RESPONSE TO INTERVENTION FOR

BEHAVIORAL CONCERNS

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CHAPTER I

INTRODUCTION

The Individuals with Disabilities Education Improvement Act (IDEIA) was reauthorized in 2004 to include the use of Response to Intervention (RTI) as a model for identifying struggling students as learning disabled (Burns & VanDerHeyden, 2006; McIntosh, Campbell, Carter, & Dickey, 2009; Ysseldyke, 2005). RTI has been defined as a change in academic or behavioral presentation as a result of the implementation of empirically-validated interventions and instruction (Fuchs, Mock, Morgan, & Young, 2003; Gresham, 2004; Gresham, 2001). The purpose of RTI is to identify at-risk students early (Gersten & Dimino, 2006).

Previously, the controversial IQ-achievement discrepancy model has been utilized to determine specific learning disability (SLD) eligibility. This 'wait-to-fail' model relies on the results of one-shot, standardized measures of intelligence and academic achievement to determine special education eligibility (McIntosh et al., 2009). This model became widely accepted practice without empirical evidence to support its utility (Gresham, VanDerHeyden, & Witt, 2005; Lyon, 1996). Recent research into its effectiveness has shown that the discrepancy model has failed to demonstrate technical adequacy, appropriately guide classifications decisions and eligibility categories, focuses on with-in child deficits rather than examining the environment, and, most importantly,

does not provide information regarding appropriate treatment or intervention for student deficits (Barnett, Daly, Jones,& Lentz, 2004).

As a result of the documented shortcomings of the discrepancy paradigm, alternative means of determining special education eligibility have been explored. In 2002, the Office of Special Education and Rehabilitative Services (OSERS) proposed the abandonment of the discrepancy model in favor of a decision making process based on response to instruction. OSERS states that this process should utilize scientifically validated progress-monitoring of target skills for making decisions that lead to effective special services and provide early intervention efforts rather than waiting for children to fail. Currently, the most suitable alternative to the discrepancy model seems to be RTI (Danielson, Doolittle, & Bradley, 2005; Ysseldyke, 2005). Gresham (2005) identified four major advantages that RTI has over the wait-to-fail model, including early identification of struggling students, the use of a risk model rather than a deficit model, reduction of identification biases, and a focus on student outcomes. Early identification is particularly important, because younger children are more likely to be responsive to intervention efforts and maintain the positive outcomes associated with these efforts over time (Cheney, Flower, & Templeton, 2008).

Response to Intervention

RTI is similar to the discrepancy model, because it is also based on a discrepancy. In this case, however, the discrepancy is found between pre-and post-intervention scores to display the acquisition of knowledge or a desired increase or decrease in behavior and between the referred student's educational performance and the performance of a typical student (Barnett et al., 2004; Gresham, 2004; Gresham, 2005; Vaughn, Linan-Thompson,

& Hickman, 2003). A diagnosis of SLD would be assigned to those students who do not respond to empirically-validated interventions and exhibit low achievement (Vaughn et al., 2003). While RTI efforts have been asserted as a means of primarily identifying SLD in academic areas, it can also be used as an effective model to address social functioning and behavioral disorders (Cheney et al., 2008).

The structure of RTI models vary based upon context, but, generally, it is conceptualized as a three-tiered model of service delivery aimed at addressing at-risk students and providing early intervention and remediation (Cheney et al., 2008; Gresham, 2005; Hawken, Vincent, & Schumann, 2008; McIntosh et al., 2008). Within this model, all students are screened to identify those who may benefit from additional support, evidence-based interventions arranged on a continuum of intensity are utilized in an attempt to remediate concerns, progress is continually monitored, and data-based decision making is employed to make special education eligibility decisions (Fuchs et al., 2003; Gresham et al., 2005).

Intervention Intensity

In order to elicit student response to academic or behavioral intervention, interventions are arranged on a continuum of intensity to find the least intrusive intervention necessary to meet student needs, implying that more intense interventions will have a greater impact on the target concern. Intervention intensity is a rather broad term and has been defined in various ways; however, at its core, it refers to the likelihood that a given intervention will change a problem and is reflective of the time, effort, or

overall resources required to sustain the change (Barnett et al., 2004; Duhon, Mesmer, Atkins, Greguson, & Olinger, 2009).

Intervention intensity can be conceptualized on two levels: general education interventions and intensive interventions. General education interventions address groups of students in the general education setting and include only minor modifications that can be easily implemented. A deviation from the norm after the implementation of an effective general education intervention may indicate the need for intensive interventions and/or special education services (Duhon et al., 2009; Fuchs, 2003). Case, Speece, and Molly (2003) and Speece and Case (2001) have presented evidence of the effectiveness of these interventions. The second class, intensive interventions, requires more resources for implementation and is usually employed in a small group or one-on-one setting. These types of interventions are similar to the intensity provided in special education programs and can help identify which interventions can be effective for a particular student once he/she is identified with a SLD (Duhon et al., 2009; Fuchs, 2003).

Typically interventions are arranged in intervention hierarchies, which are a "series of interventions or components that are unified by response class (e.g., low rates of academic responding, disruptive social behaviors) and ordered in a planned sequence to resolve a problem situation" (Barnett et al., 2004, p. 69). Intervention intensity can be increased or decreased overtime as a result of the quality of student response to that intervention. For most students, interventions are ordered by increasing intensities in an effort to identify the lowest-level intervention necessary for student success; however, challenging behaviors that require immediate, intensive intervention efforts, such as behaviors that pose a threat to student safety, begin at the a very intense level of support

with the goal of decreasing the intensity of the intervention overtime while maintaining appropriate student response, if possible (Barnett et al., 2004).

Interventions ordered into hierarchies of intensity have been utilized in research by Daly, Martens, Dool, and Hintze (1998) and Daly, Martens, Hamler, Brool, and Eckert (1999). Both studies examined oral reading fluency interventions and added intervention components in order to increase intensity. Since new and different components were added to these interventions as the sole method of increasing intensity, it is difficult to understand the relationship between the intensity of the intervention and the response produced since objective quantification of intensity is next to impossible. Intuitively, it makes sense that adding more intervention components requires more resources; however, this method of intensification results in "evaluations of intensity in relation to the time and effort required to implement the interventions (i.e., process variables), but not necessarily an evaluation of intensity in relation to effectiveness or change in the problem situation it was designed to target" (Duhon et al., 2009, p. 105).

Response to Intervention and Behavior

While research regarding RTI and behavior is sparse, it was reported in 2009 that nearly 7,000 schools across the United States and Canada are implementing RTI models for behavior (McIntosh et al., 2009). Such models have been utilized in response to the growing concern surrounding school discipline due to increased demands on academic accountability and the disruptions that behavior problems can cause in the classroom setting. School staff report that a disproportionate amount of resources are expended to a small group of students exhibiting behavior problems, and accurate, efficient early

identification efforts are needed to address these students (Cheney et al., 2008). In fact, Gresham (2005) reported that up to 5% of school population accounts for nearly half of all behavioral disruptions and "drain 50-60% of school building and classroom resources" (p. 340). However, students with behavior problems are incredibly underserved by special education programs; this is surprising considering the considerable challenges these students present (Gresham, 2005). Students with behavioral concerns have disproportionately higher rates of "dropout and academic failure, and they are more likely to be arrested, poor, unemployed, involved with illicit drugs, and become teen parents" (Eber, Sugai, Smith, & Scott, 2002, p. 172). If left unattended, early behavior problems can clearly have lifelong consequences

Due to the potential prognosis of individuals with conduct concerns, several models have been proposed as a means of addressing behavior in schools, including positive behavior supports (PBS; McIntosh et al., 2009). PBS is a three-tiered model of evidence-based intervention service delivery, similar to RTI, that seeks to prevent problem behavior (Hawken et al., 2008; McIntosh et al., 2009). Tier I behavior intervention in PBS and RTI involves clearly defined schoolwide and classwide behavioral expectations that are taught to all students with the goal of increasing behavioral functioning at a schoolwide level. The procedures for discipline of inappropriate behaviors and acknowledgement of appropriate behaviors are applied consistently throughout all settings (Hawken et al., 2008). RTI and behavior at tier I often includes interventions at the classwide level and data for the whole group is analyzed to determine if there are global, problematic behavior problems that should be addressed utilizing a classwide intervention rather than intervening with a single student

(Riley-Tillman, Methe, & Weegar, 2009). Ideally, this tier I intervention would be sufficient support for 80% of the student body (Hawken et al., 2008).

Another 15% of students who do not respond to the universal approach may require more intensive interventions at tier II. For both RTI and PBS, this level of intervention in conceptualized as more intense than tier I with regard to the amount of resources invested in the intervention; however, it should require minimal staff time to implement. Usually these interventions are delivered in a small group or individual format and target specific behavioral skills (Eber et al., 2002; Hawken et al., 2008). Students who are not responsive at this level, usually 5% of the population, advance to an even more intensive, comprehensive, individualized tier III (Eber et al., 2002). At this level behavior support plans are usually based on functional behavior assessment data (Hawken et al., 2008). It is at this point that RTI and PBS systems are differentiated. An important distinction between PBS and RTI is that RTI is ultimately used for diagnostic decision making; therefore, if a student does not exhibit appropriate response to tier III intervention, he/she may be eligible for special services. Since PBS provides a system of prevention within a school, RTI adds to these programs by using empirically-based, effective behavior interventions ordered on a continuum of intensity; therefore, RTI can been seen as an "extension and new application of the already substantial research base regarding positive behavior interventions" (Fairbanks, Sugai, Guardino, & Lathrop, 2007, p. 289).

In order to further distinguish RTI from PBS, it is important to examine the relevance of diagnostic decision making with regard to response to behavioral intervention. The purpose of PBS is to match a student's need with a level of

intervention intensity, and RTI takes this information to make eligibility decisions. Once responsiveness has been established during tier III of RTI, those students that can be shaped back to normal rates of responding could arguably not be disabled, rather they needed more intense intervention to acquire the skills necessary to function at "normal" levels of responding. Those students that cannot be shaped back to "normal" levels of responding after responsiveness has been met at the third tier, could be determined to be disabled since their rates of responding cannot reach normative rates of response. These students would require intervention at the highest intensity level to sustain appropriate levels of response. More research needs to examine whether discrepant children can be shaped back to average rates of responding and what this might mean for diagnostic decision making.

In research a RTI approach has been extensively applied to SLD and academic concerns, rather than behavior problems. RTI can be applied to behavior, but research needs to be conducted to establish it as an efficient, useful, and conceptually sound approach to diagnosis and treatment of behavior concerns (Fairbanks et al., 2007). Although a three-tiered process has been discussed, it has been applied in research only a few times (Barnett et al., 2006; Fairbanks et al., 2007). There is a need for research validating RTI models in the area of behavior.

Riley-Tillman and colleagues (2009) examined the use of a tier I intervention for increasing prosocial behaviors. They utilized systematic direct observations and direct behavior ratings to determine response to intervention. Cheney et al. (2008) applied RTI to behavior in order to evaluate the best metric for quantifying a student's response to tier II intervention. Check, Connect, & Expect (CC&E) intervention was employed, which

required students to check in each morning with a school staff member, receive feedback on a daily behavior report card, and check out with the same staff member at the end of the school day. While these studies are helpful in understanding interventions that can be utilized within an RTI framework, they only examined one tier of intervention and failed to look at the transition between tiers and the change in intervention intensity across these tiers, which is an integral component of the RTI process.

Also, previous studies of RTI and behavior do not sufficiently account for the relationship between the intensity of the intervention and the outcome or response produced. For example, Fairbanks and colleagues (2007) implemented the RTI process within two second grade classrooms. The researchers defined the first tier of intervention as the universal PBS system already in place within the school. Tier II included 10 students that were considered nonresponsive to PBS and consisted of a new and different intervention; a Check-In and Check-Out group intervention that provided increased structure and prompts, instruction on specific skills, and increased feedback to the students involved. Tier III included 4 students and consisted of individualized interventions. Functional assessment rating scales were given to teachers in order to form function-based interventions for each student, and, again, new and different interventions were constructed. Results indicated that tier II was successful in remediating the behavior problems for 6 of the original 10 students. The remaining 4 students responded only after receiving the tier III intervention.

Barnett, Elliott, Wolsing, Bunger, Haski, McKissick, and Meer (2006) also applied a RTI framework, with novel interventions implemented across the three tiers. Specifically, they discussed the case of Robin, a four-year old preschool student

exhibiting extreme behavior problems. In order to remediate Robin's problems, a classwide intervention was implemented first (tier I). Much like PBS, behavioral rules were selected, posted, and taught to the students in Robin's class. The teacher was also prompted every three minutes to provide positive feedback to the students who were behaving appropriately, and high-interest activities were provided to maintain student engagement. Tier II provided more practice in behavioral skills, and Robin's appropriate behaviors were monitored in addition to providing positive feedback every three minutes. In the third tier, a more individualized behavior plan was developed for Robin. At the conclusion of intervention, Robin and her peers were exhibiting dangerous or aggressive behaviors for 0% of the intervals observed using structured observations.

While Fairbanks et al. (2007) and Barnett and colleagues (2006) have shed light on the functionality of RTI as applied to behavior, it is difficult to understand the function of intervention intensity across the tiers of intervention. The implementation of three different interventions makes intervention intensity difficult if not impossible to quantify and evaluate. There is an unknown relationship between the different interventions, and there is no established criterion to compare the intervention intensity across the three tiers; therefore, any assertion about the relationship between the interventions and intervention intensity is subjective. More research is needed with systematic, quantifiable changes in intervention intensity in order to make accurate comparisons between intervention intensity and student responses (Duhon et al., 2009).

There is a need for research to determine the contexts in which evidence-based interventions are likely to have the maximum effect, and what can be changed in order to improve more students' outcomes (Fairbanks et al., 2007). Overall, research regarding

RTI and behavior needs to be conducted within the general education classroom, especially concerning behavior interventions across the three tiers.

This study examined a model of RTI in behavior. Within this model an effective general education intervention was implemented to all students within one classroom at an elementary school. A model involving the systematic, measurable increase in intervention intensity was implemented. This particular model was utilized to answer crucial questions regarding RTI. One primary question to be answered by this study is, can a RTI approach using an increasing intensities design be used to differentiate student response to behavioral intervention? If so, can we compare student responsiveness based on the intervention intensity required to meet a set criterion of success? Finally, can discrepant children's responsiveness be altered to match that of the general population?

CHAPTER II

REVIEW OF LITERATURE

There has been a dramatic push for change in specific learning disability (SLD) identification and diagnosis. Of the many issues that have stimulated the movement away from the commonly used discrepancy model, perhaps the most influential have been political promotion for more effective means of diagnosis, excessive increases in the diagnosis of SLD, referral bias, and the disadvantages of the discrepancy model (Barnett et al., 2004). Currently, the most suitable alternative to the discrepancy model seems to be response to intervention (RTI; Ysseldyke, 2005; Danielson, Doolittle, & Bradley, 2005).

Political Promotion for Change

Office of Special Education Programs (OSEP)

The Office of Special Education Programs (OSEP) exerted great effort to improve the diagnostic system for SLD and has played an important role in bringing attention to the need for change within SLD diagnosis by sponsoring the Learning Disabilities summit, which was held in Washington D.C. in August of 2001. The organization's concentrated endeavors ultimately resulted in the formation of nine papers that encompassed a range of topics associated with SLD identification, such as, the history of

SLD classification, approaches to classification, IQ-achievement discrepancy model, early intervention and identification, processing deficits, alternative methods of identification, decision making models, clinical judgment, and discussion of SLD as a construct (Bradley & Danielson, 2004).

In 2002 OSERS recommended that the traditional discrepancy model of identification be abandoned. Further, they encouraged the adoption of a decision making process based on response to instruction or intervention with continuous progress monitoring of the target skill. This new model should involve early intervention in an effort to avoid the wait-to-fail phenomenon (Barnett et al., 2004). To boost continuing inquiry and research into the topic of SLD, OSEP developed the National Research Center on Learning Disabilities (NRCLD) in 2002. NRCLD has taken the initiative of developing a single definition of RTI, its implementation, and testing RTI approaches for effectiveness (Bradley & Danielson, 2004).

Individuals with Disabilities Education Improvement Act (IDEIA)

IDEIA standards coincide with a RTI framework (Barnet et al., 2004). The Individuals with Disabilities Education Act, as it was originally known, specified as recently as 1997 that there must be an IQ-achievement discrepancy in order for there to be a SLD diagnosis. IDEA was revised in 2004 and renamed the Individuals with Disabilities Education Improvement Act (IDEIA). IDEIA stated that an ability-achievement discrepancy model cannot be required by school districts to identify students as SLD. Rather, an alternative means of diagnosis, RTI, can be used in place of the discrepancy model (Burns & VanDerHeyden, 2006; Cheney, et al., 2008; Ysseldyke,

2005). It states that "a local education agency (LEA) may use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures" [614 (b)(6)(B), IDEA, 2004]. Other changes within IDEIA allowed for 15% of Part B funds to be utilized for early intervention services to aid students that do not meet requirements for special education but do need addition services to function within the regular classroom environment (Fuchs et al., 2004; Moore-Brown, Montgomery, Bielinski, & Shubin, 2005).

