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The Use of Problem Solving Skills Training to Treat Disruptive Behavior in Schools

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THE USE OF PROBLEM SOLVING SKILLS TRAINING TO TREAT DISRUPTIVE BEHAVIOR IN SCHOOLS

A Dissertation

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Agricultural and Mechanical College
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by

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	ii
ABSTRACT.....	iv
INTRODUCTION.....	1
Disruptive Behavior Background.....	1
Evidenced-based Treatments for Disruptive Behavior.....	3
Psychosocial Treatment in Schools.....	13
Problem Solving Skills.....	18
Integrating CBT and Problem Solving Skills Psychoeducation.....	21
Purpose.....	23
METHOD.....	24
Participants and Setting.....	24
Measurement of Dependent Variables.....	24
Materials.....	25
Procedure.....	27
Experimental Design.....	28
Procedural Integrity.....	29
RESULTS.....	30
DISCUSSION.....	34
Issue of Generalization.....	38
Additional Limitations and Future Directions.....	41
Conclusion.....	43
APPENDIX A. SESSION PROTOCOLS.....	45
APPENDIX B. TREATMENT INTEGRITY CHECKLISTS.....	53
APPENDIX C. SCRIPTS AND CUE CARDS.....	59
APPENDIX D. IRB FORM.....	60
REFERENCES.....	61
VITA.....	67

ABSTRACT

Disruptive behaviors in children are a class of behaviors that involve problems with impulse control, regulating emotions, compliance, aggression, and respecting the rights of others or societal norms (American Psychiatric Association, 2013; Nelson, 1996). The presence of these disruptive behaviors take a negative toll on the environment including the education setting, criminal justice system, public health services, and families (Tolan and Leventhal, 2013; Cuffel, 1997). Meta-analyses have shown several evidence-based treatments for disruptive behavior with cognitive-behavioral therapy being an effective approach (Eyeberg, Nelson, & Boggs, 2008; McCart & Sheidow, 2016). One such cognitive-behavioral therapy that is effective for decreasing disruptive behaviors in children is Problem Solving Skills Training (PSST) (Kazdin, 2017), however there is no published evaluation of PSST in a school setting. The study at hand examines the use and effectiveness of PSST in a school context comparing a delayed waitlist control group to a treatment group through a teacher-report measure of behavior and frequency of time out room referrals. Significant decreases in problem behavior were found in both teacher-report measures and time out room referrals for the active treatment group over time. These results demonstrate that PSST is an effective cognitive-behavioral based intervention to decrease disruptive behavior for children in the school setting.

INTRODUCTION

Disruptive Behavior Background

Disruptive and defiant behavior in youth take a tremendous toll on those in their environment and are far too common (Walker, Ramsey, & Gresham, 2004; Merikangas, Nakamura, & Kessler, 2009). These problematic behaviors are the most common mental health referral in children (Ogundele, 2018). The education setting is often impacted by the social-behavioral problems that disrupt the classroom in addition to the legal system that is required to deal with the potential harm to others (Tolan & Leventhal, 2013). Cuffel (1997) asserts that disruptive behaviors are a major contributing factor to the use of public resources, both formal and informal. This includes the likely relationship between disruptive behavior and costs to mental health services, public health services, indirect costs to families that provide care and supervision, and societal costs to the criminal justice system (Cuffel, 1997). Tolan and Leventhal (2013) put this total cost at \$3 million. According to the DSM-V (American Psychiatric Association, 2013), disruptive, impulse control, and conduct disorders involve problems in regulating and controlling emotions and behaviors. Often times, these children are described as antisocial, challenging, defiant, noncompliant, or aggressive (Nelson, 1996). While the topography of the symptoms varies, all of the disruptive, impulse control, or conduct disorders include a violation of the rights of others or violation of societal norms. Individuals with one of these disorders will commonly show an angry/irritable mood, argumentative/defiant behavior, vindictiveness, behavioral outbursts with aggressive impulses, destruction of property, deceitfulness, theft, and/or serious violation of rules.

The presence of disruptive behaviors can be impairing for children and are linked to negative outcomes. American adolescents were found to have a negative correlation between

externalizing problems and perceived academic efficacy (Roeser, Wolf, Strobel, 2001). Children who exhibit problem behavior in the classroom are less likely to be involved in academic interactions with teachers and the academic interactions they do have with teachers are at a lesser quality level of instruction (Sutherland & Oswald, 2005). Furthermore, school aged children with persistent behavior problems were found to be less likely to graduate from high school or attend college along with early anti-social behaviors being a strong predictor for participation in crime as an adult (Duncan and Magnuson, 2011). Disruptive behaviors have been strongly linked to school drop out (Vitaro, Brendgen, and Tremblay, 1999). Children with aggressive, hyperactive, or oppositional behaviors are more likely to withdraw from school which is likely due to this overall disruptive behavior contributing to outcomes such as grade retention or alternative classroom placement. Social deficits with peers also are present for those children with disruptive behaviors. In children with antisocial behaviors, it is twice as likely that they will initiate unprovoked aggression towards peers compared to typically developing children (Snyder, 2002). This same rate was found for reciprocating peer aggression and continuing aggressive behavior.

