The effectiveness of a tiered, RTI model on decreasing the frequency of disruptive behavior of students in an alternative school setting

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Abstract
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The data indicated that the frequencies of disruptive behavior were not significantly different after the implementation of the RTI model. The study was confounded by other programs being implemented at the same time and also affected by a lack of fidelity to the RTI model.

Keywords
Education, Educational Psychology, Education, Guidance and Counseling, Education, Special

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THE EFFECTIVENESS OF A TIERED, RTI MODEL ON DECREASING THE FREQUENCY OF DISRUPTIVE BEHAVIOR OF STUDENTS IN AN ALTERNATIVE SCHOOL SETTING

BY

JAMES C. MARSTON
B.A., University of New Hampshire, 2003

THESIS

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Master of Arts

in

Counseling

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This thesis has been examined and approved.

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ABSTRACT

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James C. Marston

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Though a Response to Intervention model has been found to be effective in a public school setting, there are few studies that evaluate the effectiveness of an RTI model in an alternative school setting. This study compared mean frequencies of disruptive behavior in an alternative school setting that had chosen to implement an RTI model.

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CHAPTER I

INTRODUCTION

Students who display problem behaviors require support to succeed in schools, particularly those students who display disruptive behaviors. Matching students with the appropriate supports to reduce disruptive behaviors is a constant challenge. In some cases, schools match students to interventions through a teacher referral process, whereby students are nominated as potentially benefiting from intervention, with anecdotal reports of problem behaviors. From these anecdotal reports, interventions are determined and executed. This system of matching student with intervention is largely subjective and therefore may lead to students being overlooked or mismatched with interventions.

A potentially more effective approach to matching students and interventions is a Response to Intervention (RTI) model. A Response to Intervention model uses data to nominate students for intervention, employs a tiered model of evidence-based interventions, and has clearly defined criteria for qualifying for each level of intervention (Gresham, 2004; Hawken et al., 2008).

Response to Intervention is a method of providing support to students in need in both the educational and behavioral realms (Glover & DiPerna, 2007). Unobtrusive, pervasive behavioral interventions are offered first at a universal level, to all students within an educational setting. Those who do not respond to the universal level, that is, continuing to display disruptive behaviors, will receive a secondary intervention, which is more intense and more targeted. Those individuals that do not respond to the secondary intervention will receive a tertiary, individualized, tier of intervention. At each of the
three levels, evidence-based interventions are applied, with decisions as to which student goes into which intervention based on on-going data collection.

An RTI model, built to include a process of teacher referrals, will enable more efficient use of resources and ensure that students who are in need of services are not overlooked. This study hypothesized that implementing an RTI model would increase the effectiveness and quality of interventions intended to decrease the frequency of disruptive behavior. The effectiveness of the model was determined by the change in the frequency of disruptive behavior in setting that employed it. This study evaluated the effect of the implementation of an RTI model on the frequency of disruptive behavior in an alternative school setting.

While the thrust of RTI models in general is to make alternative school placements for students less necessary, there is still a need for alternative schools, particularly for students who engage in extremely disruptive behavior. The goal of these schools is to minimize disruptive behavior by teaching coping skills and replacement behaviors so that the students' needs can be met in a mainstream school. A Response to Intervention (RTI) model could be an effective way of reducing instances of disruptive behavior within the setting, realizing the school's goal and contributing towards better outcomes for the students.

Currently, RTI models are considered an effective, efficient way of determining what interventions should be used with which students to decrease problem behaviors in public schools. However, alternative schools face the challenge of attempting to intervene with students who have been unresponsive to any intervention available or
offered in a public school. This challenge is made more acute by the expense and effort of offering high-intensity interventions to an entire population of alternative school students. While the framework of an RTI model solves similar problems in public schools, it is not proven as successful for alternative schools. If it is found to be an effective method of informing and guiding interventions, then it may become standard practice in alternative schools as well.

While the RTI model is generally used to address educational needs, it has been related to behavior needs in programs such as Positive Behavioral Interventions and Supports. These programs have primarily been instituted in public schools but have also been implemented in alternative school settings (Kalke, Glanton, & Cristalli, 2007). These interventions and their components are described more fully in Chapter Two.

Disruptive behavior is defined as physical or verbal outbursts that are not appropriate in the classroom environment. For the purposes of this study, these outbursts were classified as minor, moderate, or severe in nature, ranging from talking during class and extending through unsafe or assaultive behavior. The program being evaluated defined disruptive behaviors very specifically and behaviorally, as will be outlined in Chapter Three.

**Importance of the Study**

Because of the high potential for negative outcomes for students, it is important to intervene effectively as early as possible to decrease instances of disruptive behavior. Disruptive behavior in a school setting is a major impediment to learning, not only for the student engaging in the behavior, but also to the other students in the classroom.
Disruptive behavior has been linked with personality disorders in adulthood (Helgeland, Kjelsberg, & Torgersen, 2005). Disruptive behavior diagnoses are associated both with bullying behavior and victimization by bullies (Kokkinos & Panayiotou, 2004). Disruptive behavior diagnoses typically precedes initiation into substance use which may lead to adolescent alcoholism (Kuperman et al., 2001). Early onset of such a disorder can also indicate a trajectory towards antisocial outcomes and delinquency in adolescents (Broidy et al., 2003).