No Child Left Behind

The No Child Left Behind (NCLB) act, instated in 2001, asserts that there must be increased accountability for students with learning disabilities, because it requires the inclusion of children with disabilities in state testing and general education. This idea can be attributed to the increase of students with disabilities being incorporated in the general education setting, in order to place them in a least restrictive environment. In relation to students with disabilities, NCLB's hope is to provide improved intervention and instruction methods to maximize learning potential (Barnett et al., 2004; Danielson et al., 2005).

Increase in Number of Students Identified as Learning Disabled

The identification of children as SLD was uncommon prior 1970 (Fuchs et al., 2003). According to Vaughn and colleagues (2003), since the category of SLD was instituted in 1975, the number of students diagnosed as SLD has increased by 200%. Currently, the largest group being served under IDEA is SLD. According to a national survey conducted by the Advocacy Institute (2005) during the 1999-2000 academic

school year, over 50% of the students' served under IDEA Part B are labeled SLD. This extreme increase in the incidence of SLD has elevated concerns about the methods used to identify these students (Fuchs et al., 2003).

Bias in Referrals

The referral of students for special education assessment has commonly been based on teacher opinion. Unfortunately, this reliance on teacher referral has resulted in an overrepresentation of minority groups, students with culturally diverse linguistic backgrounds, and students of low socioeconomic status in special education (Moore-Brown et al., 2005). Not only are teachers biased in their referrals, school psychologists can be biased by a teacher's referral concern when assessing a referred student. In order to illustrate this concept, O'Reilly, Northcraft, and Sabers (1989) conducted a study measuring the bias inherent in referrals. They found that when provided with a teacher's referral concern along with generic, ambiguous reports and data, a school psychologist is more apt to view a student as SLD if a teacher suggests it.

Disadvantages of the IQ-Discrepancy Model

The use of the discrepancy model has been controversial since its inception. This model is commonly referred to as a "wait-to-fail" model, since it delays assistance for students that have academic need (Gersten & Dimino, 2006). The discrepancy model is based on the idea that a student should have a significant difference between his/her IQ and ability scores. The development of a large enough discrepancy for special education qualification is often not observed until a student has struggled through several years of schooling (Fuchs et al., 2002; Speece & Case, 2001; Vaughn & Fuchs, 2003).

Another observed problem with the discrepancy model is that the measurement methods are not valid or reliable. Most IQ tests are seen as poor gauges of intelligence and no reliability has been demonstrated between different scores of IQ and achievement (Reynolds, 1984). The discrepancy model is atheoretical (Fuchs, Fuchs, & Compton, 2004); therefore, professionals employ many different methods and instruments of measuring a discrepancy which results in varying identification (Aaron, 1997; Fuchs et al., 2004; Reynolds, 1984). Discrepancy calculations have varied in the form of computation, the size of discrepancy required for diagnosis, and the type of IQ and achievement tests used (Fuchs et al., 2004).

The discrepancy model can result in the over-identification of students who do not necessarily need assistance and the under-identification of students who are in need. For example, students with extremely high IQ's and average reading abilities would be identified as learning disabled, since there is a significant discrepancy between their IQ and ability. Similarly, poor readers who also exhibit low intelligence would not be served, because they do not have a significant discrepancy between IQ and achievement, even though they are obviously in need of assistance. One could argue that the student with the most need, in this situation, would be the one who is denied services (Aaron, 1997; Fuchs et al., 2004). Under this model, the SLD label is unfairly assigned and withheld from children who need the assistance (Fuchs et al., 2004).

When comparing the SLD population to those who are not labeled as SLD, it has been found that there is not a significant difference between the two groups. Many students have comparable deficits in abilities, whether they demonstrate a discrepancy or not (Fuchs et al., 2003). In fact, studies have illustrated that poor readers with and

without a discrepancy display similar performance on measures of reading ability (Fuchs et al., 2002).

Response to Intervention

Initially conceived by Heller, Holtzman, and Messick in 1982 (Duhon et al., 2009), RTI has been defined as a change in academic or behavioral presentation as a result of the implementation of empirically-validated interventions and instruction (Fuchs et al., 2003; Gresham, 2004; Gresham, 2001). This model of identification is similar to the IQ-achievement discrepancy model, because it is also based on a discrepancy, but, here, the discrepancy is found between pre- and post-intervention ability to display the acquisition of knowledge or a desired increase or decrease in behavior (Gresham, 2004; Gresham, 2005; Vaughn et al., 2003). A diagnosis of SLD would be assigned to those students who do not respond to empirically-validated interventions, or who lack a discrepancy between pre-and post-intervention data, and exhibit low achievement in relation to peers that is not the result of low socioeconomic status, poor general classroom instruction, and culturally diverse linguistics (Duhon et al., 2009; Vaughn et al., 2003).

The purpose of RTI is to identify at-risk students early and to maintain procedures for identification that are valid and reliable (Gersten & Dimino, 2006). RTI also requires that students receive effective instruction with progress monitoring of skills and data-based decision making to inform necessary modification, titrations, or change to evidence-based intervention efforts (Barnett et al., 2004; Duhon et al., 2009; Gresham, 2005). The logic of using this data-based decision making and intervention development and selection has been compared to the efforts of a medical doctor when determining

dosage level or the type of medication needed to produce a positive response in patients, with the intensity of the intervention being matched to the severity of the problem (Gresham, 2005). Such efforts demonstrate the need (or lack of need) for special education resources to maintain progress over time prior to consideration for special education services (Barnett et al., 2004; Duhon et al., 2009). The main benefit of using this type of process is that it requires school professionals to take steps away from simply admiring the problem to remediating the problem early (Gresham, 2005).

L.S. Fuchs proposed the Treatment Validity Model in 1995, which has served as the model for what is now commonly known as RTI. Hawken and colleagues (2008) outlined the National Association of State Directors of Special Education's (NASDE) recommendations regarding the components of an effective RTI system. NASDE asserts that an RTI model must incorporate a multi-tier system of service delivery, a problem-solving model that facilitates decision making about appropriate levels of intervention, the use of evidence-based interventions, data-based decision making about student response, and the application of assessment for screening, diagnostic, and progress monitoring.

There currently is not any single favored RTI model (Danielson et al., 2005). Varying characteristics of different models include the number of tiers involved, the person who distributes the intervention, and whether or not RTI is used as a pre-referral intervention or as the eligibility criterion (Fuchs et al., 2002). Across research, most RTI models can be explained through increasing and decreasing intensity (Barnett et al., 2004) and include multiple phases, most commonly three tiers (Hawken et al., 2008;

Marston, 2005). The two most commonly used models of RTI are standard protocol and problem-solving (Fuchs et al., 2002).

The Original Treatment Validity Model

In response to the notion that the regular classroom should be assessed before a student is identified as SLD, Fuchs developed the Treatment Validity model. Within this model the regular education classroom environment is adapted to aid the at-risk student to maximize his/her learning potential (Fuchs, 2003; Speece & Case, 2001; Vaughn & Fuchs, 2003).

During the first phase of the treatment validity model, the regular classroom is assessed to rule out poor instruction as the cause of under-achievement. If the mean rate of academic growth throughout the entire class is low, a classwide intervention is implemented to fortify classroom instruction. If and when it is found that the classroom instruction is sufficient to encourage learning, the process moves to phase II, during which students are identified as possessing a dual discrepancy (Fuchs, 2003). A dual discrepancy has two components: significantly lower achievement than that of same-age peers and inadequate responsiveness to intervention (Fuchs, 2003; NJCLD, 2005; Fuchs & Fuchs, 1998; Speece & Case, 2001). Dually discrepant students are seen as at-risk for a SLD diagnosis and adaptations are made within the classroom environment to attempt to remediate the problem. Phase III is used to determine whether the in-class adaptations are sufficient to aid the at-risk students. If students continue to display significantly low achievement, they are placed in special education. During phase IV, special education efforts are evaluated to determine effectiveness before the SLD label is assigned. This

phase has generated much controversy, since the student receives special education services before diagnosis (Fuchs, 2003).

In order to conduct assessment of student responsiveness across phases I, II, and III, curriculum-based measurement (CBM) is used (Fuchs et al., 2003). CBM was developed by Deno in the late 1970s (Hosp & Hosp, 2003). CBM is a collection of standardized techniques for cataloging academic progress and aptitude (Deno, Fuchs, Marston, & Shin, 2001) across academic areas such as reading, mathematics, and written expression (Hosp & Hosp, 2003). CBM has appeal due to its simplistic application and interpretation (Ysseldyke, 2005).

CBM was developed as a measurement system to be used by teachers that can produce accurate and meaningful academic information in order to monitor growth and class standing. The information gathered could also be used by teachers to evaluate their teaching environment and the effectives of the programs used within schools (Deno et al., 2001). Deno et al. (2001) examined the use of CBM, and they found that CBM can be used to establish growth criterion for general and special education classrooms when student performance is repeatedly measured.

CBM is part of a larger form of measurement termed curriculum-based assessment (CBA). CBA uses information from the curriculum that students are being taught in order to assess student progress over time. There are two different forms of CBA: mastery measurement and general outcome measurement. Mastery measurement breaks down core curriculum areas into subsets of skills that are assessed with the intent of setting short-term academic goals. Most mastery measurement tests are teacher-made and not standardized. On the other hand, general outcome measurement is standardized

and used to set long term academic goals. CBM would fall under the latter category (Hosp & Hosp, 2003).

Within the Treatment Validity model, CBM is used differently across the phases. During the first phase, CBM is used to describe instructional quality by measuring the mean academic functioning of the classroom. Once the model progresses to the second phase, CBM is used to define a dual discrepancy within a group of at-risk students. While in phase III, CBM measures responsiveness to adaptations in instruction to accommodate the at-risks students. It is the goal of the interventions to increase a student's academic functioning, with the ultimate objective of reaching the class mean (Deno et al., 2001; Hosp & Hosp, 2003).

General Three Tier Models

While, conceptually, RTI models vary in the number of tiers that make up the system and differ regarding the components that each tier entails, three tier models are most commonly employed (Hawken et al., 2008). The National Joint Committee on Learning Disabilities (NJCD, 2005) described the characteristics of a common three tier model of RTI. Students move between tiers until the intervention is found to be effective in remediating the target concern. If the level of resources and intensity required to achieve success is congruent to the level provided within a special education setting, then the student may be deemed eligible for such services (McIntosh et al., 2009).

The first tier takes place within the general education classroom, where empirically validated interventions for academic or behavioral concerns are conducted for all students (NJCLD, 2005). These interventions are often referred to as classwide interventions or core curriculum, and, on average, tier I support should sufficiently meet

the needs of approximately 80% of the student population. Screening assessment is utilized to determine which students are at-risk for academic or behavioral problems. CBM is used to monitor student progress to determine if the intervention is working and to inform effective instruction, while students receive unique, differentiated instruction based on the data collected (Hawken et al., 2008; NJCLD, 2005).

Tier II increases the intensity of the intervention for those students who are deemed at-risk for SLD or behavioral disorders due to their non-responsiveness to the first tier of intervention as indicated by the screening assessment and progress monitoring data (NJCLD, 2005). Tier II interventions have received less attention in research than Tier I and III; however, McIntosh and colleagues (2009) suggest that tier II interventions sbould be easy to implement, demand little to no assessment prior to implementation, and require few extra resources beyond tier I. This intervention is also implemented in the general education classroom in a small group or one-on-one and more instructional time is applied to the target concern. Approximately 15% of the student population will be in need of tier II intervention. Standard protocol interventions, which are packaged, evidence-based interventions, are commonly employed at this tier. Again, CBM is used to measure students' rate of growth repeatedly overtime and to determine intervention effectiveness in order to modify the intervention, if needed. Typically parents are notified of their child's need during this stage. If students continue to be nonresponsive throughout the duration of the second tier, they would move to tier III (Hawken et al., 2008; NJCLD, 2005).

Intensity is further increased in tier III. The individual student's academic or behavioral needs are typically found by conducting diagnostic assessment of student

academic and/or behavioral deficits, and instructional procedures are developed to address the specific deficits. Tier III interventions are provided in a one-one-one setting, and approximately 5% of the student population will require intervention at this tier (Hawken et al., 2005). In some RTI models, a comprehensive evaluation is performed and a multidisciplinary team establishes whether or not the student is in need of special education when tier III interventions are needed. As a whole, "the goal of such a system is to ensure that quality instruction, good teaching practices, differentiated instruction, and remedial opportunities are provided for students with disabilities who require more specialized services than what can be provided in general education" (NJCLD, 2005, p. 251). While there is a lack of consensus regarding the composition of the tiers within RTI, the assumption is that as a student moves through the tiers of intervention, more time, resources, and effort is applied to remediate concerns (Hawken et al., 2008).

Standard Protocol Approach

The standard protocol approach to RTI implements the same standardized, empirically validated intervention for all students who have an equivalent identified deficit in an academic or behavioral area (Fuchs et al., 2002; Fuchs et al., 2003; Gresham, et al., 2005). In this approach, large groups of students can be given the same intervention at the same time, providing for efficient intervention application (Fuchs et al., 2003). Another advantage of using this method is that it improves upon a weakness of the discrepancy model, since it differentiates between a poor instructional environment and an actual skill deficit (Fuchs et al., 2003; Vellutino, Scablona, Sipay, Small, Pratt, Chen, & Denckla, 1996). Within the standard protocol approach, if a student responds to

an intervention, he/she is assumed to be remediated and allowed to continue general education at tier I (Fuchs et al., 2004).

In a study performed by Vellutino and colleagues (1996) a standard protocol approach was assessed. The researchers asked first-grade teachers to nominate their poorest readers, and these students were assessed using the Word Attack or Word Identification subtests of the Woodcock Reading Master Test-Revised (WRMT-R). Those who scored lower than the 15th percentile and did not have a previous disability, such as hearing or vision problems that could account for their poor scores, were asked to participate in the study. Those that were included were assigned to one of two groups: tutoring or contrast.

The tutoring group was given the same one-on-one intervention every day for a semester that lasted for thirty minutes. All tutoring instructors were trained to implement the tutoring lessons properly to ensure that students were given the same intervention. The material in the tutoring sessions sought to improve phonemic awareness, decoding, sight word recognition, and comprehension. Throughout the semester and at the beginning of the following semester, students were administered the WRMT-R to measure progress and responsiveness. Researchers determined four levels of responsiveness, which were very limited growth, limited growth, good growth, and very good growth. At the end of the tutoring sessions, 66 percent of the first grade students had caught up to their peers, having demonstrated good and very good growth. This study is important, because it illustrates how teachers can use the standard protocol approach to improve student outcomes.

Another important study in the examination of standard protocol RTI was conducted by Torgesen, Alexander, Wanger, Rashotte, Voller, and Conway (2001). The researchers chose 50 participants with reading deficits who were attending SLD classes. Students were randomly divided into two groups: the auditory discrimination in depth program (ADD) and the embedded phonics program (EP). In order to gauge the students' abilities before intervention, they were assessed using a battery which included many different measures that investigated the students' phonological processes, reading ability, spelling ability, mathematical ability, expressive and receptive language, overall IQ, classroom behavior, and fine-motor function.

After these initial data were collected for all participants, differentiation in group treatment began. Both groups experienced twice daily tutoring sessions for just under an hour. The ADD program instruction emphasized discrimination between different phonemes, syllables, and self-correction when committing reading errors. The EP program provided direct reading instruction to students by allowing them the chance to practice reading and writing skills. Upon completion of the tutoring sessions, all students were measured again on the same pre-intervention battery. In order to reinforce the intervention skills, each student was provided with two months of generalization training, and follow-up measures were then administered at one and two year intervals with the purpose of monitoring growth in both reading and language abilities overtime. A year after the conclusion of the intervention, almost half of the students no longer needed special education services, and the researchers found that both tutoring groups improved overall reading skills at a two year follow-up (Torgeson, et al., 2001).

Vaughn et al. (2003) examined the process of the standard protocol approach. The participants in this study were 45 second-grade students who had been identified through a two-tiered process as being at-risk for a reading disability. First, teachers recommended students for participation who were not already receiving assistance in reading based on below-grade level performance in English. Second, all recommended participants were screened using the Texas Primary Reading Inventory (TPRI), and those who met the at-risk criteria qualified for participation. The Woodcock Reading Mastery Test Revised (WRMT-R) Word Attack and Passage Comprehension subtests and the Elision, Blending, Rapid Digit Naming, and Rapid Letter Naming Subtests from the Comprehensive Test of Phonological Processing (CTOPP) were administered prior to the intervention and 30 weeks later. The Test of Oral Reading Fluency (TORF) was also administered before the intervention and once every 10 weeks over the 30 week period. Students who met criteria at any administration of the TORF exited the intervention, but still participated in the weekly TORF assessment.

The intervention was administered by four intensively trained tutors. The intervention focused on phonemic awareness, phonics and mastery of sound-letter relationships and word families, fluency, instructional level reading and comprehension, and spelling, because these variables are known to be important for the development of reading skills. Throughout the intervention, each student received 35 minutes of reading instruction each day, and progress monitoring occurred each week to assess growth.

