AN EVALUATION OF THE PENN RESILIENCY PROGRAM FOR
DISRUPTIVE PREADOLESCENTS IN AN ELEMENTARY SCHOOL SETTING

by

Mildred Janice Howard

Liberty University

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Dissertation Committee Approval:

_____
Jeanne Brooks, Ph.D.   Date

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Lisa Sosin, Ph.D.   Date

_____
John Thomas, Ph.D., Ph.D.   Date

ABSTRACT

AN EVALUATION OF THE PENN RESILIENCY PROGRAM FOR

DISRUPTIVE PREADOLESCENTS IN AN ELEMENTARY SCHOOL SETTING

Mildred Janice Howard

Center for Counseling and Family Studies

Liberty University, Lynchburg, Virginia

Doctor of Philosophy in Counseling

This study involves the evaluation of the Penn Resiliency Program (PRP) in the treatment

of aggressive and disruptive behavior among third, fourth, and fifth graders in an urban

school setting. The PRP targets unproductive automatic thoughts that contribute to

aggressive and disruptive behavior. Four research questions were examined: (1) Does the

PRP decrease aggressive and disruptive classroom behavior? (2) Is the PRP effective in

modifying automatic thoughts? (3) Do changes in automatic thoughts influence posttest

teacher ratings? (4) Does participation in the PRP improve academic performance?

Answers to the research questions were determined by implementing the PRP over a 12-

week time frame. Students were selected for program participation based on teacher

ratings of aggressive and disruptive behavior. Selected students were randomly assigned

to the PRP or the Botvin Life Skills program. The Children's Automatic Thoughts Scale

and the Behavior Assessment System for Children, Second Edition, Externalizing and

ADHD Problems Progress Monitor were administered prior to and following program

implementation to evaluate changes in automatic thoughts and changes in aggressive

behavior. Changes in academic performance were assessed through a review of report

card grades in reading and math.

Dedication

I would like to dedicate this project to my father, James Ingram, and my husband,

William Howard.

Acknowledgements

Working on this project has been both an enjoyable and challenging experience. I praise God for giving me the ability to persevere and for placing individuals in my life to help me accomplish this endeavor. Without these special individuals this project would not have been possible.

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TABLE OF CONTENTS

List of Tables

CHAPTER ONE: INTRODUCTION

Aggressive and disruptive classroom behaviors have been linked to poor academic achievement and the subsequent development of emotional disorders such as oppositional defiant disorder and conduct disorder (Pardini & Fite, 2011). Several school-based programs found cognitive behavior therapy (CBT) efficacious in reducing aggressive and disruptive behavior (Durlak, Rubin, & Kahng, 2001; Kendall, 1993). The most common youth-focused CBT components include emotion awareness, anger management, coping skills, self-instruction, problem solving, and goal setting (Lochman, Powell, Boxmeyer, & Jimenez-Carmargo, 2011; Sukhodolsky, Kassinove & Gorman, 2004). Although cognitions—and more specifically, automatic thoughts—have been implicated in the initiation and maintenance of aggressive behavior, few youth-oriented CBT programs include strategies that target cognitions.

This study evaluated the effectiveness of the Penn Resiliency Program (PRP, Gillham, Reivich, & Jaycox, 2008), a CBT program, in the treatment of aggressive and disruptive behavior among third, fourth, and fifth grade elementary school students. The PRP has a number of similarities with other youth-oriented CBT interventions such as *Think Good-Feel Good* and the TFGA program. The PRP includes coping skills, decision making and social problem solving components. However, the PRP intervention centers on teaching students to recognize, evaluate, and dispute cognitions (automatic thoughts) that lead to aggressive and disruptive behavior. Students learn to modify cognitive processes that, in turn, influence emotions and resulting behaviors. The program has been used extensively to treat depression and children and adolescents (Gillham, Hamilton, Freres, Patton, & Gallup, 2006; Gillham & Reivich, 2004). More recently, the PRP has

been studied as an intervention for aggressive and disruptive behavior (Cutuli, Chapman, Gillham, Reivich, & Seligman, 2007).

Background of the Problem

Academic Achievement

Aggressive and disruptive behavior has been identified as one of the leading barriers to academic achievement. Children who engage in aggressive and disruptive behaviors are more likely to perform below standards in reading and mathematics (Akey, 2006; August, Realmuto, Hektner, & Bloomquist, 2001; Finn, Pannozzo, & Voelkl, 1995). In a longitudinal study, Williams and McGee (1994) found aggressive and antisocial behaviors to be inversely correlated with academic achievement. Students who are aggressive and disruptive are more likely to perform poorly on standardized tests, drop out of school, and engage in substance abuse (Lochman & Wells, 2002; Shinn, Ramsey, Walker, Steiber, & O'Neil, 1987).

The national demand for teacher accountability requires that teachers engage and educate all children, including those displaying externalizing behaviors. However, disruptive or aggressive behavior can negatively impact the quality of the teacher's instruction as well as the classroom morale. Teachers must frequently monitor and redirect students who display aggressive or disruptive behavior (Williams & McGee, 1994). Classmates are prevented from learning in an optimum environment when the negative behaviors of aggressive or disruptive students create an atmosphere of tension and chaos (Bowen, Jensen, & Clark, 2004). Although quality instruction is the most

2

important factor in determining how well children learn (Vandevoort, Amrein-Beardsley, & Berliner, 2004), instructional effectiveness is compromised when aggressive or disruptive children have difficulty controlling their behavior in the classroom. Consequently, disruptive students as well as their classmates are at risk for poor academic achievement.

Emotional Disorders

Left untreated, aggressive or disruptive behavior may be manifested as oppositional defiant disorder (ODD) or conduct disorder (CD). Overall prevalence rates among children and teenagers for ODD and CD range from 4-14 percent depending on the criteria used and the population studied (Carr, 2009). Their central clinical features are defiance, aggression, and destructiveness; anger and irritability; pervasive relationship difficulties; and difficulties with social cognition (Carr, 2009).

The *DSM-5* (American Psychiatric Association [APA], 2013) describes ODD as a pattern of angry/irritable mood, argumentative/defiant behavior, or vindictiveness that are outside a range that is normative for the individual's developmental level, gender, or culture. Symptoms include frequently losing one's temper; being easily annoyed by others; feeling angry and resentful; and being argumentative, defiant, and spiteful (APA, 2013). According to the *DSM-5*, the pattern of behavior must last for at least six months and cause "distress in the individual or others in his or her immediate social context (e.g., family, peer group, work colleagues)" (p. 220). The behavior must negatively impact social, educational, occupational, or other important areas of functioning.

In contrast, conduct disorder is characterized by a persistent and repetitive pattern of behavior in which the basic rights of others, as well as major age-appropriate societal norms and rules, are violated (APA, 2013, p. 221). Conduct disordered behaviors are classified in four categories: aggressive behavior toward people or animals; conduct that causes property damage or loss; deceitfulness or theft; and serious violations of rules. The manifestation of at least three behaviors in any one of the four categories must have occurred within the last 12 months, with at least one behavior occurring within the last six months (APA, 2013).

Etiology of Aggression

Shaw, Gilliom, and Giovannelli (2000) examined the pathways for aggressive behavior patterns posited by social learning theories and attachment models. Their study confirmed Moffitt's original hypothesis (as cited in Steiner & Remsing, 2007, p. 3) that children with disorders such as ODD and CD have multiple intraindividual and contextual risk factors that begin in infancy. Without intervention, these factors often lead to adverse personality development in adulthood (Rutter, Silberg, O'Connor, & Simonoff, 1999).

Attachment theory (Bowlby, 1988) offers a plausible explanation for the development of aggressive and disruptive behavior. Anxiously attached children may engage in aggressive and disruptive behavior as a way of seeking attention or care, or as a way of expressing resentment and anger (Allen, Moore, Kuperminc, & Bell, 1998). Children with avoidant attachment styles may engage in aggressive and disruptive

behavior to distance themselves from others (e.g., parents), or violate rules to demonstrate a lack of concern for others (Allen et al., 2002).

Aggressive and disruptive behavior is more prevalent among adolescents from families with a low socio-economic status (Loeber, Burke, Lahey, Winters, & Zera, 2000). In one study, dysfunctional family patterns such as absentee parenting and ineffective disciplinary practices were predictors of aggression and alcohol abuse (Clark, Neighbors, Lesnick, & Donovan, 1998). Students reared in stressful family situations such as poverty, marital break-up, single parenting, unemployment, and lack of support from extended family are more likely to perform violent acts (American Academy of Child and Adolescent Psychiatry, 2011).

Emotional and social challenges, acute and chronic stressors, cognitive lags, and health and safety issues present significant challenges to academic and social success (Jensen, 2009). To maintain instructional effectiveness, teachers need evidenced-based strategies and access to programs to teach problem-solving skills and pro-social behaviors in the classroom (Jensen; Nelson, Lott, & Glenn, 2013). Students who learn to control disruptive behaviors have been found to experience higher levels of well-being, increased cooperative behaviors, and improved academic achievement (Gansle, 2005; Kazdin, 2005; Nelson et al., 2013). In contrast, without intervention poor academic and social performance tend to continue over time and predict other future problems (Lahey, Miller, Schwab-Stone, Goodman, Waldman, & Canino, 2000).

Empirically supported CBT programs have been found to be effective in treating a number of disorders, including aggressive and disruptive behaviors (Daunic, Smith,

Brank, & Penfield, 2006; Lochman & Wells, 2002). An integral component of CBT includes the recognition and treatment of automatic thoughts that contribute to emotional distress and subsequent problematic behaviors. Disruptive children often have a limited repertoire of responses to everyday situations, exhibit maladaptive social skills, and experience emotional problems (Bradley & Corwyn, 2002; Jensen, 2009).

Children with emotional dysregulation may become frustrated so easily that they give up on tasks and have trouble working in cooperative groups (Jensen, 2009). Among adolescents, poor adaptive functioning, deficits in social skills, and family stressors often contribute to disruptive and inappropriate behavior (Jensen). CBT programs that teach problem solving and social skills and incorporate anger management training and parent training components have been found to be effective in reducing problematic behaviors (Weisz & Doss, 2004). CBT programs may be a combination of primary, secondary, or tertiary interventions. Primary interventions are psychoeducational in nature and help to prevent the development of maladaptive behaviors while secondary and tertiary interventions teach skills to reduce and manage dysfunctional behaviors (Gordon, 1983).

Cognitive Behavioral Treatment

Cognitive behavior therapy is based largely on the work of Aaron Beck (Corey, 1991). According to Beck, early experiences and parenting lead to the development and maintenance of rigid or fixed ways of thinking (Beck, 1964) referred to as "core beliefs" (Beck). Negative core beliefs fall into two categories: beliefs associated with helplessness and beliefs associated with unlovability (Beck, 1964). Later, Judith Beck (2011) identified a third category: beliefs associated with worthlessness. Beck postulated that

6

most individuals maintain positive and realistic core beliefs, such as, "I am competent," "I am likeable," and "I am worthwhile." Core beliefs may be related to others, the world, and the future; for example, "Other people are untrustworthy," "Other people will hurt me," or "The world is a rotten place" (Beck, 2011). During CBT, fixed and rigid maladaptive beliefs about oneself and others are evaluated and modified.

Some dysfunctional core beliefs may only surface during times of psychological distress (Beck, 2011). It may be necessary for the therapist and client to look for patterns in the client's thoughts to identify core beliefs (Creed, Reisweber, & Beck, 2011). Core beliefs form the basis for automatic thoughts (Beck, 2011). Negative core beliefs lead to irrational automatic thoughts, which in turn lead to emotions such as anger, anxiety, and sadness. The CBT model suggests that maladaptive thoughts about oneself, the world, and the future result in cognitive distortions that create negative affect (Stallard, 2002).

Beck (1976) defines *automatic thoughts* as thoughts that intrude rapidly and with little effort or intention. The thoughts are generally self-focused and contain negative views of the self, the world, and others. Beck concluded that negative thoughts tend to (1) be fleeting, (2) be highly specific, (3) be spontaneous, (4) be plausible to the individual, (5) be idiosyncratic to the person's concerns, (6) precede emotional arousal, and (7) involve a bias or distortion of reality. Schneiring and Rapee (2004) found that children exhibiting aggressive and disruptive behaviors experienced automatic thoughts centering on themes of hostility and revenge. These automatic thoughts foster feelings of anger and irritability (Creed et al., 2011).

Angry emotions contribute to the display of aggressive and disruptive behavior (Candelaria, Fedewa, & Ahn, 2012); such behavior may then reinforce an individual's automatic thoughts (Creed et al., 2011). CBT attempts to modify negative cognitive beliefs, such as "No one likes me," "People pick on me," and "I must fight to protect myself." Modification of negative beliefs reduces the frequency of maladaptive automatic thoughts (Beck, 2011). As unhelpful thoughts are reduced, so are the angry emotions and corresponding aggressive behaviors (Cutuli et al., 2007).

The cognitive element of CBT consists of learning new methods for dealing with automatic thoughts (Cutuli et al., 2007). Dysfunctional automatic thoughts, those that distort reality, are often emotionally distressing (Beck, 2011). The logical connection between thoughts and feelings provides the foundation for CBT work. When working with children and adolescents, a significant amount of time is spent teaching individuals how to recognize and evaluate negative automatic thoughts that contribute to feelings of anger or hostility.

To a large degree, CBT is based on the assumption that modification of automatic thoughts will result in a change in emotions and behavior (Creed et al., 2011; Gillham & Reivich, 2004). However, CBT includes both cognitive and behavioral interventions (Kazdin, 2005). A number of behavior strategies—such as activity monitoring, goal planning, testing predictions, role playing, and modeling—may be used to supplement the cognitive component (Stallard, 2002). The behavioral element of CBT may include one of three conceptual models: applied behavioral analysis, the neobehavioristic meditational stimulus-response (SR) model, and social learning.

Applied behavioral analysis, derived from the work of B. F. Skinner (1974) is

based on the principle of operant conditioning and focuses on overt behavior. Skinner

found that behavior could be shaped by a process of rewards and reinforcements. *Shaping*

is defined as breaking up a specific behavior into small steps and rewarding each step

until the student accomplishes the specific behavior (Kazdin, 2003). Cognitive therapy in

conjunction with operant conditioning techniques improves the acquisition of social and

problem solving skills. Students are rewarded for completing small steps in the process of

controlling anger or managing conflicts. Rewards may be verbal, in the form of praise, or

tangible, in the form of tokens that can be exchanged for an item the student desires

(Kazdin, 2003). Operant conditioning methods teach students to adjust behavior

according to the consequences of that behavior. Hence, behavior followed by favorable

consequences is more likely to be repeated (Carlson, 1994).

The neobehavioristic meditational SR model is identified with the experiments

and work of Ivan Pavlov. Wolpe (1958) utilized Pavlov's findings in clinical settings to

change maladaptive behavior through classical conditioning. *Classical conditioning* is a

form of learning that involves the association between two stimuli, in which an

unimportant stimulus acquires the properties of an important one. As a result, a stimulus

that previously had little effect on behavior becomes able to invoke a reflective behavior

(Carlson, 1994). Classical conditioning occurs when a neutral stimulus is followed by one

that automatically elicits a response (Carlson, 1994).

Classical conditioning has been extended to human behavior and clinical

problems through the practice of *systematic desensitization* (Stallard, 2002). By pairing

9

fear-inducing stimuli with a second stimulus that produces an antagonistic response (i.e., relaxation), the fear response can be inhibited (Stallard, 2002). For example, adolescents who experience fear at the prospect of taking a test can be exposed to sequential images of the test taking process while in a relaxed state (Weisz et al., 2004).

Anger is hypothesized to be a conditioned response to a conditioned stimuli. For example, a student may become angry (conditioned response) after receiving negative feedback (conditioned stimuli) from a teacher. Aggressive behavior is mediated by anger and may be reinforced by physical punishment (McMahan & Forehand, 2003), feelings of power and revenge (Ferguson & Beaver, 2009), and failure to obtain recognition for prosocial behavior (Forehand & Long, 2002). Children who are physically punished are more likely to endorse hitting as a way to resolve conflicts with siblings and peers (Smith, 2012). Acts of aggression and revenge have the power to temporarily restore feelings of competency, strength, and mastery (Bloom, 2001), but fail to accomplish the intended goal. Whereas positive reinforcement, delivered consistently in response to socially appropriate behavior, can change undesired behavior (Kazdin, 2005).

Social learning theory can be traced to the research conducted by Albert Bandura. The Bobo doll experiments (Bandura, Ross, & Ross, 1961) demonstrated a correlation between exposure to violence and subsequent aggressive behavior. Children modeled aggressive behavior toward an inanimate Bobo doll after watching adults treat the doll with aggression (Bandura, Ross, & Ross, 1961). The adults in the study were viewed speaking aggressively, punching, kicking, and striking the Bobo doll with a mallet.

The children in the study were divided into two experimental groups and one control group: one group watched adults model aggressive behavior, the second group watched adults model nonaggressive behavior, and the control group had no exposure to adult models. Results of the study showed that children exposed to the aggressive models reproduced a significant amount of physical and verbal aggression identical to those of the adult model. Children in the nonaggressive experimental group were generally less aggressive than both the modeled aggression group and the control group. The control group demonstrated less aggressive behavior than the modeled aggression group. The Bandura et al. (1961) experiment recognized the role of the environment and emphasized that learning could occur by observation and imitation (Stallard, 2002).

In addition, Kazdin (2003) uses the phrase "modeled punishment" to describe the process by which children learn to hit classmates and others. Punished children inflict punishment on others in a manner similar to the punishment personally experienced. Social learning theorists posit that children who witness or are exposed to violence in real life or in fictional media are likely to imitate the behavior (Jaffee, Sudermann, & Reitzel, 1992; Wareham, Boots, & Chavez, 2009). Just as children learn to imitate aggressive behavior, they can also learn to imitate prosocial behavior. Social learning techniques including modeling, assertiveness training, and conflict resolution skills are integral components of many CBT programs (Wilson & Lipsey, 2007). Social learning techniques teach students how to use prosocial behaviors and appropriate verbal responses to resolve conflicts.

Prevention Programs for Aggressive and Disruptive Behavior

Prevention is a key element in the alleviation and elimination of aggressive behaviors. Programs designed to mitigate adverse contributors such as poverty, community violence, and child abuse can be delivered in schools, clinics, and various other settings (Bernat, August, Hektner, Bloomquist, 2007; Botvin, 1999; Furlong, Felix, Sharkey, & Larson, 2005). For preschool children, there is some evidence that programs such as Head Start, the Incredible Years, and the Child Dinosaur Program increase prosocial behavior and prevent future delinquency (Carr, 2009). Home visitation by clinicians has also been used as a successful preventive measure for high-risk families (Kazdin & Weisz, 1998). Positive outcomes in child functioning and parent-child relationships have been noted when preventive programs are employed (Carr, 2009).

Studies have shown that both children and adolescents benefit from therapy that focuses on developing skills to increase positive relationships with peers (Kazdin, 2005). Improved social skills and training in anger management may assist children and adolescents in identifying feelings and developing coping mechanisms that reduce the stress and anxiety that may contribute to oppositional behavior tendencies. Dodge (1991) examined aggressive behavior in children and concluded that "oppositional children underutilize social clues, misattribute hostile intent to peers, generate fewer solutions to problems, and expect to be rewarded for aggressive responses" (p. 212).

The Triple P (Positive Parenting Program) is a six-level system of parenting and family support interventions that provides psychoeducation, counseling, group discussion, practice, and feedback. Developed by Matthew Sanders and colleagues

12

(Sanders & Murphy-Brennen, 2010) at the University of Queensland, the 10-session program centers on causes of children's behavior problems, strategies for encouraging normal development, and techniques for managing misbehavior. Active skills training methods used in the sessions include modeling, rehearsal, self-evaluation, and homework tasks. Although the core programming focuses on parents of children ages 1 to 12 years, Triple P also extends to parents of teenagers. Triple P draws on empirical studies related to child development, applied behavior analysis, social learning, cognitive functioning, and family dynamics (Sanders & Murphy-Brennen, 2010).

Other evidence-based treatment protocols available for angry and aggressive behaviors include individual counseling (Bernard & Joyce, 1984), problem solving training (Bowen, Jensen, & Clark, 2004), social skills training (Botvin, 1999), and anger management training (Gansle, 2005). Programs often center on teaching children new skills for interacting with family members and peers. Programs may also include components for helping parents manage problematic behavior. Parent training may focus on learning to avoid power struggles, applying positive reinforcement and time-out strategies, recognizing and praising prosocial behaviors, and remaining calm and unemotional during periods of anger (Kazdin, 2005; Weisz et al., 2004).

Preventing disruptive behavior has been recognized as a key strategy in improving academic achievement among students (Akey, 2006; August et al., 2001; Finn et al., 1995; Williams & McGee, 1994). The main issue for many teachers is the impact of frequent low-level classroom disruption on academic instruction and classroom climate (Ruttledge & Petrides, 2011). CBT prevention programs have been found to be

13

effective in reducing disruptive behaviors among children and adolescents (Carr, 2009; Kazdin, 2005) by developing skills that reduce acting out behaviors, increasing the range of appropriate behavioral responses, fostering problem solving abilities, and reframing students' thinking about anger-provoking events (Jensen, 2009).

