

12-14-2009

The Effectiveness of Prevent-Teach-Reinforce: Does the Presence of Comorbid Internalizing Behavior Problems Moderate Outcomes for Children with Externalizing Behavior Problems?

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The Effectiveness of Prevent-Teach-Reinforce:
Does the Presence of Comorbid Internalizing Behavior Problems Moderate Outcomes for
Children with Externalizing Behavior Problems?

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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Date of Approval:
December 14, 2009

Keywords: School-Based Treatment, Positive Behavior Support, Elementary,
Intervention, Functional Behavior Assessment

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Acknowledgments

I would like to thank my committee members for all the time and effort they spent helping me with this research project. I would first like to thank Dr. Raffaele Mendez for her patience, encouragement, and feedback during this entire process. I want to thank Dr. Suldo for teaching me to maintain high standards for myself and my work. I would like to thank Dr. Ferron for his willingness to answer all my statistics questions and his patience throughout this. Finally, I want to thank Dr. Iovannone for allowing me to work with her and providing me with her expertise. The help I have received from each of you has been invaluable.

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ABSTRACT

This study examined the effectiveness of a school-based intervention process known as Prevent-Teach-Reinforce for children with a combination of externalizing and internalizing behaviors compared to children with only externalizing behaviors. The dependent variables examined were social skills, problem behaviors, and academic engaged time. Data for the current study were taken from archival data collected by the Florida Mental Health Institute that included students in kindergarten through 8th grade. A series of repeated-measures analysis of variance (ANOVA) was used to identify differences in improvement on the dependent variables for the two groups of students.

Research questions focused on the main effects as well as interaction effects between the type(s) of behavioral problems displayed (i.e., externalizing only, combination of externalizing and internalizing). Behavior problem classification was determined by calculating students' individual subscale scores on the Social Skills Rating Scale.

The current study found support for the use of the Prevent-Teach-Reinforce intervention for children with varying behavioral profiles. Significant improvements were found in social skills, behavioral problems, and academic engaged time for students. Additionally, results of this study indicate that internalizing behaviors did not serve as a moderator to treatment effectiveness for students with externalizing behavior problems who received the PTR intervention. That is, improvements were similar for both groups, demonstrating that PTR is a process that can be used in an equally-effective way for both populations.

Chapter I

Introduction

Statement of the Problem

Reports from parents, teachers, national statistics, and school data attest to the fact that a substantial number of children display problematic behavior in schools (Carpenter & Nangle, 2002; Federal Interagency Forum on Child and Family Statistics, 2008; Mash & Barkley, 2003). Likewise, a wealth of research has documented the negative outcomes associated with these behaviors. Specifically, externalizing behavioral problems (e.g., defiance, physical aggression, and verbal aggression) are negatively correlated with academic achievement (Brunnekreef, Sonnevile, Althaus, Minderaa, Oldehinkel, Verhulst, & Ormel, 2007), positive relationships with teachers (Henricsson & Rydell, 2004), positive relationships with peers (Coie & Kupersmidt, 1983), and self-esteem (Krettenauer, Ullrich, Hofmann, and Edelstein, 2003). Additionally, externalizing behaviors are positively correlated with school suspension (Skiba, Peterson & Williams, 1997), dropout rates (Bock, Tapscott, & Savner, 1998), and association with deviant peers groups (Dishion, French, & Patterson, 1995; Reid, 1993).

Adding to these concerns is the knowledge that many children with externalizing behaviors also display internalizing behavior problems (e.g., withdrawal from peers, flat affect, and excessive crying; Mash & Barkley, 2003). The co-occurrence of internalizing behaviors with externalizing behaviors poses additional concerns in that these students

often respond differently to treatment than those children who have only one type of behavioral concern (Jensen, et al., 2001; Kazdin & Wassell, 1999; March et al., 2000).

Within the school setting, the treatment of behavior problems is increasingly delivered through a three-tiered model known as Positive Behavior Support (PBS) (Dunlap, Sailor, Horner, & Sugai, 2009). Within this system, as the intensity of a problem increases, so does the intervention used to treat the problem. Research regarding PBS and students with both externalizing and internalizing behaviors has demonstrated that these students are resistant to less intensive interventions (known as Tier 1 and Tier II; Lane, Wehby, Roberston, & Rogers, 2007). Because of their resistance to these interventions, a more individualized process, known as a functional behavior analysis, may be used (i.e., a Tier III intervention). A functional behavior analysis (FBA) is a process in which the antecedents, behaviors, and consequences to behaviors are identified (Scott, Anderson, Mancil, & Alter, 2009). The goal of this process is to find ways to alter the relationship between these factors in order to decrease problematic behavior and increase desirable behavior.

Prevent-Teach-Reinforce (PTR) is a specific approach to the Tier III process that seeks to address concerns regarding the feasibility of such a process in schools by standardizing the procedures (Iovannone, Greenbaum, Wang, Kincaid, & Strain, 2009; Kern, Hilt, & Gresham, 2004). In this way, the process can be implemented by a teacher in a typical classroom with the guidance of a behavior consultant as opposed to being conducted by an expert. Preliminary data support the use of PTR in reducing problematic behavior and increasing prosocial behavior in children with severe externalizing behaviors (Iovannone, Greenbaum, Wang, Kincaid, & Strain, 2009). However,

additional research is needed to assess additional populations that may benefit from PTR, including children with comorbid internalizing and externalizing behavior problems.

Rationale for the Study

To date, no research has explored the effectiveness of the PTR process for those students with both externalizing and internalizing behavioral concerns. Some research purports that functional behavioral assessment may not be effective for dealing with behaviors related to internalizing concerns because this process only identifies proximal variables without addressing distal and personal variables such as family dysfunction and emotional regulation (Cone, 1997; Evans, 1999; Flannery, O'Neil & Horner, 1995; Haynes & O'Brien, 1990; Miller et al., 2004). Additionally, research that addresses intervention effectiveness often demonstrates that interventions that have been shown to be effective with one group of students do not necessarily generalize to all students since many children have co-occurring concerns that need special consideration (Jensen, et al., 2001; Kazdin & Wassell, 1999; March et al., 2000).

Purpose of the Study

The current study has been designed to address two areas in which additional research is needed. First, this study will add to the research regarding treatment effectiveness for children with externalizing behavior problems that co-occur with internalizing psychopathology. Specifically, information will be gathered to assess whether the school-based, Tier III intervention known as Prevent-Teach-Reinforce is effective for students displaying both externalizing and internalizing behavioral problems. Second, this study will provide additional empirical data on the use of FBAs with internalizing

behavior problems. The following specific research questions will be investigated in the study:

1. Do children with only externalizing behaviors show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention?
2. Do children with a combination of externalizing and internalizing behavior problems show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention?
3. Is there a difference in levels of improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention for children with externalizing behaviors only vs. those with a combination of internalizing and externalizing behavior problems?

Significance of the Study

A wealth of information exists regarding the negative impact of behavioral problems on academic, social, and emotional outcomes for children (Brunnekreef, Sonnevile, Althaus, Minderaa, Oldehinkel, Verhulst, and Ormel, 2007; Coie & Kupersmidt, 1983; Henricsson & Rydell, 2004; Krettenauer, Ullrich, Hofmann, and Edelstein, 2003; Nelson, Benner, Lane & Smith, 2004). The knowledge that behavior problems are a concern that warrants action must be considered within the context of recent initiatives from many professional organizations to promote increased use of evidence-based practice as opposed to relying on individual practitioners' discretion to guide treatment decisions (Kratochwill, 2007). However, current research that investigates treatment effectiveness often demonstrates the tendency of children with

both externalizing and internalizing behaviors to respond differently to treatment than those children with only one type of behavioral concern (Jensen, et al., 2001; Kazdin & Wassell, 1999; March et al., 2000). Additionally, most of our current knowledge of what is effective when working with this population is limited to studies using randomized clinical trials. While such studies may demonstrate interventions that are effective when working with this population, the resources needed to carry them out properly may not be available in typical schools (Kratochwill, 2007).

In light of these lines of research, studies are needed that can contribute to our understanding of what may be effective in addressing the needs of these children with co-occurring internalizing and externalizing behavioral problems in schools. Therefore, studying the effectiveness of the PTR intervention will contribute to our understanding of how to work with this population in schools. That is, a school-based study demonstrating that a standardized, manual-based approach to an FBA is effective for this population would demonstrate that behavioral principles can be used to address the needs of students with both externalizing and internalizing behavioral concerns.

Chapter II

Literature Review

Overview

This chapter begins with an overview of the literature on behavior problems in youth, including their prevalence and relationships with academic achievement, social development, and long-term outcomes. Subsequently, research regarding externalizing behaviors in combination with internalizing behaviors is discussed. This is followed by a brief overview of the different approaches to investigating internalizing behavior and a review of behavioral intervention research in the mental health field, including school-based treatment of children with behavioral concerns. The chapter concludes with a discussion of positive behavior support and a three-tiered service delivery model in schools in which the severity of problems guides decisions about how to best serve the child with an emphasis on a Tier III intervention known as Prevent-Teach-Reinforce (PTR; Iovannone, Greenbaum, Wang, Kincaid, & Strain, 2009). The potential of PTR to address the needs of children displaying externalizing behaviors with internalizing behaviors serving as a moderator is discussed at the conclusion of the chapter.

Prevalence of Externalizing Behaviors in Youth

Externalizing behaviors in youth are those behaviors that present themselves outwardly and are characterized by the child acting negatively towards the external environment (Campbell, Shaw, & Gilliom, 2000; Eisenberg, et al., 2001). Examples of these types of behavior include disruptive, hyperactive, and aggressive behaviors

(Hinshaw, 1987). These behaviors are different from internalizing behaviors in that while internalizing behaviors are also presented outwardly, they affect the internal, psychological environment of the child more so than the external environment.

Examples of internalizing behaviors may include withdrawal and inhibition.