By the end of the study, 34 of the second-grade participants met criteria for exit from the intervention, while 11 did not. These 11 students would be considered for special education. These students also differed from the students that met criteria on the

measures of rapid naming, fluency, and word attack; therefore, these students are a distinct group that is in need of instruction beyond the regular classroom. The researchers argued that because over three-fourths of the participants avoided special education, RTI is a viable option for identifying students with possible SLD (Vaughn et al., 2003).

These studies present a viable alternative to the traditional "wait-to-fail" model. At-risk students were given assistance before being evaluated for special education; therefore, prevention is accomplished through RTI. Standard protocol approach offers an empirically-valid, structured process to address the deficits of previously unresponsive students. Given that poor instruction is taken into account, this approach is more likely to identify true non-responders (Fuchs et al., 2003).

Problem-Solving Approach

There are several problem-solving models used in RTI, and they have spawned from the problem-solving model of consultation (Fuchs et al., 2002; Telzrow, McNamara, & Hollinger, 2000). The problem-solving model adheres to a four step process that includes the identification of the problem, analysis of the problem, plan implementation, and evaluation of the problem and student progress (NJCLD, 2005; Telzrow et al., 2000). Within this approach, each assessment and intervention process is individualized for each student and the problem-solving process is used to accommodate each student's differing needs (Fuchs et al., 2004), because it is assumed that there is not any single intervention that can be effective for individuals of a specific group.

During the problem identification phase of this approach, problem behavior is operationally defined in order to measure the frequency, intensity, and duration of the

behavior. Problem analysis consists of the confirmation of the problem and the determination of variables that may contribute to the solution in order to develop an appropriate plan. During the next step, plan implementation, the plan is executed and monitored. The final step in the problem-solving process is the evaluation of the problem, and the effectiveness of the intervention is assessed and modified as needed. Throughout this process, data are collected to determine a student's responsiveness to intervention. This model serves to explain the problem as environmental, rather than as a within-student characteristic (Fuchs et al., 2002).

When problem-solving RTI is used within a consultation framework, it is triadic in nature, due to the fact that it involves the consultant, teacher, and the student. The consultant's purpose is to guide the teacher through the problem-solving process, while having no direct contact with the student. The teacher serves as a mediator between the consultant's direction and the student's instruction. Behavioral problem-solving has been described by consultants and teachers as effective, because it addresses a wide range of student needs (Fuchs et al., 2002).

Problem-solving models are also used in pre-referral interventions, with the purpose of reducing the number of special education referrals. A pre-referral intervention is defined as a "teacher's modification of instruction, to better accommodate a difficult-to-teach student prior to a formal referral of the student for testing and possible special education placement" (Fuchs et al., 2002, p.160). With the intention of prevention, the consultant works indirectly with the "difficult-to-teach student" through the teacher, in order to minimize the chance of special education referral. This process also serves to reduce future student problems by strengthening the teacher's ability to intervene. This

type of problem-solving approach has been implemented throughout the nation, such as in Heartland Education Agency and Minneapolis School Districts; however, there is inadequate evidence to support these programs since the majority of RTI research has been executed using the standard protocol approach (Fuchs et al., 2002). Overall, the problem-solving approach is widely viewed as an effective way to measure responsiveness to intervention due to its preventative and individualized nature.

Comparing Standard Protocol Approach and Problem-Solving Approach

While both approaches are preventative in nature, the standard protocol approach provides better quality control while the problem-solving approach is more vulnerable to diversity among individuals. Researchers have established data to show that the standard protocol approach can improve academic performance, but there has been little to no research into the effectiveness of the problem-solving approach. To date, neither approach has been implemented on a large scale, because the standard protocol approach has been used mostly in research and problem-solving has yet to display fidelity and implementation accuracy (Fuchs et al., 2002). Both approaches do, however, boast many improvements upon the "wait-to-fail" discrepancy model.

Intervention Intensity

In order for RTI to be feasible, one component of intervention must be the inclusion of a continuum of intensity (Barnett et al., 2006). Intervention intensity, as a construct, is quite broad in definition, but usually can be conceptualized as the time, effort, or resources invested into an intervention (Barnett et al., 2004). Previously, intervention intensity has been defined as the probability that a given intervention will

alter a target concern (Gresham, 2001). Duhon et al. (2009) extended this definition to include the idea that more intense interventions will have a greater effect on the target behavior. To determine the effectiveness of the RTI process for any one student, the intervention type and intensity must be indicated (Fuchs & Fuchs, 2006).

Two categories of intervention intensity have been differentiated. The first is called general education interventions, which are conducted within the classroom setting (Duhon et al., 2009). These interventions involve only minor adjustments to the academic environment to serve the entire classroom of students. Classwide interventions have been shown effective, and a lack of responsiveness by a student or multiple students within the classroom reveals a discrepancy from the normal student response. This lack of response to effective intervention might point toward a SLD if the intervention is academic, or a behavioral disability if the intervention is geared toward behavior (Duhon et al, 2009; Fuchs, 2003).

The second category of intervention is referred to as intensive interventions. These are interventions that are provided to student in a one-on-one or group setting and require resources equivalent to those provided within special education. These types of interventions, while they are resource demanding, provide important information about interventions that are effective in remediating academic problems (Duhon et al., 2009; Fuchs, 2003).

There are two types of intervention intensity designs that can be utilized within RTI: decreasing intensity and increasing intensity. A lack of responsiveness requires a change in intensity, such as reformulating target variables, interventions, and support for students participating in RTI. Within these designs, intervention elements are added or

subtracted in order to find the least invasive intervention necessary to meet the child's needs. The decreases and increases in intensity serve to display the need for special education services (Barnett et al., 2004).

Decreasing intensity designs begin with an intervention that is presumed to meet the immediate needs of the child. These types of designs are usually employed when a child's problem behaviors are particularly challenging, for example, the child's behavior may pose a threat to the safety of the school environment. Parts of the intervention are systematically removed as goals are met until the intervention reaches a least restrictive state (Barnett et al., 2004; Barnett et al., 2006). There are two types of decreasing designs: sequential and partial withdrawal. Sequential withdrawal is the steady, regular extraction of different parts of the intervention to observe whether the treatment effects are sustained. Partial withdrawal is similar to a multiple baseline design, because when there are multiple target behaviors, the intervention can be withdrawn from only one of the behaviors. If withdrawing the intervention does not result in a loss in treatment effect, then the intervention can be further withdrawn from the other target behaviors, which allows for the observation of maintenance effects. If the withdrawal of a component of the intervention results in the maintaining of the treatment effects, then this component is no longer considered necessary. However, if the withdrawal of the component results in the loss of treatment effects, it is considered crucial to the intervention (Barnett et al., 2004).

Increasing intensity designs are similar to decreasing designs, in that they both employ universal screening with the ultimate goal of prevention (Barnett et al., 2006). Increasing intensity designs estimate the least amount of intervention needed to meet the

goals of the treatment, with intervention intensity increasing by the addition or extension of intervention methods until the goals are met (Barnett et al., 2004). Increasing intensity designs are the general design within RTI and can be described as a three-tier model of intervention (Barnett et al., 2006).

Two different areas must be included in an assessment of a student's response to intervention in an increasing intensity design. The first domain was termed by Barnett et al. (2004) as child outcome variables. There "must be socially valid child outcome variables that can be measured repeatedly across time (and)… variables selected must allow for quantification of the intensity of the intervention" (Barnett et al., 2004, p. 68). Direct assessment methods, such as CBM, can be used to assess child outcomes in academic areas, while "active student engagement, rate of skill acquisition or trials to a set performance criterion, and behavioral fluency" can be measured to assess outcomes in behavior (Barnett et al., 2004, p. 68-69).

The second area involves the selection of variables that allow for intervention intensity to be quantified. Barnett et al. (2004) proposed four basic requirements for implementing increasing intensity designs. The first is to perform a task analysis of the intervention plan. Secondly, the behaviors that encompass the intervention are defined. Third, indicators of intensity are selected, while a plan to measure them is developed. Last, in order to estimate intervention intensity, the actual episodes involving participation of the child and change agents are planned and checked. Conclusions about intensity are made by comparing it to the typical routines in the classroom.

Research has assessed the influence of differing intervention intensities. Rhymer, Dittmer, Skinner, and Jackson (2000) attempted to increase the math fluency of four

students by using an intervention involving explicit timing, peer tutoring, and positive feedback with overcorrection. The intervention intensity was later increased by adding performance feedback. The results suggested that there was minor improvement in math fluency when given the less intense intervention; however, three of the four students made additional gains after performance feedback was added to the initial intervention.

Intervention hierarchies are a sequence of interventions or intervention components that target similar response classes and are presented in order of intensity to remediate the concern. Research has utilized intervention hierarchies to evaluate intensity (Barnett et al., 2004; Duhon et. al, 2009). Studies by Daly, Lentz, and Boyer (1996) and Daly et al. (1999) used increasing intensity hierarchical designs to improve oral reading fluency. In both studies, interventions or intervention elements are added as a means to increase intensity with intensity defined as the number of personnel and the amount of time required to execute the intervention.

Researchers have used single case designs incorporating increasing intensities to work with children who were socially withdrawn, had math deficits, and had language deficits. Intensity is increased until intervention goals are met (Barnett et al., 2004). For example, Sheridan, Kratochwill, and Elliott (1990) used an increasing intensities design to treat four socially withdrawn children in developing, practicing, and recording a specific goal for initiating peer contact. Their results indicated that these children matched the amount of social initiations of their peers after the second phase of treatment.

All of the above studies have shed light on the relationship of increasing intensities and student response as a result of the increase; however, the outcomes are

difficult to interrupt due to a lack of systematic enhancement. Since increasing intervention intensity involved adding a new and separate component to the already implemented intervention, we cannot accurately quantify and evaluate this increase in intensity. While, intuitively, simply adding more intervention should increase the intensity of the intervention, since it takes more time to implement, this increase in effort does not necessarily translate into an increase in the response to that intervention. "Because there is an unknown relationship between the different interventions delivered and no anchor is established with which to compare intervention intensity, a systematic and quantifiable approach to evaluating intensity is difficult if not impossible" (Duhon et al., 2009, p. 105). As a result, most evaluations of intervention intensity continue to be wholly subjective (Duhon et al., 2009).

Adding another component to an intervention is not the only way to increase the intensity of an intervention. An intervention's intensity can also be increased by increasing the frequency of the intervention (Shapiro, 2004) or by systematically increasing one component of the same intervention, such as the rate of reinforcement. By increasing the frequency of the intervention or the rate of reinforcement given for appropriate response to the intervention, we are able to systematically and objectively increase the intensity of the intervention. This quantification of intensity can be achieved by assessing the intensity of the intervention as compared to the original intervention. Here the original intervention establishes the foundation for comparing the intensity at different levels of the intervention and increasing a single component of that intervention, such as the frequency or the rate of reinforcement, allows for a metric of comparison to be established (Duhon et al., 2009). This is essential to objectively understanding the

relationship between the intensity of the intervention and the response to that intervention.

Decisions Regarding Responsiveness to Intervention

A variety of methods can be used to measure a student's responsiveness to intervention, and there are two factors that must be accounted for in order to implement RTI. These components are: the timing of the measurement of student response to intervention and the condition that must be met in order to indicate that a student has responded adequately (Fuchs & Fuchs, 2006).

Measurement of Student Response to Intervention

There are three types of measurement of student response that can be employed within an RTI framework: final status performance, growth in response, and a dual focus on performance level and growth in response.

Final status measurement is when students are only measured at the conclusion of the intervention to determine responsiveness. This type of measurement does not account for the amount of learning that takes place throughout the intervention process. If the student meets a predetermined standard at the end the treatment, he/she is considered responsive. There must be a focus on the discrepancy between pre- and post-intervention growth, which is called slope. The desired slope to determine responsiveness can be set in two ways: normative or criterion-referenced. An example of a normative standard is that a student should be above the X percentile when administered a post-test. A criterion-referenced benchmark is one that stipulates a student should be able to read X amount of words or complete X amount of math problems within a given amount of time.

This criterion is associated with later school success when the intervention is no longer offered (Fuchs & Fuchs, 2006).

In contrast, the growth in response measurement method assesses student growth periodically throughout the intervention. The responsiveness decision is based on the amount of growth rather than by a predetermined criterion. It is assumed that growth throughout the intervention indicates past poor instruction rather than a within-child deficit, but it may be argued that if the child needed intensive intervention there may, in fact, be a deficit. This type of measurement can lead to the false conclusion that a child no longer is at risk for special services, because some amount of growth occurred, when the child might actually need special services to maintain growth and continue to learn (Fuchs & Fuchs, 2006).

The final type of measurement is a dual focus on performance level and growth, or dual discrepancy. This approach examines performance level of the individual student along with the amount of growth as compared to same-age peers (Fuchs & Fuchs, 2006). A dual discrepancy is determined when a student displays a difference from their peers on mean level of performance and amount of growth overtime when presented with effective instruction (Vaughn et al., 2003). This can be measured by determining which students do not respond to classroom instruction that has been demonstrated to be effective for most children within the class. For students who do not respond to effective instruction, it is assumed that a deficit exists within the child (Fuchs & Fuchs, 2006).

The determination of which type of measurement is appropriate is dependent upon the ultimate goal of the RTI process: to determine SLD eligibility or to remediate academic problems. The performance level and growth in response standards would be

best suited for remediation, and the dual discrepancy model is best for differentiating those with possible SLD from the regular classroom (Fuchs & Fuchs, 2006).

Determining Response to Intervention

Determining individual student response requires the use of a measurement standard for differentiating responders from non-responders (Fuchs, 2003). There are three different types of standards that can be used to distinguish responders from non-responders: normative, limited norm, and benchmark determinations. The normative approach is when responsiveness is determined based on the full distribution of student scores (percentiles). The limited norm approach is used when the sample of student scores can only be taken from a small group of at-risk students already involved in the RTI process; however, limiting the sample to at-risk students does not provide for a comparison to a normative sample, which assists in delineating significantly poor response. A benchmark determination is used when it is appropriate to set a standard that must be met to achieve future success in the academic domain. An example of a benchmark criterion would be comparing a student's post-intervention math fluency score to a math fluency score that is considered to be representative of success in math (Duhon et al., 2009; Fuchs & Fuchs, 2006).

Utilizing any one of the measurement standards; norm, limited norm, or benchmark; provides researchers and practitioners with a quantifiable and objective tool to examine student response. For example, when employing the benchmark standard, it is possible to quantify the response by calculating the difference from the benchmark both pre- and post-intervention. This calculation indicates the change that is due to the

intervention and the discrepancy from the benchmark that remains, if any (Duhon et al., 2009).

Advantages of Response to Intervention

Due to the many issues related to the traditional "wait-to-fail," ability-achievement discrepancy model of identification, RTI has been explored as an alternative option and has many advantages over the discrepancy model (Fuchs et al., 2002). RTI offers a much more direct and logical method of identification (Gersten & Dimino, 2006). RTI's primary advantage is that of prevention and early identification and instruction of struggling students, which results in the avoidance of the wait-to-fail characteristic of the discrepancy model (Hawken et al., 2008; Fuchs et al., 2002; Gresham, 2004; NJCLD, 2005; Vaughn & Fuchs, 2003). Bailey, Aytch, Odom, Symons, and Wolery (1999) pointed out the importance of early intervention, as younger children are more likely to respond to and maintain positive outcomes from such efforts; therefore, it is vital that schools utilize effective means of identifying at-risk students early in their academic careers (Cheney et al., 2008).

Another advantage of RTI is that is reduces the number of students ultimately referred for special education services (Moore-Brown et al., 2005; NJCLD, 2005), which, in turn, reduces the cost schools have to allot to these services (Fuchs et al., 2002). This is accomplished through the problem-solving approach, by separating out those who are struggling due to poor instruction and those who do, in fact, need special services to succeed. RTI provides assurance that those students who are receiving special services are those who really need it (Vaughn & Fuchs, 2003). Due to the universal screening method commonly utilized by RTI models, teacher bias in identification is reduced

(Gresham, 2004; Moore-Brown et al., 2005; Vaughn & Fuchs, 2003) and there can be a decrease in the disproportional amount of minorities referred for special education (NJCLD, 2005; Vaughn & Fuchs, 2003). In fact, several sites that have used a RTI approach have reported a reduction in the amount to students identified with a SLD (Hawken et al, 2008).

RTI can also promote effective instruction for all students within the education system. All regular education students are considered to be within one of the three tiers of RTI; therefore, students can receive remediation and support regardless of special education needs (Hawken et al., 2008). This is accomplished when a teacher is asked to perform a classwide intervention to identify at-risk students. Experience with valid instruction methods provides the teacher with more knowledge in instructing all students since the focus is on student outcomes (Gresham, 2004; Vaughn & Fuchs, 2003). This can lead to a reduction in the number of students referred for special education simply due to a lack of instruction (Vaughn & Fuchs, 2003). Overall, RTI is more accurate and efficient model for identifying students as SLD (Gresham, 2004).

