta que tengas sobre este estudio. Si tienes una pregunta más tarde que no se te haya ocurrido ahora, puedes llamarme al 702-895-3329 o preguntarme la próxima vez. Si no he respondido a tus preguntas o si no te sientes cómodo hablando conmigo sobre tu pregunta, tu o tus papás pueden llamar a la Oficina de Integridad de Investigación de la UNLV - Temas Humanos al 702-895-2794 o al número gratuito 877-895-2794.

9. Circular la cara sonriente en la parte inferior izquierda significa que aceptas estar en este estudio. Circular la cara triste en la parte inferior derecha significa que usted no quieres estar en este estudio. Tu y tus papás recibirán una copia de este formulario después de haberlo firmado.

Circula la cara sonriente si aceptas ayudar con este estudio:  

Circula la cara triste si no quieres ayudar con este estudio:

<table>
<thead>
<tr>
<th>Cara sonriente</th>
<th>Cara triste</th>
</tr>
</thead>
</table>

El nombre del niño  
Fecha  

Iniciales del Participante

4 of 2
APPENDIX C

TEACHER CONSENT FORM
TITLE OF STUDY: Self-monitoring: A Behavioral Intervention for Children Attending Head Start

INVESTIGATOR(S): Joseph Morgan, PhD; Samantha Riggleman, MAT

For questions or concerns about the study, you may contact Joseph Morgan at 702-895-3329.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu.

Purpose of the Study
You are invited to participate in a research study. The purpose of this study is to research the effects of self-monitoring on appropriate classroom behaviors with preschoolers at risk.

Participants
You are being asked to participate in the study because you are currently an early childhood teacher in Head Start.

Procedures
If you volunteer to participate in this study, the research team will collect the following data on you: (a) procedural fidelity of instruction of self-monitoring in your classroom and (b) responses on a social validity questionnaire. The research team will not be present in your classroom to measure fidelity of instruction and collect data; however, the tapes will be reviewed on a weekly basis to ensure fidelity. It is anticipated that the study will last for ten weeks.

Benefits of Participation
There may not be direct benefits to you as a participant in this study. However, we hope to learn if preschoolers can learn how to self-monitor and if the use of self-monitoring will increase preschoolers’ appropriate behaviors.

Risks of Participation
There are risks involved in all research studies. This study may include only minimal risks. The only risk found within this research study is the possibility that privacy may be breached through videotaped observations for the purposes of measuring teacher fidelity and preschooler behavior. The privacy may be breached if a member of the research team recognizes one of the students or the teacher during observations.

The probability that this risk may occur is not likely. The severity if it does occur is extremely low. If privacy is breached, it is not reversible.
TITLE OF STUDY: Self-monitoring: A Behavioral Intervention for Children Attending Head Start

Cost /Compensation
There will be no financial cost to you to participate in this study. The study will last for approximately ten weeks. You will not be compensated for your time.

Confidentiality
All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. All records and data associated with their name will be kept in a locked office. The data collected will be kept in a locked box in a locked office. The PI and Student Investigator will be the only ones with a key to the locked box for a period of seven years. At the end of the seven years, the data will be destroyed. The videos of each participant will be uploaded to One Drive, Microsoft’s online secure file storage and file sharing service, by the Student Investigator. Each member of the research team will be given a secure password to access the video files. The data collected will be kept in a locked box in a locked office. The PI and Student Investigator will be the only ones with a key to the locked box for a period of seven years. At the end of the seven years, the data will be destroyed.

Voluntary Participation
Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:
I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

________________________________________  __________________________
Signature of Participant  Date

________________________________________
Participant Name (Please Print)

Videotaping:
I agree to be audio or video taping for the purpose of this research study.