There are a number of evidence-based practices for intervening with specific students, many of which will be explored in Chapter Two. The universal level of interventions in this setting consists of a token economy, school-wide reinforcers based on positive behavior, clearly defined behavior expectations, clearly defined consequences for negative behavior, one to one counseling, and consistent daily structure. The secondary tier of intervention included contingency contracts based on level of disruption for targeted classes, Life-Space Crisis Intervention interviews, and direct instruction in pro-social skills. The tertiary tier of intervention included wraparound, client-centered future planning, and function-based behavior plans.

The challenge facing educators is offering these interventions with appropriate students within a school setting. Applying every practice to every student would be a waste of resources and time. Not all students require the same level of intervention to increase appropriate behavior. To be effective, interventions should be organized and driven by data, monitored and refined based on data.
Nature of the Study

The alternative school used in this study adopted an RTI model, providing the opportunity to perform this study. The alternative school's internal discipline system, which is clearly defined in their program manual, was used to measure the frequency of disruptive behavior. A baseline of disruptive behavior was determined from past data in the school, and the frequency of disruptive behavior was tracked throughout the implementation of the new program.

The school being studied has been using the same behavior program for four years with little modification. This presented the opportunity to establish a baseline rate of disruptive behavior previous to the start of the RTI model of intervention. The RTI model was defined in explicit terms and student referral data was documented on a weekly basis to ensure fidelity in delivery.

The previous program at the school had a behavioral basis and frequently employed contingency contracts, individual counseling, and token economies to curb disruptive behavior. Negative behavior was punished using a tiered system of punishment based on the severity of the behavior, and followed up by a problem-solving discussion with the student, focused on the student acquiring new pro-social skills. Outside of these interventions, students were referred by teachers for more robust interventions. This teacher referral process was subjective, and frequently supported by anecdotal evidence of problem behaviors, which sometimes, but not always, included data to support the referral.
The school has implemented a RTI method of organizing interventions starting on October 14, 2009. The main focus of this study was to see if using a RTI method which includes organizing evidence based interventions in tiers and utilizing a systematic, evidence-based system of determining interventions and intervention effectiveness would have a stronger effect on decreasing the frequency of disruptive behavior in the setting than the previous system. The details of the newly implemented system will be outlined in Chapter Three.

**Limitations of the Study**

This study assumed that any difference in the frequency of disruptive behavior could be attributed to the new intervention alone, a fairly large assumption. The study occurred within the context of a number of on-going interventions and relationships, including changes in family dynamics. There was no way to control for the many variables that occur in an alternative school setting in the context of the lives of the students in question.

The sample size was also small and constantly changing in its makeup. As students achieved certain benchmarks of behavior, they transition from the alternative school setting to mainstream settings. Similarly, newly admitted disruptive students were brought into the program. These comings and goings were controlled for as much as possible, but any global measure of disruptive behavior will be skewed by the make-up of the student body.

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Further, the population of the school was fairly small, making generalization of the findings difficult. Also, the makeup of the school was comprised of students with varying diagnoses and issues, making its specific demographics unique, so approaches that work with this population in this school may not be effective with other populations of similar alternative schools.

**Summary**

This study investigates the efficacy of an RTI model employed in an alternative school setting. If the model was found to be effective, this system could be implemented in other alternative school settings, improving outcomes for larger numbers of children. In addition as interventions become more effective, teacher frustration and burn-out may decrease, further contributing to a higher quality of care and intervention for students in alternative school settings.

A tiered, RTI model employing data-based decision making and evidence-based practices should help student outcomes by decreasing the frequency of disruptive behavior. A review of the pertinent research follows, in Chapter Two. Data was collected leading up to the intervention, and continued after the intervention. The implementation of the program will be detailed in Chapter Three, along with methods of information gathering and analysis. Chapter Four will present the data from the study and Chapter Five will discuss its implications for future research and application.
CHAPTER II
REVIEW OF THE LITERATURE

Introduction

This literature review will offer support for the effectiveness of a RTI model for decreasing the frequency of disruptive behavior. First, the necessity for reducing the frequency of disruptive behavior is explored, as a justification for the necessity of this study. Then, research will be explored that supports an RTI model as an effective, efficient means of evaluating and providing interventions. To ensure that the RTI model delivers evidence-base interventions, studies exploring responses to disruptive behavior will be discussed. Finally, existing research as to the specific interventions within each tier will be evaluated and discussed.

The information was gathered by seeking studies that dealt with decreasing disruptive behavior. Each intervention was then explored for a) evidence of efficacy and b) applicability in an alternative school setting. The Response to Intervention model was explored separately, and several studies involving it were found. The model’s applicability to an alternative school setting were particularly sought after, as it is a focus of this study.

Disruptive Behavior

Disruptive behavior is defined as any behavior that significantly disrupts the learning environment of the classroom. It can include inattention, hyperactivity, impulsivity, and aggressiveness (Braswell & August, 1997). For many populations, early disruptive behavior can be linked to future difficulties. Particularly for boys, early
disruptive behavior, especially violence, tends to indicate future delinquency and ongoing violence (Broidy et al., 2003). Several studies match adolescent emotional and disruptive behavior disorders to personality disorders in adulthood (Schaeffer et al., 2006; Helgeland, Kjelsberg, & Torgersen, 2005).