Behavior and Response to Intervention

RTI has been encouraged and embraced as a method of identifying SLD; however, it has not been accepted within the behavioral domain (Cheney et al., 2008). Prevalence of behavior challenges range from 7-25% in early childhood, and early behavior problems are linked to more serious problems later in life (Barnett et al., 2006). Given the success that has been observed for RTI as it is applied to academic areas, researchers are starting to turn their attention to RTI service delivery for behavioral concerns; however, there is minimal research pertaining to the implementation of such a

system (Hawken et al., 2008). Despite the lack of empirical evidence for RTI in the area of behavior, similar behavior support systems have been used in schools, such as schoolwide positive behavior supports (Fairbanks et al., 2007).

Positive Behavior Supports

Positive behavior supports (PBS) is a systemic program that positively addresses social behavior within schools (Walker, Cheney, Stage, & Blum, 2005). Schoolwide implementation of PBS includes four different components outlined by Warren, Bohanon-Edmondson, Turnbull, Sailor, Wickham, Griggs, & Beech (2006). The first is the formation of a team comprised of school staff members, administrators, parents, and other appropriate stakeholders to establish the behavior support plan. Second, the schoolwide behavior rules and expectations are chosen and defined. These expectations are then taught to the students. Third, a system for acknowledging appropriate behavior and dissuading inappropriate behaviors in line with the behavioral expectations is established. Finally, the program must be monitored for effectiveness.

PBS emphasizes prevention of behavior problems within a three-tiered model, similar to RTI. The first tier consists of the behavioral expectations set forth by the PBS team. The second tier includes students who have been identified as having a particular need, such as social skills groups or school counseling programs. The third tier is provided to students who have more individualized needs, such as individualized behavior contracts (Walker et al., 2005).

Since PBS provides a system of prevention within a school, RTI adds to these programs by adding a special education eligibility logic and by using empirically-based, effective behavior interventions ordered on a continuum of intensity; therefore, RTI can

been seen as an “extension and new application of the already substantial research base regarding positive behavior interventions” (Fairbanks et al., 2007, p. 289).

RTI applied to behavior can also be conceptualized in three tiers. The first tier consists of classwide intervention, which can include interventions to encourage active engagement, instructional modifications (Barnett et al., 2006), or target certain activities or routines that can be adapted. The goal of a classwide intervention is to improve classroom functioning in order to decrease behavior disruptions (Fairbanks et al., 2007). These interventions are implemented by the classroom teacher (Barnett et al., 2006; Fairbanks et al., 2007).

The second tier is described as group or embedded intervention. The children included in this tier have not responded to the first tier and require more intense intervention that is included in the regular classroom activities (Barnett et al., 2006; Fairbanks et al., 2007). Hawken et al. (2008) recommended using either the amount of discipline referrals received by individual students or a systematic screening process for determining which students are nonresponsive to tier I; however, the preferred method is direct observation of behavior. Attendance, tardies, and poor academic performance are also areas that have been observed to determine the effectiveness of tier I intervention (Hawken et al., 2008). Intervention in the second tier might include additional practice of skills needed to perform socially appropriate behavior, additional routine modification, or peer tutoring. Finally, those students who have not responded to the second tier of RTI, would progress to the third tier, which increases in intensity. These interventions are individualized and include more frequent progress-monitoring of the target behavior (Barnett et al., 2006; Fairbanks et al., 2007).

Response to Intervention for Behavior in Research

While RTI as applied to behavior has been discussed in research, very few have attempted to apply it within the school setting. Fairbanks et al. (2007) implemented the RTI process within two second grade classrooms. The researchers defined the first tier of intervention as the universal PBS system already in place within the school. Tier II included 10 students who were considered nonresponsive to PBS and consisted of a Check-In and Check-Out group intervention that provided increased structure and prompts, instruction on specific skills, and increased feedback to the students involved. A student was deemed unresponsive if there was little change in the rate of problem behaviors or the behavior rates increased. Tier III included 4 students and consisted of individualized interventions. Functional assessment rating scales were given to teachers in order to form function-based interventions for each student. Results indicated that tier II intervention was successful in remediating the behavior problems for 6 of the original 10 students. The remaining 4 students responded only after receiving intervention that was considered even more intensive than tier II.

Barnett et al. (2006) discussed the case of Robin, a 4-year old preschool student exhibiting extreme behavior problems. In order to remediate Robin's problems, a classwide intervention was implemented first (tier I). Much like PBS, behavioral rules were selected, posted, and taught to the students in Robin's class. The teacher was also prompted every 3 minutes to provide positive feedback to the students who were behaving appropriately, and high-interest activities were provided to maintain student engagement. Tier II provided more practice in behavioral skills and Robin's appropriate

behaviors were monitored in addition to providing positive feedback every 3 minutes. In the third tier, a more individualized behavior plan was developed for Robin.

Using RTI to remediate behavior concerns has several advantages. Most importantly, since it takes places in the general education classroom, RTI increases the probability that all students in a class will benefit from the evidence-based intervention, not just the referred students. It also provides immediate assistance to those students who are exhibiting problem behaviors (Gresham, 2004). Another advantage is that RTI can lead to more accurate decision making regarding students with behavior concerns, with greater assurance that fewer students will fall into a false-positive or false-negative category of identification (Gresham, 2005). Research has suggested that teachers tend to attribute student behavior problems to variables intrinsic to the child and refer students with the goal of special education placement. RTI can lead to more accurate placement (Gresham, 2004).

More research is needed to determine the contexts that evidence-based interventions are likely to have the maximum effect, and what can be changed in order to improve more students' outcomes (Fairbanks et al., 2007). Overall, research regarding RTI and behavior needs to be conducted within the general education classroom concerning interventions across the three tiers in order to promote appropriate behavior.

Single Case Design

Single case design (SCD) is a category of experimental procedures that have been utilized within the field of psychology and education for many years, especially to establish the effectiveness of intervention efforts. SCD permits educational professionals to document intervention effectiveness in a defensible manner, which is of vital

consequence in today's educational setting (Riley-Tillman & Burns, 2009). SCD grew from the need to examine the influence of an independent variable on individual student's or a small group of students' behaviors and to establish empirically-based intervention (Barnett et al., 2004). Importantly, these designs do not require the existence of a control group or randomization of subjects, which can be difficult, impossible, and even unethical to achieve within a school setting, and they allow data to be collected in a systematic manner and analyzed according to the problem-solving process (Riley-Tillman & Burns, 2009). The core features of SCD are especially important for RTI, as it can be used to assess interventions along a continuum of intensity (Barnett et al., 2004) and provide confidence in the problem solving and data-based decision making process (Riley-Tillman & Burns, 2009).

According to Riley-Tillman and Burns (2009) there are three general purposes of SCD within an educational setting:

1. Did the outcome variable change when the intervention was implemented?
2. Was the observed change due to the implementation of the intervention and *only* the implementation of the intervention?
3. Can the information learned from the educational intervention be generalized to other similar educational problems and settings? (p. 9)

Within the RTI framework, the success or failure of the intervention aids in determining the need for special services; therefore, it is important to conclude that the intervention is indeed what caused the change in behavior (Riley-Tillman & Burns, 2009).

Barnett and colleagues (2004) outlined the basic methods of SCD. The first step is to choose target behaviors or dependent variables to measure. Secondly, the target

behavior is measured repeatedly in order to establish a stable baseline. An evidence-based intervention is then implemented to remediate the behavior of concern. The fourth step is to continue the "measurement of the dependent and independent variables within an acceptable pattern of intervention application and/or withdrawal to detect changes in behavior and make efficacy attributions" (p. 71). The data is then graphed and the difference between the baseline and intervention phases is visually analyzed to determine the intervention effect (Barnett et al., 2004).

Baseline Logic

After a target behavior is chosen, baseline data, or pre-intervention data, must be collected in order to understand the behavior before an intervention is implemented. This idea has been termed baseline logic. There are four steps of baseline logic that underlie all single case designs: prediction, affirmation of the consequent, verification, and replication by affirmation of the consequent (Riley-Tillman & Burns, 2009).

The prediction step involves the initial collection of a series of stable baseline data points and allows professionals to predict what the behavior will look like in the future if intervention is not utilized to remediate it. A sufficient baseline should contain "at least three data points to ensure there is no naturally occurring trend and should be presented a condition severe enough to warrant intervention" (Riley-Tillman & Burns, 2009, p. 52). This phase of data collection is usually notated by 'A.' Baseline data collection is essential to determining if the intervention did indeed cause any change in the target behavior. It is also critical to progress monitoring, as it allows for the comparison of post-intervention scores to pre-intervention scores (Riley-Tillman & Burns, 2009).

The second step, affirmation of the consequent, involves the implementation of the intervention, and it is commonly notated with 'B.' At this point, it has been hypothesized that the selected intervention will result in a change in the target behavior, and this step serves to test this hypothesis. The next step is called verification and is also notated with an 'A,' because it usually involves a withdrawal of the intervention in order to allow the target behavior to return to baseline levels of performance. If the behavior does indeed return to baseline, it can be determined that the original prediction regarding the trend of the baseline data was accurate. For example, one could conclude that the target behavior would have persisted had nothing been done to remediate it, and the changes observed during the intervention phase were associated with the presentation of the intervention rather than some other variable. The final step, replication of affirmation of the consequent, is notated with 'B.' It involves the reintroduction of the original intervention and again generates the chance to monitor the change or lack of change in the data and reinforces the effect found in the initial B phase (Riley-Tillman & Burns, 2009).

Common Single Case Designs

Baseline logic is also identified as the most well-known SCD, the ABAB design. The ABAB design involves the initial baseline measurement phase (A), the introduction of an empirically-validated intervention (B), the withdrawal of the intervention or reversal of the intervention effect (A), and the reintroduction of the intervention (B). This type of design is the only one that utilizes intrasubject direct replication of the experimental effect, and it allows for experimental control. One major disadvantage of

this type of design is that some target behaviors involve learning and, therefore, the effects cannot be reversed (Riley-Tillman & Burns, 2009).

While ABAB designs achieve experimental replication through the withdrawal of the intervention, a multiple baseline design accomplishes experimental replication by reproducing the effect across participants, settings, or stimuli with a delay "between phase changes across the multiple consequents" (Riley-Tillman & Burns, 2009, p. 54). In other words, there is a delay in the change from A to B across the chosen consequents. For example, if a researcher chooses to utilize the same intervention in the same setting with three different students, the first student would receive the B phase while the other two students are still in the A phase. The prolonged A phase for the second and third student are acting as verification for the A phase of the first student. "After the intervention effect has stabilized, and assuming the baseline conditions remains stable for the remaining two cases, a second B is initiated" with the second student, and so forth (Riley-Tillman, 2009, p. 54). A multiple baseline design provides for experimental control without the need for reversal; however, it is difficult to use this type of design to evaluate the effect of different interventions (Riley-Tillman & Burns, 2009).

A multielement design provides for the comparison of different interventions, and the replication of the experimental effect is commonly achieved across subjects. The construction of this the multielement design will likely result in the maximum internal validity for evaluations of intervention success. "For example, a comparison of two interventions with a final return to baseline would be ABACABACA or ABACACABA, or ABCABCA, or ABCACBA, and so on" (Riley-Tillman & Burns, 2009, p. 64). This type of design contains the same characteristics of the classic ABAB design; however, it

moves between intervention phases at a much quicker pace. The disadvantage of this type of design is that the data collection may require an abundance of time and resources, and it necessitates the need for rapid decision making (Riley-Tillman & Burns, 2009).

Interpretation of Single Case Design

After the data is collected within a SCD, the data is summarized and analyzed in a visual format, primarily in line graph form, which is the most helpful and efficient method of presentation. Generally, no more than three target behaviors are plotted on any single graph, each series of data is connected with a line, phase changes are noted, the X-axis represents time, and the Y-axis is the outcome data values. Traditional visual analysis includes reviewing the level, immediacy, variability, and trend of the data (Riley-Tillman & Burns, 2009).

The most basic technique of interpreting SCD data is to compare the *level* of the data before the intervention (baseline) to the level of the data after the intervention phase. The level of change is also compared to the goal for the target behavior to determine intervention effectiveness. Another method, *immediacy/latency of change*, seeks to review the data immediately after the intervention is introduced, and, ideally, the intervention would alter the target behavior in such a way that one can observe an immediate 'step' in the graph after the intervention is initiated. Latency of change seeks to determine how long it takes (immediate or delayed) for the intervention to change the target behavior. If the change in the data is immediate, it indicates that the change is probably due to the intervention; however, if the response is delayed, it is more challenging to ascribe the behavior change to the intervention (Riley-Tillman, 2009).

Variability "refers to the amount of variation in range and/or consistency in the set of data" (Riley-Tillman, 2009, p. 80). The objective of intervention may be to reduce the variability of the target behavior rather than establish a completely new level. Presenting a high-low range is a straightforward method of expressing the variability of data; however, the percent of nonoverlapping data can also be utilized to analyze variability. This would be accomplished by observing the amount of data overlap between phases, and one would expect to see no overlap in behavior between phases. Finally, a change in *trend* is the rate of change within a phase, and a change in the trend of the outcome data is indication of satisfactory change. Evaluating the trend in data allows researchers and practitioners to make predictions about the data (Riley-Tillman, 2009).

Single Case Design and Response to Intervention

SCD is essential for evaluating RTI initiatives regarding behavior due its utility in measuring experimental effects on one student or with small groups of students. Most studies within education have utilized SCDs. RTI calls for empirically-based intervention, and SCD provides the format for determining intervention effectiveness. Given that high-stakes decisions about special education eligibility can now be placed on the effectiveness of such interventions in remediating target concerns, it is important that experimentally valid forms of measurement are utilized to ensure that outcome data is truly due to the intervention (Riley-Tillman, 2009).

Rationale

In response to the problems surrounding the discrepancy model of identifying learning disabilities, IDEA now allows RTI as an alternative means to identify students

with learning disabilities. Preliminary research regarding the use of RTI model has been promising (Case et al., 2003; Gresham, 2001; Gresham et al., 2005; Speece et al. 2003, Torgesen et al., 2001; Vellutino et al., 1996), but issues concerning its implementation still exist. In research an RTI approach has been extensively applied to SLD and academic concerns, rather than behavior problems. RTI can be applied to behavior, but research needs to be conducted to establish it as an efficient, useful diagnostic tool for behavior concerns.

Research regarding RTI has primarily been centered on academic concerns (Fairbanks et al., 2007), especially concerning reading disabilities (Gresham et al., 2005). However, behavior has remained relatively unexplored regarding response to intervention criteria. It has been shown that behavioral challenges are present within the educational setting, and early behavioral problems tend to result in later serious problems in children (Barnett et al., 2006). Although a three-tiered process has been discussed, it has been applied in research only a few times. There is a need for research validating RTI models in the area of behavior.

Previous studies have shed light on using a RTI approach with behavior concerns; however, they do not sufficiently account for the connection between the intensity of the intervention and the outcome generated. Fairbanks et al. (2007) offered separate interventions across all three tiers of intervention. The application of three distinct interventions renders intervention intensity difficult, if not impossible, to quantify and evaluate, because there is an unknown relationship between the three different interventions, and there is no established criterion to compare the intervention intensity across the three tiers. As a result, any statement about the relationship between the three

interventions and intervention intensity is ultimately subjective. Additional research is needed that utilizes systematic, quantifiable changes in intervention intensity in order to construct accurate comparisons between intervention intensity and student responses (Duhon et al., 2009).

This study examined a model of response to intervention in behavior. Within this model an effective general education intervention was implemented to all students within one grade at an elementary school. A model incorporating single case design involving increasing intensity was implemented. This particular model was implemented to answer crucial questions regarding response to intervention.

Research Questions and Hypotheses

One main question to be answered by this study is can an RTI approach be used to differentiate student response to behavioral intervention? If so, can we compare student responsiveness based on intervention intensity required to meet a set criterion of success? Finally, can discrepant children's responsiveness be altered to match that of the general population? The following list summarizes the research questions and hypotheses to be addressed:

Research Question 1: *Can an RTI approach be used to differentiate students' responses to behavioral intervention?*

It is hypothesized that a behavioral intervention can be used to differentiate students' responses. The null hypothesis states that there will be no significant difference in students' responses.

Research Question 2: *Can student responsiveness be compared based on the intervention intensity required to meet the criterion for success and can the level of responsiveness be measured?*

It is hypothesized that increasing intervention intensity can be used to compare student responsiveness and measure the level of responsiveness. The null hypothesis states that increasing intervention intensity cannot be used to compare student responsiveness and the level of responsiveness cannot be measured.

Research Question 3: *Can discrepant children's responsiveness be altered to match that of the general population?*

It is hypothesized that discrepant children's responsiveness can be altered to match that of the general classroom population. The null hypothesis states that discrepant children's responsiveness cannot be altered to match that of the general classroom population.

CHAPTER III

METHODS

Experiment One

Participants and Setting

The participants in this study were 19 general education students from one kindergarten classroom at an elementary school in a southwest community. Superintendent, principal, and teacher consent was obtained prior to data collection procedures (See Appendix A for Research Prospectus). The first phase of the experiment included all of the students in the classroom. The second phase included 3 students: Blake, Tim, and Jack (pseudonyms) who exhibited low response rates during the first phase. Parent consent and child assent were obtained for the 3 students included in the second phase. Both parent permission and child assent forms stated that the student could withdraw permission at any time to remove themselves from the research project (See Appendix B for Parent Consent Form and Appendix C for Child Assent Form).