Purpose of the Study

This study examined the effectiveness of the Penn Resiliency Program (PRP), a preventive school-based CBT program that teaches students how to identify and evaluate automatic thoughts, utilize problem solving strategies to manage conflicts, and cope with adversarial events. PRP is a brief, time limited, structured CBT school-delivered program consisting of 12 sessions. The emphasis is on present functioning and the learning process includes thought monitoring, problem solving, and exercises to reinforce skills.

Research Questions

The present study assessed the viability of a school-based CBT program to reduce aggressive and disruptive behavior in a school setting. The research questions posed are: Does the PRP decrease aggressive and disruptive classroom behavior? Is the PRP effective in modifying automatic thoughts? Do changes in automatic thoughts influence posttest teacher ratings? Does participation in the PRP improve academic performance? It is believed that participation in the program will lead to more prosocial behaviors and fewer antisocial behaviors, improved report card grades, and modification of automatic thoughts related to hostile intent. Based on theory and previous research it is

14

hypothesized that the treatment group will significantly differ from the control group on posttest ratings of aggressive and disruptive classroom behaviors, report grades, and automatic thoughts regarding hostile intent in ambiguous situations.

Limitations and Delimitations

The present study evaluated the efficacy of the Penn Resiliency Program with third, fourth, and fifth grade students with T-scores of 60 or higher on the Behavior Assessment System for Children, Second Edition, Externalizing and ADHD Problems Progress Monitor (BASC-2). The BASC-2 was completed by classroom teachers prior to implementation of the program and two weeks after the conclusion of the program. Changes in automatic thoughts were measured with the Children's Automatic Thoughts Scale. Students were randomly assigned to either a treatment or control group. Teachers were blind to group assignment.

The BASC-2 has two limitations. The instrument can be time consuming for teachers to complete. Each instrument takes approximately five minutes to bubble answers. With multiple students the time commitment can be problematic. The instrument is also costly. A package of 25 forms costs $27. One limitation for the CATS is that it has not been used as a screening tool with students in a regular elementary school. Previous studies have been conducted with clinically diagnosed children and adolescents.

Additional details regarding the research methods are described in Chapter Three.

The following assumptions will be made in order to complete this study:

15

1. Studying the impact of specific interventions to alleviate aggressive and disruptive behavior in the classroom will help educators improve classroom instruction.

2. Teaching students skills to respond to adversarial situations will lead to fewer disruptive and aggressive behaviors.

3. Fewer aggressive and disruptive behaviors will lead to improved classroom climate and increased academic achievement.

4. Aggressive and disruptive behavior will be accurately measured by the Behavior Assessment System for Children, Second Edition, Externalizing and ADHD Problems Progress Monitor.

5. The Children's Automatic Thoughts Scale will accurately measure automatic thoughts.

Although parent training—such as group meetings to discuss topics like limit setting, reinforcement, and successful parent-child interactions—has been found to enhance CBT effectiveness in the treatment of aggressive and disruptive behavior (Kazdin, 2003; Lochmnan & Wells, 2002), a limitation of the PRP is the lack of a parent component. Furthermore, the present study focused primarily on the role of automatic thoughts in the initiation and maintenance of aggressive and disruptive behavior. Additional CBT elements such as problem solving skills training, social skills training, and conflict resolution skills training may all contribute in various ways to the effectiveness of the program, but were not studied.

Finally, the relationship between the counselor and the students participating in a group may be a strong motivator for student improvement. Students who are aggressive and disruptive in class often have poor relationships with teachers (Nelson, Lott, & Glenn, 2013). When students experience a positive relationship with an adult in the school setting they are likely to engage in more prosocial behaviors (Nelson et al., 2013; Peters, 2006). However, the impact of the counselor/student relationship was not evaluated in this study.

Definitions

This section presents operational definitions of the following terms related to the study: aggressive behavior, disruptive behavior, and automatic thoughts.

Aggressive behavior refers to behavior that interferes with the act of teaching and the act of learning. Aggressive behaviors may include hitting, kicking, pushing, and using abusive language (Cameron, 1998). Students who display aggressive behavior may violate the rights of others, violate age-appropriate societal norms or rules, and experience impairment in social or academic functioning (Fraser, Nash, Galinsky, & Darwin, 2001). For example, children who display aggressive behavior may bully other students, engage in fights, use profanity, steal, lie, or cheat (Fraser et al., 2001). Brown and Parsons (1998) identified two types of aggression: reactive aggression and proactive aggression. *Reactive aggression* is defined as a defensive response to a perceived threat or provocation. Examples of reactive aggression include blaming others, getting mad when corrected, and refusing to admit being at fault for anything. *Proactive aggression* is

defined as unprovoked aversive behavior. Examples of proactive aggression include playing mean tricks on others, threatening others, and taking things from others without their knowledge. Aggressive behavior was measured by the BASC-2 Progress Monitor.

Disruptive behavior refers to behavior that interferes with the act of teaching and the act of learning. Cameron (1998) distinguishes disruptive behavior from aggressive behavior. Disruptive behaviors include defacing objects, physically annoying other pupils, screaming, exhibiting temper tantrums, refusing to carry out requests, engaging in defiant verbal and non-verbal behavior, daydreaming, and talking out of turn (Cameron, 1998). Students who display disruptive behavior often fail to complete class work, disturb peers by talking, get off task, or write on desks, and are frequently absent or tardy (Cameron, 1998). A student who interrupts the teacher by talking to classmates would be considered disruptive (Cameron, 1998). Disruptive behavior was measured by the BASC-2 Progress Monitor.

Automatic thoughts express an individual's interpretation of a situation. Neutral or positive situations may be misconstrued and influence emotional, behavioral, and physiological responses (Beck, 2011). Automatic thoughts coexist with a more manifest stream of thoughts and are not based on reflection or deliberation; they are usually accepted as true without synthesis or evaluation (Beck, 2011). Automatic thoughts typically lie just below conscious awareness, although with some stimulation, these thoughts can be brought to the conscious level for evaluation (Creed, et al., 2011). Aggressive and disruptive children and adolescents often experience automatic thoughts

that center on themes of revenge and hostility (Schniering & Rapee, 2004). Automatic thoughts were measured by the Children's Automatic Thoughts Scale.

Significance of the Study

Aggressive and disruptive behavior can lead to emotional and behavioral problems such as ODD or CD, as well as to academic failure (Fives, Kong, Fuller, & DiGiuseppe, 2011). Moreover, aggressive behavior has been linked to harmful future outcomes including substance abuse and violent crimes (Anderson, Kochanek, & Murphy, 1997; Gladstein, Rusonis, & Heald, 1992; Lochman & Wells, 2002). In response to the increased incidence of aggression in public schools, educational communities are continually exploring methods to reduce disruptive classroom behavior. A number of interventions have been recommended, including parent training, behavior modification, play therapy, social skills training, problem solving skills training, coping skills training, social metacognitive training, relaxation training, art therapy, rational emotive therapy (RET), and cognitive behavioral therapy (Weisz et al., 2004).

The most promising intervention for aggressive and disruptive behavior appears to be cognitive behavioral therapy (Murphy & Christner, 2006; Ruttlege & Petrides, 2011). Cognitive behavioral therapy incorporates a variety of methods, including behavioral procedures and cognitive restructuring processes. Imagery exercises may be used in the cognitive restructuring process to help students learn to control anger and modify aggressive behavior (Kanfer & Goldstein, 1991). Students may experience the

task in imagination, trying to foresee any obstacles that may pose a problem. The counselor and students work together to formulate plans to overcome any identified barriers. Students imagine going through anger-provoking situations successfully, including coping with all anticipated obstacles (Kanfer & Goldstein, 1991).

Students may learn problem-solving processes that require careful and deliberate thinking. The counselor fosters development of the skill through instruction, demonstration, and practice. The classroom provides a perfect environment for students to learn appropriate problem-solving behaviors by working in pairs or groups. Students learn to predict whether the outcome of an action will be positive or negative before deciding how to react (Beland, 1991). CBT in classroom settings often includes both short- and long-term goal setting (Ruttledge & Petrides, 2011). Students who set and achieve realistic short-term goals feel successful and competent (Botvin, 1999) and are motivated to make long-term behavior changes.

The present study evaluated the effectiveness of the PRP, a CBT school-based program in modifying automatic thoughts. Similar to other CBT programs, the PRP includes problem solving, decision making, and social skills components. The main focus of the program, however, is the recognition, evaluation, and modification of negative automatic thoughts that contribute to unhealthy emotions and maladaptive behaviors. The current study evaluated the effectiveness of the PRP in modifying automatic thoughts that trigger anger and lead to disruptive behavior. Given the lack of studies evaluating the effects of automatic thought modification on disruptive behavior and academic achievement, the current study is an important addition to the literature.

20

CBT treatment for aggressive and disruptive behavior has proven to be effective across racial and socioeconomic groups (Eyberg, Nelson, & Boggs, 2008). African Americans are well represented in such studies, indicating that treatments are effective for this subgroup. Latino children and adolescents, however, are underrepresented (Eyberg et al., 2008). The present study contributes to the literature in this area as well as it evaluated the effectiveness of a CBT program with both African American and Latino students in two low-income urban schools.

Theoretical/Conceptual Framework

Aggressive and disruptive behavior among children and adolescents can have serious consequences for academic achievement and social competence. Teachers increasingly rate aggressive and disruptive behavior as major impediments to classroom learning (Tidwell, Flannery, & Lewis-Palmer, 2003). Aggressive and disruptive behavioral tendencies are more likely to develop in children and adolescents who are reared in poverty (McCoy, Firck, Loney, & Ellis, 1999). Children and adolescents from lower socioeconomic groups may be left alone to fend for themselves and care for younger siblings while parents work long hours (Jensen, 2009). As a result, such children may not develop adequate skills to respond appropriately to stressful or anger-producing situations. Fatigued parents working one or more jobs to support the family may have little time to spend teaching social or conflict resolution skills (Comer, 2004; Jensen, 2009).

Bradley and Corwyn (2002) found that children and adolescents who come from stressful home environments exhibit lower levels of academic achievement. Stressors such as transiency or frequent poverty-related moves (Schafft, 2006), exposure to violence (Garbarino, 1999), and family isolation (Bolland, Liam, & Formichella, 2005) contribute to lower academic achievement among families with low socioeconomic status. In addition, stress resulting from school bullying and school violence decreases test scores, diminishes attention spans, and increases absenteeism and tardiness (Hoffman, 1996).

Children from lower socioeconomic groups often experience higher levels of stress and are more likely to encounter aggressive situations than children from more affluent environments (Jensen, 2009). Early environmental stressors may include child abuse or neglect, family turmoil, neighborhood violence, and extreme poverty (Gunnar, 2007). Behavioral research suggests that children reared in impoverished environments are more likely to develop psychological disturbances and experience impaired social functioning (McCoy et al., 1999). Early intervention programs, however, significantly reduce problematic behaviors during adolescence and have positive implications for lifelong mental health (Willis, 2002).

Wadsworth, Raviv, Compass, and Conner-Smith (2005) found that classes teaching appropriate coping skills and stress relieving techniques resulted in lower levels of hostility among school-age children. Interventions designed to reduce maladaptive automatic thoughts may help children and adolescents regulate emotions and minimize dysfunctional behaviors. Given that the effects of stress are cumulative (Evans, 2004),

interventions that help children and adolescents deal with adverse circumstances can significantly reduce the impact of poverty on educational achievement and future well-being (Comer, 2004; Willis, 2002).

Resiliency is defined as the power or ability to overcome illness, depression, or other adversity (Murry & Brody, 1999). Resiliency researchers have identified several factors that may moderate the relationship between socioeconomic status and child and adolescent functioning (Bradley & Corwyn, 2002). Factors pertinent to this study include self-efficacy, stress reactivity, active coping strategies, communication skills, cognitive competence, and affective responses to others. The PRP lessons in this study focused on teaching students to change automatic thoughts that represent maladaptive responses to teachers and peers. As students acquire the skills needed to react appropriately to adversarial situations, their academic achievement, prosocial behaviors, self-efficacy, and resiliency are likely to increase (Comer, 2004; Murry & Brody, 1999). This study assessed the viability of the PRP program in teaching children and adolescents how to change maladaptive automatic thoughts in response to stressful events and situations that lead to aggressive and disruptive behavior.

Organization of Remaining Chapters

This study is organized into five chapters. Chapter One summarizes the research problem and introduces the four research questions to be addressed. Chapter Two presents a review of the literature and evaluate the strengths and weaknesses of previous studies. Chapter Three describes the methodology, participants, procedures, and measures

23

utilized in the study. Chapter Four details the data collection process and present an analysis of the data. A summary of findings, conclusions, and recommendations for further study are presented in Chapter Five.

Chapter Summary

Evidence suggests that disruptive and aggressive behaviors contribute to low academic achievement (Akey, 2006; August et al., 2001). The PRP program examined in this study is intended to help students to identify and modify thoughts that contribute to impaired social responses and behaviors. Increases in prosocial classroom behaviors lead to more effective classroom instruction and enhance student well-being (Comer, 2004; Nelson et al., 2013). The present study seeks to improve educational and social outcomes for children and adolescents by researching factors that contribute to disruptive behavior and poor academic achievement. Identifying interventions that can help children and adolescents manage negative thoughts and maladaptive behaviors will improve their lives both now and in the future.

CHAPTER TWO: LITERATURE REVIEW

The purpose of the current study was to evaluate the effectiveness of the Penn Resiliency Program (PRP), a cognitive behavioral program, in the treatment of aggressive behavior among elementary school children. In this chapter several topics will be discussed; the first topic will include a discussion of Cognitive Behavior Therapy (CBT) in the treatment of emotional and behavioral disorders. In addition, research concerning the development of cognitions in children will be presented followed by the role of cognition in the maintenance of aggressive behavior. Next, a review of meta-analysis and individual CBTstudies evaluating the effectiveness of CBT programs in school settings to treat aggression will be discussed. Finally a summary of the literature documenting the efficacy of CBT programs in the treatment of aggression in children and adolescents will be presented.

Cognitive behavior interventions have been used successfully to treat a wide range of disorders including depression (Beck, 2011), anxiety (Borkovec, Newman, Pincus, & Lytle, 2002), obsessive compulsive disorder (Whittal, Thordarson, & McLean, 2005), and eating disorders (Murphy, Straebler, Cooper & Fairburn, 2010). Although much of the cognitive behavior therapy (CBT) research has centered on adults, CBT has also been found to be an effective treatment for children (Fives et al., 2011; Velting, Setzer, & Albano, 2004). CBT focuses on changing faulty cognitions through a process of cognitive restructuring and the modification of automatic thoughts. In studies of aggressive and disruptive behaviors in school settings, CBT has been shown to be an

effective group intervention (Carr, 2009; Lochman & Lenhart, 1993; Lochman & Wells, 2002).

Through the process of cognitive restructuring, cognitive behavior therapy helps change irrational core beliefs and modifies automatic thoughts that contribute to unhealthy behaviors (Beck, 2011). Cognitive behavior therapy is based on the premise that automatic thoughts about events produce negative feelings and emotions (Stallard, 2002). Individuals participating in cognitive therapy, therefore, undergo a process of cognitive restructuring. Cognitive restructuring attempts to change or modify core beliefs, which are defined as fundamental, inflexible, absolute, generalized beliefs that people hold about themselves, the world, and others (Beck, 2011). Much of the work in cognitive behavior therapy involves identifying, evaluating, and modifying automatic thoughts that occur as a result of core beliefs. Through cognitive therapy clients learn to think rationally, set goals connected with overcoming irrational core beliefs, and dispute dysfunctional automatic thoughts to improve daily functioning (Beck, 2011).

Cognitive restructuring was developed by University of Pennsylvania psychiatrist and professor emeritus Aaron Beck (1972), who outlined his approach in his work, *Depression: Causes and Treatment.* He later expanded his focus to include anxiety and other disorders in *Cognitive Therapy and the Emotional Disorders* (Beck, 1976). Cognitive restructuring emphasizes the reciprocal relationship between cognition and behavior. In a given situation, core beliefs influence an individual's perception by generating situation-specific automatic thoughts (Beck, 2011). These automatic thoughts (ATs) invariably cause emotional disturbance, which evokes anomalous behavior. Beck

26

(1976) defined automatic thoughts as" the personalized notions that are triggered by particular stimuli that lead to emotional responses" (Beck, 1976). In other words, core beliefs influence thinking (ATs), which in turn influences reactions or behaviors. CBT teaches individuals to recognize and modify maladaptive ATs that contribute to emotional distress and unhealthy behaviors (McKay, Davis, & Fanning, 2011; Salkovskies, 1989).

According to Beck (1976), the most direct route to changing dysfunctional emotions and behaviors is to modify inaccurate and dysfunctional thinking. Beck (1976) identified several distortions in information processing that lead to faulty assumptions and misconceptions. The most common distortions include arbitrary inference, overgeneralization, and magnification and exaggeration (Kanfer & Goldstein, 1991). *Arbitrary inference* refers to the process of reaching conclusions without sufficient and relevant evidence. This cognitive distortion results in catastrophizing, or thinking of the absolute worst scenario for a situation. *Overgeneralization* is defined by Beck as holding extreme beliefs on the basis of a single incident and applying them inappropriately to dissimilar events or settings. *Magnification and exaggeration* consist of overestimating the significance of negative events (Kanfer & Goldstein, 1991). Individuals who exhibit cognitive distortions often magnify problems so that they become overwhelming. The thoughts targeted in CBT are comprised of "ideation that interferes with the ability to cope with life experiences, unnecessarily disrupts internal harmony, and produces inappropriate or excessive emotional reactions that are painful" (Beck, 1976, p. 235). The client is trained to self-monitor negative ATs, which are defined as verbal thoughts or

images that seem to come without effort and are associated with feeling upset. Once

clients understand ATs, a useful homework assignment is to record an activating event,

the accompanying emotion, and the ATs (Beck, 1976). During the in- session reviews of

self-monitored ATs, the therapist may use a number of techniques for evaluating ATs and

uncovering cognitive biases. The most common techniques include Socratic questioning,

examining the evidence, and asking specific questions to encourage rational thinking.

Cognitions of Aggressive Children and Adolescents

CBT has been found to be effective in the treatment of aggression in children and

adolescents (Carr, 2009; Daunic et al., 2006; Kendall & Braswell, 1982; Lochman &

Lenhart, 1993; Lochman & Wells, 2002). Research in this area has examined the efficacy

of coping skills, social skills, and problem solving training in the treatment of aggressive

and disruptive behavior. Larkins and Frydenberg (2004) asserted that negative thinking or

automatic thoughts occur in proactively aggressive children as a result of parental

modeling of aggressive behavior, lack of parental warmth and involvement,

permissiveness of aggressive behavior, or power-assertive child rearing practices.

Proactive aggression is a learned behavior that is often utilized to harm, dominate, or

coerce another (Brown & Parsons, 1998). Reactively aggressive children develop

negative ATs in response to early trauma, child abuse, or poor early relationships (Brown

& Parsons, 1998). Children exhibiting reactive aggression attribute hostile intentions to

ambiguous stimuli (Brown & Parsons, 1998).

Lochman et al. (2011) suggested that patterns of aggressive behavior in children are influenced by temperament and biological disposition as well as contextual experiences with family, peers, and community. Aggressive children have cognitive distortions affecting their ability to accurately appraise, interpret, evaluate, and solve problematic social situations (Lochman & Dodge, 1994). Social skills deficits are evident as aggressive children are unable to engage in perspective taking, anger management, and conflict resolution. The inability to recognize and modify distorted ATs appropriately may lead to angry outbursts, physical aggression, bullying, and other disruptive behaviors (Garner & Hinton, 2010).

Children who are aggressive and disruptive often have poor peer relationships and impaired social cognition (Jensen, 2009). Dodge's (1993) information processing model provides a framework for understanding social cognition among aggressive and disruptive children. Children identified as displaying aggressive and disruptive tendencies are hypothesized to have difficulties (a) encoding social cues; (b) making accurate interpretations and attributions about social events; (c) generating a variety of adaptive solutions to perceived problems; (d) deciding which solution to enact based, in part, on the consequences; and (e) skillfully enacting the chosen strategy (Lochman & Lenhart, 1993). CBT group programs for children often focus on one or more of these deficits.

Cognitive behavior strategies with youth involve interactive, performance-based activities as well as cognitive interventions to produce changes in thinking, feeling, and behaving. Emphasis is placed on the learning process and the contingencies and reinforcers in the environment. According to Kendall (1993), children and adolescents

29

are in the process of developing templates to view the world. Cognitive behavioral treatments provide educational experiences and therapist-coached reconceptualizations of problems to build a new "coping" template. Children learn to use new skills through modeling, role playing, in-class exercises, feedback, and homework assignments.