The intention of early intervention plans is to curb disruptive behaviors in students, not only to increase academic outcomes, but also to change the trajectory of students who exhibit disruptive behaviors early in life. The goal of any intervention is succinctly stated by Frank Gresham: to seek an outcome that fosters “adaptation or successful functioning in a school setting” (Gresham, 2004, p. 337).

**Response to Intervention**

The study performed here suggested that RTI models represent an efficient and effective way to organize interventions to reduce disruptive behavior in order to improve outcomes for students. Research supports that RTI includes interventions that match the severity of problem behaviors being addressed (Gresham, 2004). It seeks to be a cost-effective model, where the most expensive, time-consuming interventions are reserved for the most challenging, most difficult behaviors. The goal of matching the response and the behavior is to be efficient as well as effective.

Most RTI models have several characteristics in common. First, they have varying levels and purposes of intervention at each level (Gresham, 2004; Hawken, Vincent, & Schumann, 2008). In most cases, the models have three tiers, represented as a triangle, with the base of the triangle representing the universal level of interventions (Sugai, 2007). The primary tier represents universal interventions, applied to all students,
and effective with 80% of them, and includes teaching expected behavior and expectations to all students. Those that fail to respond to the first interventions move into the secondary tier, where more intensive interventions are used paired with the already existing primary tier interventions, and is expected to be effective with 15% of the population. This tier tends to be more intensive instruction in known problem areas. Those who fail to respond to the primary or secondary tier are slated to be added to the tertiary tier, where intensive, specific interventions are applied, which are expected to be effective with the remaining 5% (Sugai, 2007).

Moving between these tiers of intervention is not done haphazardly: in fact another common component of RTI approaches is that decisions about interventions are data-driven (Gresham, 2004; Hawken et al., 2008). Data are collected about the students and used to inform intervention. As students' behaviors respond or not to intervention, it is that information that indicates which tier of interventions is applied.

A third similarity amongst RTI models is that the interventions at each level are evidence-based (Gresham, 2004; Hawken et al., 2008). Rather than relying on "common sense" interventions, RTI models employ interventions that are supported by research and have good outcomes for the behaviors the interventions are designed to influence.

RTI models include on-going evaluation to assess student response and to monitor progress (Hawken et al., 2008). As students respond to interventions, the interventions can be eased back or increased as necessary.

The studies on the effectiveness of RTI intervention implementation make the point that in order to be effective, RTI systems should focus on primary and secondary
interventions, because the tertiary tier is expensive to implement (Hawken et al., 2008). Effective primary and secondary interventions decreased the effort and cost of employing comprehensive tertiary interventions to students for whom they are not specifically required. While outcomes should be held as more important than monetary concerns, resource allocation is still an important concern in designing an effective RTI model of intervention.

The Individuals with Disability Education Act adopted language that specified that positively based interventions should be considered (2004). To that end, interventions at each tier should include interventions that focus on reward rather than punishment, on teaching positive behaviors rather than extinguishing negative ones.

Several evaluations of the Positive Behavioral Intervention and Supports (PBIS) system, an RTI model, have found the tiered system to be effective (Luiselli, Putnam, Handler, & Feinberg, 2005; Nelson, Martella, & Marchand-Martella, 2002; Reinke, Splett, Robeson, & Offutt, 2009). The data to support PBIS in public schools are widespread, coupling school-wide positive interventions with fewer behavior referrals and more positive academic outcomes (Luiselli et al., 2005). Other studies have paired PBIS with programs to address family dynamics and problems are more effective than PBIS alone (Nelson et al., 2002; Reinke et al., 2009).

Few documented attempts have been made to implement RTI-style interventions in alternative school settings. One wide-ranging study implemented TCI (Therapeutic Crisis Intervention) and PBIS simultaneously at three different sites. The study found a significant decrease in safety holds and resource room referrals (Kalke, Glanton, &
Cristalli, 2007). While this study offered evidence for the model, it was complicated by simultaneously applying both TCI, an intervention aimed at changing interactions between students and staff with the aim of decreasing the number of safety holds, and PBIS. The success of either alone remains unsupported by this study.

**Evidence Based Interventions**

Research suggests that a positive, three-tiered RTI model is both effective and efficient for organizing interventions for use with students exhibiting disruptive behaviors, it remains to explore various interventions for each tier. RTI models require evidence-based interventions, so an evaluation of the available interventions is appropriate.

**Token Economy.** A token economy, where tokens or points are earned for engaging in pro-social behaviors, has been found to be effective in the elimination of disruptive behaviors (Chiu-Wen Chen & Hsen-Hsing Ma, 2007). A token economy based on self monitoring was found to be additionally effective (Zlomke & Zlomke, 2003).

**Time Out.** As a response to repeated non-compliance, intentional violence, and property destruction, time-outs have been found to be an effective intervention (Fabiano et al., 2004). Time-out is generally conceptualized as a break from the reinforcement of the classroom setting, a separation between students and the interesting, compelling aspects of the classroom. Time-outs are generally only effective if the student is reinforced in some way for being in the classroom, and is therefore motivated to return once the break is over. Time-out followed by debriefing has been found to be effective in reducing discipline problems and been linked to better ratings of social skills and academic
performance (Albrecht, 2008; Nelson, 1996). In some cases, a period of redirection follows time-out, where the student is given a simple academic task that is worked through with the teacher prior to a conflict resolving debriefing. (Albrecht, 2008; Nelson, 1996) It seems that a necessary component to effective time-out is debriefing and problem-solving following a time-out.