Experiment procedures were conducted by the experimenter and research team members in the classroom setting during scheduled afternoon 'circle time,' which was a specified interval of the day during which behavior concerns were present. During circle time the students in the class sat at assigned spots on a round carpet, and the teacher sat in a chair at the front of the classroom in very close proximity to the circle. During circle

time the teacher presented various educational activities, including descriptions of the weather, reading a class message aloud, reading a book aloud to the class, reviewing an alphabet letter of the week, counting out loud, choral responding to letter sounds, etc. Some of the tasks required the students to respond chorally, while others required the students to raise their hands before answering. Students were often expected to sit quietly on their assigned spot while the teacher presented new information.

Materials

Structured Observation Forms

Materials for the first phase of this study consisted of structured observation forms with 152 observation intervals that were 12 seconds in length; therefore, the daily observation session lasted 30 minutes, 24 seconds. Structured observations were utilized, because they are considered the preferred method to evaluate students' RTI regarding behavior (Hawken et al., 2008). All students in the class were included on the observation form in order of the seating arrangement with each student being observed for a total of 8 intervals. Observations began with the first student and moved in a clockwise manner around the carpet. After the final student was observed, observation methods were repeated until the end of the observation period.

In 1976, Walker and Hops used an observation system with a 19-category time sampling code to record the behavior of the students in one classroom in successive 6-second intervals. The classroom teacher was interviewed to determine the behaviors of concern. In order to establish a baseline level or performance for the class, a student referred by the teacher for poor behavior (experimental subject) was observed during the first 6-second interval, a peer during the next interval, the experimental subject again

during the third interval, and another peer in the fourth 6-second interval. "A new peer was observed every alternate interval until all peers had been observed once; then, the cycle began again and continued until the observation session was terminated" (p. 161). Similarly, Riley-Tillman and colleagues (2009) utilized systematic direct observation to measure on-task reading behavior. The primary observer used a 10-minute observation form with 15-second intervals. Ten seconds were designated for observing, while the final 5 seconds of each interval was reserved for coding. The observation began with the first student and moved in a counterclockwise fashion around each table in the room until each student had been observed three times. The study was a BABA design, and the observation system was utilized during both the behavior intervention phases and the withdrawal faces.

The observation forms for this study were constructed to include the behavior concerns within the classroom that were reported by the teacher and were observed using interval recording. The disruptive behaviors included on the observation form included talking out (TO), out of seat (OS), peer interaction (PI), teacher attention (TA), motor movement (M), and off-task (OT). The appropriate behavior included on the observation form was on-task (+; See Appendix D for Classwide Observation Form). TO, OS, PI, TA, and M were recorded using partial interval recording, while OT was recorded using partial interval recording with a 6-second interval duration requirement. On-task (+) was recorded using whole interval recording.

All behaviors were operationally defined prior to the initiation of observation procedures. TO is defined as any inappropriate vocalization including yelling out when the student is expected to raise his/her hand to answer a question, humming, clicking,

grunting, etc. This code did not include vocalizations that were appropriate to the task (e.g. choral responding). Talking to a peer was recorded as a PI rather than talking out. OS was defined as sitting in any area other than the assigned spot on the carpet, including the time-out chair which was located at the back of the room, standing, lying down, sitting on knees, etc., when expected to be on their assigned spot. This did not include appropriate out of seat behavior (e.g. standing when told to do so for a singing and dancing task). PI was defined as interacting with a peer, such as talking, touching, etc., that is inappropriate to the task. TA is defined as teacher attention (verbally or physically) for inappropriate behavior directed to the individual student being observed. When a student was visually oriented to something other than the task being presented and/or the teacher, the student was coded as OT. Examples include, playing with shoes, clothes, etc. while not paying attention; staring at the ceiling, wall, carpet, out the window, etc. This must occur for at least 6 seconds of the interval to be recorded. Inappropriate M was defined as playing with objects while attending to the task, swinging arms, kicking legs, hitting self, rocking, turning around while still in assigned seat, etc. This does not include minor motor movements or movements appropriate to task, such as rocking lightly to the beat of the music, etc. On-task was defined as the lack of the above behaviors. The student must be on-task for the entire interval for it to be recorded.

Two different observation forms were used during the second phase of the experiment; however, the same recording procedures and behavior codes were continued. The first observation form, Non-responder Observation Form, included 3 students identified as being non-responders to the first phase of the experiment. The form was a 30-minute structured observation with 150, 12-second observation intervals allowing for

50 observations of each student (See Appendix E for Non-responder Observation Form). The second observation form included the 15 students who were determined to be responsive to the initial intervention. One student had withdrawn from the school prior to this phase of the experiment; therefore, there were 18 total students in the class. The observation form also consisted of 150, 12-second observation intervals allowing for each student to be observed for a total of 10 intervals. (See Appendix F for Responder Observation Form).

Intervention Materials

An intervention was developed to remediate the identified behaviors of concern. Class rules were established to address the target behaviors: sit on your pockets, raise your hand, keep your hands and feet to yourself, and pay attention to Mrs. Smith (pseudonym). A poster of the circle time rules was utilized to visually cue students to the expected appropriate behaviors. The teacher was also provided with a script for the first day of intervention that explicitly explained the circle time rules and the intervention procedures to the students in an age-appropriate manner (See Appendix G for First Day Intervention Script). Similarly, a script was provided for the beginning of circle time, the intervention time period, to be read every day after the first day of intervention. This script served to cue the students to the poster of rules and remind them of the expectations and possible rewards dependent upon their behavior (See Appendix H for Beginning of Intervention Script). A script was given to the teacher to read at the end of the intervention time period explaining if the class was going to be reinforced for appropriate behavior or not (See Appendix I for End of Intervention Script). The teacher's implementation of the scripts was monitored daily using integrity sheets (See

Appendix J for First Day Script Integrity, Appendix K for Beginning of Intervention Script Integrity, and Appendix L for End of Intervention Script Integrity).

In addition, a small, glass bowl (classwide bowl) contained each student's name on a strip of orange construction paper and was utilized to determine who would receive a reward at the end of the intervention period. This bowl was employed during both phases of the experiment; however, during the second phase the non-responders' names were taken out of the classwide bowl. A second bowl (non-responder bowl) contained strips of both blank construction paper and construction paper with a star drawn on the inside and was used with the non-responding students to determine if a reward would be provided.

Reinforcements were used throughout the intervention to reward students for engaging in appropriate behavior. The teacher was asked to identify acceptable reinforcers for the classroom, and the reinforcers used were academically and age appropriate, such as pencils, erasers, stickers, and small toys.

Dependent Variables

The first dependent variable in this study was the average rate of on-task behavior of the class as measured by the interval recording system during the first phase of the experiment. The target behavior was on-task behavior, which was defined as the absence of disruptive behaviors (TO, OS, PI, TA, M, and OT). The second dependent variable was individual rates of on-task behavior for the 3 non-responding students as measured by the structured observation system during the final phase of the experiment.

Responsiveness was examined to determine effectiveness of the behavior intervention and if increasing intervention intensity could reduce the difference between

the level of on-task behavior rates and criterion levels of performance. Visual analysis of classwide and individual student rates of on-task behavior as measured by of the structured observation system was used. Responsiveness was operationalized as the level of on-task behavior, and a criterion level of 75% on-task was chosen to indicate responsiveness. The daily on-task percentages were graphed (using a line graph in Microsoft Excel) to compare the classwide and non-responder student performance level to the 75% criterion. During the first phase of the experiment the intervention was deemed successful after classwide on-task behavior rates were consistently maintained at or above 75%. Each of the 3 non-responding students were also considered to be responsive to the intervention after maintaining on-task rates at or above a 75% level.

Behavior Intervention

Classwide Intervention

The purpose of the intervention was to increase levels of appropriate, on-task behavior in a general education classroom. The intervention involved differential reinforcement of incompatible behaviors; reinforcing students for not engaging in the target behaviors. The reinforcement was distributed using a lottery system. The objective of the intervention was to increase on-task behaviors to the preset criterion level of 75% or above.

The intervention was conducted during ‘circle time’ from 12:00pm until 12:45pm. The classroom teacher indicated that this time period was troublesome as the majority of students were off-task. At the beginning of every intervention time period, the teacher posted the classroom rules. The teacher read the rules to the students and explained them in an age-appropriate manner using scripts provided by the researcher. After the teacher

finished reading the intervention script, the researcher and research team members began conducting the structured observations. At the conclusion of the observation period, the researcher nonverbally alerted the teacher as to whether or not the class met criterion to be rewarded (class average on-task at 75% or higher). The teacher then read one of two paragraphs on the intervention script: one that indicated the class earned the chance to receive a reinforcer or the paragraph that alerted the class that they did not earn rewards. If the class met criterion, the teacher picked 3 names from the classwide bowl to choose a reinforcer. This gave each student a 17% probability of being rewarded on any given day.

Non-Responder Intervention

After the non-responders were identified, their names were removed from the classwide bowl; however, they still participated in circle time, listening to the classroom rules, and viewing the poster of rules. The only intervention components that changed were the probability of reinforcement and the intervention bowl utilized. This change in the probability of reinforcement is representative of the intensity of the intervention. The researcher and team members informed the non-responding students of the change in intervention in an age-appropriate manner.

The probability of being rewarded on any given day was increased twofold from 17% to 33% by placing four blank strips of paper and two marked strips of paper in the non-responder bowl. The non-responders were observed using the non-responder observation sheet. If criterion levels of performance were met during an intervention time period, the student was allowed to pick from the non-responder bowl. If he picked a piece of paper with a star, he was allowed to pick a prize. If he picked a blank piece of

paper, he was told he could try again the next day. If the student did not respond to the increased probability of reinforcement, the probability was again increased twofold from 33% to 66% by placing four marked pieces of paper in the bowl and two blank pieces of paper. This increasing intensities procedure was used until the student was deemed responsive to the intervention. One student required intensity levels such that the bowl was no longer used. Once the intensity was increased to 100% probability of reinforcement, the student was automatically rewarded at the end of the intervention period for achieving criterion levels of performance. The intervention intensity was increased to 100% probability of receiving two reinforcers for one non-responding student, and this was achieved by providing two rewards at the end of the intervention period for achieving criterion levels of performance.

Overview of Procedures and Experimental Design

Prior to the experiment, approval was obtained from the institutional review board (IRB) of Oklahoma State University (OSU). The first phase of the study, the *Pre-Intervention Phase,* involved direct observations of student behavior in the classroom to obtain a baseline level of classwide behavior. The inappropriate behaviors measured were high frequency, low intensity behaviors that are occurring across multiple students. The second phase of the study, the *Intervention Phase One,* involved the use of the behavior intervention across the entire sample to establish a rate of intervention response in which the class average was performing at a set criterion level. The goal of this phase was to establish classwide responsiveness to the intervention, or on-task rates of behavior at 75% or above. The intervention was implemented using an ABAB design to determine that the behavior intervention caused the behavior change. Once the class was deemed

responsive, the intervention was withdrawn and the class returned back to baseline levels of behavior. When baseline rates were achieved, the intervention was again implemented and the class average on-task behavior, as measured by the interval recording system, returned to 75% or above. The third phase, *Intervention Phase Two*, entailed the use of the same intervention at increasing intensity levels to improve the response of the students who responded poorly to the initial intervention phase. During this phase, student response to increasing intervention intensity was evaluated within a multiple baseline design across subjects to establish response matching. Intervention intensity was systematically increased, and visual analysis was used to evaluate responsiveness.

Pre-Intervention Phase: Establishing Baseline Levels of Performance

Baseline. A teacher interview was conducted in order to identify the behaviors of concern that were occurring in the classroom and the time of day during which they are occurring most frequently. A structured observation system was developed to observe these behaviors of concern. This observation system was split into intervals, and the observer systematically cycled through the classroom observing a different student during each interval to determine an overall base rate of the target behaviors. If a student was absent his/her particular observation intervals were skipped. During the study, observer agreement was calculated using the per cent agreement method; observers had to agree on on-task behavior (absence of off-task behaviors) in an interval for that interval to be counted as an agreement. Agreement was calculated by dividing the number of agreements by the total number of agreements and disagreements. The agreement scores for each observation period were averaged together to obtain the average observer

agreement for the entire course of the study. Observer agreement averaged 95.8% across all observers and ranged from 88% to 100%.

Intervention Phase One: Establishing Classwide Responsiveness

This phase was designed to evaluate classwide response to the behavior intervention. Once the target behaviors were identified and defined, an empirically-validated, research-based intervention was constructed to increase levels of on-task behaviors for the class. The intervention included visual and verbal cues and reinforcement of incompatible behaviors. The intervention was implemented during a specified interval of the school day: circle time. Students were reinforced for appropriate, on-task behavior. An ABAB single case design was utilized. Given that the class began intervention with low rates of on-task behavior, they were initially reinforced for successive approximations of the goal until they reached the 75% criterion level in order for them to experience success. Once the on-task behavioral performance of the classroom was functioning at the pre-set level of 75% or above, the intervention was withdrawn in an effort to return the levels of behavior back to baseline rates. After baseline rates of behavior were reestablished the intervention was again implemented in an effort to reach the 75% criterion level again.

Intervention Phase Two: Rate of Response Matching

At this time the observation data was disaggregated by student to determine which students had the lowest average on-task behavior rates. These three students were deemed non-responsive and proceeded to Intervention Phase Two.

The purpose of this phase was to increase the rate of appropriate, on-task behaviors of the non-responding students to the criterion level of 75% by increasing

intervention intensity in a systematic manner. To accomplish this, the same intervention from Intervention Phase One was applied with increasing intensity in a multiple baseline design across subjects. Intensity is defined as the probability of reinforcement. The 3 non-responding students were included on an observation sheet identical to the observation sheet containing the other 15 students.

Baseline. The non-responding students were observed using the structured non-responder observation sheet to determine their individual baseline levels of behavior.

Intervention. The intervention was implemented in the classroom by the classroom teacher, the experimenter, and team members. The teacher followed the exact same procedures implemented during the first intervention phase. Differences in intervention delivery involved increasing the probability of reinforcement for those students included in this phase of intervention. For example, in Intervention Phase One each student had a 17% chance of being rewarded, and intensification included increasing the probability of being rewarded to 33% and so forth. The non-responding students were also taken out of the classwide bowl and were provided with their own bowl to choose from.

Non-responding students were observed using the same methods as before but on the Non-Responder Observation Form with the observer cycling through only the 3 non-responding students throughout the 30 minute observation. This allowed each of the 3 students to be observed for a total of 50, 12-second intervals. The remaining 15 students were observed in the same manner, each being recorded across 10 of the 12-second intervals. The level of intervention intensity was continually increased by multiples of 2

until each of the non-responding students reached criterion to be deemed responsive to the intervention.

Experiment Two

Participants and Setting

The participants in this study were the 3 students who were included in the last phase of the first experiment and showed responsiveness at increased intensities in Intervention Phase Two. This study was conducted by the experimenter and the research team members in the classroom setting during the same interval of time in the school day as in the first experiment.

Materials

Structured Observation Forms

The same 30-minute observation system utilized in Intervention Phase Two of Experiment One was employed to measure the students' rate of appropriate behaviors.

Reinforcement

Reinforcement was used during the intervention to reward students for reaching and maintaining criterion levels of behavior 75% on-task or above. The reinforcers were academically and age-appropriate materials that were selected by the classroom teacher, such as pencils, erasers, stickers, and small toys.

Dependent Variable

The dependent variable in this study was the rate of on-task behaviors displayed throughout the fading procedure. The intervention intensity was systematically decreased in the same amounts it had been previously increased. Rate of on-task behavior was measured using the Non-Responder Observation Form. The goal of the experiment was to maintain levels of responsiveness at 75% or above throughout each fade in

intervention intensity until the 3 students reached the initial intensity of the classwide intervention.

Visual analysis of individual student rates of on-task behavior as measured by the structured observation system was used. Responsiveness was operationalized as the level of on-task behavior, and a criterion level of 75% on-task was chosen to indicate responsiveness. The daily on-task percentages were graphed (using a line graph in Microsoft Excel) to compare student performance to the 75% criterion.

Fading Procedure

Students in this experiment are those that required higher rates of reinforcement, or higher levels of intensity, to reach the same level of on-task behavior as average responders. The purpose of this procedure was to shape these discrepant responders back to the same rate of reinforcement as average students while maintaining criterion levels of performance.

Overview of Procedures and Experimental Design

Each student who was included in the final phase of the first experiment was included in this second experiment. The purpose of this experiment was to fade each student back to average levels of intensity. This experiment involved gradually decreasing the rate of reinforcement in multiples of two to reach the same level as average responders. The intervention intensity was faded to the intervention level of intensity that produced average classroom performance at or below criterion level. This experiment was a changing criterion design.

Baseline. The classwide intervention utilized a 17% probability of reinforcement, while each of the three target students required a greater probability to achieve

responsiveness. Baseline performance was the level of intervention intensity (probability of reinforcement) required in the first experiment for the student to reach the criterion level of performance.