The cognitive abilities of children differ from those of adults in ways that have implications for the application of CBT strategies (Hughes, 1990). Children may have difficulty understanding abstract self-talk processes and the relationship among thoughts, feelings, and behaviors. To increase comprehension, concrete examples, modeling, pictorial representations, and didactic teaching are often necessary. A number of activities--such as the *Feeling Thermometer* (Stallard, 2002), the *Feelings Game* (Berg, 2009), and the *How Are You Feeling Today*? poster (Borgman, 2011)--may be used to help children identify and recognize feelings. To teach children how to engage in self-talk, puppets, guided imagery, and bibliotherapy may be utilized (Beland, 1991; Bernard & Joyce, 1984). Older children may be able to monitor self-talk with thought journals or logs and sentence completion exercises (Bernard & Joyce, 1984).

Young (1983) recommended helping children and adolescents understand the meaning of irrational thoughts and distinguish irrational from rational thoughts by using a checklist and asking the child to check all the thoughts that are irrational (i.e., absurd and false rather than sensible and true). The checklist items may be read to young children. Specific examples may also be provided to make items more concrete. Creed et al. (2011) advocate using a *Thinking Trap Worksheet* to help adolescents discover errors in logical

30

thinking. The primary focus of this activity is to help adolescents recognize the errors in logic of some automatic thoughts (Creed et al., 2011).

Beck (2011) suggests that negative beliefs are generally related to the self, the world, and the future. Students experiencing problems in school may have negative beliefs related to the self. To help a child understand the difference between failing at a task and being a failure, the therapist draws a circle on a large sheet of paper and tells the child that the circle represents the child. The therapist draws little circles (representing the child's traits, characteristics, and performances) within the larger self-circle. The therapist can explain that one bad inner circle or attribute does not make the entire circle bad (Young, 1983).

Identifying and modifying ATs related to social threat and hostility is an effective intervention for children displaying disruptive and aggressive behavior (Schniering & Rapee, 2004). CBT targets cognitive processes in an effort to modify how children view their social world and themselves, how they relate and react to others, and how they conceptualize and solve problems (Durlak, Rubin, & Kahng, 2001). Studies exploring risk factors for youth aggression have found correlations with low socioeconomic status, poor parental supervision, harsh and erratic discipline, and delinquent peers. Children who are at risk for aggressive and disruptive behaviors often display cognitive distortions and cognitive deficits. Several CBT programs that focus on maladaptive and impaired cognitive processes have been used successfully with children and adolescents who are at risk for developing externalizing problems.

Cognitive Behavioral Programs to Treat Aggression in Children

The studies selected for this review were obtained from a thorough search of the psychological databases included in ERIC, PSYCHINFO, GALLIEO, and Liberty University's online Library. The keywords *aggression*, *disruptive behavior*, *cognitive behavior therapy* and *schools* were used in the search. Studies that were qualitative in nature or involved co-occurring treatment in a treatment facility were eliminated. Studies of students receiving special education services or attending preschool programs were not included. One study conducted in Australia was not included because the specific details of the CBT program were omitted. All included studies involved program implementation with regular education students.

Nine studies were included in the review and provide overwhelming evidence for CBT's effectiveness as a treatment for aggression and disruptive behaviors. All studies included were published in peer-reviewed journals and provided specific information about the sample characteristics, and the specific CBT treatment employed. Two studies were meta-analyses that examined the effectiveness of a wide array of CBT programs in elementary, middle, and high schools. These studies were included to demonstrate CBT's effectiveness across multiple ages and grade levels.

A study by Kendall and Brasswell (1982) was included to represent CBT's effectiveness with middle-income, white, suburban students. Three studies (Lochman, Burch, Curry, & Lampron, 1984; Lochman & Lenhart, 1993; Lochman, Nelson, & Sims, 1981) evaluated the effectiveness of the Anger Coping Program (Lochman, et al. 1984), a coping skills training program that includes conflict management, problem solving and

social skills training. A study by Ruttledge and Petrides (2011) demonstrated the effectiveness of the *Think Good--Feel Good* (Stallard, 2002) workbook activities in conjunction with an anger management program, in reducing disruptive classroom behaviors. The eighth study examined the effectiveness of the Coping Power program (Lochman & Wells, 2002) in combination with parent training, and also considered the program's applicability for substance abuse reduction. The final study examined the effectiveness of Tools for Getting Along: Teaching Students to Problem Solve (Daunic et al., 2006) in conjunction with teacher training and added booster sessions. The Tools for Getting Along: Teaching Students to Problem Solve emphasizes learning to recognize and manage anger and learning to use problem solving steps to generate, implement, and evaluate solutions to social problems.

Meta-Analysis Studies

Hahn et al. (2007) studied the effectiveness of several school-based cognitive behavior programs for children at risk for developing aggressive and disruptive behaviors. These included The Second Step program, The Interpersonal Cognitive Problem Solving program, and Providing Alternative Thinking Strategies. A systematic review team and a multidisciplinary team evaluated the effectiveness of universally implemented programs in reducing or preventing violent behavior. Violent behavior was defined by measures of conduct (the psychiatric condition in which the rights of others are violated); measures of externalizing behavior (lying, stealing, defiance, truancy, and delinquency); measures of acting out (aggressive, impulsive, or disruptive classroom behaviors) or conduct problems (talking in class, stealing, fighting, lying, refusing to

33

follow directions, teasing, and breaking things); measures of delinquency (violent and non-violent behavior); and school records of suspensions and disciplinary referrals.

Electronic data sources were searched in June and July of 2002 for literature on universal school-based programs. Search results were updated in December 2004. Only studies with sample sizes greater than 20 were included for review. Studies were classified as having good, moderate, or limited suitability. Designs that were classified as having the greatest suitability included a control and treatment group with data collection occurring prospectively. Moderately suitable studies were those in which data were collected retrospectively or with multiple pre- and post-assessments, but no comparison group. Least suitable studies involved only one pre- and posttest and no comparison group. On the basis of the number of threats to validity, studies were assigned a number of penalties and classified as good, fair, or limited. Interventions that were determined to be effective were evaluated in terms of the program's applicability to diverse settings, populations, and circumstances (Hahn et al., 2007).

The Hahn et al. (2007) team selected 53 studies of universally implemented programs for inclusion in the study. All school anti-violence programs included in the study were associated with a reduction in violent behavior. The effectiveness of school CBT programs was found at all levels, from a 7.3% relative reduction in violent behavior among middle school students to a 29.2% relative reduction in violent behavior among high school students. In elementary schools the median reduction in violent behavior was 18%. Significant improvements in violent behavior were found within low socioeconomic environments as well as across race and ethnicity.

Sukhodolsky et al. (2004) used meta-analysis to investigate the overall effect size of cognitive therapy for treating anger problems in children. In addition, the authors compared the effect sizes of the various components of cognitive therapy--such as skill development, affective education, problem solving, and multimodal treatments--using Cohen's *d*. Twenty-one published and 19 unpublished outcome studies were selected for analysis. Only studies targeting one of the following were included: anger reduction, reduction of aggressive or antisocial behavior, improvement of anger-related social-cognitive deficits, improvement of self-regulation or self-control, or improvement of social skills.

Skills development (*d*=.79) and multimodal (d=.74) components of CBT were significantly more effective than affective education (d=.36). A mean effect size of .67 (medium range) suggested that CBT is effective in the treatment of anger-related problems. Feedback, modeling, and homework appeared to be significantly related to effect size. No significant relationship was found between effect size and duration of treatment. In the selection of specific CBT components for targeting anger-related problems, affective education (including relaxation, imagery, and emotions education) appeared less helpful than problem-solving treatments that included learning to think about causes, consequences, and solutions. Both individual and group deliveries of CBT components were equally effective (Sukhodolsky et al. 2004).

Studies of School-Based CBT Programs

Given that socioeconomic status is a risk factor for violent behavior, many CBT and aggression studies target minority and low socioeconomic status children. Kendall

and Braswell (1982), however, evaluated the efficacy of cognitive behavioral and behavioral treatments in a predominantly white suburban elementary school. Twenty-seven non-self-controlled students were randomly assigned to a cognitive behavioral program, a behavioral program, and an attention control group. Instruments administered included the Peabody Picture Vocabulary Test (PPVT), the Matching Familiar Figures Test (MFF), the Piers Harris Children's Self-Concept Scale (PH), and the Wide Range Achievement-test (WRAT). Assessments were conducted by 15 undergraduate students and one graduate student. Individual therapy sessions were provided by six female and three male professional therapists. The therapists' training consisted of studying a manual and role-playing exercises. Six undergraduates and one graduate student were selected to serve as behavioral observers. Observers participated in practice sessions in which videotapes of simulated classroom behavior were rated. Inter-rater reliability was reported at .85.

Observers rated the occurrence or nonoccurrence of the following behaviors: (1) off task-verbal (OTV); (2) off-task physical (OTP); (3) off-task attention (OTA); (4) out of seat (OS); (5) bugging others verbally (BV); and (6) bugging others physically (BP). An in-session therapy measure was utilized by the therapist to assess the student's engagement in the activities, the student's ability to understand and use self-instruction, and the quality of the therapist-student relationship.

During the month preceding the intervention, students were administered the PPVT, MFF, WRAT, and PH. Two weeks prior to the intervention, the referred students were matched with non-referred students. Nineteen of the 27 pairs were matched within

36

five IQ points. Each pair was observed for 15 minutes twice a week, with the observer alternating between each pair member. The 27 referred students were rank ordered by scores on the Self Control Rating Scale (SCRS) and randomly assigned to one of the three treatment conditions. Teachers, testers, and observers were blind to group assignment.

All study participants received 12 sessions of therapy encompassing psychoeducation, play, and interpersonal social skills training. Students in the cognitive behavioral treatment also received self-instructional training through modeling and behavioral contingencies, while students in the behavioral treatment were exposed to modeling and contingencies only. The control group also received therapy, but without the self-instruction, modeling, or contingencies. Sessions lasted 45-55 minutes and were provided twice a week. Pretest, posttest, ten-week, and one-year follow-up scores were analyzed for treatment efficacy.

Teachers' blind ratings of self-control indicated improvement for the cognitive behavioral treated students. Blind ratings on hyperactivity showed improvement for both the cognitive behavioral and behavioral treated students. The cognitive behavioral group had significantly more improved ratings on self-control than either the behavioral or the attention control group. Improvements were maintained at both ten-week and one-year follow-ups.

MFF errors were reduced in all three groups, while WRAT scores showed improvement for both the cognitive behavioral and behavioral groups. Off-task verbal (OTV) and off-task physical (OTP) behaviors showed post-treatment decreases. Out of

seat (OS) behaviors showed a slight decrease in the cognitive behavioral group with higher reductions noted in the behavioral group. Within the control attention group, out of seat (OS) behaviors remained constant. When comparing bugging others verbally (BV) behaviors, a reduction was found in the cognitive behavioral group while a slight reduction was found in the behavioral group. No changes were evident in the control group. Treatment effects were negligible for bugging others physically (BP) behaviors within the treatment groups. Therapists' ratings of engagement and understanding were not related to improvement.

Universal and specialized coping skills programs incorporating CBT concepts have also been developed to prevent disruptive, off-task, and aggressive behavior. Lochman and Lenhart (1993) reviewed several studies that utilized the Anger Coping Program to reduce aggression among elementary school children. The Anger Coping Program includes exercises to improve perspective taking skills, increase awareness of physiological signs of anger, improve social problem-solving ability, and teach strategies for resolving conflicts. The overall goal of the program is to teach aggressive children how to conceptualize and think about problematic situations. Lochman et al. (1981) used the Anger Coping Program in a 12-session, twice weekly project with 12 second and third grade African American children. All children were from single-parent homes and lived in a low income housing project. At program completion, all children had decreases in teacher checklist ratings of acting out behaviors as well as significant improvements in daily ratings of on-task behavior and aggressive behavior.

Lochman et al. (1984) randomly assigned 76 boys identified as aggressive based on teacher rating scales to anger coping (AC), goal setting (GS), anger coping and goal setting (AC-GS), or untreated control (UC) groups. The goal setting treatment lasted eight weeks and focused primarily on setting personal goals to reduce behavior problems at school. The AC treatment consisted of 12 weekly 45-60 minute sessions. Fifty-three percent of the boys were racial minorities and ranged in age from 9-12 years.

At posttesting, boys in the two anger coping conditions (AC and AC-GS) had significant reductions in an independent observer's ratings of disruptive classroom behavior. Higher decreases in aggressive and disruptive behaviors occurred with children scoring higher on pretest scores of aggression. Improvements were noted in the no treatment group among students with higher levels of self-esteem. However, students with high levels of self-esteem who were exposed to the goal setting treatment experienced increased rates of aggression. Hence, coping skills training appeared to be an effective intervention for reducing disruptive behavior while goal setting treatment did not.

In addition to experiencing difficulties with problem solving and coping skills, aggressive children are more likely to be rejected by their peers and have trouble interacting with others (Lochman & Wells 2002). Rejected children have been found to have social informational processing deficits, including a hostile attributional bias that leads to associated anger. Lochman and Wells (2002) asserted that aggressive children who experience rejection are more likely to join deviant peer groups and engage in substance abuse. In their study, 245 moderate- to high-risk aggressive fifth graders were

randomly assigned to one of three cognitive behavioral treatment groups and one control group. Of these, 61 children received a universal Coping with Middle School Transition (CMST) program and the Coping Power program (IU), 59 children received the Coping Power program only (I), 62 children received the universal (CMST) program only (U), and 63 students received neither intervention (C). The distribution of African American children across the four cells was relatively even (IU = 75%, I = 78%, U = 78%, C = 81%).

The Coping Power program and the universal intervention began immediately after condition assignment. Time I assessments were collected prior to the intervention; Time 2 mid-assessments were collected during the summer between fifth and sixth grade; and Time 3 assessments were collected after intervention completion. The Coping Power program consisted of both a parent and child component. The Coping Power Child Component included 22 group lessons delivered in fifth grade and 12 group lessons delivered in sixth grade. Students also received one individual session every two months to reinforce concepts taught during group encounters.

The Coping Power Parent Component involved 11 small group meetings during the fifth grade year and five small group meetings during the sixth grade year. Parent attendance was low despite numerous incentives (transportation, child care, stipends) to encourage participation. The universal CMST program consisted of informational parent meetings and teacher in-service meetings. Parents were invited to attend three sessions during fifth grade and one session during sixth grade. The topics addressed issues related to school success and promoted positive parental involvement with the school.

Informational sessions were designed to prepare parents for issues related to peer pressure, deviant peer groups, the need for parental monitoring, and adolescent risk-taking behavior.

A teacher intervention component included five two-hour meetings during the fifth grade year with all teachers participating in the program, and six meetings with a group of selected teachers and a Coping Power program representative. Teacher meetings focused on promoting parental involvement, enhancing children's study skills through class work organization and homework completion, parent-teacher communication, social problem-solving strategies, developing the student-school bond, conflict management, and proactive classroom management techniques.

Outcome measures included the CSAP (Center for Substance Abuse Prevention) Student Survey, the Proactive Reactive Aggressive Behavior Scale, the Teacher Observation of Classroom Adaptation–R (TOCA-R), the Early Adolescent Temperament Measure, the abbreviated version of the Dysregulation Inventory, the Teacher Rating of Children's Social Skills, the Perceived Competence Scale for Children, the Outcome Expectation Questionnaire, Perceived Peer Behavioral Norms, the Kentucky School Bonding Survey, Parent Involvement in the Schools, the Alabama Parenting Questionnaire, and the Family Relations Scale. The summer interview battery, including the child self-report and parent report measures, was administered to 214 participants (88% of the original sample) across all three time points. Teacher measures collected at both mid- and post-treatment were available on 187 participants (77% of the original

41

sample). Full classroom assessments, those collected at all three time points, were only available for 125 students (51%) due to student transiency.

All three intervention cells (IU, U, I) had lower levels of tobacco, alcohol, and marijuana use than the control cell at post-treatment. Children receiving the Coping Power intervention had reductions in parent-rated proactive aggression. With teacher-rated measures of children's problem behaviors, children in the indicated program had increasing levels of behavior improvement and a trend for greater reductions in proactive aggressive behavior. Children in the universal as well as the universal and indicated combined interventions achieved increased social competency scores. Students in the indicated and universal combined cell tended to have decreases in anger over time in comparison with the other three cells. Problem-solving and anger management improvements were evident among the indicated and universal students. All students participating in the treatment groups exhibited lower levels of aggression.

Although most CBT studies have targeted children and adolescents identified as exhibiting externalizing behaviors, universal prevention programs have been found to be effective in the prevention of disruptive and aggressive behavior (Cullinan, 2002). Class-wide programs can be utilized to target selected students or provide instruction and strategies to a broadly defined group to maintain appropriate behavior. Daunic et al. (2006) developed, piloted, and investigated the effectiveness of a CBT program, Tools for Getting Along: Teaching Students to Problem Solve (TFGA), with 525 fourth and fifth grade students. TFGA consists of 20 lessons organized into six categories or steps.

Following an introductory lesson, three lessons (Step 1) focusing on problem

identification and anger recognition are presented. The next two lessons (Step 2) provide strategies for emotion regulation. Step 3 addresses the problem in terms of goals and barriers. Step 4 teaches students how to generate solutions through brainstorming. Exploration of each solution's consequences is covered in Step 5. The final component, Step 6, teaches students to evaluate solutions based on outcome. Five role-play lessons are incorporated throughout the curriculum to provide students with ample opportunities to practice skills. Six booster lessons supplement the program and are designed to be used at one- to two-week intervals during the second half of the school year.

TFGA lessons were taught twice a week and lasted for 30 minutes. Teachers implementing the program received an eight hour in-service training pertaining to the curriculum's conceptual foundation, rationale, organization, and essential features. Of the 525 students selected for participation, 165 were nominated as target students. Students were randomly assigned by school to a TFGA 20-session intervention, a TFGA 20-session intervention plus booster, or a control group. The number of targets in the 20-lesson, 20-lesson plus booster, and control groups were 42, 86, and 37, respectively. Of the 86 students in the lesson plus booster group, 60% were African American and 43% received free or reduced fee lunches.

Outcome measures included the Problem Solving Questionnaire, Pediatric Personality and Anger Expression Scales, the Reactive-Proactive Aggression Scale, the Social Skills Rating System, and the TFGA Teacher Questionnaire. Three assessments were conducted: one prior to treatment (Assessment I), one after the completion of the core lessons (Assessment 2), and one after the implementation of the booster lessons

43

(Assessment 3). Study findings suggested that exposure to *TFGA* significantly increased

target students' knowledge of problem-solving steps and decreased teacher ratings of

reactive and proactive aggression. The addition of booster sessions, however, did not

significantly change improvements at Assessment 3.

Ruttledge and Petrides (2011) provided six cognitive behavioral therapy sessions

for 22 children ages 13-14 identified as engaging in disruptive behavior. Aggressive and

disruptive behavior characteristics were derived from Cameron's (1998) description of

the various types of disruptive behaviors found in classrooms. Disruptive behavior

included refusing to follow directions, persistent talking in class, bullying, daydreaming,

using abusive language, refusing to complete class work, exhibiting temper tantrums, and

damaging or defacing objects. CBT resources were compiled from Stallard's (2002)

Think Good--Feel Good workbook and *Anger Management: A Practical Guide* (Faupel,

Herrick, & Sharp, 1998.)

The *Think Good--Feel Good* outcome measures included the Beck Youth

Inventory (BYI), the Trait Emotional Intelligence Questionnaire-Adolescent Short Form,

the Strengths and Difficulties Questionnaire (self-report, teacher, and parent ratings), and

the Teacher Behavior Checklist. Using a repeated measures design, significant reductions

were found between Pre (pre-intervention) and Time 3 (post-intervention) in self-,

teacher, and parent reports of disruptive behavior. Self- and teacher report improvements

were maintained at Time 4 (six month follow-up). No changes were found between Pre

(pre-intervention) and Time 2 (pre-intervention) assessments.

Table 2.1

Cognitive Behavioral Programs for Schools

Program	Researchers	Grades	Skills
Anger Coping Program	Lochman et al., 1984;	4-6	Anger management, problem solving, social skills
Coping Power Program	Lochman & Wells, 2002	4-6	Goal setting, study skills, social skills, anger management
Interpersonal Cognitive Problem Solving	Hahn et al., 2007	PK-2	Social competence, behavior management
Providing Alternative Thinking Strategies (PATHS)	Hahn et al., 2007	PK-6	Self-control, peer relations, interpersonal problem solving
Think Good--Feel Good Program	Ruttledge & Petrides, 2011	K-5	Pscychoeducation, problem solving
Second Step	Hahn et al., 2007	PK - 8	Empathy, anger management, problem solving
Stop and Think	Kendall & Braswell, 1982	4-6	Impulsivity, self-control, problem solving

| Tools for Getting Along: Teaching Students to Problem Solve | Daunic et al., 2006 | 4-6 | Anger management, problem solving |

Strengths and Weaknesses of Studies

The studies in this review provide salient data regarding the effectiveness of CBT programs in the treatment of aggressive and disruptive classroom behaviors. Most of the studies were experimental in nature and adhered to accepted research guidelines and practices. With the exception of Ruttledge and Petrides (2011), all studies reviewed included a control group. Control groups are usually used to address threats to internal validity such as history, maturation, selection, and testing (Kazdin, 2003). Control of these threats is accomplished by ensuring that one group in the design shares these influences with the intervention group but does not receive the intervention or experimental manipulation. Changes in aggressive and disruptive behavior may result from repeated assessment on various dependent measures. A no-treatment or alternative treatment control group that is exposed to the same assessments as the treatment group negates the effect of repeated testing on improvement (Kazdin, 2003).