________________________________________  __________________________
Signature of Participant  Date

________________________________________
Participant Name (Please Print)
APPENDIX D

TEACHER QUESTIONNAIRE TO DETERMINE TARGETED BEHAVIOR FOR EACH PARTICIPANT
Teacher Questionnaire to Determine Targeted Behavior for each Participant

Participant’s Name: __________________________

1. List the top three behavior concerns you have for the participant.

2. Rank them in priority for the classroom.

3. For the first behavioral priority, describe what the preschooler is doing and the current behavior expectation.

List the first priority behavior here:

Setting it occurs in the most frequently (i.e., centers, large group, small group, free time):

<table>
<thead>
<tr>
<th>Current behavior expectation within the setting</th>
<th>Description of preschooler’s behavior within the setting</th>
</tr>
</thead>
</table>
APPENDIX E

TEACHER BEHAVIOR DEFINITIONS (CURRENT/TEACHER PREFERRED INTERACTIONS) FOR EACH PARTICIPANT AS IDENTIFIED BY THE TEACHER
<table>
<thead>
<tr>
<th>Targeted Behavior Skills</th>
<th>Teacher Preferred Behaviors</th>
<th>Current Behaviors</th>
</tr>
</thead>
</table>
| Keeping hands to self    | • Preschooler did not touch a peer’s body.  
                      (Participant C)  
                      • Preschooler kept his hands to self.  
                      • Can “high five” with a peer | • The preschooler touched a peer (e.g., hugging, grabbing).  
                      • The preschooler grabbed a peer in a hug and would not let go.  
                      • Preschooler touched a peer using an object (e.g., pencil, paper, toy) |
| Social/emotional         | • When upset, the preschooler will express their feelings using words such as “I don’t like that”.  
                      Crying when upset  
                      instead of using words  
                      (Participant D)  
                      • When upset, the preschooler will use their words to tell a teacher.  
                      • When frustrated or upset, the preschooler will use a voice that is not louder than the classroom level of noise.  
                      • If crying, preschooler will use teacher redirection and will be able to join in an activity. | • When frustrated or upset, the preschooler cries and/or raises voice louder than the classroom level of noise.  
                      • The preschooler will not verbalize to the teacher or peer regarding what can be done instead of crying.  
                      • Preschooler does not follow redirection from adult (i.e., continues crying, continues engaging in behavior that is inappropriate). |
| Engaging in cooperative play  | • Asking a peer to share an item.  
                      (Participant A & B)  
                      • If a peer requests an item that they have, the preschooler will allow the peer to have access to the item (if not immediately, then in a 10 second delay after request made).  
                      • Making a request to a peer to join a center and engage in play/activity.  
                      • The preschooler will be in a center with at least 1 other peer engaging in play/talk and observe the rules of the classroom (e.g., using materials correctly, keeping body and friends safe, etc.) without teacher making corrective request. | • Preschooler at a center alone with no peer.  
                      • If a peer requests an item that they have, the preschool will not allow the peer to have access immediately or within a 10 second delay after request made.  
                      • The preschooler takes an item from a peer without making a verbal request.  
                      • The preschooler runs away from a peer or cries when the denied item from peer or access to a center. |

Target behavior definitions
APPENDIX F

TEACHER’S PROCEDURAL FIDELITY TO SELF-MONITORING INTERVENTION
Procedural Fidelity checklist

Self-Monitoring Intervention Steps | Was step/procedural implemented? Circle Yes or No |
--- | --- |
1. Teacher set up videotape to record session | Yes | No |
2. Teacher reviewed with preschooler the steps to self-monitoring prior to implementation. | Yes | No |
3. Teacher put out clean checklist and crayon in specified location. | Yes | No |
4. Teacher set timer for 3 minutes. | Yes | No |
5. Teacher prompts preschooler to return to activity in a least to most hierarchy of prompts. | Yes | No |
6. Teacher monitored preschooler’s behavior during activity. | Yes | No |
7. When timer goes off, teacher verbally prompts preschooler to come to the checklist. If the preschooler does not respond to verbal prompt, teacher uses partial physical prompt then full physical. The preschooler may also come to the checklist with no prompts after hearing timer. | Yes | No |
8. Teacher asked preschooler to reflect on their behavior and if they had teacher preferred or inappropriate/current behavior at the center. | Yes | No |
9. Preschooler puts mark on checklist using crayon. | Yes | No |
10. Teacher provided positive verbal praise. | Yes | No |
11. Teacher prompted preschooler to return to center (if necessary or if they did not do so on their own) | Yes | No |
12. Preschooler returned to the center (or activity) they were involved in. | Yes | No |
13. Teacher set timer for 3 minutes. | Yes | No |