In 2006, five percent of children were reported by their parents as displaying “definite or severe difficulties” with emotions, behavior, and relationships with others (Federal Interagency Forum on Child and Family Statistics, 2008). If the prevalence of these behaviors is assessed in terms of the Diagnostic and Statistical Manual of Mental Disorders IV-TR (DSM IV-TR) criteria for behavioral disorders, 9% to 13% of children from ages 9 to 17 meet criteria for diagnosable emotional or behavioral disorders (American Psychiatric Association, 2000). These maladaptive behaviors manifest in multiple settings, including school. For instance, both ADHD and Conduct Disorder are classified as DSM-IV externalizing behavior problems in that they are aggressive, anti-social, and hyperactive in nature (American Psychiatric Association, 2000). Attention Deficit Hyperactive Disorder (ADHD) occurs in about 3%-7% of the school population, while Conduct Disorder (CD) is diagnosed in about 6%-16% of males and 2-9% of females in the school population (American Psychiatric Association, 2000).

Impact of Externalizing Behaviors on Development

The negative impact of externalizing behaviors in schools is extensive. To demonstrate this point, the following section will briefly discuss the specific negative impact that externalizing behavior problems can have on academics and school experiences, teacher and peer relationships, and long-term outcomes for children.

Academics

Research shows that students with externalizing behaviors show deficits across multiple academic areas (e.g., mathematics, reading, and written language; Nelson, Benner, Lane & Smith, 2004). One factor contributing to this finding is that children with externalizing behaviors have been shown to demonstrate deficits in information processing as well as language deficits. For instance, Brunnekreef, Sonnevile, Althaus, Minderaa, Oldehinkel, Verhulst, and Ormel (2007) compared children identified through the parent-report Child Behavior Checklist as displaying externalizing behavior problems to children with internalizing problems only as well as to children with no behavior problems. When comparing the groups on speed and accuracy measures from the Amsterdam Neuropsychological Tasks program, children with externalizing behaviors showed significantly worse skills than children with internalizing behaviors only, who did not differ from children with no behavioral issues.

Similarly, Seguin, Parent, Treblay, and Zelazo (2009) assessed longitudinal data for children involved in the Quebec Longitudinal Study of Child Development. Mothers had assessed their child's behavior at several points in time using scales drawn from the Preschool Behavior Questionnaire. When the researchers analyzed this behavioral data and data collected from the Peabody Picture Vocabulary Test-Revised, they found that physical aggression was related to receptive language deficits even after controlling for other cognitive abilities and environmental factors.

In addition to skill deficits in students with externalizing behavior problems is the presence of undesirable behaviors. These students display excessive behaviors such as verbal and physical aggression towards peers, defiance, and in-class disruptions. All of these behaviors are associated with suspension from school (Skiba, Peterson, & Williams,

1997). When students with frequent conduct problems are removed from the classroom environment, they are placed at an even greater disadvantage as their exposure to the material becomes even more limited. This removal from the class then leads to students falling further behind academically (Bock, Tapscott, & Savner, 1998).

In addition to the immediate negative effects associated with suspension, long-term negative effects also can occur. Instead of deterring students from making bad choices, suspension is one of the top school-related reasons for dropping out of school. That is, frequent suspension or expulsion leads to “pushouts” or students who receive frequent feedback from the school environment that they are perceived as unable or unworthy of graduation and are therefore encouraged, indirectly, to dropout (DeRidder, 1991). Therefore, the presence of undesirable external behaviors can be thought of as a catalyst for other negative events.

The defiant and aggressive nature of students with externalizing behavior also leads to more conflict with and negative attitudes toward teachers than is typical for peers without externalizing behaviors (Henricsson & Rydell, 2004). In fact, teachers cite behavioral issues as one of the major obstacles to teaching (Carpenter & Nangle, 2002; Gould, 2002). Teachers who continue to have negative interactions with this type of student may find it difficult to deal with the stress associated with interacting with these students and may respond in a more negative manner, thus making academic success more difficult for the student (Strain, Lamber, Kerr, Stragg, & Lenker, 1983).

Peer relationships

Peer relationships are yet another area that can be adversely affected by maladaptive behaviors. Students with externalizing problem behaviors can have difficulty forming and

maintaining peer relationships because they can be obtrusive, hyperactive, aggressive, excessive, and intense (Coie & Kupersmidt, 1983; Mash & Barkley, 2003). Other students may be overwhelmed or unnerved by these actions, and they may avoid interactions with these children, leading them to turn to other deviant peers for friendships. Such friendships can lead to other problems (e.g., juvenile delinquency; Dishion, French, & Patterson, 1995; Reid, 1993). Furthermore, this lack of positive interaction with typical students can inhibit the development of important interpersonal skills (Jimerson, Egeland, & Teo, 1999).

Long-term outcomes

Long-term consequences accompany these short-term effects of problematic behavior. Behavior problems in preschool are the single best predictor of delinquency in adolescence, gang membership, and adult incarceration (Dishion, French, & Patterson, 1995; Reid, 1993). Likewise, these behavior problems in childhood are associated with violence, substance abuse, and anxiety in adulthood. These children are more likely to experience divorce, unemployment, and psychiatric illness in adulthood than their same-age peers without behavior problems (Coie & Dodge, 1998; Kazdin, 1985).

Students with Both Externalizing and Internalizing Behaviors

As demonstrated in the research literature, the future prospects for children with externalizing behaviors are quite troublesome and thus warrant attention. Within this population, however, is a subgroup of students who display both externalizing and internalizing behaviors and warrant additional attention. McConaughy and Achenbach (1994) found that 40 to 44% of children who had elevated scores on the Aggressive Behavior syndrome subscale of the Child Behavior Checklist (CBCL) also had elevated

scores on the Anxious/Depressed syndrome subscale. Delinquent Behavior and Anxious/Depressed subscale scores also were simultaneously elevated in 25 to 31% of their sample. When information on these same children was collected through the Teacher Report Form (TRF), co-occurring externalizing and internalizing behaviors were present in 23 to 30% of the sample. Similarly, when using the same general population sample, McConaughy, Skiba, and Russell (1993) found that of the sample who met the borderline clinical cutpoint scores for externalizing behaviors on the CBCL, 51% also met cutpoint scores for internalizing behaviors. For the TRF, 42 to 44% of the sample had simultaneous borderline clinical cutpoint scores on both the externalizing and internalizing scales. If comorbidity is examined in terms of specific disorders, Oppositional Defiant Disorder has been found to be comorbid with depressive symptoms in 17.2% of children and comorbid with anxiety symptoms in 8.9% of children (Boylan, Vaillancourt, Boyle, & Szatmari, 2007). ADHD has been found to be comorbid with anxiety problems in 25-33% of children and comorbid with depressive problems in approximately 23% of children (Bauermeister, et al., 2007; Jarrett & Ollendick, 2008).

Research has shown that students with co-occurring internalizing and externalizing behavior problems demonstrate worse outcomes than those children with only one type of behavioral concern (Harrington, Fudge, Rutter, & Pickles, 1991). For instance, Brunnekreef et al. (2007) found that children with only externalizing problem behaviors showed significantly poorer performance on speed and accuracy tasks on the Amsterdam Neuropsychological Tasks program while children with internalizing problems alone did not differ from a comparison group in their task. However, students who had both internalizing and externalizing problems showed the lowest proficiency on

the tasks. Likewise, Wright (2001) found that Separation Anxiety Disorder worsens externalizing disruptive behaviors. Other research, however, has shown that internalizing behaviors serve to protect externalizing behaviors from becoming problematic (Walker, Lahey, Russo, Christ, McBurnett, Loeber, Stouthamer-Loeber, & Green, 1991). Specifically, students with both Conduct Disorder and anxiety have been shown to experience fewer social problems than children with Conduct Disorder alone. Researchers have concluded that internalizing behaviors may serve as either a protective or exacerbating force in children's lives (Jarrett & Ollendick, 2008). Furthermore, it has been noted that more research should examine internalizing and externalizing behaviors as interrelated entities that influence one another and thus warrant special consideration (Chase & Eyberg, 2008).

Treatment and Intervention

A majority of research regarding comorbid behavior problems focuses on homotypic comorbidity (i.e., behaviors that are contained to either exclusively internalizing behaviors or exclusively externalizing behaviors) with limited attention focused on treatment outcomes for children with a combination of internalizing and externalizing behavior problems (Chase & Eyberg, 2008). The following sections will review the limited research available regarding treatment of children with co-occurring internalizing and externalizing behaviors. Specifically, research regarding psychopharmacological treatment, family-based treatment, and school-based treatment will be reviewed.

The Importance of Moderators in Treatment

When investigating both externalizing and internalizing behaviors, the manner in which researchers choose to describe their sample varies. Often, researchers examining both types of behavioral issues define their sample as displaying “comorbid” behaviors. Comorbidity is defined as “the manifestation of two or more disorders that co-occur more often than would be expected by chance alone” (Mash & Barkley, 2003, p. 37). An additional line of research investigates internalizing behaviors or comorbidity as a moderator. A moderator is a variable that “identifies on whom and under what circumstances treatments have different effects” and can help identify which patients will be most responsive to a specific treatment (Kraemer, Wilson, Fairburn, Mphil, & Agras 2002). Another way to think of a moderator is as a variable that changes the relationship between the risk factor and the outcome. Additionally, some researchers have chosen to discuss internalizing and externalizing behavior influences as an interaction. The term “interaction” is used because statistical procedures examining the externalizing and internalizing behaviors can yield an interaction effect, which would indicate that one variable (i.e., internalizing behavior) is serving as a moderator. An equivalent way to interpret this interaction would be to say that comorbidity led to a different pattern of results than would be found if only one type of behavior was present. In all, while different terms are used throughout the research literature, it is important to note that these terms represent the same sample conditions.