Broidy et al. (2003) identified several developmental pathways based on aggression and conduct problems in the early school years. Boys who displayed consistently high levels of aggression in childhood were found to have future offenses of both violent and non-violent nature in adolescence. Broidy et al. suggest that physical aggression is a strong predictor for delinquency even when accounting for other confounding disruptive behaviors. Additionally, conduct problems were a significant factor for future violent delinquency. This was not the case for other predictors, such as hyperactivity. It is clear that disruptive behaviors lead to severe, negative outcomes for youth and that there is a need to address these concerns.

Evidenced-Based Treatments for Disruptive Behavior

Through a systematic literature review, Eyberg, Nelson, and Boggs (2008) identified multiple evidence based treatments for disruptive behaviors in children and adolescents. The majority of these treatments were classified as probably efficacious and one was classified as a well-established treatment. McCart and Sheidow (2016) updated this review to further specify evidence based treatments targeted for adolescents with disruptive behaviors. Many of these evidence based treatments can be sorted into two themes: 1) parent training and/or 2) cognitive behavioral therapy. A review of evidence based treatments for disruptive behavior extracted from these two prior reviews is provided below.

Parent Training Based Treatments

Parent training has shown to be an effective treatment for treating disruptive behavior in children, highlighting the importance of social learning theory and discipline strategies for improvements in behavior (Webster-Stratton, Reid, and Hammond, 2001). Social learning theory rests on the principles of observation and modeling. This means that individuals learn through models that demonstrate to the observer how to respond with new patterns of behavior (Bandura, 1979). Bandura explains that information can be modeled in various ways including physically, pictorially, or verbally. Furthermore, once an observer displays a pattern of behavior that they have learned through a model, it may contact programmed or naturally existing communities of reinforcement. Parent training based treatments often rely on having the parent learn to be a model for positive behavior for their children and then reinforcing responses of positive behavior from the child. Individual evidence based parent training programs to treat disruptive behaviors, or those with a parent training component, are discussed.

Helping the Non Compliant Child (Forehand & McMahon, 1981) is a treatment that targets noncompliance in children ages 3-8 by teaching parents to change negative styles of parent-child interactions. This is done through parents learning how to increase positive feedback, ignore minor negative behaviors, give clear directions, and providing appropriate consequences. Parents learn these skills through modeling, role playing, and in vivo training (Eyeberg, Nelson and Boggs, 2008). The key aspect of this treatment is that there is an interaction between the parent's behavior and the child's compliance or noncompliance (McMahon & Forehand, 2003). This ultimately will shape the child's social development. With the training for the parents being successful, this should warrant positive social development.

The Incredible Years (Webster-Stratton & Reid, 2003) is a well-recognized treatment for children with conduct problems. The parent training component of the Incredible Years treatment is a group format training where parents learn positive parent-child interactions for children ages 2-10. Skills learned include child-directed play skills and appropriate discipline techniques which are taught through video modeling. There are different versions of the Incredible Years Program depending on the age of the child, but many of the parent training components focuses on using logical consequences and problem solving strategies (Webster-Stratton, 2000). Overall, the goals of parent training of the Incredible Years are to decrease conduct problems in children and promote parent competence. Proficiency in the above skills to complete these goals should ultimately improve the child's psychosocial wellbeing.

Multidimensional Treatment Foster Care (MTFC) (Chamberlain & Smith, 2003) is a treatment that was originally used to target severe delinquent behavior in foster youth through a community based program. The parent component of the MTFC involves trained foster parents learning behavioral strategies to reduce delinquent behavior. This is done through implementing

a daily token reinforcement system by providing points for expected behaviors and removing points for negative behaviors. These points can then be exchanged for privileges. Foster youth learn to increase positive behaviors in order to access the rewards that are contingent upon exhibiting the positive behaviors. The child is assigned a treatment team who carry out different aspects and roles of the treatment plan (i.e. Youth therapist, family therapist, PDR Caller) to support the child and family (Fisher & Chamberlain, 2000). Thus, this treatment model is extremely resource intensive.

Multisystemic Therapy (MST) combines several treatments and procedures into one treatment package to treat anti-social and delinquent behavior in children. These treatment procedures include CBT, behavior therapy, parent training, family therapy, and the use of pharmacological methods when necessary. The goal of MST is to keep the child in the home setting and preventing out-of-home placement, therefore, MST sessions are mostly conducted in the family's home over the course of several months. MST delivery can vary greatly but an underlying principle of this treatment is to address and improve the family functioning to decrease problem behavior in the child. The parents, and the child, must work individually and together to increase positive socialization as a family unit. Conducting MST can be complicated as combining several treatments and procedures creates an extra complexity for treatment strength and integrity (Kazdin, 1997).