How many Yes: _______/13  
How many No: _______/13
APPENDIX G

LETTER OF ACCESS TO HEAD START CENTER
Letter of Acknowledgement of a Research Project at a Head Start Facility

Office of Research Integrity-Human Subjects
University of Nevada, Las Vegas
4505 S. Maryland Parkway, Box 451047
Las Vegas, NV 89154
July 27, 2016

Dear Samantha Riggleman:

This letter will acknowledge that I have reviewed a request by Samantha Riggleman (Student Investigator) and Dr. Joseph Morgan (Principal Investigator) to conduct a research project entitled, Tier II prosocial behavioral intervention for children attending Head Start at Acelero Learning-Herb Kaufman Center.

When the research project has received approval from the UNLV Institutional Review Board and upon presentation of the approval letter to me by the approved researcher, as Center Director for Herb Kaufman Center, I agree to allow access for the approved research project.

If we have any concerns or need additional information, the project researcher will be contacted or we will contact the UNLV Office of Research Integrity-Human Subjects at 702-895-2794.

Sincerely,

[Signature]
Signature of Center Director

[Date]
Date
APPENDIX H

SELF-MONITORING SHEETS
Self-monitoring sheet Participant A and B
Preschooler Name: ____________________________ Date: ____________

<table>
<thead>
<tr>
<th></th>
<th>Did I play together with my friends and follow classroom rules?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; time</td>
<td>Yes</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; time</td>
<td>Yes</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; time</td>
<td>Yes</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; time</td>
<td>Yes</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; time</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Self-monitoring sheet Participant C
Preschooler Name: ______________________________ Date: ____________

<table>
<thead>
<tr>
<th>Time</th>
<th>Did I keep my hands to myself?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hands to Yourself</td>
</tr>
<tr>
<td>1\textsuperscript{st} time</td>
<td>Yes</td>
</tr>
<tr>
<td>2\textsuperscript{nd} time</td>
<td>Yes</td>
</tr>
<tr>
<td>3\textsuperscript{rd} time</td>
<td>Yes</td>
</tr>
<tr>
<td>4\textsuperscript{th} time</td>
<td>Yes</td>
</tr>
<tr>
<td>5\textsuperscript{th} time</td>
<td>Yes</td>
</tr>
<tr>
<td>Time</td>
<td>Used Words</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>1st</td>
<td>Yes</td>
</tr>
<tr>
<td>2nd</td>
<td>Yes</td>
</tr>
<tr>
<td>3rd</td>
<td>Yes</td>
</tr>
<tr>
<td>4th</td>
<td>Yes</td>
</tr>
<tr>
<td>5th</td>
<td>Yes</td>
</tr>
</tbody>
</table>
APPENDIX I

SELF-MONITORING COMPLIANCE DATA COLLECTION SHEET FOR PARTICIPANTS
Data collection sheet  
Preschooler Name: _____________________________ Date: _____________________________