Combined Medication and Behavioral Studies

Several studies have examined how the presence of both internalizing and externalizing disorders impacts treatment with psychotropic medication, behavioral

treatments, or both. The Multimodal Treatment Study of Children with ADHD (MTA) investigated the efficacy of medication and behavioral treatments for children diagnosed with ADHD (MTA Cooperative Group, 1999). Information was collected on 579 children ranging in age from 7 to 9 years (80% male, 61% Caucasian, 20% African American, and 19% other). During treatment, children were randomly assigned to one of four conditions (i.e., medication management, behavioral treatment, a combination of the two, or a community comparison). Medication management was conducted by titrating medication and adjusting the timing and dosage based on parent and teacher ratings over the course of treatment. Behavioral treatment consisted of 14 months of individual and group parent training, 4 months of classroom management training for the teacher, and an 8-week summer program for the child. The community comparison was referred to community care resources after an assessment was completed using the Diagnostic Interview Schedule for Children- parent report (DISC-P), parent- and teacher-completed Swanson, Nolan, and Pelhan scale (SNAP), the Social Skills Rating Scale (SSRS), and the Multidimensional Anxiety Scale for Children (MASC). Preliminary results showed that treatment which involved medication management (i.e., combination treatment and medication management alone) was more effective than those treatments without medication management (i.e., behavior treatment only and community referral) in treating ADHD behaviors. However, when examining improvements in internalizing behaviors, combined treatment (i.e., both behavioral and medical treatment) was more effective than unimodal treatment (i.e., behavioral treatment only or medical treatment only). Behavioral treatment and medical treatment did not differ in their effectiveness at improving internalizing symptoms.

To further investigate the role of these internalizing behaviors in treatment for children with ADHD, Jensen et al. (2001) grouped the same children from the MTA study into one of four categories based on data collected from parent-reports (i.e., ADHD only, ADHD and anxiety, ADHD and ODD/CD, and ADHD, ODD/CD, and anxiety). The findings of their study revealed that the presence of certain combinations of behavioral problems was related to differences in effective treatment. More specifically, children with ADHD only as well as children with ADHD plus other externalizing behaviors responded best to the medication only treatment; the addition of the behavioral component did not influence treatment positively or negatively. Children with ADHD in combination with anxiety responded in a similar, positive direction to either medication or behavioral treatments. Finally, children with all these disorders (i.e., ADHD, anxiety, and ODD/CD) made the most improvements with the combined treatment (i.e., both medication and behavioral treatment). These findings suggest that it is important for practitioners to determine the specific types of behavioral issues that a child is presenting in order to provide the most effective treatment.

Parent Training

Few studies are available that investigate parent training programs and outcomes for children with both internalizing and externalizing behaviors. However, Kazdin and Wassell (1999) conducted a study examining the effectiveness of cognitive problem-solving skills training (PSST) and parent management training (PMT) for families with children referred for Conduct Disorder. Two hundred children ranging in age from 3 to 13 years participated in the study with their parents. A majority of the children were Caucasian males. While most of the participants met diagnostic criteria for either

Conduct Disorder or Oppositional Defiant Disorder (71%), others met criteria for different DSM-IV disorders (e.g., Attention Deficit Hyperactivity Disorder and Major Depressive Disorder). Seventy-nine percent of the children met comorbidity criteria (i.e., criteria for CD or ODD as well as either another externalizing disorder or an internalizing disorder).

Kazdin and Wassell (1991) trained participants in cognitive problem-solving through a structured treatment manual which outlined each session. Cognitive problem-solving training consisted of 20 to 25 sessions with the child in which modeling, role-playing, corrective feedback, and reinforcement were used to teach skills. Parents were taught management strategies during 16 individual sessions through practice, feedback, and shaping. Parents and children were brought together to review and practice strategies they had learned.

At the conclusion of treatment, the investigators measured therapeutic change by assessing the child's current antisocial behavior, problem behaviors in the home, and total symptoms. Analyses revealed that comorbidity was associated with less therapeutic change, which the researchers attributed to previous research knowledge stating that more severe behavioral problems and greater numbers of symptoms are associated with less therapeutic improvement over time. While the investigators did not specify if certain combinations of behavioral problems were associated with less therapeutic change (i.e., externalizing behaviors combined with internalizing behaviors versus exclusively externalizing behaviors), these results provide support regarding the importance of addressing whether a child has comorbid issues when selecting a parent training program.

A parent training study that provides more insight into the role of internalizing behaviors in treatment outcomes is seen in Chase and Eyberg's (2008) study. Sixty-four children with Oppositional Defiant Disorder were included in treatment using Parent-Child Interaction Therapy. Because 15 of the children in the study had comorbid Separation Anxiety Disorder and an additional 26 children had clinically significant internalizing scores on the Child Behavior Checklist, the researchers were able to investigate the role of internalizing behaviors on treatment outcomes.

Therapy lasted for 8-12 sessions. During the first phase of therapy, known as child-directed interaction, parents learned skills to play with their child and were coached through the use of a one-way mirror and a bug-in-the-ear microphone. This phase of therapy lasted until parents had mastered the skills (an average of 5 sessions). Next, parents learned discipline strategies during the parent-directed interaction phase of therapy. This phase also continued until parents had mastered the skills taught. Overall, therapy lasted an average of 14 sessions.

At the end of therapy, the researchers found that children with comorbid ODD and SAD did not differ in their response to treatment than those children with ODD only. Specifically, treatment significantly reduced ODD symptoms in both groups. Additionally, SAD symptoms decreased, with 73% of children no longer meeting diagnostic criteria for SAD at the end of therapy. The results of this study demonstrated that parent training with Parent-Child Interaction Therapy is effective in reducing both internalizing and externalizing behaviors problems.

School-Based Treatment

While the studies described above demonstrate the importance of identifying co-occurring problems (i.e., the presence of both externalizing and internalizing behaviors) and examining how internalizing or externalizing symptoms may serve as a moderator of treatment outcomes, it is also important to consider the setting in which treatment occurs. Jacob and Coustasse (2008) listed the following factors as reasons why schools are the optimal setting for treatment of students with behavioral and emotional issues: schools are familiar to students, so they may not experience the same uneasiness that may arise from visiting other settings; transportation barriers are eliminated by delivering treatment in schools; data can be collected on the student in various ways, from different people, and in varying settings; and cost of care is less expensive in schools than in private and community-based settings. In fact, schools are considered the de facto provider of services to children with behavioral and emotional needs, with 70-80% of children with such needs receiving services from school personnel (Burns, Costello, Angold, Tweed, Stangl, Farmer, et al., 1995). Based on this information, many interventions that are created for these children are formatted for delivery in the school. The following section will review school-based intervention plans for those children displaying behavior problems.

Positive behavior support. One increasingly popular school-based intervention known as Positive Behavior Support (PBS) uses an interconnected system of prevention and intervention strategies throughout the entire school to reduce problematic behaviors. PBS can be used to develop social skills and reduce problematic behavior for students in general education as well as for students with developmental disabilities, autism, and

emotional and behavioral disorders (Colvin, Kame'enui, & Sugai, 1993; Sugai & Horner, 2007; Todd, Horner, Sugai, & Colvin, 1999). PBS has been shown to promote prosocial behaviors, increase academic engaged time, improve academic performance, and decrease office discipline referrals (Lassen, Steel, & Sailor, 2006; Sugai & Horner, 2007). The 2006-2007 Final Report for Florida's PBS Project at the University of South Florida demonstrated the following positive outcomes for schools implementing PBS school-wide:

- Average number of office discipline referrals (ODR) decreased 28% after 1 year of implementation and continued to decline for the following two years
- Out of school suspension (OSS) was 41% lower at schools with high levels of PBS implementation than at schools with lower levels of implementation
- 20% reduction in in-school suspension after 1 year of implementation of PBS
- PBS schools had higher rates of students achieving Level 3 on FCAT reading than other schools for the 2004-2005 and 2006-2007 school years.

PBS uses three levels of evidence-based interventions to address behavioral problems, with increasing levels of support at each level. That is, as the severity and intensity of the problem increases, so does the intensity of the intervention. Because all interventions used in PBS schools are empirically-supported, consistent, high standards are created across classrooms (McIntosh, Horner, & Sugai, 2009). At the school-wide level, or Tier I, procedures are applicable to all students in all settings. The use of these

standardized processes with a culture of clear expectations is intended to be effective for 100% of the students.

Researchers have investigated school-wide PBS to assess its effectiveness for all students. Lane, Wehby, Roberston, and Rogers (2007) investigated the degree to which varying student profiles impact response to PBS. A total of 178 high school students (grades 10-12) were nominated by their English teachers using a modified Systematic Screening for Behavior Disorders scale (SSBD). Teachers nominated one student for each of the following categories: externalizing, internalizing, comorbid, and typical. Teachers received training in SW-PBS for one year prior to implementing the program at their school. After training, teachers implemented the Tier 1 components of PBS throughout their school. Students selected for the study were monitored through discipline referrals, tardiness, GPA, and referrals for additional supports. Effect size data suggested that students responded differently to the program, with students with comorbid problems showing the least responsiveness. Students in the comorbid group showed slight decreases in GPA ($ES = -0.12$), worsening tardiness ($ES = 0.36$) and slight improvement in suspensions ($ES = -0.05$). In comparison, students with externalizing only and internalizing only behaviors respectively showed improvements in GPA ($ES = 0.22, 0.39$), tardiness ($ES = -0.17, -0.60$), and suspensions ($ES = -0.04, -0.27$). This study provides a good example of how a well-implemented, low-intensity approach may not be effective for students with both externalizing and internalizing behaviors.

For these students who do not respond to well-implemented programs at Tier I (students considered “at risk”), it is necessary to move to more intensive services. Records kept by teachers or other professionals are used by a school’s planning and

behavior support teams to inform decisions to move to Tier II interventions. At Tier II, groups of students are identified as displaying similar behavior problems and patterns and as needing specific skill development. These group interventions are flexible but systematic and include the following core features: continuous availability, rapid access, low effort by teachers, consistency with school-wide expectations, implementation by all staff in the school, flexibility based on assessment, and continuous monitoring (Hawken, Adolphson, MacLeod, & Schumann, 2009). Examples of common Tier II interventions that have been shown to be effective include Check in Check out (CICO) (Filter, McKenna, Benedict, Horner, Todd, & Watson, 2007) and the Behavior Education Program (BEP; Hawken & Horner, 2003; Hawken, MacLeod, & Rawlings, 2007; March & Horner, 2002).