Intervention. The intervention intensity was faded to the intervention level of intensity that produced average classroom performance at or above criterion level. This experiment was a changing criterion design. The same intervention procedures from Experiment One, Intervention Phase Two were utilized here, except the intervention intensity was decreased (instead of increased) with the same increments as it was previously increased. At each change in intervention intensity, the experimenter evaluated if the student maintained performance at or below the criterion level of 75% on-task. If criterion levels of performance were maintained, the intervention was further faded until the intervention intensity matched that of the classwide intervention intensity. Lastly, the students were included in the classwide bowl rather than being provided with the non-responder bowl for reinforcement once they reached the 17% probability of reinforcement intensity level.

CHAPTER IV

RESULTS

Experiment One

Pre-Intervention Phase: Establishing Baseline Levels of Performance

Pre-Intervention screening indicated that the classroom had low rates of on-task behavior relative to the 75% on-task criterion level. On average during the 8 initial baseline observation sessions the class was on-task 52.6% of the observation period. This indicated that there was a need for a classwide behavior intervention to increase on-task behavior.

Intervention Phase One: Establishing Classwide Responsiveness

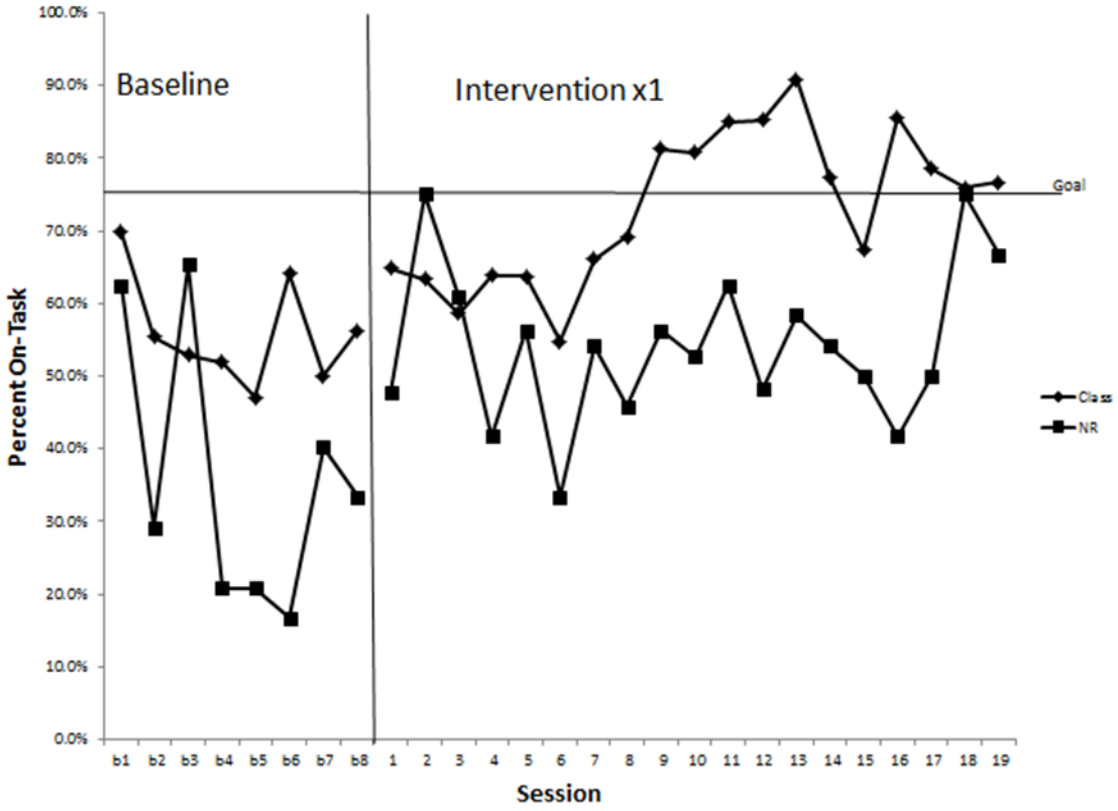
The first intervention phase was conducted for 19 sessions. Initially, the goal of 75% on-task was not being met. Integrity of intervention implementation was measured during the observation periods, and integrity ranged from 75% to 100% with an average integrity score of 96.8%. Individual student data was disaggregated and graphed against the class average on-task rates of behavior. Upon examination of the class average rates of on-task behavior and the individual student rates of on-task behavior using visual analysis, it was evident that 3 students were pulling down the class mean. By

disaggregating individual student data clear patterns can be seen across time. Looking at one data point is not useful; however, looking at the patterns of data is useful in differentiating students' responses to the behavior intervention. After separating the 3 non-responsive students from the other 15 students in the class, the goal of 75% on-task was met. Figure 1 offers a graph that compares the 15 responsive students versus the 3 students identified as non-responsive to the initial, classwide intervention phase at intervention intensity 1 (17% probability of reinforcement). A clear level difference between the different groups can be seen. This indicates that the intensity of the classwide intervention does not produce the level of on-task behavior identified as indicating responsiveness for the 3 non-responding students; however, the intervention intensity is sufficient for the rest of the class.

In order to validate that the intervention caused the change in level of on-task behavior rates an ABAB design was implemented. The behavior intervention was withdrawn until a return to baseline rates was achieved. After the class returned to baseline, the intervention was then implemented again at the same intensity level until the class met the goal of 75% on-task. Figure 2 displays the non-responding students and the class rates of on-task behavior throughout the ABAB design.

Figure 1

Class versus Non-Responders: Initial Classwide Intervention



Using visual analysis it can be seen that the class and non-responder rates of on-task behavior before the intervention was below the 75% criterion level. During the first implementation of the classwide intervention the level of class on-task behavior was at or above 75% during several sessions, indicating responsiveness to the intervention; however, the non-responding students did not meet the criterion level. During the second baseline phase, the class and non-responding students returned to low rates of on-task behavior. The class again responded to the intervention and returned to criterion levels of performance; however, the non-responding students' on-task behavior rate did not change. By comparing individual student response to class average response, it can be seen that these 3 non-responding students were discrepant. Table 1 displays the 3 non-

responding student average on-task rates as compared to the average of the other 15 students in the class.

Figure 2

Class versus Non-Responders: ABAB Design

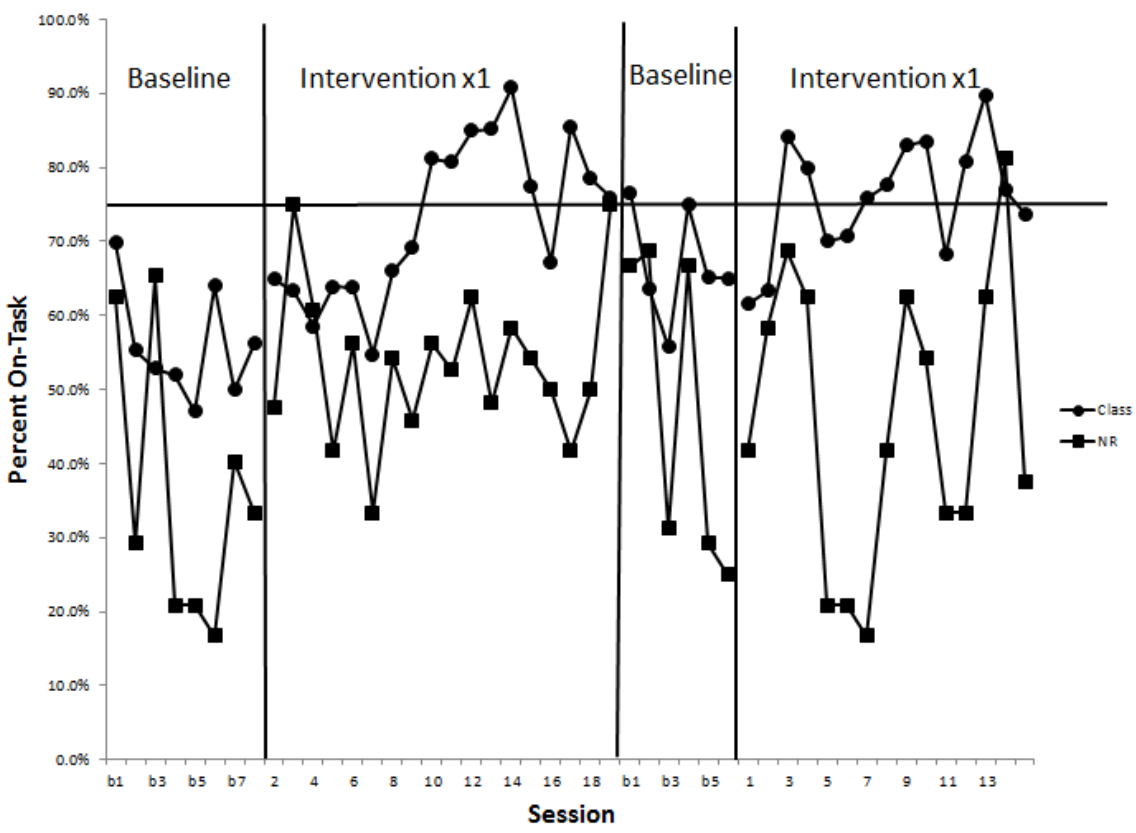


Table 1

Average Class On-Task Rates vs. Non-Responders

	Baseline	Intervention	Baseline	Intervention
Class Average	55.9%	73.1%	60.9%	77.0%
Blake	28.8%	57.0%	39.6%	49.1%
Tim	45.0%	54.3%	60.4%	51.1%
Jack	33.9%	51.0%	21.9%	37.5%

Intervention Phase Two: Rate of Response Matching

The second intervention phase (Rate of Response Matching) included 3 students: Blake, Tim, and Jack who exhibited low response rates during the first intervention phase.

Baseline or Intensity One: 17% Probability of Reinforcement

Performance of the 3 non-responders during the individual baseline (classwide intervention intensity 1: 17% probability of reinforcement) was very similar to that of their rates of on-task behavior during the first intervention phase. Blake, Tim, and Jack continued to perform with rates of on-task behavior below the criterion level (See Figure 3).

Intensity Two: 33% Probability of Reinforcement

During this phase the 3 participants were exposed to the intervention with increased intensity. They were allowed to pick from the non-responder bowl if they met criterion level of performance and had a 33% probability of reinforcement. One student, Blake, met the criterion level of on-task behavior during this phase and the intervention was not intensified further for him; however, the other two students did not and they proceeded to the next intensity level (See Figure 3). In examining Blake's data, it appears that the baseline data was trending upward before the implementation of the second intensity level. While this is true, the third baseline data point is relatively stable with the initial intervention data points before he was deemed responsive to the intervention. There is also a clear level difference between his baseline data and the

criterion level; therefore, this upward trend is considered inconsequential to the ultimate result.

Intensity Three: 66% Probability of Reinforcement

During this phase the students received the same intervention; however, if they met criterion for reinforcement they were given a 66% probability of reinforcement. During this phase, Tim met the criterion level of on-task behavior consistently; therefore, intensification ended for this student. Jack did not meet criterion, and, as a result, he proceeded to the next intensity level (See Figure 3).

Intensity Four: 100% Probability of Reinforcement

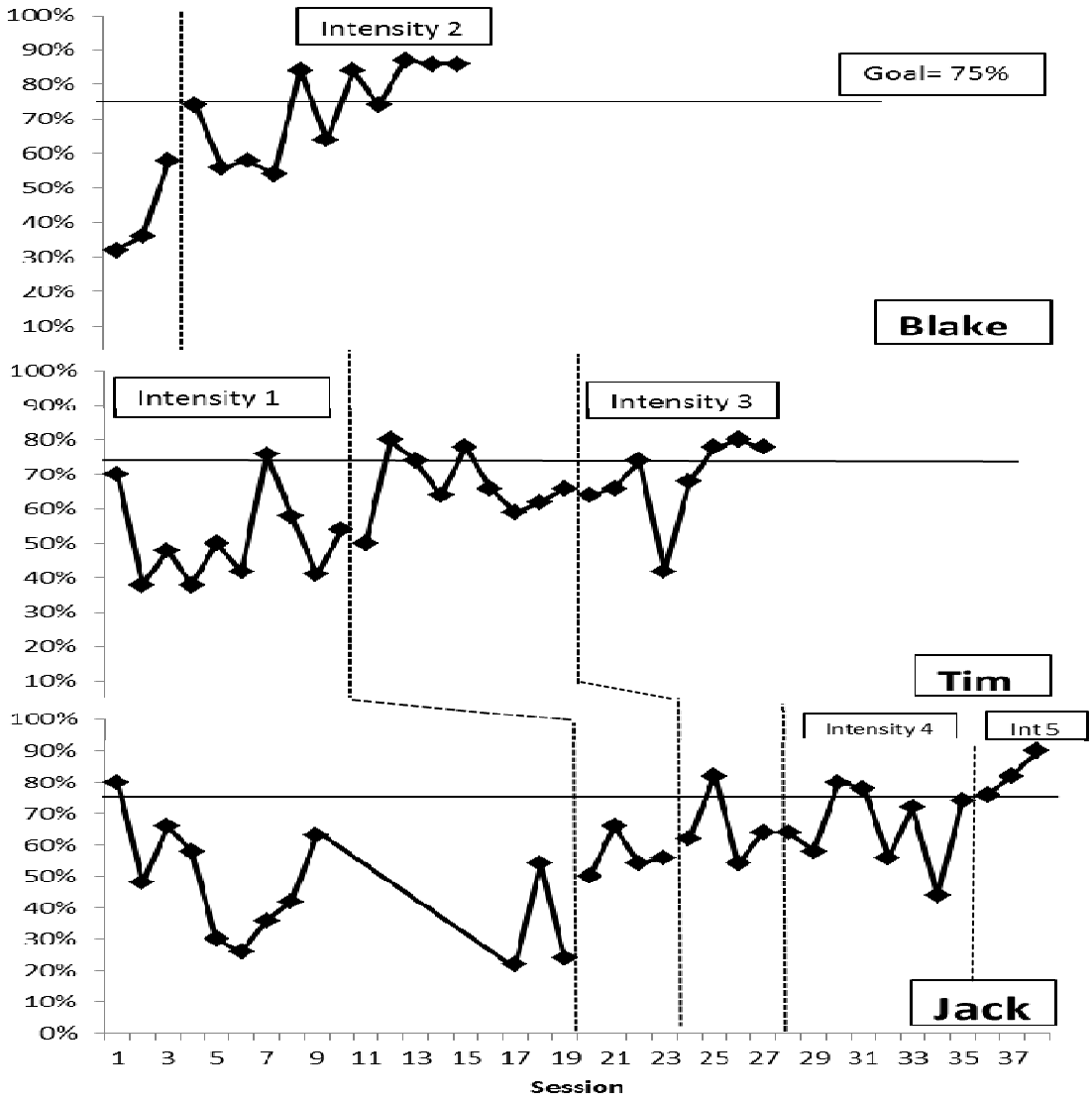
If Jack met criterion levels of performance on any given intervention session he received a reinforcer without picking from the non-responder bowl ensuring a 100% chance of reinforcement. This probability was chosen, because it is impossible to increase the probability of reinforcement beyond 100%. After seven intervention sessions at this level of intensity, Jack did not consistently meet criterion levels and intensity was increased further (See Figure 3).

Intensity Five: 100% Probability of Reinforcement with Two Rewards

During this phase Jack was given two reinforcers for meeting criterion levels of performance, and he consistently met criterion levels at this intervention intensity (See Figure 3).