Furthermore, rival hypotheses or alternative explanations of the results can be minimized by the inclusion of a control group (Kazdin, 2003). Incorporating both control and comparison groups in experimental designs may also address threats to construct validity. Control and comparison groups also add precision to a study's conclusions.

46

Treatment evaluation strategies often require control and comparison groups and can be used to address specific questions related to treatments and interventions (Kazdin, 2003).

The concept of *yoking* refers to equalizing control and comparison groups on a particular variable that might systematically vary across conditions (Kazdin, 2003). Subjects may be matched to ensure that each pair receives identical conditions. Conditions may include length of time between pre-test and posttest, the time of day interventions are provided, or the number of sessions attended. Through yoking, the investigator controls variables that may potentially confound the results (Kazdin, 2003). Only one study, by Kendall and Braswell (1982), utilized the yoking procedure. Kendall and Braswell (1982) used IQ to match aggressive and disruptive students with their non-aggressive peers.

Random assignment to groups and testing each group before and after treatment are standard procedures in any experimental design (Kazdin, 2003). Lochman and Wells (2002), Kendall and Braswell (1982), and Lochman et al. (1984) each used random assignment. Daunic et al. (2006) used a quasi-experimental design, as the TFGA program was provided universally to selected classes across six schools that were randomly assigned to conditions. All studies highlighted in this review utilized pre- and posttests to measure change.

Daunic et al. (2001) measured the effectiveness of the TFGA program alone as well as the TFGA program with six booster sessions. Although this study found that the added component had little effect on the outcome measures, this treatment strategy is often utilized to enhance treatment efficacy and maximize therapeutic change. The

47

Coping Power program (Lochman & Wells, 2002) included a parent component to improve treatment outcomes. Students participating in the combined student and parent components exhibited lower proactive aggression ratings on parent scales and increased improvement in classroom behavior. Previous studies (Carr, 2009; Kazdin, 2005; Sander & Murphy-Brennan, 2010) have demonstrated the efficacy of including a parent training component in the treatment intervention for aggressive children.

CBT interventions in schools include teaching strategies to develop problem-solving skills, coping skills, conflict resolution skills, and social skills. The evidence base is particularly strong that the acquisition of these skills minimizes aggressive and disruptive behavior. Several studies have demonstrated CBT's efficacy in reducing off-task, hostile, and impulsive behaviors. Students participating in CBT programs showed improved teacher ratings on aggressive and disruptive behavior scales. The following section will discuss the Penn Resiliency Program, a CBT program that has been used successfully in the treatment of disruptive behaviors in adolescents.

Table 2.2

CBT Program Research

Program	Strengths
Anger Coping Program	Pre- and posttest design, random assignment, parent component
Coping Power Program	Pre- and posttest design, random assignment, control group, parent component
Interpersonal Cognitive Problem Solving	Pre- and posttest design, control

	group
Providing Alternative Thinking Strategies (PATHS)	Pre- and posttest design, control group
Think Good--Feel Good Program	Pre- and posttest design
Second Step	Pre- and posttest design, control group
Stop and Think	Pre- and posttest design, random assignment, control group, yoking procedure
Tools for Getting Along: Teaching Students to Problem Solve	Quasi-experimental design, booster sessions

The Penn Resiliency Program

Developed by a research team at the University of Pennsylvania, the Penn

Resiliency Program (PRP; Gillham, Reivich & Jaycox, 2008) is a CBT intervention

designed for children and adolescents experiencing internalizing behaviors such as

depression. The goal of the PRP is to change maladaptive and dysfunctional ATs. Beck

(1976) examined ATs in adults using the cognitive content-specificity model, and found

that intense emotional states are characterized by specific ATs. A number of studies with

adults have confirmed Beck's theory (Beck, Laude, & Bohnert, 1974; Hollon, Kendall, &

Lumry, 1986).

Beck's (1976) cognitive content-specificity model suggests that negative beliefs

and cognitive distortions regarding personal loss and personal failure are primary

predictors of depressive symptoms. Conversely, distortions associated with physical and

social threat contribute to anxiety disorders (Schniering & Rapee, 2004). In a more recent

study, Wilkowski and Robinson (2011) determined that automatic thoughts concerning hostile attribution bias and anger rumination predicted aggressive behavior. Similarly, automatic thoughts based on the perception of hostile intent and the right to revenge were found to be predictors of reactive or retaliatory aggression (Schniering & Rapee, 2004). The PRP targets ATs commonly found in depressed, anxious, and aggressive children.

Schniering and Rapee (2004) developed the Children's Automatic Thought Scale (CATS) to evaluate the nature, structure, and organization of children's ATs. The CATS assessment utilizes research from the cognitive content-specificity theory and provides a four-factor model for the organization of ATs: physical threats, social threats, physical failure, and hostility. ATs associated with physical and social threats are indicative of feelings of anxiety; elevated ATs on the physical failure items reflect depressive symptomatology; and higher scores on the hostility items reflect aggressive tendencies. The identification of the hostility factor is consistent with research showing that aggressive and disruptive children selectively encode and attend to hostile attributions (Dodge, 1993). Additionally, thoughts pertaining to hostility and revenge form a unique component of cognitive content separate from cognitions related to personal failure and threat (Schniering & Rapee, 2004).

Although Schniering and Rapee (2004) found a strong predictive relationship between ATs regarding hostility and revenge and aggressive behaviors, few studies have investigated the effects of AT modification on aggressive and disruptive classroom behaviors. Aggression studies with children have focused on psychoeducation for parents (Kazdin, 2005), peer rejection (Lochman & Wells, 2002), coping skills training

50

(Lochman et al., 1984), social skills training (Hahn et al., 2007) and social problem solving (Daunic et al., 2006). The PRP has some similarities to other CBT programs, but it is one of few school-delivered programs that specifically targets dysfunctional ATs among elementary school students. The Think Good--Feel Good program (Stallard, 2002) also focuses on the role of ATs in aggressive behavior, but the exercises and activities are not as extensive or as diverse as those found in the PRP.

The PRP curriculum incorporates techniques adapted from adult cognitive behavioral therapy and is based on the theories of Aaron Beck, Albert Ellis, and Martin Seligman (Abramson, Seligman, & Teasdale, 1978; Beck, 1976; Ellis, 1962). The theoretical foundation of PRP is derived from the Activating events, Beliefs, and Consequences (ABC) model developed by Albert Ellis (1962). Activating or adversarial events (A) are responsible for emotional disturbances or consequences (C) primarily because the events are acted upon by a student's beliefs (B). In essence, a student's thoughts and beliefs about a situation or activating event mediate the effect of the event on behavior and feelings (Gillham & Reivich, 2004).

Understanding the connection between thoughts, feelings, and behavior is an important goal of the PRP program. Students learn that reactions to circumstances and events are filtered through a personal belief system. Unfortunately, the belief system is not always obvious or accurate. To assist students in acquiring skills to evaluate beliefs, the concepts of activating events, beliefs, and consequences are presented in the beginning sessions of the program.

51

The ABC model of problem conceptualization is taught through a series of three panel cartoons. Adversarial situations are presented in the first panel while emotional responses are presented in panel three. Panel two is completed by the student with a thought that corresponds to the logic of the ABC (Gillham & Reivich, 2004). As students become more familiar with the ABC logic, any one of the panels can be completed by the student independently. Exercises in the form of cartoons and short stories encourage students to generate, identify, and examine dysfunctional thoughts in a variety of situations.

Disputing inaccurate beliefs is an additional component of the PRP. Students learn how to think rationally about the causes and potential outcomes of specific problems. Gilliam and Reivich (2004) noted that thoughts do not occur randomly, but develop as an information processing style to explain circumstances and events. Attributions can be described along three dimensions: internal versus external (Is the cause related to the individual or other people/circumstances?); stable versus unstable (Is the cause likely to be present for a long time or is it temporary?); and global versus specific (Is the cause operating in few or many domains?). Student-friendly terms such as me versus not me, always versus not always, and everything versus not everything are used to help students understand how processing style affects the interpretation of events. Knowledge of the explanatory style options provides a framework for generating a number of different alternatives for understanding the event. Students are rewarded for being able to generate alternative explanations that change one or two personal explanatory style preferences. After generating alternative ways of thinking about a

52

situation, students are instructed to evaluate the evidence to determine the most accurate belief.

The PRP includes perspective taking, decision making, and social problem solving components that are key to reducing aggressive and disruptive behaviors (Ruttledge & Petrides, 2011; Daunic et al., 2006; Lochman et al., 1984; Lochman & Wells, 2002). The program also includes enhancement activities such as homework, feedback, and role playing, which have been found to increase program effectiveness (Sukhodolsky et al., 2004). The PRP is typically delivered in twelve 45-minute segments. Within each lesson resiliency concepts are taught and practiced. Skills are introduced through skits, role plays, short stories, and cartoons that highlight fundamental concepts. Once students understand the core concepts, practice opportunities are provided with hypothetical scenarios that demonstrate how the skill is relevant to real-world situations. Students are allotted time to discuss each scenario and explore potential personal applications of the new skill.

The PRP has been evaluated in at least 13 controlled trial studies with more than 2,000 children and adolescents between the ages of 8 and 15. In one study, the PRP was found to prevent depression, anxiety, and adjustment disorders across a two-year period in children with high baseline symptoms (Gillham et al., 2006). In a second study, PRP prevented behavioral (externalizing) problems 24-36 months after the intervention (Cutuli et al., 2007).

The present study examines the effectiveness of the Penn Resiliency Program in reducing aggressive and disruptive behaviors among African American and Latino third,

53

fourth, and fifth graders. Given the lack of studies that evaluate the effectiveness of school-based CBT programs that specifically target the influence of dysfunctional automatic thoughts on the development and maintenance of aggressive and disruptive behaviors, the present student represents an important contribution to the literature.

Chapter Summary

The usual course of adult CBT treatment includes an emphasis on automatic thoughts. CBT programs for children, however, have focused primarily on coping, social and problem-solving skills training, conflict management, and anger management. In comprehensive studies evaluating the treatment of aggressive and disruptive behaviors, cognitive behavioral programs in schools have been found to help students learn to be assertive, use a decision-making model to solve problems, and cope with anger through self-talk and relaxation training (Weisz et al., 2004; Wilson & Lipsey, 2007). CBT interventions are most effectively applied in the context of a classroom environment that encourages and supports appropriate behavior.

CBT stresses the importance of cognitive processes as the antecedents of behavior. Beck (1995) maintained that how an individual feels and behaves is largely determined by that individual's assessment of events. Because the assessment is affected by beliefs, assumptions, and automatic thoughts, cognitions should be the focus of therapy. Lasting changes in behavior are most likely to occur when individuals have an awareness and understanding of their cognitive and explanatory style processes.

The PRP targets automatic thoughts and provides ample exercises, role-playing activities, and scenarios to teach students how to modify dysfunctional cognitions. The beliefs that underlie the dysfunctional thoughts are the focus of treatment. Relevant beliefs and automatic thoughts are evaluated in various ways and are subsequently modified so that the student's conclusions about and perceptions of events change (Beck, 1995). Although originally designed to prevent and treat depression in children and adolescents, studies of the PRP with anxiety disordered youth and studies with aggressive and disruptive adolescents have shown encouraging results.

Previous literature on CBT demonstrates that conflict management, problem solving, and social and coping skills training are effective interventions for youth aggression (Beland, 1991; Kendall & Brasswell, 1982). The present research studied the PRP to determine whether the program is effective in modifying dysfunctional automatic thoughts and decreasing aggressive and disruptive behavior in classrooms.

CHAPTER THREE: METHODS

The purpose of this study is to evaluate the effectiveness of the Penn Resiliency

Program (PRP) in reducing disruptive behavior and improving academic achievement

among preadolescents. Chapter One provided background information regarding the

effectiveness of cognitive behavioral therapy (CBT) programs in treating externalizing

behaviors among children and adolescents; it also detailed the salience of and theoretical

basis for the study. Chapter Two reviewed previous research studies documenting the

effectiveness of specific CBT programs with children and adolescents. The current

chapter will provide an overview of the methodology utilized in the study. The following

components will be addressed: research design, including participants, instrumentation,

and assumptions; procedures; data processing and analysis; and a summary.

Research Design

This study utilized an experimental, randomized, pretest/posttest control group

design. The purpose of the study was to determine the effectiveness of the PRP in

reducing disruptive behavior and increasing academic achievement. The research

questions guiding this study include: (1) Does the PRP decrease aggressive and disruptive

classroom behavior? (2) Is the PRP effective in modifying automatic thoughts? (3) Do

positive changes in automatic thoughts influence posttest teacher ratings? (4) Does

participation in the PRP improve academic performance?

The following hypotheses were formulated:

Hypothesis 1: Students participating in the PRP will experience more improved ratings of aggressive and disruptive behavior than students participating in the control group.

Null Hypothesis 1: There is no difference in the posttest ratings of aggressive and disruptive behavior between the control and experimental groups.

Hypothesis 2: Students participating in the PRP will experience more positive changes in automatic thoughts than students participating in the control group.

Null Hypothesis 2: There is no difference in changes in automatic thoughts between PRP participants and control group participants.

Hypothesis 3: Changes in automatic thoughts will result in changes in teacher ratings of disruptive behavior among PRP participants.

Null Hypothesis 3: Changes in automatic thoughts will have no effect on teacher ratings of disruptive behavior among PRP participants.

Hypothesis 4: Students participating in the PRP will experience greater improvement in academic grades in reading and math than students participating in the control group.

Null Hypothesis 4: There is no difference in changes in academic achievement in reading and math between the PRP and the Botvin program control group.

The treatment and control groups functioned as the independent variables. Seven dependent variables were utilized to answer the research questions. An analysis of covariance (ANCOVA) was performed for Questions 1, 2, and 4. An ANCOVA is used to increase statistical power and reduce within-group error variance. An ANCOVA also

removes the effects of pretest scores in a pretest/posttest design. A Pearson correlation coefficient was used for Question 3. This analysis allowed the researcher to examine the strength of the relationship between the Behavior Assessment System for Children, Second Edition, Externalizing and ADHD Problems Progress Monitor (BASC-2 Progress Monitor) teacher ratings and the Children's Automatic Thoughts Scale (CATS).

The BASC-2 Progress Monitor pre- and posttest scores were utilized to measure mean differences in aggressive and disruptive behavior between the treatment and control groups (Question 1). The CATS pre- and posttest scores for each of the four subscales (social threat, physical threat, personal failure, and hostile intent) were analyzed to assess changes in the frequency of maladaptive automatic thoughts among study participants (Question 2). The relationship between changes in automatic thoughts and BASC-2 Progress Monitor teacher pre- and posttest score differences was also analyzed (Question 3). Finally, reading and math average percentages prior to the implementation of the program and following its conclusion were analyzed for differences between the treatment and control groups (Question 4).

Selection of Participants

The present study was conducted in two Title I schools located in Georgia. Ninety-seven percent of the student body in School A has been designated as economically disadvantaged and receives free or reduced-fee lunches. In School B the percentage is 77 percent. A review of the 2012-2013 School-wide Strategic Plan for

58

Schools A and B indicated the following achievement scores on the state's Criterion

Referenced Competency Test (CRCT):

Table 3.1

Standardized Test Scores for Schools

Test	School A	School B
Reading	85%	92%
Math	81%	72%

Participants were recruited from each of the schools. Before the study was

conducted, a sample size of 60 students from School A was planned. The researcher

hoped to recruit 30 students for the intervention group and 30 students for the control

group. However, enrollment at School A was much lower than anticipated. From the

2012-2013 to the 2013-2014 school year, student enrollment decreased from 484 students

to 313 students.

A total of 39 students from School A expressed interest in participating in the

study, which was conducted after school one day a week for 45 minutes over a 12 week

period. Of the 39 interested students, 35 returned informed consent forms. During the

course of the study two students moved, one student voluntarily dropped out of the study,

and one student missed six sessions including the final session and did not complete post

measures. A total of 31 students from School A therefore completed the study, 15 of

whom met the criteria for disruptive behavior. The other 16 were allowed to continue in

the study to reduce the likelihood of an iatrogenic effect of group experience. The phrase *iatrogenic effect* has been used in preventive group work with antisocial youth to refer to programs or interventions that have a detrimental outcome. Disruptive behavior has been found to escalate when at-risk youth are placed in homogeneous groups (Dishion, McCord, Poulin, 1999; Feldman 1992). With the inclusion of non-disruptive students, problematic behaviors were not observed during the course of the study.

To increase the overall sample size, students were also recruited from School B. At School B, 25 students expressed interest in participating in the study, and 20 of these returned informed consent forms. Subsequently, three students failed to attend sessions on a regular basis and were unable to complete the post measures. The remaining 17 included 11 students who met the criteria for disruptive behavior. The total sample size for Schools A and B thus consisted of 48 students, with 26 meeting the criteria for disruptive behavior. For data analysis purposes the experimental and control groups from both schools were combined. Identical procedures were followed at each school for both the control and treatment groups.

Subjects were third, fourth, and fifth graders (ages 8 to 12, M = 9.45). Students receiving counseling or therapy outside of school were excluded. The demographics of the sample group are listed in Tables 3.2 and 3.3. Demographics for the total group as well as disaggregated data for the 26 disruptive students are shown.

In accordance with Liberty University's research requirements, application was made to the Institutional Review Board (IRB) to obtain permission to conduct the study. An application was also be made to the school district's Office of Accountability. Ethical

60

standards were maintained through strict adherence to the American Psychological

Association's ethical standards (APA, 2010). Reasonable precautions were exercised to

maintain the confidentiality of the data. Student names were replaced by codes and other

personally identifying information was disguised.

Table 3.2

Characteristics of Sample Population Disruptive Students (DS)

	Treatment PRP	Control Botvin
N	14	12
Gender		
Female	2 (14.29%)	1 (8.33%)
Male	12 (85.71%)	11 (91.67%)
Ethnicity		
African American	4 (28.57%)	5 (41.67%)
Hispanic	7 (50.00%)	6 (50.00%)
White	3 (21.43%)	1 (8.33%)

Table 3.3

Characteristics of Sample Population Total (TS)

	Treatment PRP	Control Botvin
N	25	23
Gender		
Female	11 (44.00%)	7 (30.43%)
Male	14 (56.00%)	16 (69.57%)
Ethnicity		
African American	5 (20.00%)	7 (30.43%)
Hispanic	15 (60.00%)	13 (56.52%)
White	5 (20.00%)	3 (13.04%)

Instrumentation

Two measures were administered in the study as pre- and posttests. The BASC-2

Progress Monitor (Reynolds & Kamphaus, 2009) is used to determine whether students

are benefiting from an intervention. The BASC-2 Progress Monitoring System consists of

four forms: Externalizing and ADHD Problems, Internalizing, Social Withdrawal, and

Adaptive Skills. The BASC-2 Progress Monitor was normed on a total sample of 11,170

students. The sample was matched to U.S. population estimates for race, religion, and

socioeconomic status. Median test-retest coefficient alphas range from .74-.91 for each

form. Inter-rater reliability estimates range from .58-.83. Validity correlations between

the Behavior Assessment System for Children-Second Edition Rating Scales (BASC-2

Rating Scales) Composite Score and the BASC-2 Progress Monitor Total Score are in the

upper .80s and low to mid .90s. The BASC-2 Progress Monitor score profiles are similar

to those found on the BASC-2 Rating Scales, indicating the ability to identify emotional

and behavioral problems.

For the purposes of this study, the 20-item Progress Monitor Externalizing and

ADHD Problems Teacher Form was used. The Progress Monitor Externalizing and

ADHD Problems Teacher Form median reliability coefficients are .94 for females and .95

for males. Test-retest reliability and inter-rater reliabilities are .91 and .68 respectively. In

validity studies the Externalizing and ADHD Problems Teacher Form correlations were

.74 with the Achenbach System of Empirically Based Assessment (ASEBA)

Externalizing Problems Scale, .73 with DSM-Oriented Scales Oppositional Defiant

Problems, and .68 with DSM-Oriented Scales Conduct Problems. Adjusted correlations

corrected for range restrictions based on the standard deviation of the Progress Monitor

Form are .81, .76, and .72 respectively.

The BASC-2 Progress Monitor produces a single score, referred to as the total

score. A numerical score of 0, 1, 2, or 3 is assigned to each item response. Raw scores are

obtained by adding the scored values of the items. Two types of normative scores are

provided: T scores and percentiles. The T score indicates how extreme the raw score is

(i.e., how far the raw score is from the average score of the norm group). The T scores

have a mean of 50 and a standard deviation of 10. A percentile indicates how unusual the

raw score is by reporting the percentage of the norm sample scoring at or below a given

raw score. T scores of 70 and above are considered to be in the clinically significant

range, and T scores of 60-69 are considered to be in the at-risk range.