While all interventions used within the PBS system are empirically-based, these interventions may not be effective for those students with unique characteristics (e.g., students with both externalizing and internalizing behaviors). A review of the literature revealed no studies investigating the effectiveness of Tier II interventions for children with both internalizing and externalizing behaviors.

When it is decided by educational and human service agencies that a more personalized, problem-solving approach (i.e., Tier III interventions) will be used, it is typical for a functional behavior assessment (FBA) to be conducted and an individualized support plan to be developed. This process involves the following essential steps:

1. identify goals of intervention,
2. gather relevant information through records reviews, interviews and observations,

3. develop summary statements (i.e., statements that describe the relationship between the student's behavior and the environment),
4. generate behavior support plan,
5. implement and monitor outcomes (Scott, Anderson, Mancil, & Alter, 2009).

These behavior support plans are identifiable in that they are positive, proactive, educative, and functional. Furthermore, these plans use principles of applied behavior analysis. That is, the interventions used meet the following criteria: the environment is altered to remove the triggering event; new skills are taught to replace problematic behavior; and rewards for negative behavior are minimized while clear rewards for appropriate behavior are maximized. Finally, strategies are used that enhance the student's lifestyle (e.g., improving relationships with others, participating in group activities; Dunlap, Sailor, Horner, & Sugai, 2009).

Research supports the use of an FBA in developing effective interventions (Blakeslee, Sugai, & Gruba, 1994; Kern, Hilt, & Gresham, 2004). Furthermore, the use of FBA in schools is endorsed by the National Association of School Psychologists, the National Association of State Directors of Education, and the National Institute of Health.

Prevent-Teach-Reinforce. Despite research supporting the use of FBAs in schools for children with severe behavioral problems, this practice is not a standard process used effectively in most schools (Blood & Neel, 2007). Some researchers have questioned whether such a process is feasible in a school setting (Kern, Hilt, & Gresham, 2004). Specifically, issues regarding whether teachers in schools are able to implement such a process accurately have been posed. Iovannone, et al. (2009) identified three limitations preventing the wide-scale application of FBAs in schools: 1) previous research on FBAs

has involved study settings with intense involvement by researchers; therefore these research results do not transfer to the typical setting provided in schools; 2) most research has been limited to single-subject studies, without much attention to conducting randomized controlled trials; and 3) previous training efforts in FBA implementation for school personnel have not been successful.

To address such issues, a tertiary-level intervention known as Prevent-Teach-Reinforce (PTR) was developed (Iovannone, et al., 2009). PTR uses a collaborative and systematic approach to completing an FBA, thus increasing teacher acceptance and standardization of this process. Teachers guide the FBA process through the use of a reader-friendly manual as well as from assistance from a PTR consultant. The teacher manual provides personnel with the steps to be completed as well as background information on each step of the process, directions and activities for each meeting, and homework assignments to be completed by each team member outside of the meetings. The PTR consultant serves to gather homework assignments by team-decided dates and synthesize the data. This data is then presented to the team for discussion, refinement, and consensus. The 5-step process outlined in the manual is as follows: team building, goal setting, PTR assessment, PTR intervention, and PTR evaluation.

1. *Team building.* In the first step, specific team members are selected (with as few members as the teacher and PTR consultant). The team also decides at this point how consensus will be reached in future steps as well as the responsibilities of each team member.

2. *Goal setting.* The second step of goal setting is comprised of three components. First, each team member identifies goals for the student to achieve within 3 domain (i.e., social,

academic, behavioral). At this point, team members identify both the behaviors they would like to see decrease as well as behaviors they would like to see increase. Next, a consensus on behaviors to be targeted and their operational definitions is reached. Finally, a strategy for measuring behaviors is developed, and data is collected daily throughout baseline and the intervention.

3. *PTR assessment*. The third step involved is the functional behavior assessment which involves the assessment of preventative, teaching, and reinforcement variables. Each team member independently answers questions related to these three areas, and the PTR consultant synthesizes the information to develop a draft hypothesis based on the data received. The purpose of this step is for team members to come to a consensus on hypotheses regarding the antecedents to the behavior, the function of the behavior, and the events that follow the behavior. The specific areas addressed are as follows:

- *Prevention*. The context in which the problem behavior occurs is identified. In other words, events or circumstances that serve as triggers to the problematic behavior are identified by the team members.
- *Teach*. At this stage, the goal is to identify an acceptable behavior to replace the maladaptive behavior. The replacement behavior can be functionally equivalent to the problem behavior (i.e., escape, attention) or it can be a prosocial, desired behavior that is incompatible with the problematic behavior.
- *Reinforce*. The final stage of the assessment involves identifying ways to change the consequences so that the acceptable behavior is more likely to occur and the maladaptive behavior is less likely to occur. To accomplish this, the reinforcements identified during the functional assessment cannot

follow the problematic behavior. Instead, the reinforcement provided is matched to the purpose or function of the problem behavior. That is, if the behavior was to receive attention, the reinforcement for the appropriate behavior must have some way for the child to continue to receive attention.

4. *PTR Intervention.* The fourth step involves using the data gathered during the functional behavior assessment to select interventions from a menu provided in the manual. To ensure that the selected interventions align with the hypotheses developed in Step 3, descriptions of each intervention, as well as implementation examples are provided. Information is also provided regarding implementation issues, such as the time required, to ensure that feasible interventions are chosen by the team. In order to reach consensus, members are asked to rank order two to four strategies within each category (i.e., an intervention strategy that prevents problem behavior from occurring by addressing the antecedents; an intervention that teaches the student one new skill or replacement behavior; and a reinforcement intervention to increase the likelihood that the new appropriate behavior will be repeated). After the interventions are selected, the PTR consultant assists the team in developing the behavior intervention plan with specific descriptions of the intervention strategies as well as a task analysis of each intervention. Once the behavior intervention plan is written, a plan is developed to provide training and support for the teacher to ensure fidelity of the intervention. This training is provided by the PTR consultant and involves strategies such as role playing, discussion, and question and answers. Teachers are scored at prior to implementing the intervention using a checklist with all elements of the intervention that should be present. Teachers receive a score of “yes” for adequate performance on each element. Teachers receiving at least

80% of “yeses” on the overall checklist then begin implementing the intervention. A score below 80% means that the teacher receives additional training or, if the teacher continues to receive a score below 80%, a decision is made as to whether the plan should be modified or continued. Additional support is provided with up to 12 hours of consultation with the PTR consultant and 3 direct observations to ensure fidelity of the intervention.

5. *PTR Evaluation*. The final step involves measuring and evaluating the outcome data through the tool decided in Step 2. At this point, the team determines next steps for the intervention (i.e., expand, fade, change).

To assess the effectiveness of the PTR intervention in a typical school setting for students with severe behavior problems, Iovannone, et al. (2009) recruited 245 students across 65 schools, grades K through 8. Students were randomly assigned to either receive the PTR intervention or to receive the services that would usually be delivered to them at their school. Data were collected on students’ social skills and behavior problem through the Social Skills Rating System and academic engaged time through direct observation. When pre and post data were analyzed, it was found that students who had received the PTR intervention had significantly higher social skills scores and academic engaged times than their peers who had not received the PTR intervention. Additionally, problem behavior scores for students in the PTR intervention group were significantly lower than those students in the comparison group.

Despite the positive results found using the PTR process, questions regarding the effectiveness of the intervention for children with both internalizing and externalizing behaviors have not been addressed. Researchers have noted that the lack of research

regarding functional behavior assessment for children with internalizing problems is a shortcoming of the field (Kern, Hilt, & Gresham, 2004). Furthermore, some researchers assert that a child's problematic behavior is complex and cannot be simplified to proximal antecedents and consequences (Cone, 1997; Evans, 1999; Flannery, O'Neil & Horner, 1995; Haynes & O'Brien, 1990; Miller, Williams, & McCoy, 2004). Therefore, the effectiveness of the PTR process for those children who display both externalizing and internalizing behaviors warrants further attention.

Conclusion

Research demonstrating the negative effects of externalizing behaviors is well-documented. Furthermore, those children with both externalizing and internalizing behaviors appear to represent a population with specific treatment needs. Research within the mental health field shows that children with both externalizing and internalizing behaviors may require treatment that differs from treatment for children with only one type of behavioral problem (Jensen et al, 2001; Kazdin & Wassell, 1999; MTA Cooperative Group, 1999). Furthermore, school-based research documenting the effectiveness of interventions for children with comorbid internalizing and externalizing behavior problems is limited. However, the limited research that does exist has demonstrated the need to identify and consider the unique characteristics of the student (Lane, Wehby, Roberston, & Rogers, 2007).

Within the school setting, services are often delivered in a three-tiered model in which increasing problem severity results in more intensive services. For those students who have severe behavioral problems, functional behavior assessment is often used as a Tier 3 intervention (Scott, Anderson, Mancil, & Alter, 2009). Prevent-Teach-Reinforce

was developed to address concerns regarding the feasibility of conducting functional behavior assessments within schools (Kern, Hilt, & Gresham, 2004; Kincaid & Iovannone, 2008). However, the effectiveness of PTR for those children with both externalizing and internalizing behaviors has yet to be addressed in the research literature. Based on the research documenting this population's differing treatment needs, as well as research that states that functional behavior assessments with this type of population may require more consideration than just proximal variables, further study of this topic is needed (Cone, 1997; Evans, 1999; Flannery, O'Neil & Horner, 1995; Haynes & O'Brien, 1990; Miller, Williams, & McCoy, 2004). The present study will therefore investigate the effectiveness of the Prevent-Teach-Reinforce intervention for children displaying both externalizing and internalizing behaviors.

CHAPTER III

Methods

Study Design

This study used archival data from a study investigating the effectiveness of the Prevent-Teach-Reinforce intervention for students with challenging behaviors in grades K through 8. The original study was conducted by researchers at the Florida Mental Health Institute (FMHI) to investigate the effectiveness of PTR for children with externalizing behavioral problems.