Center: __________________________________________________

Start/End Time of Observation: _________________________________

<table>
<thead>
<tr>
<th>Interval</th>
<th>3 Minute Interval Times (For self-monitoring)</th>
<th>Student correctly followed steps to self-monitor (+ or -)</th>
<th>Notes (Include here if a prompt to self-monitor was given, how many, and type of prompt (i.e., verbal, partial physical, full physical))</th>
</tr>
</thead>
</table>
| 1        | 1.                                                                                     | 1. Came to self-monitoring sheet when timer went off       | Prompt level used:  
Verbal=V  
Gestural=G  
Partial Physical=PP  
Full Physical=FP |
|          | 2.                                                                                     | 2. Marked on self-monitoring sheet                        |                                                                                                                           |
|          | 3.                                                                                     | 3. Returned to previous activity                          |                                                                                                                           |
| 2        | 1.                                                                                     | 1.                                                        |                                                                                                                           |
|          | 2.                                                                                     | 2.                                                        |                                                                                                                           |
|          | 3.                                                                                     | 3.                                                        |                                                                                                                           |
| 3        | 1.                                                                                     | 1.                                                        |                                                                                                                           |
|          | 2.                                                                                     | 2.                                                        |                                                                                                                           |
|          | 3.                                                                                     | 3.                                                        |                                                                                                                           |
| 4        | 1.                                                                                     | 1.                                                        |                                                                                                                           |
|          | 2.                                                                                     | 2.                                                        |                                                                                                                           |
|          | 3.                                                                                     | 3.                                                        |                                                                                                                           |
| 5        | 1.                                                                                     | 1.                                                        |                                                                                                                           |
|          | 2.                                                                                     | 2.                                                        |                                                                                                                           |
|          | 3.                                                                                     | 3.                                                        |                                                                                                                           |
APPENDIX J

BEHAVIOR DATA COLLECTION SHEET
Student: __________________________
Date: __________________ Observer: __________________

Momentary Time Sampling: Record what the child is doing at the end of the 15-second interval.
  T= Teacher Preferred Interaction (e.g. not touching peer with hands or object)
  C= Current Interaction (e.g. touching peer with hands or object)

<table>
<thead>
<tr>
<th>1st recording period</th>
<th>:15</th>
<th>:30</th>
<th>:45</th>
<th>:60</th>
<th>SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minute 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2nd recording period</th>
<th>:15</th>
<th>:30</th>
<th>:45</th>
<th>:60</th>
<th>SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minute 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3rd recording period</th>
<th>:15</th>
<th>:30</th>
<th>:45</th>
<th>:60</th>
<th>SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minute 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4th recording period</th>
<th>:15</th>
<th>:30</th>
<th>:45</th>
<th>:60</th>
<th>SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minute 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5th recording period</th>
<th>:15</th>
<th>:30</th>
<th>:45</th>
<th>:60</th>
<th>SM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minute 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Totals:  Teacher Preferred_________________  Current_________________

Used for IOA  Yes_______  No_________
APPENDIX K

SOCIAL VALIDITY QUESTIONNAIRE: TEACHERS
Social Validity Questionnaire

Demographic Information

Describe yourself (check the boxes that best describe you):

Your gender: □ Female       □ Male

Your age: □ under 30          □ 31 to 40          □ 41 to 50
□ 51-60           □ 61 and above

Your ethnicity: □ European American □ Asian-Pacific □ Hispanic
□ African-American □ American Indian
□ Other (specify)_________

Check your current teaching certificates:
□ Early Childhood Education
□ Elementary Education
□ Special Education
□ Other (Specify)__________________

Check the one that best describes your education:
□ High school or GED
□ Some college
□ Associate’s degree
□ Bachelor’s degree
□ Master’s degree
□ Other (Specify)__________________

Your teaching experience:

How many year(s) have you taught preschoolers? _____________

How many year(s) have you taught preschoolers with IFSP/IEPs? _____________

Please provide information to inform researchers on changes you would recommend or practices you want to continue.
Please indicate the extent in which you agree or disagree with the following statements regarding the self-monitoring intervention by circling a number that most closely reflects your opinion.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree Somewhat</th>
<th>Neutral</th>
<th>Agree Somewhat</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. The intervention focuses on important behaviors.
   1  2  3  4  5