The BASC-2 Progress Monitor is designed primarily to monitor emotional and

behavioral changes during an intervention program (Reynolds & Kampaus, 2009). The

form is not used for diagnostic purposes; rather, it is segmented based on common

behavioral and emotional problems (Reynolds & Kamphaus, 2009). The 20-item

instrument is "intended to yield only an overall score that represents a combination of

hyperactivity, inattention, aggression, and conduct problems" (R. Kamphaus, personal

communication, October 7, 2013).

The second instrument used in the study, the Children's Automatic Thoughts

Scale (CATS) questionnaire, was specifically designed for children and has been the

subject of a number of studies. The 40-item questionnaire assesses beliefs related to

63

internalizing and externalizing problems. It also contains specific items related to various disorders that can aid in assessing content specificity (i.e., thoughts that are specific to a disorder). Using the Cronbach's alpha coefficient, the CATS has a total internal consistency score of .95. Internal consistency of subscales is also high, with coefficient alphas of .85 for physical threat, .92 for social threat, .92 for personal failure, and .85 for hostile intent. Test-retest correlation coefficients are .76 for the total score, .77 for physical threat, .73 for social threat, .74 for personal failure, and .68 for hostile intent.

Discriminant validity studies conducted by Schniering and Rapee (2004) demonstrated significant differences between a community sample and each of three clinical groups. The mean total score for the community group was significantly lower than the mean anxiety group (mean difference = -25.88, $p < 0.0001$), the depressed group (mean difference = -30.52, $p < 0.0001$), and the behavior disorder group (mean difference = -11.85, $p < 0.05$). Behavior disordered children had significantly higher scores on the hostility scales compared to both the anxious group (mean difference = 5.44, $p < 0.05$) and the depressed group (mean difference = 5.59, $p < 0.05$).

The CATS items are scored on a 5-point scale ranging from "not at all" (0) to "all the time" (4). Higher scores represent a higher amount of negative thought. The range of each subscale is 0-40. For that reason, the range of the total score is 0-160.

Assumptions

In conducting the study, the following assumptions were made concerning the instruments used for measuring outcomes:

1. Aggressive and disruptive behavior will be measured by the BASC-2 Progress Monitor.

2. The Children's Automatic Thoughts Scale will measure automatic thoughts.

3. Report card grades will reflect an objective assessment of academic achievement.

Procedures

Students were recruited from two elementary schools. Parents were given a letter from the researcher explaining the details of the study and requesting permission for their child to participate in the study. A copy of the letter is included in Appendix B. Informed consent forms were obtained from parents and participating students signed assent forms (Appendices B and C). The researcher advised parents and students that group participation was voluntary and students could withdraw at any time.

Following receipt of the informed consent form from parents and the signed assent form from students, the researcher asked teachers to complete the BASC-2 Progress Monitor. Students were then rank ordered by BASC-2 scores and randomly assigned to either the treatment group or the control group. There were a total of four cells, one treatment group at each school and one control group at each school. The treatment groups met weekly for 12 weeks and the control groups met weekly for 11 weeks. Group sessions lasted between 35 and 45 minutes. The BASC-2 Progress Monitor was used as a pretest and posttest. Teachers completed the instrument prior to program implementation and within two weeks following completion of the program, with the second set of scores used as a posttest.

The Children's Automatic Thoughts Scale (CATS) Hostile Intent Subscale was administered during the first group session to measure automatic thoughts related to hostile intent. The complete CATS, measuring physical threat, social threat, personal failure, and hostile intent, was administered during session four (midway) and during the final group session (posttest). The researcher orally read and supervised administration of the CATS.

The Penn Resiliency Program (PRP; Gillham et al., 2008), a cognitive behavioral program, was presented by the researcher to 25 third, fourth, and fifth graders. The Botvin Life Skills program was delivered to 23 third, fourth, and fifth grade students. All 48 study participants were rated by teachers using the BASC-2 Progress Monitor. Students were rank ordered by BASC-2 scores and randomly assigned to the treatment condition (PRP) or control (TAU) group. The PRP group met for 12 sessions including a celebratory session at the conclusion of the program. The TAU group received 11 lessons from the Botvin program and also had a celebration at the end of the program. The Botvin Life Skills series is provided by the school district to individual schools for classroom and small group guidance activities. Teachers were blind to group assignment. Student codes were used so the researcher was unable to match pre- and posttest scores with individual students. Teachers were provided with a $5 or $10 gift card at the conclusion of the program as a token of appreciation for completing rating scales and providing reading and math scores for participating students.

Each group met weekly with the researcher. Treatment group sessions followed a format that consisted of (1) welcome, (2) review of homework, (3) introduction of new

lesson, (4) completion of practice exercises, (5) assignment of homework, and (6) snack. Control group sessions followed a similar format, without the review and assignment of homework. Additional details regarding the interventions are listed in the Intervention section below.

Treatment Group: Penn Resiliency Program

The Penn Resiliency Program (Gillham & Reivich, 2007) is a group intervention program designed to teach cognitive, behavioral, and social problem-solving skills.

Lesson 1. The first half of PRP Lesson 1 is designed to introduce students to the program, establish rapport, and build group cohesion. The cognitive component of this lesson is based on the "ABC model" (Ellis, 1962). Automatic thoughts are introduced as "conversations inside our heads" or "self-talk," and students are encouraged to describe recent activating events (A), or adversities, and to recall what they "said to themselves" (Gillham & Reivich, 2007). The final section of Lesson 1 focuses on the link between thoughts and feelings: the B (beliefs) and C (emotional consequences) of the ABC model. With the aid of three-frame cartoons, students generate the automatic thoughts that make sense of specific emotional consequences, given the adversity.

Lesson 2. The focus of this lesson is on explanatory style, particularly the stable-unstable dimension. Optimism and pessimism, referred to as "thinking styles" in PRP, are presented to the students through a series of skits they act out as a group. The students practice identifying permanent (stable) thoughts in similar skits. Activities in the lesson require the students to generate alternatives to the initial, explanatory style-driven

67

thoughts of the actors. For homework, students use their knowledge of explanatory style

to generate alternative explanations for events in their own lives.

Lesson 3. After Lessons 1 and 2, students are able to identify their pessimistic

automatic thoughts and understand that automatic thoughts are uncritically accepted as

accurate. In Lesson 3, the students consolidate the skill of generating alternatives and

learn how to evaluate the accuracy of their beliefs and their initial automatic thoughts.

The group facilitator reads the students a story that presents the process of generating

alternatives and evaluating evidence as analogous to the work of a detective. The story is

about two fictional characters, Sherlock Holmes and Merlock Worms. Merlock Worms is

a bad detective because he comes up with only one suspect (i.e., endorses his initial

automatic thoughts and fails to generate alternatives), overlooking evidence that is vital

to the case (i.e., failing to evaluate the thought). Sherlock Holmes, however, is a good

detective because he draws up a list of suspects (generates candidate beliefs) and looks

for clues to narrow down the list (evaluates evidence).

The skill of evaluating evidence is practiced in the "File Game" activity. The

students receive a confidential portfolio about a fictitious child, which contains letters,

report cards, diary entries, awards, etc. The child's automatic thoughts are presented to

the students, and their task is to use the information in the portfolio to evaluate the

accuracy of the thoughts.

Lesson 4. PRP Lessons 2 and 3 targeted causal attributions and beliefs about past

events. The focus in Lesson 4 shifts to thoughts about the future in the wake of a negative

activating event. The skills of generating alternatives and evaluating evidence are applied

68

to catastrophizing. The notion of catastrophizing is conveyed to the students with the classic story of Chicken Little and the acorn. Chicken Little is compared with Merlock Worms; both believed the first thought that popped into their heads, without generating alternatives or looking for clues. The students differentiate the "worst case," "best case," and "most likely" scenarios for consequences of the adversity (i.e., generating alternatives).

The students have now learned three essential cognitive skills: generating alternatives, producing counter-evidence, and putting thoughts in perspective. They have learned to apply these skills as they reflect on difficult situations they encounter. The final cognitive activity, "Real-time Resilience: The Hot Seat," teaches students to use the skills in real time.

Lesson 5. Lesson 5 is devoted to reviewing the cognitive skills developed in Lessons 1 through 4. Students are asked to apply these skills to inaccurate beliefs about the causes of adversity and to catastrophic thoughts about the future. Students are also asked to apply the newly acquired skills to real life situations.

Lesson 6. Lesson 6 is the first in the interpersonal problem-solving module. This module aims to apply the basic cognitive skills learned in the first half of the program to the interpersonal domain, highlighting interaction style, social skills, and social problem solving. Skits are used to illustrate three interaction styles: aggression, passivity, and assertiveness. Students discuss the consequences of each type of behavior as well as beliefs that promote or inhibit it. The students spend most of the lesson practicing

assertiveness and role-playing the use of negotiation skills when assertiveness fails to bring about the desired goal.

Lesson 7. Lesson 7 teaches students behaviorally-oriented techniques to help them cope with difficult emotions or stressful situations (e.g., parents arguing). The group leader introduces a variety of skills and strategies, such as controlled breathing and muscle relaxation, and guides students through practicing each. In addition, the group leader helps the students formulate a positive visual image (e.g., their next birthday party) that they can call to mind when they begin to feel angry or anxious. Students are encouraged to seek support from others, including family members and friends, when experiencing challenging problems.

Lesson 8. The first half of this lesson is devoted to overcoming procrastination. Many cases of procrastination are a consequence of all-or-nothing thinking. The perfectionistic child who believes, "My social studies paper has to be an A+" will tend to build the task of writing the paper into a seemingly insurmountable problem. The behavioral consequence of such thoughts is avoidance, or procrastination. This component of PRP teaches students to apply the cognitive skills learned in the first four weeks of the program to negative thoughts about projects and chores. In addition, students learn a strategy for overcoming procrastination by breaking large projects into smaller, more manageable steps.

Lesson 9. The first part of Lesson 9 reviews the skills covered in Lessons 6 through 8. Students discuss hypothetical dilemmas and ways to handle these difficult scenarios. Students also practice relaxation techniques and assertiveness strategies. Poor

decision-making skills are common among children with externalizing behavior problems (Beland, 1991). In Lesson 9 the group leader leads students through the use of a four-cell technique for decision making. In the final section of the lesson, this decision-making technique is applied to examples from the students' lives.

Lesson 10. Many children, especially children with aggressive behaviors, selectively attend to hostile cues and attribute hostile intent to the ambiguous behavior of others (Dodge, 1986). Lesson 10 combats this tendency by teaching a five-step approach to problem solving. First, students are taught to stop and think about problems before reacting impulsively. In this step, students learn to gather evidence for and against their initial beliefs, to consider alternative interpretations, and to perspective-take. Second, students are encouraged to determine what their goal is in the situation. Third, students learn to generate a variety of possible solutions. Fourth, students use the decision-making techniques from Lesson 9 to choose a course of action and enact it. Finally, students learn to evaluate the outcome and to try again if they haven't reached their goal. The final portion of this lesson is spent practicing social problem-solving skills using several scenarios offered by the group leader.

Lesson 11. Lesson 11 consolidates the skills of social problem-solving. The lesson provides a forum for the students to apply the five-step technique to difficult interpersonal situations in their own lives. Individual challenges are discussed and appropriate feedback is provided by the group facilitator.

Lesson 12. Lesson 12 presents a review of the entire program and includes a party for the students.

71

Control Group: Botvin Life Skills Training

The Life Skills Training program (Botvin, 1999) consists of eight health and personal development lessons designed to prevent drug abuse. The program has separate workbooks for students in the third, fourth, and fifth grades. The lesson topics are identical for each grade. Activities and exercises differ in complexity and are developmentally appropriate for each grade level. For the purposes of this study, three additional lessons, including an introductory lesson, a review lesson, and a celebration lesson, were added.

Lesson 1. In Lesson 1 students review the Botvin Life Skills program. The general rationale for the program is discussed and students participate in an icebreaker activity designed to develop a sense of community.

Lesson 2. Lesson 2 focuses on self-esteem and includes activities related to setting long- and short-term goals and examining personal strengths and weaknesses.

Lesson 3. The Stop-Think-Go decision-making model is introduced in Lesson 3. Students are given opportunities to practice using the model in a number of scenarios, from planning a birthday celebration to responding to tobacco-related situations.

Lesson 4. Lesson 4 emphasizes the dangers of smoking and substance abuse. A number of topics related to smoking, including negative health effects, attitudes concerning smoking, and peer pressure are addressed. Although the lesson for fifth graders includes a demonstration of tobacco and tobacco-related products, for this study the demonstration will not be included in the group session.

Lesson 5. Lesson 5 introduced students to the concept of consumerism and target marketing. Students were given opportunities to critique tobacco advertisements and to discuss the discrepancy between advertisements and the actual effects of tobacco usage.

Lesson 6. Stress prevention is the focus of Lesson 6. Exercises include brainstorming about the causes and effects of stress, identifying specific types of stress, and learning stress prevention techniques such as deep breathing, guided imagery, and muscle relaxation.

Lesson 7. Lesson 7 consists of a review of the importance of communication. Students learn effective verbal and nonverbal communication skills and practice passive and active listening.

Lesson 8. Friendship, conflict styles, and peer pressure are covered in Lesson 8. Students discuss problem solving in dealing with conflict and ways to prevent conflicts with friends.

Lesson 9. This lesson teaches students how to be assertive by using "I" messages. Students use role plays to differentiate between passive, aggressive, and assertive responses to scenarios.

Lesson 10. Lesson 10 reviews the concepts covered in Lessons 2 through 9. As part of the review, students completed the Life Skills Dictionary at the end of the workbook.

Lesson 11. The final meeting is a celebration to affirm students and congratulate participants on completing the program.

Data Processing and Analysis

Four research questions were examined in this study: (1) Does the PRP decrease aggressive and disruptive classroom behavior? (2) Is the PRP effective in modifying automatic thoughts? (3) Do changes in automatic thoughts influence posttest teacher ratings? (4) Does participation in the PRP improve academic performance? It is hypothesized that the treatment group will differ significantly from the control group on posttest ratings of aggressive and disruptive classroom behaviors, grade reports, and automatic thoughts regarding hostile intent in ambiguous situations. Outcomes in the control and treatment groups were measured using an analysis of covariance (ANCOVA). The relationship of the changes in the Children's Automatic Thoughts Scale to changes in BASC-2 Progress Monitor ratings were measured using a Pearson correlation coefficient.

Chapter Summary

This study was designed to measure the effectiveness of the Penn Resiliency Program in reducing aggressive and disruptive behavior and improving academic achievement. This chapter provided an outline of the study design and procedures, described the data collection process and analysis methods, and presented the guiding research questions and hypotheses for the study. Through the implementation of the PRP with a treatment group and the delivery of the Botvin Life Skills program to a control group, the researcher hopes to discover whether the PRP actually changes automatic thoughts, and if it does, whether such changes positively affect academic achievement and decrease disruptive behavior.

CHAPTER FOUR: DATA ANALYSIS AND RESULTS

The purpose of this study was to evaluate the effectiveness of the Penn Resiliency Program (PRP) in reducing disruptive behavior, changing automatic thoughts, and increasing reading and math achievement among elementary school students. To determine program effectiveness an experimental, randomized pretest/posttest control group design was used. The experimental group received lessons from the PRP, a cognitive behavioral program. The control group received lessons from the Botvin Life Skills program (Botvin, 1999). The Botvin program is an educational curriculum developed to reduce drug and alcohol abuse. Changes in disruptive behavior were assessed using the Behavior Assessment System for Children, Second Edition, Externalizing and ADHD Problems Progress Monitor (BASC-2). Changes in automatic thoughts were measured using the Children's Automatic Thoughts Scale (CATS). Reading and math achievement grades were obtained from classroom teachers. Grades were reported prior to program implementation and after the program concluded.

A total of 48 students from the third, fourth, and fifth grades were recruited from two Title I schools in Georgia. Of the 48 students, 26 met the criteria for disruptive behavior, with BASC-2 Progress Monitor T-scores equal to or greater than 60. T-scores have a mean of 50 and a standard deviation of 10. Students with T-scores between 60 and 69 are considered at risk for disruptive behavior problems. Students with scores of 70 or above are considered to have clinically significant behavior problems.

The CATS total scores range from 0 to 160. Higher scores indicate more maladaptive and negative thinking. The total score can be divided into four subscale

scores, which range from 0 to 40 and represent negative thoughts associated with Hostile Intent (HI), Personal Failure (PF), Social Threat (ST), and Physical Threat (PT). Higher HI scores have been found to be associated with higher levels of disruptive behavior and were of primary interest to the researcher. HI scores were analyzed prior to program implementation, midway through program implementation, and one week after the program's conclusion. The remaining three subscale scores were obtained prior to delivery of the program and one week after the final lessons were completed. The subscale analyses are included in the findings.

The findings presented in this chapter include:

1. Descriptive and inferential statistics for the BASC-2, CATS total score, CATS subscale scores, reading achievement, and math achievement.

2. Inferential statistics examining the overall effects of the PRP, Botvin program, and related pretest scores on changes in BASC-2 scores, the CATS total score, CATS subscale scores, and achievement grades over the course of the study.

3. Inferential statistics examining the separate effects of each program (PRP vs. Botvin) and the related pretest scores on BASC-2 changes, CATS total score changes, CATS subscale score changes, and academic achievement changes.

4. Post-hoc tests using the results of the model (PRP or Botvin and related pretest) to calculate the average change in BASC-2 scores, CATS total score, CATS subscale scores, and academic achievement.

5. Correlation statistics showing the relationship between changes in BASC-2 Progress Monitor ratings of disruptive behavior and changes in automatic thoughts.

Sample Descriptive and Inferential Statistics

Descriptive and inferential statistics for the disruptive students ($n = 26$) and the total sample ($N = 48$) are shown below in Tables 4.1 and 4.2. Of the 26 disruptive students, 14 were randomly assigned to the PRP and 12 were randomly assigned to the Botvin program. Of the total sample, 25 were randomly assigned to the PRP and 23 were randomly assigned to the Botvin group.

Table 4.1 shows positive changes in pretest scores for disruptive students and Table 4.2 shows positive changes for the total sample. Tables 4.1 and 4.2 answer three of the four research questions for the study: (1) Does the PRP decrease aggressive and disruptive classroom behavior? (2) Is the PRP effective in modifying automatic thoughts? and (3) Does participation in the PRP improve academic performance? To answer these three research questions, paired sample t-test ANCOVAs were used. The ANCOVA results are presented following Tables 4.1 and 4.2. Because a total of nine different-tests were run, the Bonferroni adjusted alpha level of .006 (.05/9) was used to determine significance.

In an analysis of disruptive students' scores, mean BASC-2 scores decreased from 63.78 to 61.92, $t(13) = 1.29$, $p = .22$ for the PRP and from 64.00 to 62.75, $t(11) = -1.05$, $p = .32$ for the Botvin program. Decreases were also noted in total maladaptive thoughts

(CATS) for students in both groups. The means for maladaptive thoughts decreased from 56.57 to 40.57, $t(13) = .-3.33$, $p = .005$ for the PRP and from 37.08 to 35.2, $t(11) = -.21$, $p = .84$ for the Botvin program.

In a review of scores from pretest to midway through program completion, the PRP $t(13) = .42$, $p = .68$ and the Botvin $t(11) = -2.24$, $p = .05$, changes were insignificant. However, using the Bonferroni adjusted alpha of .006 (.05/9), the CATS total score change was significant for the PRP. In an analysis of PRP subscale means, decreases were found in automatic thoughts related to hostile intent (18.85 to 13.85), $t(13) = -3.16$, $p = .008$; physical threat (12.21 to 8.57), $t(13) = 1.85$, $p = .09$; social threat (12.21 to 9.14), $t(13) = 1.48$, $p = .16$; and personal failure (11.71 to 8.78), $t(13) = -2.16$, $p = .05$. Students assigned to the Botvin program also experienced decreases in Hostile Intent (20.41 to 13.16), $t(11) = -2.53$, $p = .03$; Social Threat (7.75 to 6.41), $t(11) = -.47$, $p = .65$; and Personal Failure (7.75 to 7.33), $t(11) = -.20$, $p = .84$ subscale scores. The mean score for the Physical Threat subscale increased from 8.50 to 9.00, $t(11) = .24$, $p = .82$. Academic achievement showed improvement from pre- to posttest. Mean reading grades increased from 83.23 to 87 for the PRP, $t(13) = 2.18$, $p = .02$, and 76.08 to 76.41, $t(11) = .10$, $p = .92$ for the Botvin program. Math grades also improved, with means increasing from 85.71 to 87.35, $t(13) = 1.54$, $p = .15$ for the PRP and 76.33 to 80.58, $t(11) = 2.22$, $p = .05$ for the Botvin program.