After receiving approval from the university Institutional Review Board to conduct the original study, three school districts in Central Florida and two in Colorado agreed to participate in the study. District personnel recommended potential schools to be contacted. Project staff contacted the principals of the recommended schools, described the study, and scheduled a time to present to the faculty if principals indicated an interest in participating. After providing overviews of the project to faculty, teachers indicating interest in volunteering received further explanation of the research and signed informed consent.

Participants were selected from 65 schools across five public school districts. Three school districts were located in Central Florida, and two were located in Colorado. The number of students served by each school ranged from 20,500 to 194,000.

Teachers who volunteered to participate in the study were asked to nominate students in their classrooms who engaged in severe behavior problems that were disruptive to the school environment and/or dangerous to themselves and others through the use of the Systematic Screening for Behavior Disorders (SSBD). Unresponsiveness to tier 1 and tier 2 interventions was not a requirement for the students who were nominated. The Systematic Screening for Behavior Disorders (SSBD) is a multiple-gating tool used to identify students with behavioral problems (Walker & Severson, 1991). The first gate requires teachers to rank order students with internalizing and externalizing behaviors. Students who were rank ordered in the top three positions on Gate 1 moved on to Gate 2 in which teachers rated behavioral problems through the Critical Events Inventory (CEI). Possible scores on the Critical Events Inventory range from 0 (i.e., no observable problematic behaviors) to 35 (i.e., 35 types of observable problematic behaviors).

The caregivers of each student who was rank ordered number one on Gate 1 and who had a minimum of five critical events on Gate 2 was contacted by the teacher to ascertain whether the family would be interested in the project and would allow the project staff to contact them to provide further explanation. Each family agreeing to be contacted received a visit from a PTR consultant who described the study and attempted to obtain informed consent. If the parent gave consent, the student was randomly assigned to the intervention or wait-list comparison group. If the parent did not give consent, the second ranked student's caregivers were contacted and informed consent was sought.

Recruitment consisted of 2 waves. During the 2005-2006 school year, 100 students were recruited for the study, with 50 being randomly assigned to the treatment condition and 50 students serving as the control group. The following school year (2006-2007), the control group from the previous year received the treatment, and an additional 100 students were recruited for the second wave (50 students for the treatment group and 50 students for the control group). During the 2007-2008 school year, the second control group received the PTR intervention.

Academic engaged time, social skills, and problem behaviors data were collected by trained graduate students at three points in time: pre-intervention, post-intervention, and at follow-up . On average, 71 days passed between baseline assessment and posttest assessment, and follow-up assessment occurred 6 to 8 months after posttest assessment, which typically was the following school year with a different teacher than the teacher involved in the original PTR process.

Current Study

The current study assessed the effectiveness of the Prevent-Teach-Reinforce intervention for children with both externalizing and internalizing behavior problems compared to those students who have only have externalizing behavior problems. The following research questions were investigated:

1. Do children with externalizing behavior problems only show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention?

2. Do children with a combination of externalizing and internalizing behavior problems show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention?
3. Is there a difference in levels of improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention for children with externalizing behavior problems only vs. those with a combination of internalizing and externalizing behavior problems?

Participants

Participants for the current study included 74 students from kindergarten through eighth grade who received the PTR intervention. All participants were described by their teachers as engaging in severe behavior problems that were disruptive to the school environment and/or dangerous to themselves and others, as measured by the SSBD. Furthermore, these behaviors occurred with a frequency of at least one incident per week and were sustained for at least six (6) months.

Instrumentation

Type of Behavioral Problem

Data related to the independent variable “type of behavior problem” was collected at three points in time (i.e., pre-intervention, post-intervention, and follow-up) using the Social Skills Rating System (SSRS; Gresham & Elliot, 1990). The SSRS uses three separate rating forms for teachers, parents, and students to measure three domains: social skills, problem behaviors, and academic competence. Additionally, there are three forms for different ages: preschool (3-5 years), elementary (kindergarten- grade 6), and secondary (grades 7-12). The specific number of items varies from form to form. Each

form takes up to 20 minutes to complete, with the rater stating their perception of the frequency of behaviors occurring using a 3-point scale (“0”- “Never,” “1”- “Sometimes,” or “2”- “Very Often”).

For the current study, the Problem Behaviors Subscale was used to define the variable “behavior problems” using the teacher form, elementary grade level form, which has 57 items. Within the Problem Behaviors Subscale, three domains are assessed: externalizing problems, internalizing problems, and hyperactivity problems. Examples statements include “threatens or bullies others.” “is easily embarrassed,” and “fights with others.”

As outlined in the SSRS manual, individual items on the Problem Behaviors Scale are classified as internalizing behaviors or externalizing behaviors. Individual items representing internalizing behaviors are added together to get a raw score for internalizing behaviors. The same procedure is followed for externalizing items. Appendices in the manual are then used to convert raw scores for both the internalizing items and the externalizing items into descriptive behavior levels, based on the specific child’s grade and gender. Descriptive behavior levels are reported as “fewer,” “average,” or “more.” A score of “fewer” means that the student displays fewer problematic behaviors than the standardization sample (i.e., one standard deviation or more below the mean of the standardization sample), while a score of “more” means that the student displays more problematic behaviors than the average of the standardization sample (i.e., one standard deviation or more above the mean of the standardization sample). For the purposes of this study, at the time of the pre-intervention assessment, participants with a score of “more” on both the externalizing and internalizing scales were classified as

having both externalizing and internalizing behavior problems. Participants with a score of “more” on only the externalizing scale were classified as having externalizing behavior problems only. For the Problem Behaviors Subscale, the elementary-level, teacher-endorsed form has consistency reliabilities ranging from .78 to .88 (internalizing and externalizing, respectively). The validity of the Problem Behaviors Subscale score has been established by correlating the externalizing and internalizing scales with the corresponding externalizing and internalizing scale of the Child Behavior Checklist-Teacher Form. Validity scores are .75 for the externalizing scale and .59 for the internalizing scale.

Social Skills

Data for the outcome variable “social skills” was collected from participants’ teachers at three points in time (i.e., pre-intervention, post-intervention, and follow-up). “Social skills” was defined in terms of scores obtained on the Social Skills subscale of the SSRS. Example statements on this subscale include “introduces herself or himself to new people without being told,” and “says nice things about himself or herself when appropriate.” Items endorsed by teachers on this subscale are added to obtain a total raw score. Appendices in the manual are then used to convert the total raw score into a standard score based on the specific child’s grade and gender. The standard scores have a mean of 100 and a standard deviation of 15. Children with social skills scores below 85 are classified as having fewer social skills than the standardization sample, while those with a score above 115 are classified as having more social skills than the standardization sample. The teacher form, Social Skills subscale of the SSRS has an internal consistency of .94. Negative correlations between the Social Skills subscale and the Problem subscale

of the CBCL teacher forms demonstrate the validity of the scale (i.e., total scale scores correlation of $-.64$).

Behavioral Problem

Data for the outcome variable “behavior problems” was collected from participants’ teachers at three points in time (i.e., pre-intervention, post-intervention, and follow-up). “Behavior problems” was defined in terms of scores obtained on the Problem Behaviors subscale of the SSRS. While the independent variable “type of behavior problem” also was assessed using this scale, the independent variable looked specifically at whether the behavior was externalizing or internalizing (i.e., to classify participants into either the externalizing only or both the externalizing and internalizing group). The outcome variable “behavior problems” examined the overall standard score on the Behavioral Problems scale to assess whether problematic behaviors increased, decreased, or stayed the same following the PTR intervention. Standard scores on this subscale are calculated and reported the same as those on the Social Skills subscale (i.e., converting raw scores; scores with a mean of 100 and a standard deviation of 15).

Academic Engaged Time

The outcome variable “academic engaged time” was assessed using a modified version of the academic engaged time (AET) measure from the SSBD (Walker & Severson, 1991; Iovannone, et al., 2009). The AET measures the amount of time a student is actively engaged during independent instruction. To calculate academic engaged time, an observer uses a stopwatch to record the amount of time the student is actively engaged during two separate 15-minute intervals and then divides this time by

the total length of the observation. Data for academic engaged time was collected pre-intervention, post-intervention, and at follow-up.

The validity and reliability of the AET are dependent on the individuals performing the observations. Data collectors were trained by the project director and data coordinator and instructed on definitions of examples and non-examples of academic engagement. After receiving instruction, data collectors practiced with examples on a DVD and compared and discussed their responses to one another as well as the answer key to the DVD. Once inter-rater agreement was established, the data collectors were permitted to conduct observations for the purpose of the study. Inter-rater reliability was periodically checked throughout data collection, with 20% of observations being checked. Inter-rater reliability for these observations ranged from .93 to .99.

Procedure

To conduct the study, the following steps were followed:

1. Approval was obtained from the Institutional Review Board (IRB).
2. The data set was obtained from Dr. Rose Iovannone at FMHI.
3. Participants were grouped to reflect the independent variable “type of behavioral problems.” That is, participants with a score of “more” on both the externalizing and internalizing scales of the SSRS were classified as having both externalizing and internalizing behavior problems. Participants with a score of “more” on the externalizing scale of the SSRS only were classified as having externalizing behavior problems only.

Data Analyses

Question 1: Do children with only externalizing behavior problems show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention? A series of repeated measures ANOVAs was run for each dependent variable to determine if there were differences in the dependent variable means (i.e., social skills scores, teacher-rated behavior problem scores, and percentage of time academically engaged) from pre-test to post-test for students with only externalizing behavior problems. The significance level for these analyses was set at .01.

Question 2: Do children with a combination of externalizing and internalizing behavior problems show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention? A series of repeated measures ANOVAs was run for each dependent variable to determine if there were differences in the dependent variable means (i.e., social skills scores, problem behavior scores, and percentage of time academically engaged) from pre-test to post-test for students with both externalizing and internalizing behaviors. Again, the significance level was set at .01.

Question 3: Is there a difference in levels of improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention for children with externalizing behaviors only vs. those with a combination of internalizing and externalizing behavior problems? A series of repeated measures ANOVAs was run for each dependent variable to determine whether the level of change between groups was significant (i.e., whether there was a significant interaction effect). The significance level was set at .05.