2. The target behavior is of sufficient concern to warrant the use of this intervention.
   1  2  3  4  5

3. I believe that this intervention is effective in increasing teacher preferred behaviors.
   1  2  3  4  5

4. I understood the intervention steps.
   1  2  3  4  5

5. The intervention is easily incorporated into my classroom system.
   1  2  3  4  5

6. I believe that I can accurately implement this intervention in my classroom.
   1  2  3  4  5

7. I have the necessary materials to implement this intervention accurately.
   1  2  3  4  5

8. The time requirements of this intervention are reasonable.
   1  2  3  4  5

9. Self-monitoring was an effective intervention for increasing teacher preferred behaviors.
   1  2  3  4  5

10. The self-monitoring component was an efficient method to increasing teacher preferred behaviors.
    1  2  3  4  5

11. I would use self-monitoring in the future with my preschool class.
    1  2  3  4  5

Thank you for completing this survey.
APPENDIX L

SOCIAL VALIDITY QUESTIONNAIRE: PRESCHOOLERS
Preschooler Participant Social Validity Questionnaire

1. Do you think that self-monitoring was easy to learn?
   - Very much/yes
   - A little bit
   - Not at all/no

2. How much did you like using self-monitoring at school?
   - Very much/yes
   - A little bit
   - Not at all/no

3. How much did you enjoy using self-monitoring?
   - Very much/yes
   - A little bit
   - Not at all/no

4. How much do you think self-monitoring helped you?
   - Very much/yes
   - A little bit
   - Not at all/no

5. Would you like to use self-monitoring again?
   - Very much/yes
   - A little bit
   - Not at all/no

6. What was your favorite part of self-monitoring?

7. What was your least favorite part of self-monitoring?
APPENDIX M

SELF-MONITORING TRAINING SCRIPT
<table>
<thead>
<tr>
<th>Materials needed:</th>
<th>Self-monitoring checklist, timer, crayon</th>
</tr>
</thead>
</table>

Today we are going to talk about self-monitoring. Self-monitoring is when you think about what you are doing and mark it down on a piece of paper.

During (centers, free time, large/small group) you are going to self-monitor your **(insert their specific targeted behavior). When you **(insert their specific targeted behavior), that means that **(insert operational definition of the behavior using Appendix E).

*Show preschooler the self-monitoring sheet.*

This is the self-monitoring sheet that you will use. This sheet will be used for you to see if you were doing **(insert their specific targeted behavior) when the timer goes off.

I am going to set the timer for 3 minutes. You get to continue to play in (centers/activity) until the timer makes a beep. When the timer makes a beep, you are going to answer the questions with the crayon. You can choose yes with the smiley face or no with the sad face by making a mark (*show the yes and no columns*) with the crayon. (**remind preschooler the rules of the setting before they begin to self-monitor**)

*Set the timer for 3 minutes.*

*Prompt preschooler to engage in previous activity (center/small group) until the timer beeps. Prompt least to most (first verbal, then partial physical, full physical).*

Okay (preschooler’s name), you can go back to (center/small group/activity).

*When the timer goes off, prompt the preschooler to come to the area with the self-monitoring sheet. Prompt least to most (first verbal, then partial physical, full*
Okay (insert name), the timer went off. Now is the time to mark on your self-monitoring sheet.

Read the targeted skills to the preschooler. As you read them, ask the preschooler their prompts on their self-monitoring sheet. For example, “Did you take turns with your friends” or “Did you keep your hands to yourself?”*(insert target behaviors off of their self-monitoring sheet)*

Prompt them least to most to answer yes/no with the crayon if they do not do so on their own.

After the preschooler marks the self-monitoring sheet in the yes/no column, prompt them least to most to return to their center (activity) they were involved in.

Set the timer for 3 more minutes. Repeat for a total of 5 intervals (15-minutes total).

Tell preschooler they are finished self-monitoring for the day. “Thank you for self-monitoring. We have finished self-monitoring for day. You will get to use your self-monitoring sheet again tomorrow.”