Figure 3

Multiple Baseline Graph



Experiment Two

Fading Procedure

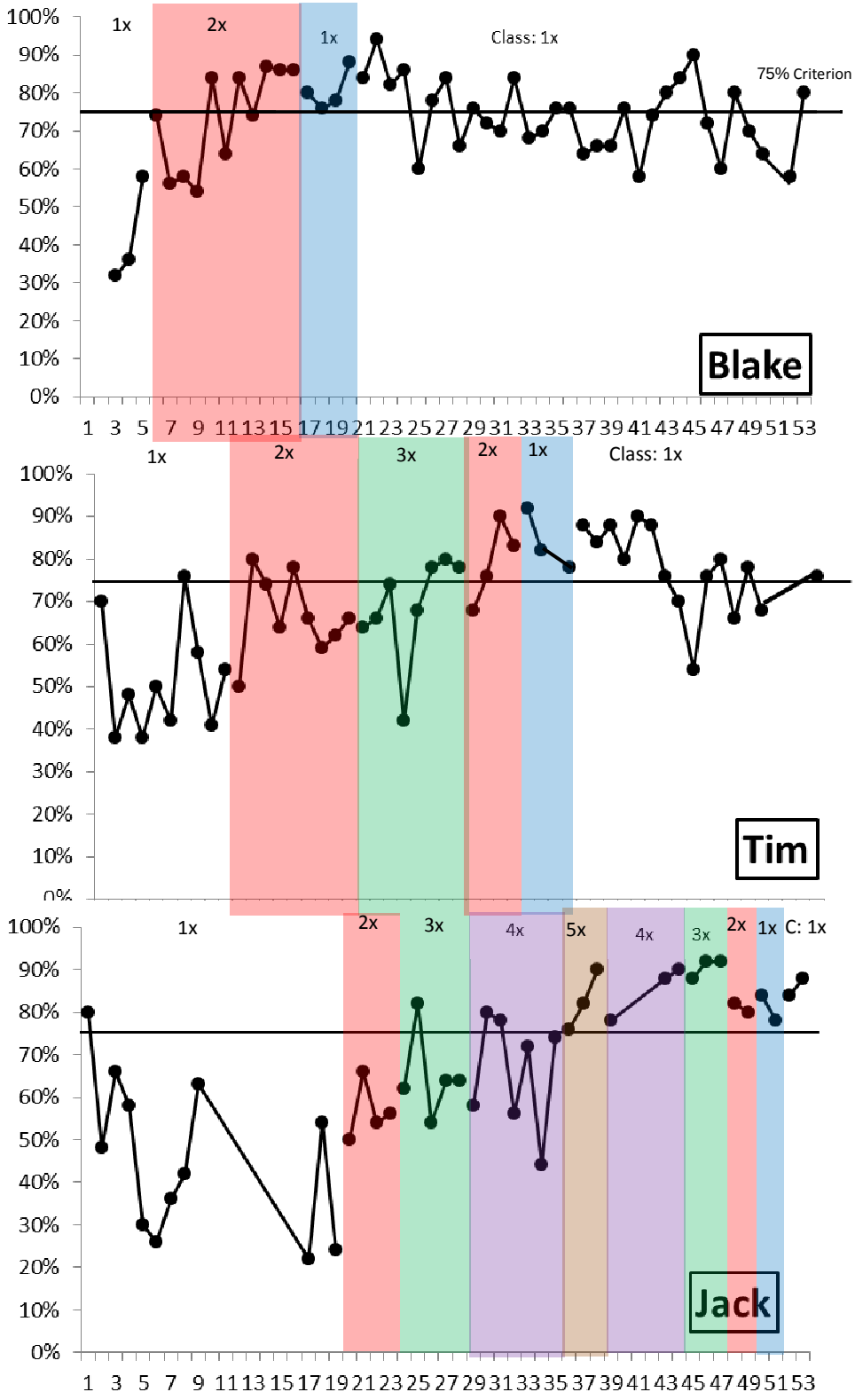
Once responsiveness was achieved for each individual target student during the first experiment, the intervention was faded out in the same increments as it was intensified in order to find the rate of reinforcement required to maintain behavior at or above the criterion level of performance. Blake began the fading procedure first, because he responded first at the second intensity (33% probability of reinforcement). The intervention was faded back to 17% probability using the non-responder bowl for reinforcement. Criterion levels of performance were maintained at the first fade; therefore, Blake was placed back in the classwide bowl with the rest of the students in the class. While Blake's rates of on-task behavior were variable after returning to the classwide intervention, the level of on-task behavior was much improved when compared to the level of behavior prior to intervention intensification. This level difference can be seen on Figure 4. The intervention was effective for Blake at Intensity 2 and was able to be faded back to classwide levels of intensity while maintaining adequate levels of appropriate on-task behavior.

Tim was responsive at Intensity 3 during the first experiment; therefore, the intervention was faded from Intensity 3 to Intensity 2. Once the responsiveness level was maintained at this rate of reinforcement, the intensity level was faded to level 1 while using the non-responder intervention bowl. Tim was then placed back in the classwide intervention and was also able to maintain adequate levels of appropriate on-task behavior (See Figure 4).

Jack required intervention intensity at Intensity 5 before maintaining on-task behavior rates at or above the criterion level of 75%. The intervention was faded in the same manner as the other students, and Jack was also able to be placed back in the classwide intervention while maintaining appropriate levels of on-task behavior (See Figure 4).

Figure 4

Intervention Graph with Fading Procedure



CHAPTER V

DISCUSSION

The primary purpose of this investigation was to examine student response to an invention used to increase appropriate behaviors. Response was examined by measuring the percentage of on-task behavior of students in a kindergarten cohort. In the first experiment, intensity was systematically increased until responsiveness was achieved. In turn, the intensity was systematically decreased in the same manner during the second experiment to ascertain the minimum amount of support required to maintain a criterion level of performance. This systematic increase and decrease in intensity allowed the researcher to quantify intervention response and gain a clearer understanding of how this response changed when intervention was altered by intensity levels (i.e. probability of reinforcement).

Initially, an ABAB single case design was employed to establish the effectiveness of the classwide behavior intervention. The intervention was conducted during a 30 minute period of the school day and included all students in the kindergarten cohort with the goal of increasing the class average on-task performance to 75%. In RTI terms, the experimenter examined student response rates which would reflect a tier I intervention in the RTI literature. The 3 non-responding students' data were disaggregated from the rest of the class data since it was pulling down the overall class average rate. After nine

intervention sessions the class, averaged together without the non-responding students' data, met this goal. The non-responding students, averaged together, only met the criterion level once during this first intervention phase. The intervention was then withdrawn until the rate of behavior returned to baseline levels. After six sessions the intervention was re-applied to the entire cohort. The class reached the criterion level of performance after only two intervention sessions, while the non-responding students only met criterion once during the second classwide intervention phase; therefore, the initial level of intensity (17% probability of reinforcement) was sufficient to elicit response to intervention for all students except the 3 students deemed non-responders. Since an ABAB design was utilized, it may be concluded that intervention is what caused the increase in on-task behavior.

The second phase of the first study included the 3 non-responding students. A multiple baseline design across subjects with increasing intensity was employed in an effort to answer the first research question: Can a RTI approach using an increasing intensities design be used to differentiate student response to behavioral intervention? The same behavior intervention from the first phase was used and the probability of reinforcement was systematically increased until each student was deemed responsive to the intervention (reached the criterion for success). Student response was successfully differentiated and measured. Intervention intensity was increased in a systematic, quantifiable way, which made it possible to measure response and compare student response in an objective manner. Blake required a 33% probability (intensity 2) of reinforcement for response to intervention to be achieved, while Tim responded at 66% probability of reinforcement (intensity 3). Jack required the most intense intervention

before he reached the criterion level of on-task performance. He responded at the 5th level of intensity (100% probability of reinforcement with two rewards).

This intervention phase also answered the second research question: Can student responsiveness be compared based on the intervention intensity required to meet a set criterion of success? Each student required a different level of intensity before response (meeting the criterion) to intervention was achieved; however, each student eventually met the criterion. Each student's response can be compared in an objective manner to describe the level of intensity required for response. For example, Tim required two times the intensity that Blake required for response to intervention to be achieved.

The second study attempted to answer the final research question: Can discrepant students' responsiveness be altered to match that of the general population? Once each student reached the criterion level of on-task behavior, the intervention intensity was systematically decreased. All 3 students maintained their on-task behavior rate at 75% or above, even after being incorporated back into the tier I intervention. Importantly, Blake and Tim maintained their improved behavioral performance for an extended length of the study. It is unknown if Jack would have maintained performance across time, as time constraints did not allow for additional observation. Practitioners need to examine not only the amount of intervention needed to produce performance, but also the level of intensity required to maintain that performance. This knowledge can help address questions concerning the type of programming necessary to help remediate behavioral deficits.

Implications for Practice

This study examined a model of response to intervention in behavior. Within this model an effective general education intervention was implemented with all students within one kindergarten classroom. One purpose of this study was to determine if an intervention of increasing intensities could be used to differentiate student response, and, if so, can that student response be compared. It is important to explore RTI designs regarding behavior, because such a process could potentially reduce the amount of students who are mislabeled with a behavioral disability and provide early intervention services to those students who are at-risk for such disabilities (Gresham, 2005). Gresham (2005) stated that if a student's behavioral deficits or excesses continued after the employment of evidence-based intervention that is implemented with integrity, then that student should be eligible for special services. In this particular study, a model of RTI was successfully used to differentiate, identify, and compare students with behavioral deficits to the average performance of their peers in an objective and quantifiable manner.

Previous research incorporating increasing intensity designs with behavioral intervention have introduced new and different components after the first intervention was ineffective in producing the desired outcome, making it next to impossible quantify and explain the intensity level and response (Duhon et al., 2009). Results of this study indicated that the application of an intervention with increased intensity of reinforcement results in quantitatively more intense intervention for the individual target students. The original intervention resulted in adequate improvements in performance for all but 3 students in the sample. These 3 students required intensity up to the fifth level to meet the criterion level. The intervention remained the same across all intensity levels. The

only component modified was the probability of reinforcement for meeting the behavioral goal; therefore, it is possible to understand the relationship between the intensity of the intervention and the response produced. Different students required differing levels of intensity to meet the criterion level, and intensifying along a single dimension established an anchor for comparison and a known relationship between intervention intensities. At the conclusion of the intervention phases of the first study, all students were considered to be functioning at the criterion level for success.

Another purpose of this study was to alter the discrepant students' responsiveness to match that of the general population. All students were faded from the highest intensity required to achieve responsiveness back to the classwide intervention intensity (17% probability of reinforcement). Determining if a student can maintain behavior at the normative level is exceedingly important within a RTI model, especially regarding special education eligibility. It can be argued that if a student achieves responsiveness at an intensity level that requires resources commensurate with special education, then he/she would be eligible for these services. However, if a student is able to respond at a normative level after previously being discrepant from peers, he/she may not be in need of special services. This method of identifying *how much* intervention a student requires in order to maintain behavior could serve to decrease the number of students who are inappropriately labeled with a behavioral disability and reserve those services for students who are truly in need. This study not only determined which students were in need of increased intensity, but also how much intensity students need to increase positive behaviors and maintain them across time.

Limitations and Directions for Future Research

Although the results of this study procured positive outcomes for the students involved and provided insight on how to apply the RTI process to behavior, there are several limitations that should be taken into account when analyzing these results. The first limitation is that the data were collected within one school district from a southwest community. This may cause the generalizability of the data to be in question, although there were no obvious components of the intervention that would suggest differences in utility across populations. Also, student behavior was only measured during 30 minutes of the day and in one classroom setting. The generalizability of student behavior across settings was not measured; therefore, it is unknown if student behavior improved in any other contexts. Finally, the observation system was strenuous and time consuming, as it was conducted for 30 minutes every day and required multiple observers. Realistically, such a system could not be utilized by school personnel in a resource-efficient manner. Other, less strenuous, methods for determining and measuring response to intervention would need to be utilized by school staff if a similar paradigm were to be used.

There is a continued need to examine RTI models in multiple academic areas, especially behavior (Vaugh & Fuchs, 2003). Replication of this study with other groups and settings with diverse backgrounds, different age groups, and students with varying behavioral needs should be conducted to allow for further validation that RTI models can be effective in remediating behavioral concerns. There is also a continued need to examine RTI and increasing intensity models with larger groups of students in an effort to increase generalizability and establish reliability and validity of RTI models. Researchers and practitioners need to discover how to best produce meaningful results for

students in a way that is most reasonable given the amount of resources in financially strained public schools.

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APPPENDICES

Appendix A
Research Prospectus

Research Project Synopsis

Title: Evaluating Responsiveness to Intervention for Behavioral Concerns

Investigators:
Cari Fellers, M.S. — Doctoral Student, School Psychology Program
Gary Duhon, Ph.D. — Oklahoma State University, School Psychology Program

Purpose of Research:
Response to Intervention (RTI) has been defined as a change in academic or behavioral presentation as a result of the implementation of empirically-validated interventions and instruction (Fuchs et al., 2003; Gresham, 2004; Gresham, 2001). The purpose of RTI is to identify at-risk students early and to maintain procedures for identification that are valid and reliable (Gersten & Dimino, 2006). Preliminary research regarding the use of RTI models have been promising (Case, Speece, & Molloy, 2003; Gresham, 2001; Gresham, VanDerHeyden, & Witt, 2005; Speece, Case, & Molloy, 2003, Torgesen et al., 2001; Vellutino et al., 1996). Research regarding RTI has primarily been centered on academic concerns (Fairbanks et al.,), especially regarding reading disabilities (Gresham, VanDerHeyden, & Witt, 2005). However, behavior has remained relatively unexplored in the area of response to intervention criteria. It has been shown that behavioral challenges are present in 7-25% of preschool students, and early behavioral problems tend to result in later serious problems in children (Barnett et al., 2006). Although a three-tiered process has been discussed, it has been applied in research only a few times (Barnett et al., 2006; Fairbanks et al., 2007). There is a need for research validating RTI models in the area of behavior. This study will examine a model of response to intervention in behavior.

Specific Objectives:
This research project will examine the optimal amount of intervention needed in order to enhance performance in behavioral skills. Specifically, this study will evaluate the intensity of an intervention needed to produce appropriate behavior.

Instrumentation/Materials:
Materials for this study will consist of structured observations in order to determine the rate of inappropriate behaviors displayed in the class and the rate of appropriate behaviors as a result of the behavioral intervention. Students will receive rewards in order to support high levels of effort. Teachers will select acceptable items from a reinforcer survey and a reward box will be created which will contain items such as stickers and pencils.

Target Population:
The participants in this study will include students and general education teachers from Stillwater Public Schools or surrounding areas. Participants will be students from a kindergarten or first grade classroom. Students will be given permission forms which must be signed by their parents in order to be included in the study. After receiving parent permission, child assent will also be obtained. As stated in both parent permission and child assent forms the student can withdraw permission at any time to remove themselves from the research project.

Research Conditions:
This project will involve a classwide intervention conducted in the classroom. The experimenter will enter the classroom once daily to carry out the intervention. The intervention will be implemented and the students' behaviors will be observed. At the end of each intervention session, the students will be rewarded for the absence of inappropriate behavior. Those students that display high levels of inappropriate behavior will be included in the same intervention with increased intensity, increased reinforcement, until they reach acceptable levels of behavior. Once each student has been deemed responsive to the intervention, the intervention intensity will be faded back to normal levels. The intervention should take approximately 30 minutes. The study is anticipated to last approximately 90 days.

Confidentiality Procedures:
Every effort will be made to ensure confidentiality. Information will be stored in a password protected database with access only available to the researchers working on this project. Data reported to the general public would be group and individual data; however, no identifying information (student, teacher, school, district) will be made public.

At the end of the study the teachers will be given information concerning their students' performance. Parents who request information regarding their child's progress will also receive information concerning their behavioral performance.

Utilization of Results:
The data collected from this study will be used for the purposes of completing and publishing in professional journals and/or at professional conferences. The results of this study may also be used to assist teachers in behavioral intervention and instructional planning.

Appendix B
Parent Consent Form

Parent Permission Form

Research Project Title: Evaluating Responsiveness to Intervention for Behavioral Concerns

Principal Investigator: Cari Fellers, M.S., Doctoral Student at Oklahoma State University

Your child's class has been chosen to participate in a research study designed to increase school success. This consent form contains important information to help you decide if it is in your child's best interest to take part in this study.

Purpose:

This study will be looking at the best possible amount of behavioral intervention needed to improve performance in behavioral skills. Your child has been receiving a classwide behavior intervention within the classroom. Student behaviors have been observed during regular classroom activities. The study should last for approximately 60 school days. Your child has been selected to earn additional rewards approved by the teacher for improving his/her performance (e.g. stickers, pencils). Those students who are not granted parent permission will continue with the general education behavior intervention already in place, will not receive additional rewards, and will not be included in data collection.

Procedures:

This project involves a classwide behavior intervention already in place in your child's classroom. The investigator has been entering the classroom daily to carry out the intervention. The intervention lasts about 30 minutes per day and does not interrupt regular classroom activities. Each student is rewarded for following the classroom rules, and your child has been selected to receive extra rewards to improve performance. Direct observations of your child's behavior using an observation form will be done in the classroom to look at his/her levels of behavior, and he/she will be rewarded for positive behaviors. No punishment of any kind will be used.

Confidentiality:

The data and database will be kept at Oklahoma State University and only the Principal Investigators and the doctoral level research assistants working on the project will have access to it. This database is contained with a password-protected program. Data will only be collected for those students who are participating in the research. At the end of the study, the results will be made available for both you and your child's teacher. In order to provide this information it is necessary to keep the data identifiable in the database; however, once student information is given to the principal, teacher, and parents, the identifiers will be removed from the database and student names will be

replaced by numbers. The records of this study will be kept private. Any written results will discuss group and individual findings and will not include information that will identify your child. At the conclusion of the study, all data will be shredded and destroyed.

Risks of Participation:

There are no known risks associated with this study.

Benefits:

The benefit of the study is that it may also help your student by improving his or her performance in behavioral skills.

Compensation:

As an incentive of participating in this research project your child will be able to pick one treat from a box of assorted candy and small toys for returning this consent form. The child will be allowed to pick a treat if consent was granted or not.

Participant Rights:

Your child's involvement in this project is completely voluntary. In addition, you may choose to withdraw your child from the project at any time without penalty.

If you have any questions with regard to your child's involvement in this study, please contact us at your earliest convenience. For information on subjects' rights, contact Dr. Sheila Kennison, IRB Chair, and 219 Cordell North, Stillwater, OK 74078, (405) 744-1676 or irb@okstate.edu.

Contact Information:

Cari Fellers
Doctoral Student
Oklahoma State University
(405) 706-7261

Gary Duhon
Associate Professor
Oklahoma State University
(405) 744-9436

____ **Yes, I give my permission for my child to be included in the research project.**

____ **No, I prefer that my child not be included in the research project.**

Parent/Guardian Signature: _____ Date: _____

Student's Name: _____

Appendix C
Child Assent Form

Verbal Child Assent Script

Student's Name: _____

Read the following to the student.