Chapter IV

Results

The research questions posed in this study were answered through a series of ANOVAs that examined changes in social skills, academic engaged time, and behavior problems following the PTR intervention for students with externalizing behavior problems only and for students with both externalizing and internalizing behavior problems. This chapter describes the results of these analyses.

Before running ANOVAs, descriptive statistics were run in order to obtain a more complete understanding of the sample. Percentages were calculated in order to better understand the distribution of ethnicity, gender, socio-economic status, and education placement in the sample. Additionally, the average age of students in each group was calculated. Table 1 provides an overview of these demographic characteristics, sorted by their behavioral profile.

Table 1

Demographic Characteristics of Sample

Demographic Variable	Overall Sample (n=74)	Ext Only (n=39)	Int Only (n=2)	Comorbid (n=17)	Neither (n=16)
Age*	8.04	7.83	11.00	8.44	7.75
Male	76.62	73.17	100.0	77.78	81.25
White	57.14	56.10	100.0	50.00	62.50
Black	15.58	17.07	0.0	22.22	6.25
Hispanic	23.38	24.39	0.0	22.22	25.00
Other	3.90	2.44	0.0	5.56	6.25
Free/ Reduced Lunch	48.05	43.90	50.0	50.00	56.25
Special Education Placement	54.55	46.34	100.0	50.00	75.00

Note: Numbers reported as percentages.

*Numbers reported as means.

Overall, a review of these data suggests several points. First, when compared to the overall distribution of the sample, black students appear to be over-represented in the co morbid group and under-represented in the “neither” group. Also, the “internalizing only” group is made up entirely of white males placed in special education programs. These results, however, are likely due to the small number of students in the “internalizing only” group. It is important to note that students with only internalizing behavior problems were not included in additional analyses because the sample size was too small to analyze once students with incomplete data were removed from the original, archival dataset.

Mean scores across pre-, post-, and follow-up assessment for both students with only externalizing behaviors and students with both externalizing and internalizing behaviors are reported in Tables 2 and 3, respectively. Review of the data for academic engaged time shows higher AET rates for both groups of students at post assessment, but both groups show a return to AET rates similar to baseline when assessed at follow-up. When looking at social skills and behavior problems, both groups show gains at post assessment, with these improvements sustaining over time until follow-up assessment. These results suggest an improvement in academic engaged time, social skills, and behavior problems for both groups of students. However, these improvements appear to only sustain over time for social skills and behavior problems.

Table 2

Mean Pre, Post, and Follow-up Scores for Students with Only Externalizing Problems

Outcome Variable	Pre	SD	Post	SD	FU	SD
AET	0.46	0.22	0.62	0.18	0.45	0.22
Social Skills	77.13	12.49	86.41	11.89	85.95	11.60
Behavior Problems	125.49	7.42	119.02	10.94	118.31	12.41

Table 3

Mean Pre, Post, and Follow-up Scores for Students with Comorbid Problems

Outcome Variable	Pre	SD	Post	SD	FU	SD
AET	0.50	0.24	0.59	0.19	0.50	0.24
Social Skills	75.35	9.97	86.18	15.49	84.59	8.69
Behavior Problems	132.59	7.60	126.06	11.37	121.94	9.51

Outcome Variable 1: Academic Engaged Time

To determine if there was a significant difference in academic engaged time across time, data were subjected to a one-way repeated measures analysis of variance (ANOVA). The results of this analysis for students with externalizing behaviors only are reported in Table 4. As is shown, a significant effect was observed from over time for students with externalizing behavior problems, $F(2, 76) = 11.62, p < .0001$. Post-hoc comparisons of assessment times using Tukey's test with the Greenhouse-Geisser correction for $df(\text{error})$ revealed that baseline AET scores were significantly lower than the post-treatment AET scores, $F(1, 38) = 25.09, p < .001$. Follow-up AET scores were significantly lower than post-treatment scores, $F(1, 38) = 15.05, p < .001$ and similar to baseline scores, $F(1, 38) = 0.01, p = 0.91$. These results indicate that academic engaged time improved for students after receiving the PTR intervention, but after 6 months, academic engaged time returned to rates similar to baseline.

Table 4

AET ANOVA for Students with Externalizing Behaviors by Time

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Treatment	2	0.71	0.36	11.62*
Residual	76	2.34	0.03	
Total	77			

Results of a one-way ANOVA for students with both externalizing and internalizing behaviors are reported in Table 5. A significant effect was not found over

time, $F(2, 32) = 2.33, p > .05$. These results indicate that students did not improve their academic engaged time after receiving the PTR intervention.

Table 5

AET ANOVA for Students with Both Externalizing and Internalizing Behaviors by Time

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Treatment	2	0.10	0.05	2.33
Residual	32	0.69	0.02	
Total	33			

Table 6 displays ANOVA results for the interaction between time and group membership. Results of these analyses show that while there was a significant change in academic engaged time over time, $F(2, 108) = 9.52, p < .001$, the mean scores for each group were not significantly different, $F(1, 54) = 0.16, p = 0.69$. Additionally, these analyses demonstrate a non-significant difference in improvement over time between the two groups of students, $F(2, 108) = 0.49, p = 0.48$. This means that both groups of students displayed similar rates of change in academic engaged time. Means for this analysis are shown in Figure 1.

Table 6

AET ANOVA with Time and Group Membership and their Interaction

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Group	1	0.01	0.01	0.16
Error (Group)	54	4.32	0.08	
Time	2	0.53	0.27	9.52*
Error (Time)	108	3.03	0.03	
Time*Group	2	0.04	0.02	0.72
Total	55			

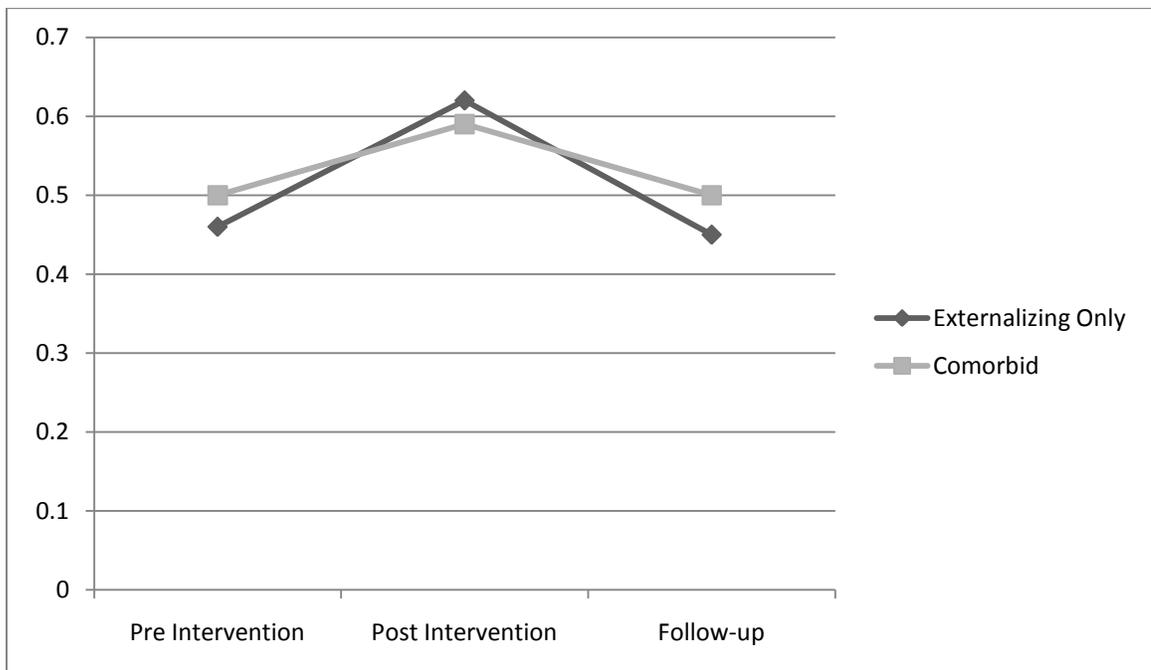


Figure 1. Mean Pre, Post, and Follow-up Academic Engaged Time Scores

Outcome Variable 2: Social Skills

To determine if there was a significant difference in social skills scores across time, data were subjected to a one-way repeated measures analysis of variance (ANOVA). The results of this analysis for students with externalizing behaviors only are reported in Table 7. As is shown, a significant effect was observed from over time for students with externalizing behavior problems, $F(2, 76) = 10.96, p < .0001$. Post-hoc comparisons of assessment times using Tukey’s test with the Greenhouse-Geisser correction for $df(\text{error})$ revealed that baseline social skills scores were significantly lower than the post-treatment social skills scores, $F(1, 38) = 16.22, p < .001$, and significantly lower than follow-up social skills scores, $F(1, 38) = 12.91, p < .001$. Post-treatment social skills scores were similar to follow-up scores, $F(1, 38) = 0.06, p = 0.81$. These results indicate social skills scores improved for students after receiving the PTR intervention, and these improvements were sustained six months later.

Table 7

Social Skills ANOVA for Students with Externalizing Behaviors by Time

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Treatment	2	2134.22	1067.11	10.96*
Residual	76	7401.11	97.38	
Total	38			

Results of a one-way ANOVA for students with both externalizing and internalizing behaviors are reported in Table 8. As is shown, a significant effect was observed from over time for students with comorbid behavior problems, $F(2, 32) = 7.25,$

$p < .01$. Post-hoc comparisons of assessment times using Tukey's test with the Greenhouse-Geisser correction for $df(\text{error})$ revealed that there was a significant difference in mean social skills scores between pre-intervention and post-intervention, $F(1, 16) = 12.79, p < .001$, as well as between pre-intervention and follow-up, $F(1, 16) = 14.96, p < .001$. Mean scores between post-intervention and follow-up were not significant $F(1, 16) = 0.19, p = 0.67$, indicating that students made significant improvements after receiving the intervention and maintained similar levels of improvement in social skills from post-intervention and follow-up. These results mirror the results of students with externalizing behavior problems only.