At the end of the 15-minute training, collect all materials, turn off videotape, and return all materials to the assigned folder.
References


175


EDUCATION AND PROFESSIONAL CREDENTIALS

Degrees
Ph.D. 2017 University of Nevada, Las Vegas Special Education
Dissertation Title: Self-Monitoring: A behavioral intervention for children attending Head Start
Disability Areas: Emotional/Behavioral Disorders and Learning Disabilities
Leadership Area: Early Childhood Special Education

M.AT 2013 Mary Baldwin University (formally Mary Baldwin College) Special Education

B.S. 2010 Shenandoah University Psychology

Licenses
Commonwealth of Virginia Special Education Teaching License K-12
License #: PGP-0656849 Expires: 06/2018

State of Nevada Special Education Teaching License K-12

Certifications
Board Certified Behavior Analyst (BCBA) Certification Number: 1-16-24934

Certificate of Completion of The Art & Science of Teaching Online Issued by UNLV

PROFESSIONAL EXPERIENCE
2017 University of Oregon Numbershire Grant R324A120071 Data Assessor

2016-2017 Substitute Teacher
Clark County School District, Nevada

2014-2016 CSUN/UNLV Preschool Teacher Assistant

2014 National Institute for Early Education Research (NIEER) Data Assessor
2013–2017 University of Nevada, Las Vegas
Teaching Graduate Assistant

2016 Assistant to Head Editor to Professional School Counseling

2011–2013 Dominion Behavioral Health Services
Behavior Specialist

2011–2012 Harrisonburg-Rockingham Community Services Board, Arbor House
Crisis Specialist

2011-2011 American Health & Wellness Institute
Behavior Specialist

2009-2011 Good Life Corporation
Residential Instructor

2010 Shenandoah University
Undergraduate Research Assistant

**Internship Experience**

2016-2017 Early Childhood Division of the Office of Special Education
Programs (OSEP) in the U.S. Department of Education; Washington, D.C.

**Teaching**

**University Courses Taught at University of Nevada, Las Vegas**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester(s) Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 481 Internship of Early Childhood Education Management</td>
<td>Fall 2013</td>
</tr>
<tr>
<td>ECE 482 Preschool Fieldwork in Early Childhood Education (hybrid)</td>
<td>Fall 2013</td>
</tr>
<tr>
<td>ECE 492 Student Teaching Seminar in Early Childhood Education</td>
<td>Spring 2014</td>
</tr>
<tr>
<td>ECE 299 Practicum for Infants/Toddlers</td>
<td>Spring 2014</td>
</tr>
<tr>
<td>EDSP 411 Students with Disabilities in General Education Settings (online)</td>
<td>Fall 2014, Spring 2015</td>
</tr>
<tr>
<td>EDU 203 Introduction to Special Education</td>
<td>Fall 2014</td>
</tr>
<tr>
<td>EDSP 423 Collaborative Consultation in Special Education</td>
<td>Fall 2015</td>
</tr>
</tbody>
</table>
Graduate Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester(s) Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESP 781 Field Experience in Early Childhood Special Education</td>
<td>Fall 2013</td>
</tr>
<tr>
<td>ESP 701 Introduction to Special Education and Legal Issues (online)</td>
<td>Fall 2014, Summer 2016</td>
</tr>
<tr>
<td>ESP 733 Management and Modification of Students with Special Needs</td>
<td>Spring 2015, Spring 2016</td>
</tr>
<tr>
<td>ESP 730 Parent Involvement in Special and General Education (online)</td>
<td>Summer 2015</td>
</tr>
<tr>
<td>ESP 737i Advanced Practicum with Exceptional Children</td>
<td>Spring 2016</td>
</tr>
<tr>
<td>ESP 733 Management and Modification of Students with Special Needs (8 week hybrid)</td>
<td>Fall 2016, Spring 2017</td>
</tr>
<tr>
<td>ESP 708 Advanced Education Strategies for Students with Disabilities (8 week hybrid)</td>
<td>Spring 2017</td>
</tr>
</tbody>
</table>

**RESEARCH AND SCHOLARSHIP**

Research Interests: social-emotional development in young children, prosocial behaviors in young children, expulsion rates for students who have behavioral disorders, early intervention and identification of emotional and behavioral disorders (EBD) and mental health, self-monitoring/impression management, early childhood special education, teacher training, use of technology in training teachers, inclusive education and practices for young children with behavioral disorders, parent and teacher collaboration.