Table 4.1

Descriptive Statistics for Disruptive Students (*n* = 26)

	n = 14			n = 12		
	PRP Pretest	PRP Posttest	*P*	Botvin Pretest	Botvin Posttest	*p*
BASC-2 T Score						
Mean	63.78	61.92	0.22	64.00	62.75	.32
SD	5.32	8.09		3.13	5.47	
CATS Total Score						
Mean	56.57	40.57	*.005	37.08	35.25	.84
SD	31.53	29.95		20.61	28.27	
CATS HI Pre-Mid						
Mean	18.85	19.86	.68	20.41	13.92	.05
SD	8.46	10.52		6.22	8.53	
CATS HI Pre-Post						
Mean	18.85	13.85	.008	20.41	13.16	.03
SD	8.46	11.69		6.22	9.13	
CATS PT						
Mean	12.21	8.57	.09	8.50	9.00	.82
SD	8.20	7.54		4.23	8.19	
CATS ST						
Mean	12.21	9.14	.16	7.75	6.41	.65
SD	8.72	7.60		6.41	7.78	
CATS PF						
Mean	11.71	8.28	.05	7.75	7.33	.84
SD	9.24	9.01		6.41	6.94	
Reading Grade						
Mean	83.23	87.00	.02	76.08	76.41	.92
SD	10.61	9.08		17.40	19.29	
Math Grade						
Mean	85.71	87.35	.15	76.33	80.58	.05
SD	10.19	8.13		12.99	8.60	

*Bonferroni adjusted alpha level (.05/9 = .006)

The average BASC-2 scores for the total sample (*N* = 48) decreased for both the

PRP and the Botvin program. Decreases are shown in Table 4.2. Mean BASC-2 scores

decreased from 56.12 to 54.56, $t(24) = -1.87$, $p = .07$ for the PRP and 56.43 to 55.04, $t(22) = -1.90$, $p = .07$ for the Botvin program. Average total maladaptive thoughts for students in both groups decreased. CATS total score means decreased from 47.08 to 34.00, $t(24) = -4.44$, $p = .0002$ for the PRP and 36.13 to 33.43, $t(22) = -.59$, $p = .55$ for the Botvin program.

Using the Bonferroni adjusted alpha level of .006 (.05/9), the decrease for the PRP was significant. In an analysis of PRP subscale means, decreases were found in automatic thoughts related to hostile intent from prior to midway through program completion (16.00 to 16.72) $t(24) = .46$, $p = .65$, hostile intent pre to post (16.00 to 12.84) $t(24) = 2.42$, $p = .02$; physical threat (10.48 to 7.36) $t(24) = -2.65$, $p = .01$; social threat (10.12 to 7.16), $t(24) = 2.48$, $p = .02$; and personal failure (9.44 to 6.36). $t(24) = -3.12$, $p = .005$. Using the Bonferroni adjusted alpha level of .006 (.05/9) the personal failure decrease was significant for students assigned to the PRP.

Students assigned to the Botvin program also experienced decreases in subscale scores for Hostile Intent pre to midway through study (18.34 to 13.39) $t(22) = -2.60$, $p = .02$; Hostile Intent pre to post (18.34 to 12.13), $t(22) = -3.14$, $p = .005$; Physical Threat (8.04 to 7.47), $t(22) = -.43$, $p = .67$; Social Threat (8.08 to 7.43), $t(22) = -.40$, $p = .69$; and Personal Failure (6.95 to 6.73), $t(22) = -.19$, $p = .85$ subscale scores. Using the Bonferroni adjusted alpha level of .006 (.05/9), the decrease from pre- to posttest for the Hostile Intent subscale score was significant.

Academic achievement also showed improvement. Achievement increases were significant for the PRP using the Bonferroni adjusted level of .006 (.05/9). Mean reading

grades increased from 83.96 to 87.78, $t(24) = 3.16$, $p = .004$ for the PRP and from 80.78

to 82.21, $t(22) = .74$, $p = .47$ for the Botvin program. Math grades also improved, with

means increasing from 86.28 to 88.84, $t(24) = 3.13$, $p = .005$ for the PRP and from 82.30

to 85.34, $t(22) = 2.56$, $p = .02$ for the Botvin program. The increase in math achievement

for students participating in the PRP was significant.

Table 4.2

Descriptive and Inferential Statistics for Total Sample (N = 48)

| | $n = 25$ | | | $n = 23$ | | |
	PRP Pretest	PRP Posttest	p	Botvin Pretest	Botvin Posttest	P
BASC-2 T Score						
Mean	56.12	54.56	.07	56.43	55.04	.07
SD	9.45	11.64		9.45	10.35	
CATS Total Score						
Mean	47.08	34.00	*0002	36.13	33.43	.55
SD	30.81	27.16		21.41	27.73	
CATS HI Pre - Mid						
Mean	16.00	16.72	.65	18.34	13.39	.02
SD	8.39	10.29		6.35	7.93	
CATS HI Pre - Post						
Mean	16.00	12.84	.02	18.34	12.13	*.005
SD	8.39	9.92		6.35	9.58	
CATS PT						
Mean	10.48	7.36	.01	8.04	7.47	.67
SD	8.82	7.27		6.81	7.59	
CATS ST						
Mean	10.12	7.16	.02	8.08	7.43	.69
SD	7.72	6.90		6.21	8.47	
CATS PF						
Mean	9.44	6.36	*.005	6.95	6.73	.85
SD	8.13	7.48		5.55	6.23	
Reading Grade						
Mean	83.96	87.28	*.004	80.78	82.21	.47

SD	9.11	9.35		15.16	16.57	
Math Grade						
Mean	86.28	88.84	*.005	82.30	85.34	.02
SD	8.50	7.05		11.91	8.77	

*Bonferroni adjusted alpha .006 (.05/9)

Research Questions

This study investigated four research questions: (1) Does the PRP decrease aggressive and disruptive classroom behavior? (2) Is the PRP effective in modifying automatic thoughts? (3) Do changes in automatic thoughts influence posttest teacher ratings? (4) Does participation in the PRP improve academic performance?

Questions 1, 2, and 4 are similar in that each seeks to determine the effect of the PRP on various behavioral and academic performance measures. Therefore, similar statistical models were employed to answer each of these questions. Question 3, which examines the relationship between changes in CATS scores and changes in BASC-2 scores, required a different statistical approach.

Question 1: Does the PRP decrease aggressive and disruptive classroom behavior?

In attempting to answer the question of whether the PRP improves students' BASC-2 scores, the researcher was interested in two aspects of improvement. One was whether the PRP significantly improves the scores, and the other was whether the PRP improves the scores in a way that is significantly different from the Botvin program.

To best answer this question, an analysis of covariance (ANCOVA) was used. The average change in students' BASC-2 scores from pre-program to post-program was estimated based on their pretest scores and the program in which they participated. The

effect of the program and pretest on BASC-2 scores is shown in Table 4.3. Although the

analysis was an ANCOVA rather than an ANOVA, an ANOVA table was used to present

the findings for each dependent variable in this study.

The data analysis is presented in tables with results for disruptive students (DS)

and the total sample (TS). The data analysis for the 26 students receiving BASC-2

teacher ratings of equal to or greater than 60 is presented first and is identified with the

abbreviation "DS." The second section of the table provides data analysis for the entire

sample of 48 students and is identified with the abbreviation "TS." In Table 4.3, the

specific p value of 0.76 for disruptive students indicates that the relationship of the

program and BASC-2 pretest with changes in BASC-2 scores is not statistically

significant. The p value of 0.98 for the total sample is also not statistically significant.

Table 4.3

ANOVA Table for BASC-2 T-scores Analysis

Source	df	F	p
Model (DS)	2	0.27	0.76
Error (DS)	23		
Corrected Total (DS)	25		
Model (TS)	2	0.01	0.98
Error (TS)	45		
Corrected Total (TS)	47		

A comparison of the two programs is presented in Table 4.4. Table 4.4 examines

the model by breaking it down into its two parts: the effect of the BASC-2 pretest and the

effect of the program (PRP vs. Botvin). According to the p value in Table 4.3, neither the

BASC-2 pretest nor the program is significantly related to the change in BASC-2 scores for disruptive students or the total sample. Table 4.4 answers the part of the question that asks whether the PRP changes students' scores in a way that differs from the Botvin program; the conclusion, based on the insignificant-test of program, is that it does not.

The effect of the program on the average change in the BASC-2 scores for the disruptive students is not statistically significant, $F(1, 25) = 0.09$, $p = 0.76$. The effect of the program on the average change in BASC-2 scores for the total sample is also not statistically significant, $F(1, 47) = 0.02$, $p = 0.88$. There is no significant effect for the BASC-2 pretest for the disruptive students, $F(1, 25) = .43$, p .51, nor for the total sample, $F(1, 47) = .00$, $p = .99$.

Table 4.4

Separate Tests of Predictors for BASC-2 T-scores Analysis

Source	df	F	p
BASC-2 Pretest (DS)	1	0.43	0.51
Program (DS)	1	0.09	0.76
BASC 2 Pretest (TS)	1	0.00	0.99
Program (TS)	1	0.02	0.88

The next part of the question was answered with a post-hoc test, in which the results of the model were used to calculate the average change in BASC-2 scores over the course of the study. As shown in Table 4.5, the expected change in BASC-2 scores for a

disruptive student with an average BASC-2 pretest score is a decrease of 2.69 points.

This decrease is not significant. The expected BASC-2 score decrease for a student with

an average BASC-2 pretest score in the total sample is 1.47 points. The decrease for the

total sample is not significant using the Bonferroni adjusted alpha level of .006 (.05/9).

Table 4.5

Estimate of Average Change in BASC-2 T-scores

Parameter	Estimate	SE	t	p
Overall (DS)	-2.69	1.96	-1.37	0.18
Overall (TS)	-1.47	0.56	-2.62	0.01

Question 2: Is the PRP effective in modifying automatic thoughts?

Question 2 examines the PRP's effect on changes in the CATS total scores as well

as the subscale scores for Hostile Intent (HI), Personal Failure (PF), Social Threat (ST),

and Physical Threat (PT). The analysis also examines whether the two programs

produced significantly different changes in the scores. Results are shown for both

disruptive students and the total sample.

As illustrated in Table 4.6, the PRP, the Botvin program, and the BASC-2 pretest

were not related in a significant way to changes in the CATS total scores for disruptive

students, $F(2, 25) = 2.90$, $p = .07$. Using the Bonferroni adjusted alpha of .006 (.05/9), the

relationship between the programs, the CATS total pretest, and the changes in the CATS

total scores for the total sample were not significant, $F(2, 47) = 4.38$, $p = .02$.

Table 4.6

ANOVA Table for CATS Total Analysis

Source	Df	F	P
Model (DS)	2	2.90	0.07
Error (DS)	23		
Corrected Total (DS)	25		
Model (TS)	2	4.38	0.02
Error (TS)	45		
Corrected Total (TS)	47		

Table 4.7 indicates that neither the pretest, $F(1, 25) = 3.37$, $p = .07$, nor the program, $F(1, 25) = 0.66$, $p = 0.42$, is a significant predictor of the average change in CATS total scores for disruptive students. Utilizing the Bonferroni adjusted alpha of .006 (.05/9), the pretest score for the total sample is not a significant predictor of CATS total score changes, $F(1, 47) = 4.66$, $p = 0.03$. The program is not a significant predictor, $F(1, 47) = 2.37$, $p = 0.13$, for the total sample.

Table 4.7

Separate Tests of Predictors for CATS Total Analysis

Source	df	F	P
CATS Total Pre (DS)	1	3.37	0.07
Program (DS)	1	0.66	0.42
CATS Total Pre (TS)	1	4.66	0.03
Program (TS)	1	2.37	0.13

Table 4.8 indicates that the overall estimated change in the CATS total score for a disruptive student with an average CATS pretest score is -7.48 points. This is not a statistically significant decrease. The overall estimated change for a student in the total sample with an average CATS pretest score is -8.10. This is a statistically significant decrease.

Table 4.8

Estimate of Average Change in CATS Total

Parameter	Estimate	*SE*	*t*	*p*
Overall (DS)	-7.48	4.63	-1.61	0.12
Overall (TS)	-8.10	2.56	-3.16	*0.002

*Bonferroni adjusted alpha .006 (.05/09)

As shown in Table 4.9, there is not a significant relationship among the PRP, the Botvin program, and the CATS HI pretest in the average change in CATS HI scores from pretest to midpoint for disruptive students, $F(2, 25) = 4.06$, $p = .03$. There is, however, a significant relationship for the total sample, $F(2, 47) = 5.80$, $p = .005$.

Table 4.9

ANOVA Table for CATS HI Pre to Midpoint Analysis

Source	df	*F*	*p*
Model (DS)	2	4.06	0.03
Error (DS)	23		
Corrected Total (DS)	25		

Source	df	F	p
Model (TS)	2	5.80	*0.005
Error (TS)	45		
Corrected Total (TS)	47		

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.10 shows that neither the CATS HI pretest score nor the program is related to the change in CATS HI scores from pretest to midpoint for disruptive students; $F(1, 25) = 3.58$, $p = .07$ and $F(1, 25) = 3.67$, $p = .06$, respectively. The CATS HI pretest score is not significantly related to the change in the CATS HI score from pretest to midpoint for all students in the study; $F(1, 47) = 5.68$, $p = .02$. The program is not related to the change in CATS HI scores from pretest to midpoint; $F(1, 47) = 4.11$, $p = 0.05$.

Table 4.10

Separate Tests of Predictors for CATS HI Pretest to Midpoint Analysis

Source	DF	F	p
CATS HI Pre (DS)	1	3.58	0.07
Program (DS)	1	3.67	0.06
CATS HI Pre (TS)	1	5.68	0.02
Program (TS)	1	4.11	0.05

Estimated overall changes for the CATS HI subscale scores from pretest to midpoint are shown in Table 4.11. Estimated overall changes for both the disruptive

group and the total sample were insignificant. The Bonferroni adjusted alpha of .006

(.05/9) was used.

Table 4.11

Estimate of Average Change in CATS HI from Pretest to Midpoint.

Parameter	Estimate	SE	t	p
Overall (DS)	-1.45	1.85	-0.78	0.44
Overall (TS)	-2.00	1.16	-1.72	0.09

Table 4.12 indicates that the relationship among the PRP, the Botvin program, and the CATS HI pretest is not significantly related to changes in the CATS HI posttest. This finding is true for both the disruptive students, $F(2, 25) = .30$, $p = .74$, and the total sample, $F(2, 47) = 1.98$, $p = .15$.

Table 4.12

ANOVA Table for CATS HI Pretest to Posttest

Source	df	F	P
Model (DS)	2	0.30	0.74
Error (DS)	23		
Corrected Total (DS)	25		
Model (TS)	2	1.98	0.15
Error (TS)	45		
Corrected Total (TS)	47		

Table 4.13 indicates that neither the CATS HI pretest score nor the program the students participated in was significantly related to the change in the CATS score from pretest to posttest. The effect of the program on the average change in the CATS HI pre- to posttest scores is not statistically significant for disruptive students; $F(1, 25) = 0.44$, $p = 0.51$. The effect of the program on the average change in the CATS HI pre- to posttest scores is also not statistically significant for total students; $F(1, 25) = 1.16$, $p = 0.28$.

Table 4.13

Separate Tests of Predictors for CATS HI Pretest to Posttest Analysis

Source	df	F	p
CATS HI Pre (DS)	1	0.11	0.73
Program (DS)	1	0.44	0.51
CATS HI Pre (TS)	1	2.19	0.14
Program (TS)	1	1.16	0.28

Table 4.14 indicates that there is a statistically significant decrease of 5.89 points in the CATS HI score from pre- to posttest for a disruptive student with an average CATS pretest score. Among total sample participants, there is a strongly statistically significant decrease of 4.62 points in the CATS HI score from pretest to posttest for a student with an average CATS pretest score.

Table 4.14

Estimate of Average Change in CATS HI from Pre- to Posttest

Parameter	Estimate	SE	t	P
Overall (DS)	-5.89	1.69	-3.48	*0.002
Overall (TS)	-4.62	1.15	-4.02	*0.0002

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.15 shows an insignificant relationship among the PRP, the Botvin, and the CATS Physical Threat (PT) subscale pretest score in the average change from PT pretest to posttest for disruptive students $F(2, 25) = 3.05$, $p = .06$. There is a statistically significant change for the total sample $F(2, 45) = 7.45$, $p = .002$.

Table 4.15

ANOVA Table for CATS PT Analysis

Source	Df	F	p
Model (DS)	2	3.05	0.06
Error (DS)	23		
Corrected Total (DS)	25		
Model (TS)	2	7.45	*0.002
Error (TS)	45		
Corrected Total (TS)	47		

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.16 indicates that neither the CATS (PT) pretest score nor the program for disruptive students is significantly related to the change in CATS PT scores over the course of the program. The effect of the program on the average change in the CATS PT scores is not statistically significant; $F(1, 25) = 0.84$, $p = 0.36$. The analysis for the total

sample indicates that the CATS PT pretest score is significantly related to the change in the CATS PT; F(1, 47) = 12.26, p = 0.001.

Table 4.16

Separate Tests of Predictors for CATS PT Analysis

Source	*df*	*F*	*p*
CATSPT1 (DS)	1	3.80	0.06
Program (DS)	1	0.84	0.36
CATSPT1 (TS)	1	12.26	*0.001
Program (TS)	1	1.13	0.29

*Bonferroni adjusted alpha, .006 (.05/9)

Table 4.17 indicates that there is no significant decrease in the estimated CATS PT scores for disruptive students with an average CATS PT pretest score. The estimated decrease is 1.19 points. There is also no significant estimated decrease in the CATS PT score for total students with an average PT pretest score; the estimate decrease is 1.89 points.

Table 4.17

Estimate of Average Change in CATS PT

Parameter	Estimate	SE	*t*	*p*
Overall (DS)	-1.19	1.38	-0.86	0.39
Overall (TS)	-1.89	0.78	-2.42	0.01

Table 4.18 examines the findings for the CATS Social Threat (ST) subscale. Insignificant results were found for the relationship among the PRP, the Botvin program, and the ST pretest for the change in ST scores among disruptive students, $F(2, 25) = 5.84$, $p = .008$, and among total students $F(2, 47)$, $p = .01$.

Table 4.18

ANOVA Table for CATS ST Analysis

Source	df	F	p
Model (DS)	2	5.84	0.008
Error (DS)	23		
Corrected Total (DS)	25		
Model (TS)	2	4.87	0.01
Error (TS)	45		
Corrected Total (TS)	47		

Table 4.19 indicates that the CATS ST pretest scores are significantly related to the change in the CATS ST score over the course of the study for both the disruptive students, $F(1. 25) = 11.32$, $p = .002$, and the total sample, $F(1, 47 = 8.19$, $p = .006$. The program in which the student was enrolled is not significantly related to the change. The effect of program on the average change in the CATS ST scores is not statistically significant for disruptive students; $F(1, 25) = 0.15$, $p = 0.70$. The effect of program on the average change in the CATS ST scores is also not statistically significant for the total sample; $F(1, 47) = 0.66$, $p = 0.42$.

Table 4.19

Separate Tests of Predictors for CATS ST Analysis

Source	df	F	p
CATS ST Pre (DS)	1	11.32	*0.002
Program (DS)	1	0.15	0.70
CATS ST Pre (TS)	1	8.19	*0.006
Program (TS)	1	0.66	0.42

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.20 indicates that there is no statistically significant change in the CATS ST posttest scores for disruptive students with an average CATS ST pretest score. The estimated change is -1.63. The estimated decrease of -1.85 points for the total sample is also not significant.

Table 4.20

Estimate of Average Change in CATS ST

Parameter	Estimate	SE	t	p
Overall (DS)	-1.63	1.45	-1.12	0.27
Overall (TS)	-1.85	0.92	-2.00	0.05

The CATS subscale Personal Failure (PF) findings are shown in Table 4.21. The PRP, the Botvin program, and the PF pretest are not significantly related to the change in

the PF posttest scores for disruptive students; F(2, 25) = 2.94, p = .07. The PRP, the

Botvin program, and the PF pretest are significantly related to the average change in the

PF posttest scores, $F(2, 47) = 6.14$, $p = .004$, for the total sample.

Table 4.21

ANOVA Table for CATS PF Analysis

Source	df	F	p
Model (DS)	2	2.94	0.07
Error (DS)	23		
Corrected Total (DS)	25		
Model (TS)	2	6.14	*0.004
Error (TS)	45		
Corrected Total (TS)	47		

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.22 indicates that the CATS PF pretest score is not significantly related to

the change in the CATS PF scores for the disruptive students, $F(1, 25) = 4.32$, $p = .05$.

The program in which the disruptive student was enrolled was not significantly related to

the change, $F(1, 25) = 0.49$, $p = 0.49$. The CATS PF pretest score was significantly

related to the change in the CATS PF posttest scores for the total sample, $F(1, 47) = 8.09$,

$p = 0.006$. However, the program was not significant, $F(1, 47) = 2.28$, $p = .13$.