Table 8

Social Skills ANOVA for Students with Comorbid Behaviors by Time

Source	df	SS	MS	F
Treatment	2	1161.45	580.73	7.25*
Residual	32	2563.88	80.12	
Total	16			

Table 9 displays ANOVA results for the interaction between time and group membership. Results of these analyses show that while there was a significant change in scores over time for each group, $F(2, 108) = 15.71, p < .001$, the mean scores for each group were not significantly different, $F(1, 54) = 0.18, p = 0.67$. These results also demonstrate a non-significant difference in improvement over time between the two groups of students, $F(2, 108) = 0.08, p = 0.92$. Similar to the results found with academic engaged time, both groups of students significantly improved their social skills scores,

but the amount of improvement between the two groups was not significantly different. The means for this analysis are shown in Figure 2.

Table 9

Social Skills Scores ANOVA with Time and Group Membership and their Interaction

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Group	1	44.81	44.81	0.18
Error (Group)	54	1093.17	242.47	
Time	2	2898.45	1449.22	15.71*
Error (Time)	108	9964.99	92.27	
Time*Group	2	15.07	0.08	0.92
Total	55			

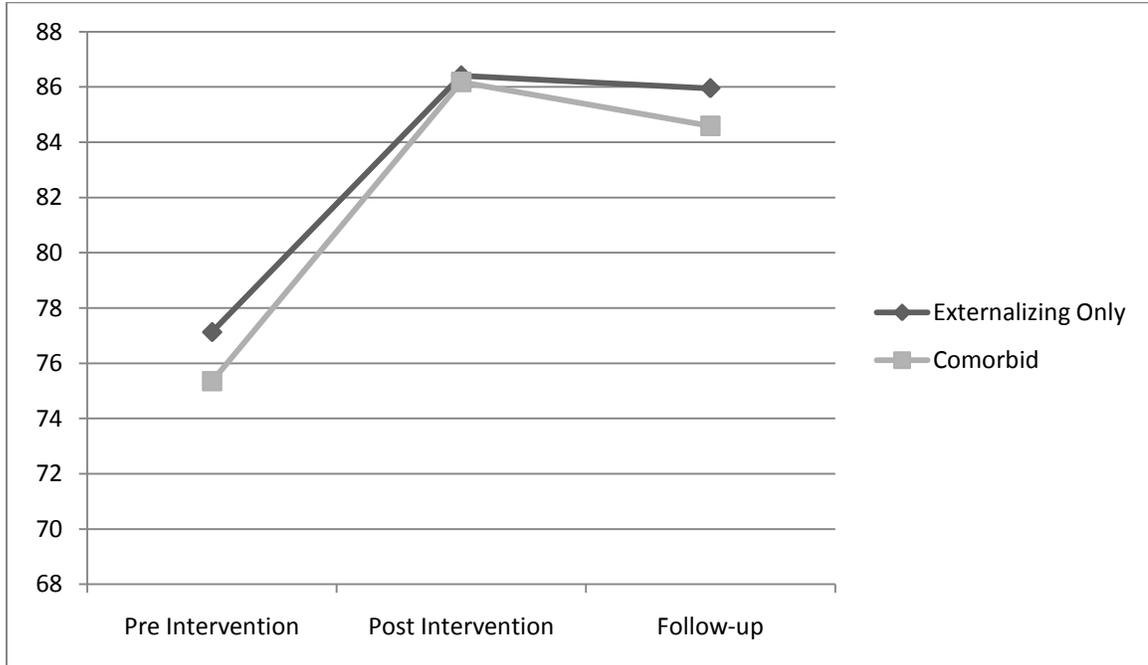


Figure 2. Mean Pre, Post, and Follow-up Social Skills Scores

Outcome Variable 3: Behavior Problems

To determine if there was a significant difference in behavior problem scores across time, data were subjected to a one-way repeated measures analysis of variance (ANOVA). The results of this analysis for students with externalizing behaviors only are reported in Table 10. As is shown, a significant effect was observed from pre- to post-assessment for students with externalizing behavior problems, $F(2, 76) = 10.19, p < .001$. Post-hoc comparisons of assessment times using Tukey's test with the Greenhouse-Geisser correction for $df(\text{error})$ revealed that baseline behavior problem scores were significantly higher than the post-treatment behavior problem scores, $F(1, 38) = 15.59, p < .001$, and significantly higher than follow-up behavior problem scores, $F(1, 38) = 15.07, p < .001$. Post-treatment behavior problem scores were similar to follow-up scores, $F(1, 38) = 0.17, p = 0.69$. These results indicate behavior problem scores improved for students after receiving the PTR intervention, and these improvements were sustained six months later.

Table 10

Behavior Problems ANOVA for Students with Externalizing Behaviors by Time

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Treatment	2	1219.56	609.78	10.19*
Residual	76	4545.78	59.81	
Total	38			

Results of a one-way ANOVA for students with both externalizing and internalizing behaviors are reported in Table 11. A significant effect was observed over time, $F(2, 32) = 6.39, p < .001$. Post-hoc comparisons of assessment times using Tukey's test with the Greenhouse-Geisser correction for $df(\text{error})$ revealed that baseline behavior problem scores were similar to post-treatment behavior problem scores, $F(1, 16) = 4.99, p = 0.04$, and significantly higher than follow-up behavior problem scores, $F(1, 16) = 16.09, p < .001$. Post-treatment behavior problem scores were similar to follow-up scores, $F(1, 16) = 1.48, p = 0.24$. These results indicate that significant gains regarding behavior problems were not made until 6 months after the intervention had been implemented.

Table 11

Behavior Problems ANOVA for Students with Comorbid Behaviors by Time

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Treatment	2	980.04	490.02	6.39*
Residual	32	2453.96	76.69	
Total	16			

Table 12 displays ANOVA results for the interaction between time and group membership. Results of these analyses showed that there was a significant change in scores over time for each group, $F(2, 108) = 15.52, p < .001$ as well as a significant difference between the mean scores for each group $F(1, 54) = 6.78, p < .001$. However, these analyses demonstrate a non-significant difference in improvement over time between the two groups of students, $F(2, 108) = 0.72, p = 0.48$. Therefore, while the students with comorbid behavior problems had significantly higher mean scores to begin

with, the rate of improvement over time was equally significant for both groups. The means of this analysis are shown in Figure 3.

Table 12

Behavior Problems ANOVA with Time and Group Membership and their Interaction

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Group	1	1245.86	1245.86	6.78*
Error (Group)	54	9927.29	183.84	
Time	2	2012.42	1006.21	15.52*
Error (Time)	108	6999.74	64.81	
Time*Group	2	93.08	46.54	0.49
Total	55			

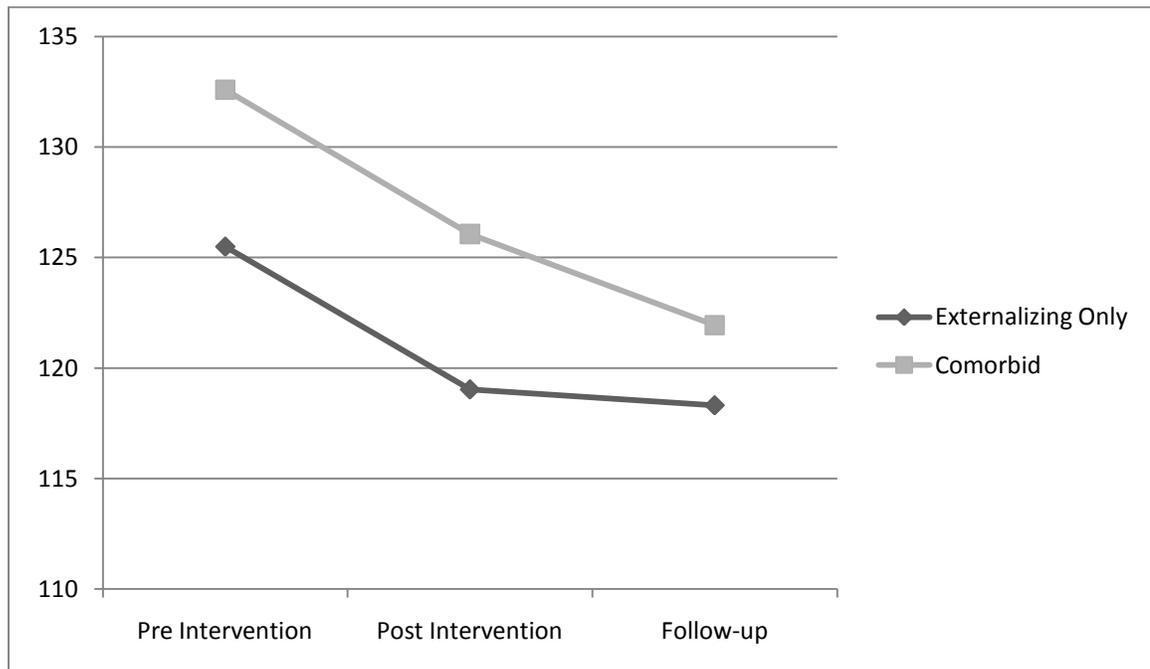


Figure 3. Mean Pre, Post, and Follow-up Behavior Problem Scores

Chapter V

Discussion

The purpose of this study was to investigate the effectiveness of a Tier III intervention involving functional behavior assessment called Prevent-Teach-Reinforce (PTR) for children with varying behavioral concerns. Specifically, this study examined whether the presence of internalizing behaviors served as a moderator to improvements in social skills, behavior problems, and academic engaged time for children with externalizing behavior problems who received the intervention. Such a study was pursued first to contribute to the research literature regarding effective treatments for children displaying comorbid externalizing and internalizing behavioral problems within schools. Additionally, the study aimed to contribute to understanding the effectiveness of functional behavior assessment for students with internalizing behaviors as limited research has investigated this topic.

The current study used archival data gathered using the Social Skills Rating System (SSRS; Gresham & Elliot, 1990) both to define and categorize the behavioral characteristics of the children as well as to measure improvement in social skills, behavior problems, and academic engaged time. The following research questions were addressed:

Question 1: Do children with only externalizing behavior problems show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention?