**Contingency Contracts.** Contingency contracts also represent an accepted means of curbing disruptive behavior. A contingency contract represents a reward for a student or group of students refraining from engaging in a specific behavior, and instead engaging in a positive, desired behavior. There is evidence to suggest that contingency contracts, regardless of type are effective in curbing disruptive behavior (Theodore, Bray, & Kehle, 2004). Other studies explored different types of contracts, including group and individual contracts and interdependent and dependent contracts. Interdependent contracts target a group of people with the reward contingent upon a randomly selected member of the group’s behavior. Thus, during the class, every student is aware that the entire group earning the reward may be contingent upon their behavior. A dependent contract requires all the students in a group make a certain level of behavior in order to earn the reward. The study found no significant different between the various contract types, though interdependent and dependent contingency contracts were slightly more effective at curbing disruptive behavior than other types (Gresham & Gresham, 1982).

**Function-based Analysis and Intervention.** Traditional RTI models, including the PBIS model, support function-based interventions at many levels. Function-based interventions are an off-shoot of applied behavior analysis that posits behavior exists
because it serves a certain function for the student engaging in a behavior. The theory states that interventions that target the function of the behavior rather than the behavior itself will be more effective. In fact, there is evidence that FBAs or Functional Behavior Analysis are effective in reducing disruptive behaviors when an intervention is tailored to match the function of a behavior, informed by the FBA (Filter & Horner, 2009). However, there are also studies that suggest that FBAs are most efficient when applied to students who exhibit “profound mental retardation” or engage in self-injurious stereotypical behaviors, and that there is a lack of evidence to support its efficacy in a population of average intelligence (Gresham, 2004). Some suggest that this lack of evidence is influenced by the model by which FBAs are performed. Traditionally, an outsider is called in to determine the function of a student’s behavior and prescribes a specific intervention plan. Teachers lack an understanding of the FBAs goal or efficacy, and are therefore not effective in following the plan (Hawken et al., 2008). While FBA’s are very structured interventions, a less formal functional assessment can be used more freely, and was employed regularly at the school.

**Wraparound.** Wraparound has been considered as an intervention for students targeted at the tertiary level. Wraparound is a multiple-systems intervention targeted at empowering families and helping coordinate services across several systems (Eber, Breen, Rose, Unizycki, & London, 2008). Wraparound has been found to be effective with severely emotionally disturbed students by fostering family involvement (Hansen, Litzelman, Marsh, & Milspaw, 2004). It also has been linked to good outcomes with children of military parents, contributing to improved continuity of care (Bickman, Smith,
Lambert, & Andrade, 2003). Studies within the juvenile justice system have found that Wraparound has been linked with a decline in juvenile delinquent recidivism (Pullmann et al., 2006). While the evidence seems good, other studies have failed to find any significant outcomes for Wraparound services (Copp, Bordnick, Traylor, & Thyer, 2007). At least one study indicates that closely following Wraparound procedures is linked with better outcomes, and that a lack of fidelity to the Wraparound construct can be detrimental to outcomes (Quinn & Lee, 2007).

Multiple Systems Therapy, a clinically-driven program of intervention similar to Wraparound, has also been found to be effective with severely emotionally disturbed populations, though not necessarily more effective than Wraparound (Hansen et al., 2004). Both address the needs of students in a wide context; at home, in school, in the face of state agencies such as social services or juvenile justice. The efficacy of involving multiple systems is widely supported (Hansen et al., 2004; Nelson et al., 2002; Reinke et al., 2009).

**Comparing Effectiveness of Different Interventions.** A meta-analysis of ninety nine studies targeted to reduce disruptive behavior found that while many were effective, no one intervention was statistically better than any other intervention, including punishment (Chiu-Wen Chen & Hsen-Hsing Ma, 2007; Ardoin, Roof, Klubnick, & Carfolite, 2008). In fact, it appears as long as some intervention is applied, it doesn’t matter precisely what intervention is applied. This makes it difficult to determine exactly what “best practice” should be enacted. However, several studies support multi-component interventions over any single intervention applied alone (Chiu-Wen Chen & Hsen-Hsing Ma, 2007; Kehle,
Bray, Theodore, Jenson, & Clark, 2000; Stage & Quiroz, 1997). One study concluded that contingency contracts and differential reinforcement are effective with 85% of students in decreasing disruptive behavior (Stage & Quiroz, 1997) making those interventions ideal for the primary level of intervention in an RTI model. Another study supported a multi-component intervention consisting of mystery motivators, a token economy with response cost, clearly posted classroom rules and teacher movement within a group contingency intervention as being effective (Kehle et al., 2000).

**Conclusion**

While there is some evidence that an RTI model is effective in an alternative school setting (Kalke et al., 2007), further support is clearly necessary. Traditional RTI models target a larger, more diverse population than those found in alternative schools. In fact, it is those students who would fall into the smallest, most challenging intervention category in a public school that form the majority of students in an alternative school. Instead of a small population of “red zone” students who require tertiary “red zone” interventions, alternative schools deal with “three shades of red”. Interventions that would fall into the tertiary tier in a public school become the universal tier at an alternative school.