Table 4.22

Separate Tests of Predictors for CATS PF Analysis

Source	df	F	p
CATS PF Pre (DS)	1	4.32	0.05
Program (DS)	1	0.49	0.49
CATS PF Pre (TS)	1	8.09	*0.006
Program (TS)	1	2.28	0.13

Bonferroni adjusted alpha .006 (.05/9)

Table 4.23 indicates that disruptive students with an average CATS PF pretest score are estimated to experience an insignificant change in CATS PF scores of -1.48 points. The students in the total sample with an average CATS PF pretest score are expected to have an insignificant decrease of -1.71 points on the CATS PF over the course of the program.

Table 4.23.

Estimate of Average Change in CATS PF

Parameter	Estimate	SE	t	p
Overall (DS)	-1.48	1.22	-1.21	0.23
Overall (TS)	-1.70	0.69	-2.45	0.02

Question 3: Do changes in automatic thoughts influence posttest teacher ratings?

Question 3 attempts to determine whether individual changes in students' BASC-2 scores (teacher ratings) are significantly related to their individual changes in automatic thoughts (CATS). The relationship of the changes in each subscale of the CATS to the

96

changes in the BASC-2 can be measured using a Pearson correlation coefficient. This

coefficient evaluates the strength of the linear relationship between the changes in the

two measures. A correlation near -1, indicating a strong negative relationship, will occur

if more positive changes in the CATS are related to more negative changes in the BASC-

2. In contrast, a correlation near +1, indicating a strong positive relationship, will occur if

more positive changes in the CATS are related to more positive changes in the BASC-2.

A correlation near 0, indicating no overall relationship, will occur if positive changes in

the CATS are not specifically related to either negative or positive changes in the BASC-

2.

        Table 4.24 presents Pearson correlation coefficients relating changes in the CATS

total and subscales to changes in the BASC-2, along with p values measuring the

statistical significance of these correlations. The table indicates that all of the Pearson

correlation coefficients are very close to 0 and all of the p values are much higher than

0.05. Therefore, there is not a statistically significant relationship between changes in any

of the CATS measures and changes in the BASC-2 scores for either disruptive students or

the total sample of students.

Table 4.24

Pearson Correlation Coefficients Comparing Changes in CATS to Changes in BASC-2

CATS score	r	p
CATS Total (DS)	-0.06	0.67
CATS HI, pre to midpoint (DS)	0.11	0.56
CATS HI, pre to post (DS)	0.06	0.76

CATS PT (DS)	0.04	0.82
CATS ST (DS)	0.15	0.44
CATS PF (DS)	-0.05	0.81
CATS Total (TS)	-0.02	0.89
CATS HI, pre to midpoint (TS)	0.10	0.49
CATS HI, pre to post (TS)	0.12	0.40
CATS PT (TS)	0.03	0.82
CATS ST (TS)	-0.12	0.41
CATS PF (TS)	-0.04	0.74

Question 4: Does participation in the PRP improve academic performance?

Question 4 examines whether students participating in the PRP attain higher reading and math achievement than students participating in the Botvin program. The analyses of changes in reading and math scores over the course of the program are again analyzed with ANCOVA models. Statistics are reported in an ANOVA table. Table 4.25 indicates that neither the reading pretest score nor the program in which the students participated is significantly related to changes in posttest scores for either the disruptive students, $F(2, 24) = 1.45$, $p = .25$, or the total sample, $F(2, 46) = 1.55$, $p = .22$.

Table 4.25

ANOVA Table for Reading Analysis

Source	df	F	p
Model (DS)	2	1.45	0.25

Error (DS)	22*		
Corrected Total (DS)	24		
Model (TS)	2	1.55	0.22
Error (TS)	44[*]		
Corrected Total (TS)	46		

[*]Note: The data for one student, whose reading score decreased by 27 points, was excluded from this analysis because the change in this student's reading score was significantly more negative than that of any other student in the sample (the next highest decrease in a reading score was 13 points). This would be considered an outlier in the data, and including it would bias the results of the model in favor of the aberrant student. By excluding this student, the model described the majority of the data much more accurately.

Table 4.26 illustrates that pre-program grades were not significantly related to changes in post-program grades for the disruptive group, $F(1, 25) = 2.78$, $p = .11$, or for the total sample, $F(1, 47) = 2.98$, $p = .09$. The effect of the program on the average change in reading grades is not statistically significant for disruptive students, $F(1, 22) = 0.59$, $p = 0.45$. The effect of the program on the average change in reading grades is also not statistically significant for the total students, $F(1, 44) = 0.29$, $p = 0.59$.

Table 4.26

Separate Tests of Predictors for Reading Analysis

Source	df	F	p
Reading Pre (DS)	1	2.76	0.11
Program (DS)	1	0.59	0.45
Reading Pre (TS)	1	2.98	0.09
Program (TS)	1	0.29	0.59

Table 4.27 indicates that disruptive students with an average reading pretest score have an insignificant expected increase of 2.90 points on the reading score over the course of the program. Total students with an average reading pretest score have a strongly significant expected increase of 3.04 points on the reading score over the course of the program.

Table 4.27

Estimate of Average Change in Reading

Parameter	*Estimate*	*SE*	*t*	*p*
Overall (DS)	2.90	1.33	2.18	0.03
Overall (TS)	3.04	0.87	3.47	*0.001

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.28 shows a strongly significant relationship among the PRP, the Botvin program, and the math pre-program grades for disruptive students, $F(2, 25) = 16.15$, $p = <.0001$, and the total sample, $F(2, 47) = 17.78$, $p = <.0001$.

Table 4.28

ANOVA Table for Math Analysis

Source	df	F	p
Model (DS)	2	16.15	*<.0001
Error (DS)	23		
Corrected Total (DS)	25		
Model (TS)	2	17.78	*<.0001
Error (TS)	45		
Corrected Total (TS)	47		

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.29 indicates that math preprogram scores are very highly significantly related to the changes in the math scores for disruptive students and the total sample, but the program in which the students are enrolled is not. The effect of the math pre-program scores on the average change in math scores is highly significant for disruptive students, $F(1, 25) = 28.99$, $p = < .0001$, and highly significant for the total sample, $F(1, 47) = 35.36$, $p = <.0001$. The effect of the program on the average change in math grades is not statistically significant for disruptive students, $F(1, 25) = 0.17$, $p = 0.68$. The effect of the program on the average change in math grades for the total sample is also not statistically significant, $F(1, 47) = 0.51$, $p = 0.48$.

Table 4.29

Separate Tests of Predictors for Math Analysis

Source	df	F	p
Math Pre (DS)	1	28.99	*<.0001
Program (DS)	1	0.17	0.68
Math Pre (TS)	1	35.36	*<.0001
Program (TS)	1	0.51	0.48

*Bonferroni adjusted alpha .006 (.05/9)

Table 4.30 indicates that a disruptive student with an average math pretest score is expected to have an insignificant increase in their score of 1.79 points over the course of the program. Students in the total sample with an average math pretest score are expected

to have a highly statistically significant increase in their score of 2.79 points over the course of the program.

Table 4.30

Estimate of Average Change in Math, Overall

Parameter	Estimate	SE	t	p
Overall (DS)	1.79	0.74	2.42	0.02
Overall (TS)	2.79	0.53	5.19	*<.0001

*Bonferroni adjusted alpha .006 (.05/9)

Chapter Summary

A total of 48 students were included in the sample for this study. Of these students, 26 received BASC-2 scores of equal to or greater than 60 from their classroom teachers. Overall, the PRP and the Botvin program did not have different effects on any of the students' behavioral or academic measures. For some of the measures, both programs were related to significant improvement; for other measures, they were not. ANCOVA results are summarized first, followed by the descriptive and paired t-test summaries.

The PRP did not change the BASC-2 ratings differently from the Botvin program. On average, the BASC-2 scores did not significantly change over the course of the study for disruptive BASC-2 students. The BASC-2 scores did not significantly decrease over the course of the study for total students.

There were no differences between the PRP and Botvin on the CATS total score changes for disruptive students or the total sample. On average, the CATS total scores did

significantly decrease over the course of the study for the total sample. The CATS HI scores did not significantly change by the midpoint of the study for the disruptive students or the total students. In examining the programs separately, there is some evidence that Botvin decreased CATS HI at the midpoint for total students, but the PRP did not; examined as an average, the CATS HI scores did not decrease significantly to the midpoint.

The CATS HI pretest to posttest estimated decrease was significant for disruptive students and total students. There were no differences between the PRP and the Botvin in the decrease. For the total sample, the CATS PT and CATS PF average changes were significantly related to the pretest and the program. The CATS PT and CATS PF pretests were significant predictors of average changes in posttest scores for the total sample. The CATS ST pretest was a significant predictor of average changes in posttest scores for both the disruptive students and the total sample.

The changes in individual BASC-2 scores were not significantly correlated with the changes in individual CATS total scores or with any of the subscale scores. This finding held true for both the disruptive students and the total sample. All correlations were close to zero, indicating no relationship.

In the area of academic achievement, there were no differences between the PRP and the Botvin program. On average, the estimated improvement in reading grades was significant for the total students. On average, the estimated improvement in math grades was significantly related to the pretest and program for both the disruptive students and the total sample. The math pre-program grades were a significant predictor of average

103

changes over the course of the study for disruptive students and the total sample. Overall the estimated math grade improvement was significant for the total sample.

A review of the descriptive statistics and paired t-test results showed decreases in posttest mean scores for BASC-2 and CATS (including subscales) scores for the disruptive students and the total sample. Significant results were found for CATS total score decreases and CATS PF decreases for the PRP total sample. The Botvin total sample group experienced significant decreases in the CATS HI scores from pretest to posttest. The means for academic achievement in both reading and math increased over the course of the study. Significant improvements in reading and math achievement were found for the total sample of students assigned to the PRP.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter Four presented the results of the study evaluating the effectiveness of the

Penn Resiliency Program (PRP) with third, fourth, and fifth grade students. The total

sample included disruptive students and students without disruptive behavior concerns.

Findings were reported for the disruptive group ($n = 26$) and the total sample ($N = 48$).

Students were randomly assigned to the experimental PRP group or the Botvin control

group. This chapter begins with a brief overview of the study, then presents the study's

findings, implications, comparisons of the current study with the previous literature,

limitations, and recommendations for future research.

Overview of the Study

The PRP emphasizes the interaction among individuals' affective, behavioral, and

cognitive dimensions (Gillham & Reivich, 2007), based on the belief that the ways

children feel and behave are determined by how they think about their experiences. The

work of the PRP counselor is to help children recognize and discard self-defeating

cognitions regarding their experiences. These maladaptive cognitions are replaced with

new more empowering cognitions.

PRP lessons focus on the cognitive content of a student's reaction to an upsetting

event or stream of thoughts. Kendall (1993) argued that problematic behaviors,

cognitions, and emotions are learned and therefore can be modified by new learning. A

significant amount of the PRP is educational in nature, as students learn to recognize

negative thoughts and maladaptive beliefs. A number of CBT techniques—including

105

examining the evidence, self-talk, and decatastrophizing—are used to help students modify unhealthy beliefs and thoughts (Gillham & Reivich, 2007). Students acquire new skills through role playing exercises, paper-and-pencil activities, discussion, homework, and counselor feedback (Gillham & Reivich, 2007).

In the current study, students in the PRP treatment group were taught how to identify distorted and dysfunctional cognitions through a process of evaluation (Gillham & Reivich, 2007) and how to discriminate between personal thoughts and reality (Gillham & Reivich, 2007). Assessing and monitoring the influence of cognitions on feelings, behaviors, and perceptions of environmental events has been found to be essential for changing behavior (Beck, 2011). To accomplish this goal, students learned to identify and observe the intensity of personal emotions that occur as a consequence of thoughts and assumptions (Gillham & Reivich, 2007).

Former school psychologists Peacock and Collett (2010) recommended CBT interventions to assist children experiencing behavioral and emotional problems in school. According to Peacock and Collett (2010), cognitive modification may significantly improve the ability of children and adolescents to concentrate on academic matters and ignore ambiguous and anger-provoking stimuli in the classroom environment. Cognitive behavior programs are designed to help children identify and change thought patterns that lead to aggressive and disruptive behaviors (Daunic et al., 2006; Stallard, 2002). Such programs address the unmet emotional needs of students, which are often manifested in the classroom (Jensen, 2009; Peters, 2006).

Utilizing this foundation, the researcher hoped to determine whether teaching children to recognize the relationship between thoughts and feelings while exploring the ways thoughts and feelings contribute to inappropriate behaviors would improve disruptive behavior and increase student achievement. The research questions posed were: (1) Does the PRP decrease aggressive and disruptive classroom behavior? (2) Is the PRP effective in modifying automatic thoughts? (3) Do changes in automatic thoughts influence posttest teacher ratings? (4) Does participation in the PRP improve academic performance?

Study participants were recruited from two Title I schools in Georgia. The total sample consisted of 48 students, with 26 students meeting the criteria for disruptive behavior. Students meeting the criteria for disruptive behavior received teacher ratings of 60 or above on the Behavior Assessment System for Children, Second Edition, Externalizing and ADHD Problems Progress Monitor (BASC-2). Teachers completed the BASC-2 both prior to program implementation and one week following program completion. Students were rank ordered based on BASC-2 ratings and randomly assigned to the treatment (PRP) or the control group. Children in the control group participated in the Botvin program (Botvin, 1999), consisting of a life skills curriculum that focuses on drug prevention.

The Children's Automatic Thoughts Scale (CATS) scale was administered prior to program implementation and at the completion of the program. The CATS total score includes four subscales: Hostile Intent (HI), Personal Failure (PF), Social Threat (ST), and Physical Threat (PT). Pre- and posttest scores were obtained for each subject. The

CATS HI subscale was also administered midway through the study, in week six, primarily to gauge changes that may have occurred within a short time after program implementation. The CATS HI scale has been linked to disruptive behavior (Schniering & Rapee, 2004) and significant changes within a short time frame would have positive implications for the program, i.e., requiring a teaching period of less than 12 weeks. Academic achievement was measured using report card grades for both reading and math. Grades were used from the beginning of the spring semester for pre-intervention and at the end of the school year for post-intervention.

Two statistical models were utilized to answer each of the research questions. Questions 1, 2, and 4 are similar in that each seeks to determine the effect of the PRP on various behavioral and academic performance measures. Therefore, similar statistical models were used to answer each research question. Question 3, which examines the relationship between changes in CATS scores and changes in BASC-2 scores, required a different statistical approach. Analyses were performed for two groups, disruptive students (students with high BASC-2 pretest scores) and the total sample. The total sample included disruptive students as well as students who were not rated as disruptive by teachers on the BASC-2.

Descriptive statistics, along with paired t-tests to assess changes within the two programs for both the disruptive group and the total sample, are also provided. Mean decreases from pre- to posttest were found for all dependent variables except the Botvin PT subscale posttest mean for the disruptive students group.

Findings

The PRP is a research-based cognitive behavioral program that targets negative and maladaptive automatic thoughts. The PRP has been studied extensively with children and adolescents experiencing symptoms of depression. Recently, the program has been studied as an intervention to reduce aggressive and disruptive behavior. The Botvin program is a research-based program developed specifically as a drug prevention program. The program has been used in a number of schools and in longitudinal studies and has been found to be effective in reducing smoking. Both programs include sections on communication skills, relaxation techniques, and conflict management. The actual lessons, sequencing, and exercises, however, are different.

The PRP and the Botvin program both have engaging lessons. The students seemed to enjoy working in the Botvin workbook and were especially interested in the lessons dealing with the short-term and long-term effects of smoking. The role-playing exercises in the PRP booklet provided an effective way for students to learn and model skills related to identifying maladaptive thoughts. The students were always excited about the role playing activities and eagerly volunteered to perform.

Overall, the PRP and the Botvin program did not have different effects on any of the students' behavioral or academic measures. Significant findings for the PRP's effect on the CATS total score for the total sample suggest that the PRP may be effective as a universal program targeting all students. Significant findings for the CATS PF decreases were also evident for the PRP's total sample. Decreases in the PF subscale, a measure of

109

thoughts related to depressive symptoms, confirm the program's efficacy with depressed adolescents and children.

In addition, mean BASC-2 scores showed slight decreases in disruptive behavior for PRP high BASC-2 students as well as all students. Although the decreases were insignificant, possibly due to the small sample size, the PRP lessons would help students develop interpersonal and problem solving skills. This finding further confirms the program's usefulness as a universal program for all students. Implementing the PRP during regularly scheduled classroom guidance lessons may improve students' social skills.

Academic achievement in both reading and math showed improvements after program implementation for disruptive students and the total sample. Mean reading and math grade improvements were significant for the PRP. Hence, the program may be valuable as an intervention to help students think positively about completing schoolwork.

The study found no significant differences between the PRP and the Botvin program. Students participating in both programs experienced similar changes in BASC-2 scores, CATS total scores, subscale scores, and academic achievement. The total sample results indicated more improved scores than the high BASC-2 pretest students. This finding may be due to the larger sample size (48 vs. 26). Also, average pre-test scores for the total sample group were significantly related to decreases in PT, ST, and PF. Average math pre-program grades were significantly related to improvements in math for the total sample. A review of t-test means showed significant decreases in

CATS total scores for the PRP. The t-test did not account for the variability due to the pretest.

Question 1: Does the PRP decrease aggressive and disruptive classroom behavior?

In answering Question 1, which asks whether the PRP improves BASC-2 scores, an analysis of covariance (ANCOVA) was used. The average changes in BASC-2 scores were estimated from pre-program to post-program based on the pre-test scores (higher BASC-2 test scores may be associated with bigger changes) and the specific program assigned (determining whether the two programs affected scores differently). Even though an ANCOVA was performed, an ANOVA table was used to present analysis results and included model, error, and corrected total. The model refers to the two predictors, BASC-2 pretest score and programs, and error refers to variability not related to the two predictors. The corrected total is simply the model and error combined.

In this study, the two programs did not demonstrate differential effects on the students' scores. In using an ANCOVA, the inclusion of the pretest as a *covariate* was especially important, as it allowed each student to serve as his or her own control when examining potential for improvement. It also enabled a comparison of all the students on equal footing, even if the groups did not have identical pretest scores. Post-hoc tests were used to determine the average change in BASC-2 scores over the course of the study for a student with an average pretest score. The change was averaged over both programs, since the main results indicated there were no differences in the two programs.

The PRP did not change the BASC-2 scores differently from the Botvin program. On average, the BASC-2 scores did not significantly decrease for high BASC-2 pretest

students, nor did they significantly decrease for the total sample over the course of the study. These results suggest that the decreases in the BASC-2 scores were not related to program assignment. Assignment to the PRP program did not lead to significant decreases in disruptive behavior.

Question 2: Is the PRP effective in modifying automatic thoughts?

Question 2 examined changes in CATS total scores and subscale scores over the course of the program and investigated whether the two programs produced significant changes in the scores. An ANCOVA model was used for statistical analysis. F values were provided for the model (pretest and PRP vs. Botvin) as well as separate F values for the pretest and the two programs. Changes in the CATS total score and each subscale score (HI, PT, ST, PF) were analyzed separately. Estimated average change, evaluated in terms of the p value, was determined for the total and subscales. Results were provided for the disruptive students and the total sample of students. On average, the CATS total scores did not decrease significantly over the course of the study for high BASC-2 pretest students. However, the CATS total scores did significantly decrease over the course of the study, on average, for students in the total sample.

The CATS HI pretest to posttest estimated decreases for both the disruptive group and the total sample were significant. In a review of the ANCOVA results for the CATS PT subscale, the pretest and two programs were significantly related to decreases in the PT for the total sample. In examining the model more closely, the CATS PT pretest was a significant predictor of PT changes. The CATS ST and PF pretests were also significant predictors of changes in ST and PF posttests for the total sample.

When analyzing the paired t-tests, decreases for the PRP CATS total score appeared to be significant for both disruptive students and the total sample. The decrease in the Botvin group's CATS HI pretest to posttest scores was significant for the total sample. The PRP's CATS HI pretest to posttest scores for the disruptive group approached significance at .008. The decrease in the PRP group's CATS PF pretest to posttest score was also significant for the total sample.

This finding indicates that both the PRP and the Botvin students with average CATS scores in the total sample experienced significant decreases in negative thoughts. Decreases for the disruptive students were not significant for either program when the effects of the pretest on the CATS Total score were considered. The PRP and the Botvin program were equally effective in modifying automatic thoughts for the students in the total sample.

Question 3: Do changes in automatic thoughts influence posttest teacher ratings?

Question 3 examined whether the students' changes in BASC-2 scores (ratings given by teachers) were related to changes in automatic thoughts (CATS). The relationship of the changes in each component of the CATS (total and subscale) to the changes in the BASC-2 was measured using a Pearson correlation coefficient. The Pearson correlation coefficient measures the strength of the linear relationship between the two variables. The changes in individual BASC-2 scores were not significantly correlated with the changes in any of the CATS scores for disruptive students or the total sample. This finding indicates that decreases in disruptive behavior were not related to

decreases in automatic thoughts. The finding was evident for both the PRP experimental groups and the Botvin control groups.