**Refereed Articles**

Riggleman, S. & Morgan, J.J. (accepted). Using the behavior expectation discrepancy tool to support young children with challenging behaviors. Submitted to *Young Exceptional Children*.

**Under Review**


Buchter, J. & Riggleman, S. (in review). Using technology to meet the needs of children 0-3 with disabilities in rural areas. Submitted to *Rural Special Education Quarterly*.

**In Progress**


Other Publications


White Papers


GRANTS

Fall 2014 Project SWIM: School Wide Initiative for Mental health needs. (Proposal submitted as a course assignment for ESP 789-Grant Writing for the Human Services)

Spring 2016 Student-Investigator with Joseph Morgan, Ph.D. Using self-monitoring at a Tier II prosocial behavioral intervention for children attending Head Start, Department of Health & Human Services, Early care and education research scholars: Head Start graduate student research grants, requested $25,000 (not funded)

Presentations


**SERVICE**

National
Guest Reviewer for *Intervention in School & Clinic* (2014)
Reviewer for TED Conference proposals (2017)

University
Created an online course (ESP 733) (2015)
Created an iBook for department handbook (2015)
Data collector/fidelity for professor (2015)
Volunteer at NABE conference (2015)
Created an online course (ESP 771) (2014)
Developed University accepted handbook & syllabus for Preschool Fieldwork in Early Childhood Education (ECE 482)
Guest lecturer for ESP 774-Supporting emerging math & science for young children with disabilities in a naturalistic environment (2013)
Guest lecturer for ECE 709-Maria Montessori (2014)
Accepted applicants into Master’s program-DD program (2014)
Designed syllabus for ESP 712-Applied Behavior Analysis as course assignment (2014)
Data collector/fidelity for peer’s dissertation (2014)
Member, President Elect, University of Nevada, Las Vegas-Student Chapter of the Council for Exceptional Children (CEC), 2013-2014
Member, President, University of Nevada, Las Vegas-Student Chapter of the Council for Exceptional Children (CEC), 2014-2015
  - Developed introductory video explaining SCEC
  - Became GPSA recognized student organization
  - Developed pamphlet to advertise SCEC
  - Increased undergraduate membership
Member, Past President, University of Nevada, Las Vegas-Student Chapter of the Council for Exceptional Children (CEC), 2015-2016
Panel Discussion in ESP 782R Professional Seminar, September 23, 2014
Community Action Project (2015) for class project
Volunteer at ECD conference (2015, July)
Student member of University of Nevada, Las Vegas Student Conduct Hearing Board (fall 2015-2017)
Proctored Master’s comprehensive examinations (2016, June)
Breakout presentation at UNLV Doctoral Summit on Publishing in the 3rd Year of Doctoral Studies (2016, August)
Volunteer at recruitment Graduate College Fair (2016, October)

Community
Volunteer, Mountain View Christian School, 2013-2017

HONORS AND AWARDS
Kappa Delta Pi Honor Society (2013)
Psi Chi National Honor Society (2010)
Dean’s List (2009, 2010)

PROFESSIONAL MEMBERSHIPS
The Council for Exceptional Children/Division of Early Childhood (CEC/DEC)
National Association for the Education of Young Children (NAEYC)
Association of Professional Behavior Analysts (APBA)
International Society on Early Intervention (ISEI)
Association for Childhood Education International (ACEI)
National Society of Leadership and Success
Kappa Delta Phi
Psi Chi