A problem with evaluating this RTI model is the number of different interventions. Since interventions are matched to the response to previous interventions, the specific combination of interventions that changes the frequency of disruptive behavior may be difficult to pin down. However, this study does not address any one intervention, but rather the structure of administering the interventions, and the system of
determining to whom the interventions will be delivered. The details of this will be addressed in Chapter Three.
CHAPTER III
PROCEDURES OF THE STUDY

Introduction.

This chapter describes the method through which the effectiveness of an RTI model on decreasing the frequency of disruptive behavior was tested. Upon establishing the method for evaluating the implementation of the RTI model, the specifics of the model itself will be explored and described. Then, potential sources of error will be discussed and analyzed. Lastly, ethical considerations of this study will be addressed.

Method.

In order to determine the effectiveness of an RTI model on decreasing the disruptive behaviors displayed in an alternative school setting, a repeated measure design was employed. Students' frequency of disruptive behaviors was analyzed before and after the RTI model was instituted.

Continual data monitoring determined whether the frequency of disruptive behavior increased, decreased, or stayed the same within the population. The dependent variable, the frequency of disruptive behaviors, was examined to determine whether it was influenced by the presence of the new model.

This method was effective for evaluating the model, as a large amount of data is available to determine a baseline frequency of disruptive behavior prior to the new intervention. The setting has a program manual that has been the same, with minor refinements, for the entirety of the time that data has been recorded, ensuring that the
baseline frequency is not influenced by random interventions or techniques. The staff had been trained to be very consistent in their treatment of their students, and this consistency contributed to a better, more stable baseline. The staff was particularly consistent in responding to the most severe disruptive behaviors.

The model was implemented early in the school year, and the data was of the same quality as it has been for the last several years. Again, the staff’s consistency helped attribute any change in the frequency of baseline behavior to the model alone.

The school had a population of 32 students, all of whom were put in placement due to extreme behaviors that were not manageable in their respective public school settings. Specific diagnoses were varied, though every student in the setting had an Individualized Education Plan. The racial make-up of the students was largely white, with 10% from minority ethnicities. Ages ranged from six to fourteen, from first through ninth grade. The population of the school changed at various intervals, as students transition into and out of the program. This setting was particularly appropriate as a large amount of data is available to determine a baseline frequency of disruptive behavior.

There was little staff turnover, which helps contribute to a continuity of care that will limit the variability of care after the RTI system is implemented. Staff was likely to respond much like they responded in previous years, with the exception of where the RTI system dictated different action.
Existing Interventions.

The interventions previously in place at the school setting are detailed here, setting the baseline for previous years. Previous to the implementation of RTI, the school used a positive-reward system for pro-social behaviors. These were represented by tokens in the primary classroom and “Social Positives” points in the older classrooms. These social positives could be used to purchase extra privileges, such as computer time, snacks, or trips off campus. For each positive behavior observed, staff members explained what was being rewarded and praised the student for displaying the behavior. These practices continued after the implementation of RTI, becoming part of the universal level of intervention.

The school’s day was divided into six blocks of class time, and four transitional times; an arrival time, a break time, a lunch time, and a dismissal time. For each block, students earned between one and four points; one for attendance, one for behavior, and two for effort. Students also earned points during transition times, though usually only a single behavior point. These points offered a guide for a student’s performance on any given day, and were factored into their overall grades.

The school had a prescribed behavior plan with scripted responses for responding to disruptive behavior. Minor challenging behaviors earned a “cue” or reminder. After receiving two cues, a student must take a five-minute time-out. If the student refused or became disruptive, then the student earned “Refusal to Comply” (RTC). RTC represented behavior that was disruptive to the learning environment. After earning RTC, a student must earn back privileges by earning daily points. The largest
consequence in the school was “Restriction”, which was a period of time spent doing review work outside the classroom, after which privileges must be earned back by earning daily points. Restriction could be earned by refusing to leave an area when directed (MRTC), going into an area where one is not allowed (MOAA), stealing (Theft), being unsafe (Unsafe), sexually or racially biased language (Bias), and severe verbal aggression directed toward a peer (PVA) or toward an adult (AVA).

Each student also received a half-hour of individualized counseling each week, and a half hour of group counseling within their age range. Some students were offered contingency contracts and other interventions based on anecdotal evidence of trouble or disruption, or teacher observation of need.

Data Collection.

This study classified disruptive behavior into three categories. First, minor disruptive behavior, defined as earning two or more cues in a school period. The second category was moderate disruptive behavior, which will be defined as earning RTC in a school period. The third category was major disruptive behavior, which will be defined as earning a Restriction, except for Theft or MOAA, which will be evaluated individually. Theft was judged major disruptive behavior if it generates a period of disruption that lasts more than 10 minutes. MOAA was evaluated as disruptive if it was earned while in a state of escalation, and therefore represented something more disruptive than simple trespassing. This system of classifying disruptive behavior was consistent with the data systems and intervention methodology in place in the setting. Thus, there was little need to create a new instrument, simply a need to collect and interpret existing
data. Staff was trained to deliver cues, RTC, and Restrictions in very tightly defined ways, and there was little drift from that core training, making inter-rater reliability a minor issue. While there was no official supervision to ensure consistency, there was an unofficial policy of peer-supervision as the staff often talked about the cue-ing process to ensure consistency and fairness.