Question 2: Do children with a combination of externalizing and internalizing behavior problems show improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention?

Question 3: Is there a difference in levels of improvement in social skills, problem behaviors, and academic engaged time as a result of the PTR intervention for children with externalizing behaviors only vs. those with a combination of internalizing and externalizing behavior problems?

Major Findings of the Study

Results of the current study indicate that internalizing behaviors did not serve as a moderator in treatment effectiveness. Specifically, both groups of students made similar significant improvements on all three outcome measures (i.e., social skills, academic engaged time, and behavior problems). These results add to the mixed findings that exist within this field of study. Specifically, some researchers have found results similar to those of the current study (i.e., similar, clinically-significant improvement over time for children with only externalizing problems compared to those with comorbid externalizing and internalizing behavior problems; Chase & Eyberg, 2008). Other researchers, however, have shown that internalizing behaviors do moderate the effectiveness of treatment for children with externalizing behavior problems (Jensen et al., 2001; Kazdin & Wassell, 1999). A possible conclusion to draw from these mixed findings may be that the presence of internalizing behaviors does not universally serve as a moderator to

treatment effectiveness. In other words, one cannot generalize findings from one study and say that because internalizing behaviors affected treatment outcomes in one intervention that this will be the same outcome in another intervention.

Contributions to the Literature

This study has contributed to the literature on the effectiveness of a specific Tier III intervention for students with comorbid internalizing and externalizing behavior problems in several ways. First, investigation of the characteristics of the original study sample showed that 26% of children identified by their teachers as having externalizing concerns also manifested significant levels of internalizing concerns. When this study was first proposed, there was some concern about whether any students would emerge as having clinically significant comorbid behaviors or as having clinically significant internalizing behaviors only. Analysis of the characteristics of the sample revealed that a substantial number of students did, in fact, fall into the category of “comorbid externalizing and internalizing behavior problems.” Furthermore, while the number of students with only internalizing behavior problems was not large enough to allow statistical analyses to be conducted, students did emerge demonstrating this profile. This is particularly interesting given that teachers were asked only to identify students with significant externalizing problems. While the specific behavioral profiles of the students did not impact the effectiveness of this particular intervention, conducting this study did show that unique profiles emerged among students and therefore, future researchers and practitioners should be mindful of whether the profiles of their population match the intervention being used.

Secondly, the questions addressed in this study align with current initiatives aimed at increasing the use of evidence-based interventions with student populations (Kratochwill, 2007). The results of the current study, along with previous research which found PTR to result in significantly more improvement for children than did “standard practice” add to emerging knowledge of effective practice with student populations (Iovannone, et al., 2009). Along these same lines, the findings of this study are important for understanding what is effective when working with children with unique behavioral profiles (i.e., comorbid externalizing and internalizing behavior problems), as previous studies have shown that children with comorbid problems sometimes require interventions that differ from children with only one type of behavioral problem (Jensen et al., 2001; Kazdin & Wassell, 1999).

Finally, the finding that significant improvements were shown after implementing the PTR intervention for students with comorbid externalizing and internalizing behavior problems provides support for the use of FBA with children with internalizing problems, an area of research that has received limited attention and some have speculated would be ineffective because of the lack of consideration of distal variables (e.g., family dysfunction; Cone, 1997; Evans, 1999; Flannery, O’Neil & Horner, 1995; Haynes & O’Brien, 1990; Miller, Williams, & McCoy, 2004). These results, however, should be interpreted with caution, as there was no analysis done in the current study that looked at students with internalizing behavior problems only.

Limitations

Some limitations should be noted for this study. One important limitation to this study is the lack of a control group. Without a control group for comparison, it cannot be

stated that improvements after receiving the PTR intervention are due to the intervention itself as opposed to other factors. However, Iovannone, et al. (2009) found significantly better outcomes for students receiving the PTR intervention over those students who did not receive the intervention when using data from the sample used for the current study.

Also, the use of archival data meant that the sample size was limited. After students were divided by their specific behavior problems, some groups had sample sizes that were too small to allow for statistical analyses. Specifically, there was no group of students available for analysis which represented internalizing behavior problems only. The addition of such a group would further clarify what types of behavioral concerns can be addressed using the PTR intervention. That is, from the results of the current study, it cannot be stated that PTR would be effective for students with only internalizing behavior problems. Previous research has shown that interventions that are effective for externalizing problems and for comorbid externalizing and internalizing problems may not be the most effective intervention for students with internalizing problems only (Jensen et al., 2001). Also, limited sample sizes may have contributed to a lack of significant results when examining the academic engaged time scores for students with comorbid behavior problems.

Another limitation that arose as a result of using archival data is related to the tools used to classify behavior problems. Because the original study used the SSRS as a collection tool, this was the de facto tool used to classify students as displaying clinically significant externalizing and/ or internalizing behaviors. However, there are other measures of internalizing and externalizing behaviors (e.g., the CBCL) that are used more

frequently in the literature to identify various types of behavior problems in children. Use of another measure may have classified children in the current study differently.

Next, it is important to note that, although significant improvements were made in all three measures, neither group of students moved into ranges of behavior considered “typical.” This is important to consider, since school personnel working with these students would still have significant difficulties with these students, despite effectively implementing the PTR interventions.

Also, because data were only collected from schools where administrators agreed to participate, it is possible that these schools differed from those where administrators chose not to participate. Specifically, schools that had more buy-in from the administration (as indicated by their agreement to participate in the study) may have also had more support from administration and buy-in from the staff responsible for implementing the PTR process. Factors such as these (i.e., buy-in and support) are known to influence the degree to which a new initiative (i.e., the PTR intervention) is successful (Hall & Hord, 2006). Therefore, it is uncertain whether the same results would have been found at other schools.

Next, it is important to note the sample characteristics of the current study. A majority of the students included in this study were male, so based on this study, it is still unclear how beneficial this intervention would be for females. Also, most students in the current study were white. Therefore, the same results may not emerge when using this process with more ethnically diverse populations.

Another limitation that should be noted relates to those students who did not meet criteria for inclusion in the current study. Students were originally identified by teachers

as displaying severe behavior problems and were therefore included in the original PTR study. However, when SSRS cutoff scores were assessed for the current study, many students did not have clinically significant behavior problems. Therefore, data for these students were not analyzed. It would be important, however, to understand if the PTR intervention resulted in different levels of improvement for these students with less severe behavior problems.

Finally, the current study only assessed three specific constructs (i.e., social skills, academic engaged time, and behavior problems). As such, it is unclear from this study what type of affect PTR would have on other constructs worthy of investigation (e.g., suspension, grades, scores on achievement tests). This is especially noteworthy as the MTA study (1999) found that certain interventions improved some areas but not others.

Directions for Future Research

Based on the results of the current study as well as the aforementioned limitations, some recommendations for future research should be noted. Many of these recommendations for future research are directly related to sample characteristics. First, because there was no “internalizing behavior problems only” category in the current study, future research assessing PTR effectiveness should address this by purposefully identifying and including such a group in the research design. This is important as previous research has shown that interventions that are effective for externalizing problems and for comorbid externalizing and internalizing problems may not be the best intervention for students with internalizing problems only (Jensen et al., 2001). This research would not only contribute to knowledge of PTR and its effectiveness, it also would add research to the understudied area of FBAs and their use with internalizing

behavior issues. Next, future research should examine the effectiveness of the PTR intervention with groups with varying demographic characteristics. Specifically, research is still needed which assesses PTR's effectiveness for ethnically diverse populations, as well as its effectiveness for females. This is an especially important line of research as school personnel are increasingly being expected to use approaches that have been supported empirically (Kratockwill, & Shernoff, 2004).

Additionally, it is important that future research attempt to replicate the results of the current study while making some adjustments to the research design. First, future research should use other measures of internalizing and externalizing behaviors to classify students. This is important as it is unclear whether the tool used for the current study was the most accurate measure of externalizing and internalizing behavior problems. Also, future research should investigate the impact of PTR on other variables (e.g., suspension and grade retention). Also, it would be beneficial to know whether PTR only improves externalizing type behavioral issues (e.g., decrease in fighting), or if it also positively affects outcomes more closely associated with internalizing problems (e.g., decrease in social withdrawal).

Implications for the Field of School Psychology

The results of the current study have important implications for the field of school psychology. First, because of the applied nature of this study, these results can be transferred easily into school-based practice. That is, the results of this study help inform practitioners of an intervention which is supported by research that they can use with children with severe behavioral concerns. This is especially important, given that school

personnel are increasingly being held to standards which include the use of evidence-based practices.

Furthermore, the current study identifies, more specifically than previous research, the types of students who may benefit from an FBA-based process. As noted previously, using FBAs routinely and effectively in schools for students with severe behavior problems is not a common practice (Blood & Neel, 2007). The findings from this study not only reiterate the effectiveness of FBAs with this population of students and therefore the importance of using such an approach, but expand on previous research by identifying specific groups of students who can benefit from this process. For instance, the finding that internalizing behaviors did not serve as a moderator of treatment outcomes suggests that practitioners can use such a program with children with severe comorbid behavioral concerns. Also, in reviewing the demographic characteristics of the sample, it was noted that roughly half of the students in each group received free or reduced-price lunch. This information is important when it is considered within the context of the current study results. That is, the results of the current study further helps practitioners understand what strategies are effective in working with economically-diverse populations.

Conclusion

The negative impact of behavioral issues is well documented in the research literature. As such, research investigating effective strategies for working with students with behavioral issues is important, especially for those students who demonstrate comorbid issues which may prevent these students from responding to certain strategies. The current study found support for the use of the Prevent-Teach-Reinforce intervention

for children with varying behavioral profiles. Significant improvements were found in social skills, behavioral problems, and academic engaged time for students with only externalizing behavior problems as well as significant improvements in social skills and behavior problems for students with both externalizing and internalizing behavior problems. Additionally, these improvements were similar for both groups, demonstrating that PTR is a process that can be used in an equally-effective way for both populations in a typical school setting.

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