Procedures:

We have been coming to your classroom for a while to help your teacher and have been giving out prizes to you and your classmates. We will be giving you and a few other students more chances to earn prizes, but nothing else will change. You do not have to earn more prizes if you do not want to. You can stop at any time you want. If you do not want to earn extra prizes, you can continue earning the same amount of prizes as the rest of your classmates.

Risks:

Since you normally earn prizes when I work with your teacher, the extra prizes will not change what you and your teacher are doing. You will not get a grade for this. Your teacher has said that it is okay for me to give you more prizes.

Rights:

You do not have to earn more prizes if you do not want to. You can stop at any time you want. You do not have to do anything that makes you feel uncomfortable or sad.

Would you like to earn more prizes?

Yes _____ No _____

_____ _____

Signature of Researcher Date

Appendix D
Classwide Observation Form

TO- Inappropriate Talking Out
OS- Inappropriate Out of Seat
PI- Inappropriate Peer Interaction
TA- Inappropriate Teacher Attn.
M-Inappropriate Motor Movement
OT- Off task
+- on task

Name:_____
Date:_____

12	24	36	48	60
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 16 TA OT M +	TO OS PI 17 TA OT M +	TO OS PI 18 TA OT M +	TO OS PI 19 TA OT M +	TO OS PI 1 TA OT M +
TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +	TO OS PI 6 TA OT M +
TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +	TO OS PI 11 TA OT M +
TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +	TO OS PI 16 TA OT M +
TO OS PI 17 TA OT M +	TO OS PI 18 TA OT M +	TO OS PI 19 TA OT M +	TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +
TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +	TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +
TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +	TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +
TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +	TO OS PI 16 TA OT M +	TO OS PI 17 TA OT M +
TO OS PI 18 TA OT M +	TO OS PI 19 TA OT M +	TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +
TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +	TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +
TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +	TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +

12	24	36	48	60
TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +	TO OS PI 16 TA OT M +	TO OS PI 17 TA OT M +	TO OS PI 18 TA OT M +
TO OS PI 19 TA OT M +	TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +
TO OS PI 5 TA OT M +	TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +
TO OS PI 10 TA OT M +	TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +
TO OS PI 15 TA OT M +	TO OS PI 16 TA OT M +	TO OS PI 17 TA OT M +	TO OS PI 18 TA OT M +	TO OS PI 19 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 16 TA OT M +	TO OS PI 17 TA OT M +	TO OS PI 18 TA OT M +	TO OS PI 19 TA OT M +	TO OS PI 1 TA OT M +
TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +	TO OS PI 6 TA OT M +
TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +	TO OS PI 11 TA OT M +
TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +	TO OS PI 16 TA OT M +
TO OS PI 17 TA OT M +	TO OS PI 18 TA OT M +	TO OS PI 19 TA OT M +		

% TO: ___/___ X 100= _____%

% OT: ___/___X 100= _____%

% OS: ___/___ X 100= _____%

% +: ___/___ X 100= _____%

% PI: ___/___ X 100= _____%

% TA: ___/___X 100= _____%

% M: ___/___X 100= _____%

Appendix E

Non-responder Observation Form

TO- Inappropriate Talking Ou M-Inappropriate Name:____________________
OS- Inappropriate Out of Seat Motor Movement
PI- Inappropriate Peer Interaction OT- Off task Date: _____________________
TA- Inappropriate Teacher Attn. +- on task

12	24	36	48	60
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +

12	24	36	48	60
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +
TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +
TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +
TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +	TO OS PI Blake TA OT M +	TO OS PI Jack TA OT M +	TO OS PI Tim TA OT M +

Blake + = ______/50 = _____% on task. At or above ____%? Yes or No. If YES, reward. If NO, no reward.
Jack + = ______/50 = _____% on task. At or above ____%? Yes or No. If YES, reward. If NO, no reward.
Tim+ = ______/50 = _____% on task. At or above ____%? Yes or No. If YES, reward. If NO, no reward.
** If they get to try for a prize, indicate if they actually got to pick a prize or not by putting a star next to their names**

Appendix F

Responder Observation Form

TO- Inappropriate Talking Out
OS- Inappropriate Out of Seat
PI- Inappropriate Peer Interaction
TA- Inappropriate Teacher Attn.

M-Inappropriate Motor Movement
OT- Off task
+- on task

Name:______________________

Date: ______________________

12	24	36	48	60
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +

12	24	36	48	60
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +
TO OS PI 1 TA OT M +	TO OS PI 2 TA OT M +	TO OS PI 3 TA OT M +	TO OS PI 4 TA OT M +	TO OS PI 5 TA OT M +
TO OS PI 6 TA OT M +	TO OS PI 7 TA OT M +	TO OS PI 8 TA OT M +	TO OS PI 9 TA OT M +	TO OS PI 10 TA OT M +
TO OS PI 11 TA OT M +	TO OS PI 12 TA OT M +	TO OS PI 13 TA OT M +	TO OS PI 14 TA OT M +	TO OS PI 15 TA OT M +

% TO: ___/_____ X 100= ______%

% OS: ___/___ _X 100= ______%

% PI: ___/___ _X 100= ______%

% M: ___/_____X 100= ______%

% OT: ___/_____X 100= ______%

% +: ___/___ _X 100= ______%

% TA: ___/_____X 100= ______%

Appendix G
First Day Intervention Script

Intervention Script: First day of Intervention to explain procedures to students

1. Post classroom rules on board or wall where students can see them at all times during the 40 minutes.

2. Say, "**These are our classroom rules while we are sitting on the carpet for circle time. I'm going to read them and explain them to you. If all of you follow these rules you will have a chance to win a prize at the end of circle time.**"

3. Point to the first rule and read aloud: "**Please sit on your pockets. This means that I would like for you to stay sitting still on your letter while we are in circle time**. **You may not lay down, lean back, or stand up.**" Explain it further if need be, so they understand this rule and what is expected of them.

4. Point to the next rule and read aloud: "**Please raise your hand. This means that I would like you to raise your hand when you want to answer a question or ask a question. You may not talk to your neighbor or talk out loud without raising your hand and waiting for me to call on you to talk**." Explain it further if need be, so they understand this rule and what is expected of them.

5. Point to rule three and read aloud: "**Please keep your hands and feet to yourself. This means that you may not touch your neighbor with your hands or your feet."** Explain it further if need be, so they understand this rule and what is expected of them.

6. Point to the last rule and read aloud: "**Please pay attention to what Mrs. Smith is teaching. This means that you must have your eyes on me or what I am teaching while we are on the carpet. You may not stare at the wall, the floor, or your neighbor."** Explain it further if need be, so they understand this rule and what is expected of them.

7. Say: "**At the end of circle time, if all of you have followed the rules, I will draw three names out of this bowl** (show them the bowl). **Those three students will be allowed to pick a prize from the treasure box** (Show them the treasure box and some of the prizes they can earn). **If all of you have not followed the rules, no one will get to pick a prize, and we will try again the next day."**

8. Say: **"Does anyone have any questions?"** Answer any questions the students might have as best you can.

9. Review the rules one more time and begin lesson.

10. As you are going through the lesson, praise students as you see them following the rules. Remind others that are not following the rules to follow them.

Appendix H
Beginning of Intervention Script

Intervention Script for beginning of circle time: Every day after the first day of intervention

1. Post classroom rules on board or wall where students can see them at all times during the 40 minutes.

2. Say, "**Remember our classroom rules for circle time? Let's go over them again."** Here you can either ask them to tell you what they are or you can read them aloud to the students.

3. Point to the first rule and read aloud: "**Please sit on your pockets."**

4. Point to the next rule and read aloud: "**Please raise your hand."**

5. Point to rule three and read aloud: "**Please keep your hands and feet to yourself."**

6. Point to the last rule and read aloud: "**Please pay attention to what Mrs. Smith is teaching."**

7. Say: "**Remember that at the end of circle time, if all of you have followed the rules, I will draw three names out of the bowl. Those three students will be allowed to pick a prize from the treasure box. If all of you have not followed the rules, no one will get to pick a prize, and we will try again tomorrow (or give the next day of the week you'll be in school if it's a Friday or a holiday)."**

8. Begin lesson. As you are going through the lesson, praise students as you see them following the rules. Remind others that are not following the rules to follow them.

Appendix I
End of Intervention Script

End of Intervention Period: Script A-Earn Reward

1. Say: "**Our circle time has ended. Since most of you did a great job following our classroom rules, I am going to pick three names from the bowl to come and pick a prize from the treasure box."**

2. Get the bowl and pick three names from it randomly. Call out each name one-by-one. Encourage the students to be happy for those that get called to pick a prize (i.e. by clapping for them, etc). Allow each student to quickly pick a prize.

3. Say: "**Great job following our classroom rules today. Tomorrow everyone will get another chance to be picked to choose a prize from the treasure box."**

End of Intervention Period: Script B-No Rewards

1. Say: "**Our circle time has ended. Too many classroom rules were broken today, so I will not be giving out prizes. Tomorrow (**or next day of week you'll be in school**) we will try again to follow the rules to earn prizes."**

Appendix J
First Day Script Integrity

Name:_____ Date:_____

Intervention Integrity: First day of Intervention to explain procedures to students

_____Post classroom rules on board or wall where students can see them at all times during the 40 minutes.

_____Say, "**These are our classroom rules while we are sitting on the carpet for circle time. I'm going to read them and explain them to you. If all of you follow these rules you will have a chance to win a prize at the end of circle time.**"

_____Point to the first rule and read aloud: "**Please sit on your pockets. This means that I would like for you to stay sitting still on your letter while we are in circle time**. **You may not lay down, lean back, or stand up.**" Explain it further if need be, so they understand this rule and what is expected of them.

_____Point to the next rule and read aloud: "**Please raise your hand. This means that I would like you to raise your hand when you want to answer a question or ask a question. You may not talk to your neighbor or talk out loud without raising your hand and waiting for me to call on you to talk**." Explain it further if need be, so they understand this rule and what is expected of them.

_____Point to rule three and read aloud: "**Please keep your hands and feet to yourself. This means that you may not touch your neighbor with your hands or your feet."** Explain it further if need be, so they understand this rule and what is expected of them.

_____Point to the last rule and read aloud: "**Please pay attention to what Mrs. Smith is teaching. This means that you must have your eyes on me or what I am teaching while we are on the carpet. You may not stare at the wall, the floor, or your neighbor."** Explain it further if need be, so they understand this rule and what is expected of them.

_____Say: "**At the end of circle time, if all of you have followed the rules, I will draw three names out of this bowl** (show them the bowl). **Those three students will be allowed to pick a prize from the treasure box** (Show them the treasure box and some of the prizes they can earn). **If all of you have not followed the rules, no one will get to pick a prize, and we will try again the next day."**

_____Say: **"Does anyone have any questions?"** Answer any questions the students might have as best you can.

_____Review the rules one more time and begin lesson.

_____As you are going through the lesson, praise students as you see them following the rules. Remind others that are not following the rules to follow them.

Calculate Integrity: _____/10 X 100 = _____%

Appendix K
Beginning of Intervention Script Integrity

Name:_____ Date:_____

Intervention Integrity for beginning of circle time

_____Post classroom rules on board or wall where students can see them at all times during the 40 minutes.

_____Say, "**Remember our classroom rules for circle time? Let's go over them again."** Here you can either ask them to tell you what they are or you can read them aloud to the students.

_____Point to the first rule and read aloud: "**Please sit on your pockets."**

_____Point to the next rule and read aloud: "**Please raise your hand."**

_____Point to rule three and read aloud: "**Please keep your hands and feet to yourself."**

_____Point to the last rule and read aloud: "**Please pay attention to what Mrs. Smith is teaching."**

_____Say: "**Remember that at the end of circle time, if all of you have followed the rules, I will draw three names out of the bowl. Those three students will be allowed to pick a prize from the treasure box. If all of you have not followed the rules, no one will get to pick a prize, and we will try again the tomorrow (or give the next day of the week you'll be in school if it's a Friday or a holiday)."**

_____Begin lesson. As you are going through the lesson, praise students as you see them following the rules. Remind others that are not following the rules to follow them.

Calculate Integrity: _____/7 X 100 = _____%

Appendix L
End of Intervention Script Integrity

Name:_____ Date:_____

Calculate % On-Task: _____ (# of intervals on-task)/_____ (# of total intervals) X 100 = _____%

Is the percent at or above 80%? Yes / No
If yes, cue teacher to read and follow Script A. Do integrity on Script A.
Is the percent below 80%? Yes / No
If yes, cue teacher to read and follow Script B. Do integrity on Script B.

Script A-Earn Reward

_____Say: "**Our circle time has ended. Since most of you did a great job following our classroom rules, I am going to pick three names from the bowl to come and pick a prize from the treasure box."**

_____Get the bowl and pick three names from it randomly. Call out each name one-by-one. Encourage the students to be happy for those that get called to pick a prize (i.e. by clapping for them, etc). Allow each student to quickly pick a prize.

_____Say: "**Great job following our classroom rules today. Tomorrow everyone will get another chance to be picked to choose a prize from the treasure box."**

Calculate Integrity: _____/ 3 X 100 = _____%

End of Intervention Period: Script B-No Rewards

_____Say: "**Our circle time has ended. Too many classroom rules were broken today, so I will not be giving out prizes. Tomorrow (**or next day of week you'll be in school**) we will try again to follow the rules to earn prizes."**

Calculate Integrity: _____/ 1 X 100 = _____%

VITA

Cari Lynn Fellers

Candidate for the Degree of

Doctor of Philosophy

Thesis: RESPONSE TO INTERVENTION FOR BEHAVIORAL CONCERNS

Major Field: Educational Psychology

Biographical:

Education: Graduated with honors from Deer Creek High School, Edmond, Oklahoma in May 2002. Received Bachelor of Arts degree in Psychology from Oklahoma State University, Stillwater, Oklahoma in May 2006. Received Masters of Science degree in Educational Psychology from Oklahoma State University, Stillwater, Oklahoma in December 2007. Completed the requirements for the Doctor of Philosophy in School Psychology at Oklahoma State University, Stillwater, Oklahoma in May 2011.

Experience: Oklahoma State University Undergraduate Teaching Assistant, August 2004-December 2004; Undergraduate Research Assistant, January 2005-May 2006; Oklahoma State University Graduate Research Assistant, August 2006-May 2010,' School Psychology Clinic Assistant, August 2006-May 2007; Graduate Teaching Assistant, August 2007-May 2008; Academic Enhancement Center Academic Facilitator, January 2007-May 2009; National Evaluation Systems Assistant Test Administrator, February 2007-June 2008; Independent Reading Tutor, May 2007-July 2007; Oklahoma State University Academic Tutor, January 2008-May 2009; American Psychological Association Graduate Student Research Reviewer, December 2008-January 2010; Oklahoma State University Collegiate Success Program Graduate Assistant, August 2009-May 2010; Behavioral Solutions RTI Specialist for OK State Department of Education, April 2009-May 2010; Florida State University Multidisciplinary Center APPIC Pre-Doctoral Internship, Intern, August 2010-July 2011; Tallahassee Community College Adjunct Faculty, January 2011-May 2011.

Professional Memberships: National Association of School Psychologists; School Psychology Graduate Organization; American Psychological Association, Student Member; Oklahoma Psychological Association, Student Member; Oklahoma School Psychological Association

Name: Cari L. Fellers Date of Degree: May 2011

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: RESPONSE TO INTERVENTION FOR BEHAVIORAL CONCERNS

Pages in Study: 111 Candidate for the Degree of Doctor of Philosophy

Major Field: Educational Psychology

In response to the problems surrounding the discrepancy model, IDEA now allows response to intervention (RTI) as an alternative means to identify students with learning disabilities. In research a RTI approach has been extensively applied to SLD and academic concerns, rather than behavior problems. RTI can be applied to behavior, but research needs to be conducted to establish it as an efficient, useful, and conceptually sound approach to diagnosis and treatment of behavior concerns. The purpose of this study was to investigate a RTI model of behavior where in an effective general education intervention was implemented with students in a kindergarten classroom. A model involving increasing intensity was implemented to answer crucial questions regarding RTI. Participants in the first experiment were 19 general education students from an elementary school in a southwest community. The first experiment involved a classwide behavior intervention utilizing prompting and reinforcement for on-task behaviors. The intervention was implemented with an ABAB single case design. After the classwide intervention was deemed effective, 3 non-responding students were identified and targeted for intervention at increased intensities utilizing a multiple baseline design across subjects. Intensity was increased in a systematic, measurable manner until each student reached criterion levels. The second experiment involved the same non-responding students (n = 3). During this study, the intensity of the intervention was faded in the same increments that it had previously been increased to determine the lowest level of intervention intensity required to maintain student responsiveness. Results of this study indicated that the application of an intervention with increased intensity of reinforcement results in quantitatively more intense intervention for the individual target students. At the conclusion of the intervention phases of the first study, all students were considered to be functioning at the criterion level for success. At the conclusion of the second experiment, all students were maintaining on-task behavior at a tier I intensity of support. This study not only determined which students were in need of increased intensity, but also how much intensity students needed to increase positive behaviors and maintain them across time.

ADVISER'S APPROVAL: Gary J. Duhon, Ph.D.