These data points were collected by school staff on a daily basis and recorded on cards. Each student had their own card for each day of school. Additionally, time-out and RTC data were collected in the Counseling Support Area, a section of the school reserved for disruptive or non-compliant students. Restrictions were documented on the card, in Counseling Support, and also required a Critical Incident Report be completed and filed.

Each student's frequency of disruptive behavior was compiled from existing data sources. Each student was assigned a number, which kept the students' identity confidential. The number of incidents of minor, moderate, and major disruption were recorded for each student, for the duration of each student's time at the school. This data was used to establish a baseline rate of disruptive behavior within the school previous to the implementation of the RTI model.

**Implementing the Intervention.**

The RTI model was implemented in October of the 2009-2010 school year. The existing data system was used to monitor the frequency of disruptive behaviors in the setting. The data was collected on a daily basis, and was collected for six months after the implementation of the RTI system.
It was decided that if the frequency of disruptive behavior decreased significantly after the implementation of the RTI system, it will be found to be effective in decreasing the frequency of disruptive behavior. The hypothesis was supported if the frequency of disruptive behaviors, globally or at any of the three levels of severity, decreases significantly.

The intervention itself was an attempt to organize the school's intervention delivery following an RTI model. Three common aspects of RTI models were adopted. First, the RTI intervention had varying levels of intervention and purpose, organized into a triangle; with universal, secondary, and tertiary levels of intervention. Second, movement between intervention levels was based on data collected in the setting. Third, evidenced-based practices were employed and evaluated on an on-going basis.

Interventions at the universal level included many of the interventions already embedded in the school's daily practices. Time-outs followed by debriefing continued to be a response to minor rule-breaking behavior. A token economy, as represented by Social Positives for the older students and literal tokens for the younger students remained in place as a universal intervention. Between time-outs for minor disruptive behavior, and Social Positives for positive behaviors, a differential reinforcement scenario was created, where students who are being disruptive receive less reward than those who engage in desirable behaviors. Large-scale, school-wide contingency contracts were implemented to reinforce adherence to school rules and contributing to a positive school environment. These interventions targeted disruptive behavior with several
evidence based interventions at a universal level; contingency contracts, token economy with response costs, and differential reinforcement.

Interventions at the secondary level included more specific contingency contracts that targeted at-risk students in clusters or individually. Classes that showed spikes in disruptive behavior were provided with the opportunity to participate in a group contingency contract for that class. Specific differential reinforcement strategies were applied to that group, heavily rewarding positive behaviors. Group counseling sessions taught a social skills curriculum targeting the problem behavior, and an LSCI group was run with the oldest students. These interventions targeted smaller groups of students in a more specific way. Students who qualified for the secondary level of intervention were also the subject of a team meeting, a Periodic Student Review, to talk about possible other interventions for that student.

Interventions at the tertiary level included the possibility of Life Space Crisis Intervention, a one to one brief counseling intervention. Wraparound was considered for students at the tertiary level, based on the needs of the student in regards to home needs and involvement with other systems. Functional based assessment of problem behaviors were also considered, as well as specific contingency contracts focusing on that individual.

Movement between levels was data-driven. All students received the universal level of intervention. Students who did not respond to that level of intervention, as defined as displaying five or more incidents of minor disruptive behavior in a week, three or more moderate disruptive behaviors in a week, or two or more major disruptive
behaviors in a week were indicated for additional secondary level of interventions. This information was collated and shared with the school staff every two weeks. These criteria were selected by the staff prior to implementing the RTI model, and were modified after the eleventh week to reflect staff's feedback; students in grades 6 and above were indicated at six or more moderate behaviors in a week from week eleven on.

Once a student was identified as needing secondary levels of intervention, a Periodic Student Review (PSR) was suggested. A PSR was a meeting that included the student’s counselor, support staff, and teaching staff, as well as a team member responsible for coordinating secondary level interventions. At the PSR, the student’s incidents of disruptive behavior were considered by the treatment team; were there specific classes or times of day that are problematic for the group? Could group-level interventions be put in place to target these groups of students? An action plan was developed and implemented, and a follow-up PSR suggested if indicated by data within two weeks.

A student who failed to respond to secondary level interventions by the fourth PSR was identified as requiring tertiary level interventions. The PSR treatment team evaluated the student and his disruptive behaviors for specific, individualized interventions. Wraparound was implemented if the student seems to display complicated out-of-school issues which contribute to on-going difficulties at school. A functional-based assessment was considered regarding the disruptive behavior, and individual contingency contracts were put in place. The student's data was monitored with further meetings scheduled as indicated by data.
Ethical Considerations.

This study had little direct impact on the students in the academic setting, as the decision to implement the RTI model originated within the setting, providing an opportunity to perform this study. The study itself was a matter of evaluating data, and so the only possible direct harm of this study was in violating the confidentiality of the students. To protect against this, the school is not identified in the study, nor will any participants. Students’ anonymity was further protected by associating each student with a code, so that all data, once collated, is identified by this code alone. The study’s originator maintained a key for the codes so that on-going data evaluation can occur, but this key remained solely in the possession of the originator in a secured location.
CHAPTER IV
DATA ANALYSIS

Results were calculated using SPSS 17.0. (APPENDIX A) Data was compiled from behavioral reports from the classrooms and from the Counseling Support Area. Behaviors were classified as Minor, Moderate, or Major, based on the criteria described in Chapter Three.