Question 4: Does participation in the PRP improve academic performance?

Question 4 examined changes in reading and math achievement over the course of the study. Teachers were asked to provide percentage grades for reading and math at the end of the first semester and the end of the school year. Teachers were blind to group assignment. The analysis was performed using ANCOVA models. Results were reported in tables in the same manner as the BASC-2 and CATS scores.

Reading grades increased over the course of the study for disruptive students; however, the improvement was not significant. On average, the estimated reading grade improvement over the course of the program for total students was significant. The change in mean reading grades for the PRP was significant for the total sample. The estimated math increase for a student with an average pre-program grade was highly significant for the disruptive students and the total sample. The t-test showed significant changes between the math pre- and post-intervention grades for the PRP total sample; the total sample for the PRP thus achieved significant improvement in reading and math grades.

The null hypothesis for the first research question was accepted. There were no differences between the experimental group and the control group on the posttest ratings of aggressive and disruptive behavior. Students participating in the PRP did not experience improvement in aggressive and disruptive classroom behavior.

114

The alternative hypothesis was accepted for the second research question. Students participating in the PRP experienced significant decreases in automatic thoughts. In an analysis of individual subscales, the CATS HI subscale decreases approached significance at .008 for disruptive students.

The null hypothesis was accepted for the third research question. Changes in automatic thoughts had no effect on teacher ratings of disruptive behavior for the students participating in the PRP. The Pearson correlation coefficients were close to 0; all the p values were higher than the Bonferroni adjusted alpha of .006.

The alternative hypothesis was accepted for the fourth research question. Students assigned to the PRP experienced improved academic achievement in both reading and math. Significant improvements were found for the total sample.

Implications

One implication of this study is readily apparent: any research-based intervention is likely to have positive effects on disruptive behavior, negative thoughts, and academic achievement. Disruptive students, as well as students who did not display inappropriate school behaviors, experienced decreases in negative thoughts. This finding was true for both PRP and Botvin participants, suggesting that all students may benefit from interventions targeting negative thoughts. The CATS total mean scores decreased along with the four subscales: Hostile Intent, Physical Threat, Social Threat and Personal Failure. The only exception was the Botvin CATS PF, which showed a slight increase for disruptive students only.

Once approval was obtained from the IRB and the school district's Office of Accountability, the study proceeded without difficulty. Rapport with students was easily established and the majority of the students were cooperative and well-mannered. As a result, the lessons were delivered weekly as planned and the students successfully completed the group assignments. Students appeared to enjoy the group time and the researcher's attention. Only one student dropped out of the study due to dissatisfaction with the group assignments.

Providing consistent, engaging, and interactive small group lessons appears to confirm previous research documenting the efficacy of cooperative learning. Successful group participation may have changed the students' perception of their ability to stay on task, control inappropriate behaviors, and get along well with peers. Gansle (2005) found that students who learn to control disruptive behaviors experience higher levels of well-being, increased cooperative behaviors, and improved academic achievement.

Furthermore, studies conducted by Lochman and Wells (2002) found that homework completion, social problem-solving strategies, conflict management, and proactive classroom management techniques were associated with improved learning and classroom behavior. Significant estimated improvements in math were found for disruptive students and the total sample in both the experimental and control groups. Significant estimated improvements in reading were found for the experimental group. Participation in intervention programs such as the PRP may provide students with opportunities to practice appropriate classroom behaviors and study skills.

116

The researcher attempted to create positive and supportive relationships with the students participating in the study. Students were encouraged to do their best and were reinforced for staying on task, demonstrating prosocial behavior, and exhibiting a positive attitude. Studies have shown that a positive relationship between the teacher and student is an important precursor for learning (Comer, 2004; Nelson, et al., 2013). The current study supports previous findings indicating that intervention programs can be delivered successfully to disruptive students when the teacher maintains a positive attitude and conveys reasonable classroom expectations.

Comparisons of the Current Study with the Previous Literature

This section compares the present study with previous research studies in this area. Given the uniqueness of the PRP program, it is difficult to make direct comparisons. No prior research has been conducted to assess changes in the automatic thoughts of children in an elementary school setting. However, researchers have previously studied CBT's effectiveness in decreasing aggressive and disruptive behavior in elementary schools.

Two differences between the current study and previous studies must be noted. First, the measurements used in other research assessing the effectiveness of CBT programs in reducing disruptive behavior are different from the measurements used in the current study. Second, previous CBT school-based research has included other components, such as parent training, teacher training, or individual counseling. Despite these differences, however, some general comparisons can be discussed.

117

The improvement in disruptive and aggressive behavior in the present study is consistent with previous research that found that children's disruptive behavior decreases with CBT interventions (Carr, 2009; Kazdin, 2003; Lochman & Wells, 2002). It is important to note that the previous studies utilized different measures to assess behavior changes. Lochman and Wells (2002) used several assessments to measure aggressive behavior, including the Proactive Reactive Aggression Scale, the Teacher Observation of Classroom Adaptation–R (TOCA-R), the Early Adolescent Temperament Measure, the abbreviated version of the Dysregulation Inventory, and the Teacher Rating of Children's Social Skills. The goal of the Lochman and Wells (2002) study was to measure the effectiveness of the Anger Coping program in reducing aggressive and disruptive behavior among fifth and sixth graders.

Daunic et al. (2006) evaluated the effectiveness of the Tools for Getting Along: Teaching Students to Problem Solve (TFGA) program in reducing aggressive behavior. This study utilized the Problem Solving Questionnaire, Pediatric Personality and Anger Expression Scales, the Reactive-Proactive Aggression Scale, and the Social Skills Rating System. The study also assessed students' knowledge of problem solving strategies and social skill improvement.

The current study focused on changes in two variables: disruptive behavior and automatic thoughts. Two instruments were used to assess the PRP's effectiveness in decreasing disruptive behavior and maladaptive thoughts. Changes in disruptive behavior were measured using the BASC-2 and changes in automatic thoughts were measured using the CATS. Daunic et al. (2006) and Lochman and Wells (2002) utilized a variety of

118

measures to evaluate changes in aggressive and disruptive behavior. Incorporating

various assessment tools, however, makes it difficult to determine whether decreases

pertain to the same disruptive behaviors, or even if decreases are comparable. Moreover,

in addition to assessing CBT's effectiveness in decreasing aggressive behavior, these

studies also assessed improvements in problem solving and social skills. The current

study measured improvements in aggressive behavior, automatic thoughts, and academic

achievement.

Some school-based CBT intervention programs include additional components.

For instance, the Coping Power Program (Lochman & Wells, 2002) included a parent

training component, while the Tools for Getting Along: Teaching Students to Problem

Solve (Daunic et al., 2006) program included teacher training sessions. Kendall and

Braswell (1982) incorporated individual therapy sessions provided by professional

therapists. Kazdin and Weisz (1998) found that CBT programs that are multisystemic,

i.e., that involve parents, teachers, and the community, are more effective than programs

that target only the student.

The current study focused on teaching students to recognize, evaluate, and change

maladaptive thoughts. Parents and teachers were not included in the intervention and

community resources were not used. Although both previous studies and the current

study indicate the efficacy of CBT interventions, it is difficult to determine how the

inclusion of one component changes the overall effectiveness of an intervention. It is

possible that the Daunic et al. (2006), Kendall and Braswell (1982), and Lochman and

119

Wells (2002) studies showed significant decreases in disruptive behavior as a result of including additional components.

Ruttledge and Petrides' (2011) study is somewhat similar the current study. Using the Cameron (1998) behavior descriptors, 22 students identified as disruptive were targeted for a CBT intervention that included materials from the *Think Good—Feel Good* (Stallard, 2002) workbook and *Anger Management: A Practical Guide* (Faupel et al., 1998)*. The *Think Good—Feel Good* workbook teaches students how to identify and change negative thoughts. The workbook includes interactive activities and exercises designed to help students understand and apply core CBT principles. *Anger Management: A Practical Guide* includes problem solving, communication, and compromise/ negotiation strategies. The purpose of the current study was to evaluate the effectiveness of a program (PRP) that included very similar lesson topics. Some students in the current study were also identified using the Cameron (1998) behavior descriptors.

Ruttledge and Petrides (2011) used several outcome measures, including the Beck Youth Inventory (BYI), the Trait Emotional Intelligence Questionnaire-Adolescent Short Form, and the Strengths and Difficulties Questionnaire (self-report, teacher, and parent ratings). A repeated measures design was used with instruments administered at Time 1 (pretest), Time 2 (midway through the intervention), Time 3 (posttest), and Time 4 (6 months following the intervention). Significant reductions were found in disruptive behavior between Time 1 and Time 3. Decreases in self-report and teacher ratings were maintained at Time 4. In the current study, the CATS instrument was used as a self-report assessment tool to measure changes in automatic thoughts. The BASC-2 teacher rating

120

scale was used to assess changes in disruptive behavior. Decreases in disruptive behavior were also found between pretest and posttest.

As a measure of automatic thoughts regarding personal failure, social threat, physical threat, and hostile intent, the CATS instrument has been found to successfully discriminate between controls and clinically anxious, depressed, or behavior disordered youth. The students in Ruttledge and Petrides' study (2011) completed three measures: the Beck Youth Inventory, The Trait Emotional Intelligence Questionnaire, and the Strengths and Difficulties Questionnaire. These three measures provided data regarding depression, anxiety, and behavior problems among the study participants.

The present study assessed behavior at pre-intervention and post-intervention. Decreases were found in BASC-2 mean scores; however, decreases did not approach significance. Changes in CATS total scores from pretest to posttest were significant for the disruptive students and the total sample in the PRP group. The current study did not determine whether changes in negative thoughts were maintained after six months. The Ruttledge and Petrides (2011) study did not assess changes in automatic thoughts, but it did examine changes in self-report, parent, and teacher ratings of aggressive behavior, as well as changes in emotional strengths and weaknesses and in depressive symptoms.

Given the lack of CBT research examining changes in automatic thoughts among disruptive students, the current study makes an important contribution to the literature. This study examined changes in automatic thoughts among elementary school preadolescents. Learning more about the role automatic thoughts play in the development

121

and persistence of disruptive behavior may provide beneficial information for school-based intervention programs.

Limitations

One obvious limitation of this study is that participants represented a limited age range, third through fifth grades, and were recruited from two Title I schools located in northwest Georgia. The limited age range and school selection may restrict the study's generalization to a more diverse population. Incorporating participants who represent a wider age range would permit findings to be applied to older students, among whom behavior problems are more prevalent.

The use of a larger sample, with students selected from schools representing more diverse socioeconomic groups, would also allow for greater generalization and might make differences in interventions appear more evident. Larger samples of students with high pretest BASC-2 scores would permit a better explication of the relationship between different interventions and treatment outcomes. It is possible that the small sample size may have yielded inaccurate findings regarding the PRP's effect on disruptive students' behavior as measured by the BASC-2.

Both the PRP and the Botvin program were equally effective as interventions in this study. It is difficult to identify whether the improvements seen among the disruptive students and the total sample were due to the interventions or to other naturally occurring factors. The inclusion of a control group with no intervention might have provided an answer to this question.

Multisystemic interventions have proven to be effective in modifying disruptive behavior. However, the present study focused on the student alone, and additional components were not included. Including parents in the intervention process, as well as incorporating community resources such as mentoring and individual counseling, may also increase the PRP's effectiveness.

Recommendations

The PRP emphasizes the importance of positive and rational thinking. The program also includes lessons focusing on communication skills, compromise/negotiation strategies, decision making, and goal setting. Previous research (Hahn et al., 2007; Weisz et al., 2004) has suggested that programs that include communication skills, decision making, and conflict management components are beneficial in helping students improve social skills. Frequently, disruptive and aggressive behaviors occur when students have limited social skills and misinterpret the cues of peers (Dodge, 1991). Although the decreases in the BASC-2 scores were statistically insignificant, the mean score decreases from pre- to posttest for the disruptive group as well as the total sample suggest that aggressive behavior decreased slightly as students learned social problem solving and communication skills. Hence, the PRP could be implemented in schools to help students learn strategies to problem solve and communicate more effectively with peers.

Although this study evaluated the efficacy of the PRP in changing automatic thoughts and reducing disruptive behavior, the PRP program has been studied extensively with children and adolescents suffering from depression and has demonstrated promising

results. Thus, the PRP could be delivered in schools as an intervention to reduce the risk of depression as well as disruptive behavior. The PF subscale, which has been linked to depression (Schniering & Rapee, 2004), showed significant estimated decreases in scores among the total sample group for PRP participants with an average PF score. The significant decrease between the PF pre- and posttest scores among the PRP's total sample supports this finding.

In future studies, incorporating a self-esteem measure may be beneficial. It is possible that the weekly group sessions helped students feel more confident and better prepared to control behavior and complete class work. Students were successful in the group setting and these feelings of accomplishment may have carried over to the classroom. Assessing students' self-esteem pre- and post-intervention may provide additional data on the role of self-esteem in helping students change cognitions.

Chapter Summary

The PRP, a cognitive behavioral program, was implemented in two elementary schools to assess the program's effectiveness in improving academic achievement and decreasing negative automatic thoughts and disruptive behavior. Significant decreases were found in the Children's Automatic Thoughts Scale (CATS) scores from pretest to posttest for disruptive students and for the total sample assigned to the PRP group. Significant improvements in reading and math were found for the total sample participating in the PRP group. Although not significant, mean score decreases were

found in BASC-2 measure of disruptive behavior for disruptive students and the total sample.

Results of this study suggest that students benefit from interventions that focus on social skills, communication skills, problem solving, and decision making. This finding is consistent with previous CBT research in school settings. Some limitations of the current study include the lack of a parent component and the lack of a control group with no intervention. Recommendations for future studies include incorporating a self-esteem measure to determine whether a relationship exists between self-esteem and automatic thoughts, and evaluating the PRP as a universal program for school-wide implementation.

Research Summary

This study was designed to evaluate the effectiveness of the PRP with disruptive elementary school students. The study found that on average the BASC-2 scores did decrease over the course of the study for students with high BASC-2 pretest scores and for the total sample; however, these decreases were statistically insignificant. There was no difference in the decreases shown by the PRP versus the Botvin program participants. The total sample of all students, including those with BASC-2 scores of 60 or greater, experienced more improvement than the smaller sample of disruptive students only.

Mean CATS total scores did significantly change for PRP disruptive students over the course of the program. However, when examining average total pretest scores, estimated changes from pretest to posttest were insignificant and disruptive students participating in the PRP fared no better than students participating in the Botvin program.

The CATS total scores did significantly decrease for the larger sample of all students participating in the PRP. Significant decreases in CATS total scores were most evident among students with average CATS total pretest scores. The HI pretest to posttest subscale mean score decreased. The mean decrease was significant among the PRP's total sample. Estimated CATS HI pretest to posttest decreases for average pretest scores were significant for the disruptive group and the total sample. The subscale CATS PF showed significant estimated decreases for the average pretest student in the total sample. The CATS PF mean pre- to posttest difference was significant for the total sample for the PRP.

There were no correlations between the BASC-2 scores and the CATS. No relationship appears to exist between teacher rating changes and changes in the students' automatic thoughts. Academic achievement in both reading and math increased for PRP students with high BASC -2 pretest scores. Estimated improvements in reading for the total sample were significant. T-tests showed significant increases in reading grades for the PRP's total sample. Estimated math improvement for disruptive students and all students was significant. T-tests showed significant increases in math grades for PRP total sample.

In light of the findings, the PRP can be recommended as a universal program to be delivered to all students during classroom guidance lessons. The PRP was found to be as effective in helping students to change negative automatic thoughts. Although decreases in problematic behaviors did not appear to be significantly related to decreases in negative automatic thoughts, students participating in the program experienced

126

decreases in CATS total scores and achieved improved grades in reading and math. This finding suggests that participating students had fewer negative thoughts and more success completing their schoolwork.

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128

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APPENDIX A: Cameron's Aggressive and Disruptive Behavior Descriptors

Aggressive behavior: (e.g., hitting, pulling hair, kicking, pushing, using abusive language).

Physically disruptive behavior: (e.g., smashing, damaging, or defacing objects; throwing objects; physically annoying other pupils).

Socially disruptive behavior: (e.g., screaming, running away, exhibiting temper tantrums).

Authority challenging behavior: (e.g., refusing to carry out requests, exhibiting defiant verbal and non-verbal behavior, using pejorative language).

Self-disruptive behavior: (e.g., daydreaming, reading under the desk).

APPENDIX B: An Evaluation of the Penn Resiliency Program

Mildred Howard
Liberty University
Center for Counseling and Family Studies

Your son/daughter is invited to be in a research study of aggressive and disruptive behavior among elementary school students. Your child was selected as a possible participant because he/she has exhibited one or more aggressive and/or disruptive behaviors. I ask that you read this form and ask any questions you may have before agreeing for your child to be in the study. If you would like to meet personally with the researcher to ask questions or receive additional information, please call 678-842-6813 to schedule an appointment.

This study is being conducted by Mildred Howard. Mrs. Howard is a doctoral student in the Center for Counseling and Family Studies at Liberty University.

Background Information:
The purpose of this study is determine if participation in the Penn Resiliency Program can help students decrease aggressive and disruptive behavior and improve grades in reading and math.

Procedures:

If you agree for your child to be in this study, your child will do the following things:

Participate in the 11-week Botvin Life Skills program or the 12-week Penn Resiliency Program. Students participating in the program will complete group exercises and activities designed to improve social, personal, and academic functioning. Exercises and activities will include role playing, completion of worksheets, and homework assignments.

Risks and Benefits of Being in the Study:
The risks of study participation are minimal and are no more than would be encountered in everyday life.

Students participating in the program may experience improved behavior and conduct grades as well as grade improvements in reading and math.

Compensation:

Students will not be compensated for program participation.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely in a locked file cabinet and only the researcher will have access to the records.

Student codes will be used in the collection and analysis of data to maintain confidentiality. Rating scales and other instruments will be shredded upon completion of the time period required for maintaining research records.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to allow your child to participate will not affect your current or future relations with Liberty University or Belmont Hills Elementary School. If you decide to allow your child to participate, you are free to withdraw your child at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Mildred Howard. You may ask any questions you have now. If you have questions later, you are encouraged to contact Mrs. Howard, Belmont Hills Elementary School at 678-842-6813 or Dr. Jeanne Brooks, Liberty University, 404-592-4041.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature: _____ Date: _____

Signature of parent or guardian: _____Date: _____

Signature of investigator:_____Date: _____

IRB Code Numbers:

IRB Expiration Date:

APPENDIX C: Assent of Child to Participate in a Research Study

What is the name of the study and who is doing the study?

An Evaluation of the Penn Resiliency Program, conducted by Mrs. Howard

Why are we doing this study?

The study is being done to learn whether the Penn Resiliency Program can help you improve your classroom behavior and improve your grades in reading and math.

Why are we asking you to be in this study?

You sometimes have difficulty controlling your behavior in class.

If you agree, what will happen?

If you are in this study, you will participate in group sessions once a week for 12 weeks or once a week for 8 weeks. You will complete worksheets, participate in role plays, and complete homework assignments.

Do you have to be in this study?

No, you do not have to be in this study. If you want to be in this study, then tell the researcher. If you don't want to, it's OK to say no. The researcher will not be angry. You can say yes now and change your mind later. It's up to you.

Do you have any questions?

You can ask questions any time. You can ask now. You can ask later. You can talk to the researcher. If you do not understand something, please ask the researcher to explain it to you again.

Signing your name below means that you want to be in the study.

_____ _____

Signature of Child   Date

Mrs. Mildred Howard, Belmont Hills Elementary School 678-842-6813
Dr. Jeanne Brooks, Liberty University, 404-592-4041
Liberty University Institutional Review Board,
1971 University Blvd, Suite 1837, Lynchburg, VA 24502
or email at irb@liberty.edu.

APPENDIX D: Summary of Penn Resiliency Lessons

Summary of Penn Resiliency Program Lessons

Lessons	Lesson Focus
Lesson One	Establishment of rapport; introduction of automatic thoughts; relationship between thoughts, feelings, and behavior
Lesson Two	Explanation of explanatory styles, participation in skits to generate alternative styles of thinking
Lesson Three	Evaluation of automatic thoughts, introduction of Sherlock Holmes
Lesson Four	Introduction of catastrophizing; differentiation of worst case, best case, and most likely case scenarios for consequences of adversarial situations
Lesson Five	Review Lessons 1-4
Lesson Six	Interpersonal problem-solving; social skills; aggressive, assertive, and passive interaction styles
Lesson Seven	Introduction of behaviorally oriented coping techniques such as deep breathing and muscle relaxation
Lesson Eight	All or nothing thinking, strategies for overcoming avoidance and procrastination
Lesson Nine	Review of Lessons 6-8, relaxation and assertiveness skills practice, introduction of decision making technique
Lesson Ten	Introduction of stop and think strategy, five-step approach to problem solving,
Lesson Eleven	Application of the problem-solving approach to individual situations
Lesson Twelve	Review of entire program, celebration of program completion