Once compiled, the data was stripped of any identifying information. The school’s data went back four years, and included data on students who no longer attended the school. These students were removed from the subject list entirely. In order to have distinct pre-implementation and post-implementation scores of frequency of disruptive behavior, the list was further limited to students who had only been in attendance during the period of the intervention, October 14, 2009 through April, 6 2010, and during the previous school year for the same period of time. This yielded a subject pool of twenty-nine students who were present in the program before and after the institution of the RTI model.

Statistical Analysis

The mean number of Minor disruptive behaviors increased from 19.90 to 22.93. The mean number of Moderate behavior decreased from 23.27 to 20.25, and Major behaviors increased from 8.03 to 9.0. The mean total behaviors increased from 182.00 to 186.00. This indicates that overall the mean number of disruptive behaviors increased by 2%. Minor behaviors increased by 15% while Major behaviors increased by 12%. Moderate behaviors decreased by 13%. This indicates that while there were more
disruptive behaviors over-all, the majority of these new behaviors were Minor in nature, and suggests that Moderate behaviors lessened and became Minor behaviors more frequently than they became Major behaviors.

Descriptive statistics showed that the data was highly skewed, violating the assumptions of parametric tests. A non-parametric test was indicated to determine significance. The Mann-Whitney U test was performed to analyze the between-group differences of the pre-intervention and post-intervention data sets.
Table 1
Mann-Whitney Test Results Comparing Pre and Post Implementation Ranks of Disruptive Behavior.

<table>
<thead>
<tr>
<th>PREPOST</th>
<th>N</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>Pre</td>
<td>38</td>
<td>37.59</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>38</td>
<td>39.41</td>
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<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td>38</td>
</tr>
<tr>
<td>MINOR</td>
<td>Pre</td>
<td>38</td>
<td>37.84</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>38</td>
<td>39.16</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td>38</td>
</tr>
<tr>
<td>MODERATE</td>
<td>Pre</td>
<td>38</td>
<td>38.13</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>38</td>
<td>38.87</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td>38</td>
</tr>
<tr>
<td>MAJOR</td>
<td>Pre</td>
<td>38</td>
<td>40.70</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>38</td>
<td>36.30</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>76</td>
<td>38</td>
</tr>
</tbody>
</table>

Test Statistics\(^a\)

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
<th>MINOR</th>
<th>MODERATE</th>
<th>MAJOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>687.50</td>
<td>697.00</td>
<td>708.00</td>
<td>638.50</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>1428.50</td>
<td>1438.00</td>
<td>1449.00</td>
<td>1379.50</td>
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<tr>
<td>Z</td>
<td>-.361</td>
<td>-.262</td>
<td>-.147</td>
<td>-.875</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.718</td>
<td>.793</td>
<td>.883</td>
<td>.382</td>
</tr>
</tbody>
</table>

\(^a\) Grouping Variable: PREPOST

The Mann-Whitney U test showed that none of the difference between pre and post groups were significant. The mean ranks of Minor Disruptive behavior increased from 37.84 to 39.16, Moderate Disruptive behavior from 38.13 to 38.87, and total Disruptive behavior from 37.59 to 39.41. Major Disruptive behavior decreased from 40.70 to 36.30. None of these changes were significant (p = .793 for Minor, p = .883 for Moderate, p = .718 for Total, and p = .382 for Major) indicating that while the intervention had minor effects on the frequency of disruptive behavior, it did not significantly change any of the scores, better or worse.
The data did not support the hypothesis that an RTI model for organizing interventions was effective in reducing disruptive behavior. There are a number of reasons why this finding may or may not reflect the true effectiveness of the model, which will be explored in Chapter V. However, this finding supports the 2007 study by Chiu-Wen Chen and Hsen-Hsing Ma that found that no one intervention was significantly better than any other for decreasing disruptive behavior.
CHAPTER V
SUMMARY, LIMITATIONS AND IMPLICATIONS, RECOMMENDATIONS OF
THE STUDY, AND CONCLUSION

Summary
The evidence of this study does not support the hypothesis that the Response to
Intervention method of organizing interventions was effective in decreasing disruptive
behavior. In fact, in two of the three categories disruptive behavior increased, and the
mean number of instances of disruptive behavior over all increased.

Limitations of the Study
Confounding Interventions. This study was intended to evaluate the effectiveness of
the RTI method of determining and providing interventions to decrease the frequency of
disruptive behavior. However, a possible complicating factor was the implementation of
Wraparound and LSCI at the same time as the RTI system. As these interventions are
new, they are not accounted for in the baseline frequency of disruptive behavior. Thus,
any effect on the frequency of disruptive behavior by the RTI system may be at least
partially confounded by these new interventions. Similarly, this study focuses primarily
on behaviorally-targeted interventions rather than academic interventions. It is likely that
some level of disruptive behavior can be influenced by modifying a curriculum or
changing academic pressures.
**Fidelity to the Model.** Another weakness of this study was the eroding of the theoretical model by practical considerations. Scheduling meetings was sometimes problematic, as was enacting the tertiary level interventions.

When the school received approval to start offering Wraparound, it was offered in the beginning of the school year, well before the data were available to indicate students for tertiary tier interventions. Some students who were not indicated, and never were indicated, for tertiary level interventions received Wraparound, for example, and not every student who was indicated for tertiary level received more intense interventions.

The secondary level, in practice, relied more heavily on individual contingency contracts than on small-group interventions. Though classrooms received small-group interventions when indicated by data, in the form of contingency contracts, classrooms that were not indicated for secondary interventions also received this intervention. Overall, there was a blurring of intervention levels, which is inconsistent with the RTI model. This blurring, however, represents good practice for students. While it contributed negatively to the study, it likely contributed to better outcomes for students. In practice, the universal level became larger, and the secondary level interventions became more sparse, and the tertiary level less exclusive.

Another possible weakness was the lack of supervision over individual interventions. When an intervention was suggested by the RTI model, it was delivered by the staff. There was no system in place to ensure that the interventions were delivered in keeping with their theoretical models.
Implications of the Study

A Response to Intervention model remains a useful tool for organizing interventions. While the study did not support the hypothesis, it did lead to a better informed population of teachers. As a result of organizing the interventions, teachers knew which students were displaying the most disruptive behavior from week to week. It helped to encourage discussion of interventions and their effectiveness.

The study itself also helped the school in question look at its different levels of intervention and evaluate them for effectiveness. It was found that the secondary tier lacked good small-group interventions, and prompted a discussion of shifting of the focus of group counseling. It was further found that the tertiary level was light on interventions. Some students were indicated by the data for tertiary level interventions, but when the team met to discuss them, no interventions available for the tertiary tier were found to be appropriate. This fostered discussions about the tertiary level and the population of students the school serves.

Recommendations for Future Studies

Further studies are necessary to support the efficacy of the RTI model as it relates to disruptive behavior in alternative schools. Future studies should be conducted in settings where the only new addition to its operation is the RTI model itself, to avoid the confounding of the data that may have been experienced in this study.

Additionally, future studies should attempt to stay more true to the RTI model. Intervention levels should be followed more closely, with interventions only being
offered when students have been indicated for those interventions, guided always, of course, by the best interests of the subjects of the study.

Secondary tier interventions should be targeted to small groups. In this study, the secondary tier focused more on small groups defined by classroom rather than grouped by data. Ideally, future studies will look at secondary tier interventions that are based on the behaviors seen throughout the setting with small groups created from data. Supervision to ensure that each intervention is delivered in keeping with its theoretical model is also recommended.

**Conclusion**

This study did not offer conclusive support for the RTI model, neither did it offer evidence that the model was ineffective, and there were several benefits to the program as a result of adopting the model.

This cannot be construed as a complete failure on the part of the RTI system, for a number of reasons. First, the increases in disruptive behavior were not statistically significant, nor were the decreases in Moderate disruptive behavior significant. Second, there were several instances where the model itself was not closely followed, as was described previously. Third, several new interventions were introduced simultaneously, which may have confounded the findings. The study did offer proof that changing the method of intervention did not increase the frequency of disruptive behavior, and there was some evidence that the Moderate disruptive behaviors lessened to become more frequent Minor disruptive behaviors.
REFERENCES


# APPENDIX A

Descriptive Statistics of Disruptive Behavior Frequency

<table>
<thead>
<tr>
<th>Statistic</th>
<th>N</th>
<th>Minimum Statistic</th>
<th>Maximum Statistic</th>
<th>Mean Statistic</th>
<th>Std. Deviation Statistic</th>
<th>Skewness Statistic</th>
<th>Std. Error Statistic</th>
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<tr>
<td>Initial Minor score</td>
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<td>66.0</td>
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<td>19.7382</td>
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<td>.434</td>
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<td>.434</td>
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<td>.00</td>
<td>87.00</td>
<td>20.2500</td>
<td>23.81662</td>
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<td>.00</td>
<td>30.00</td>
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<td>Initial Total Score</td>
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<td>Post Intervention Total Score</td>
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<td>Valid N (listwise)</td>
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<td></td>
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</tr>
</tbody>
</table>

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APPENDIX B
INSITUTIONAL REVIEW BOARD APPROVAL

University of New Hampshire
Research Integrity Services, Office of Sponsored Research
Service Building, 51 College Road, Durham, NH 03824-5585
Fax: 603-862-2364

24-Mar-2010

Marston, James Carleton
Education, Morrill Hall
62 Fristtown Road, Unit #32
Raymond, NH 03077

IRB #1: 4947
Study: The effect of RTI on the frequency of disruptive behavior
Approval Date: 22-Mar-2010

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has
reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of
Federal Regulations (CFR), Part 46, Subsection 101(a) with the following comment(s):

The IRB approves the use of human subjects in this study with the understanding that the
researcher will not record any identifying information during date collection.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the
attached document, Responsibilities of Directors of Research Studies Involving Human Subjects.
(This document is also available at http://www.unh.edu/ons/compliance/irb.html.) Please read this
document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and
return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me
at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence
related to this study. The IRB wishes you success with your research.

For the IRB,

Julie F. Simpson
Manager

cc: Julie, David