Parent Child Interaction Therapy (Brinkmeyer & Eyberg, 2003) is a parenting skill program that focuses on increasing warmth and positivity in the parent-child relationship. It is targeted to parents of disruptive children ages 2-7 years. Parents learn two styles of interaction with the first being child-directed interaction. Parents are coached to provide labeled praise, behavioral descriptions, and reflections of children's positive behavior and to provide active

ignoring for negative behaviors. The second phase, parent-directed interaction, involves learning how to give effective instructions and following through on praise and timeout procedure. Skills learned in both phases are taught through therapist coaches behind a one-way mirror utilizing a bug-in-the-ear technology for communication to the parent. Thus, this intervention is geared for clinic based training and with specific, direct, and unique methodology.

The Parent Management Training Oregon Model (Patterson, Reid, Jones, & Conger, 1975) is a program that focuses on teaching parents several basic behavioral principles so they can program their own behavioral modification strategies with their child. Therapists coach the parents through these skills and help monitor the child's behavior. Core skills that parents learn are skill encouragement (i.e. scaffolding and contingent positive reinforcement), discipline (i.e. limit setting and time out), monitoring, problem solving, and positive involvement. The aim of the program is to modify the harsh contextual factors, coercive behavior, and ineffective parenting that perpetuate negative child outcomes (Forgatch, Patterson, & DeGarmo, 2005). Therefore, the parent's involvement to enhance effective parenting are essential to improving the child's behavior.

The Positive Parenting Program (Triple P) (Sanders, 1999) builds on a multi-level system based on the severity and intensity of the child's disruptive behavior starting with universal levels of support to enhanced levels of support. For example, in Level 1, prevention is emphasized with distribution of parenting resources to the public. In Level 2, one to two brief sessions are given to parents of children with mild disruptive behavior teaching developmental expectations. In Level 3, parents learn parenting skills in a 4-session intervention to better handle moderately difficult disruptive behavior in children. In Level 4, parents participate in eight to ten parent training sessions to help treat children with more severe behavioral difficulties. This can

be done individually or in groups. In Level 5, an intensive and individually tailored program is used to treat more severe disruptive behavior and overall family dysfunction (marital problems, family stress, parental depression) over the course of several sessions. The program's foundation is rested in social learning theory as its aim is to identify the learning mechanisms that maintain dysfunctional and maladaptive relationships or interactions between parent and child (Sanders, 1999). Once this is achieved, the parent and child dynamic should improve.

The use of parent training has several limitations. Parents are not the only caregivers and home is not the only context in which children need to improve upon their social-emotional development. The school context and school personnel as caregivers still need to be addressed. Teachers serve as the primary caregivers at school that allow children to create positive relationships and adjust to the formal demands of the school context (Aviles, Anderson, & Davila, 2006), thus improving on overall social-emotional development including decreasing disruptive behaviors. Additionally, providing parent training, or involving parents in treatment, can be challenging when parent's lack of motivation, parents have challenging work schedules, levels of family stress are high, or family conflict is high, particularly between parents (Nock & Kazdin, 2005; Kazdin, Holland, & Crowley, 1997). This means that some parents can't or won't participate in parent training. Third, life stressors can make it difficult for some parents to appropriately implement the strategies learned in parent training sessions (Webster-Stratton, Reid, & Hammond, 2001). Behavior management strategies often require a high level of consistency when implementing in order to see noticeable changes in the child's behavior. For those parents managing a busy household, working long hours, or parenting other children, this level of consistency may be unobtainable.

Cognitive Behavioral Therapy for Disruptive Behavior

As mentioned earlier, cognitive behavioral therapy is another evidence-based treatment for disruptive behaviors in children (Battagliese et al., 2015). Evidence suggests that children with disruptive behaviors have deficits in social information processing including using fewer social cues, generating more negative reactions to social situations, more often applying a hostile attribution bias to vague situations, and feeling comfortable using aggression to solve problems (McCart and Sheidow, 2016). A recent meta-analysis found that CBT is an effective treatment for externalizing disorders (Battagliese et al., 2015). Specifically, CBT was largely effective for improving externalizing symptoms measured by parent report and moderately effective for improving externalizing symptoms per teacher report. This was most evident for children with ODD compared to ADHD and when the comparisons were made to other treatments or control conditions. Furthermore, large effects were found when an adult was involved with treatment whereas moderate effects were found when the treatment was child only. The use of CBT showed small decreases in aggressive behaviors with the most reduction being made when both parent and child were involved in treatment compared to a parent only intervention. Finally, the meta-analysis showed that there was a moderate increase on children's social competence after CBT.

Eyberg, Nelson, and Boggs (2008) and McCart and Sheidow (2016), also using meta analytic procedures, describe the following specific CBT interventions as probably efficacious in reducing disruptive behavior in children and adolescents.

Problem Solving Skills Training (PSST) (Kazdin, 2003) is a treatment targeted for children ages 7-13 with disruptive behaviors. Children are taught problem solving steps which are then generalized to real-life problems. Learned skills include stopping to think about the

problem, finding a variety of solutions, evaluating the solutions, making a decision, and evaluating the outcome. Role playing and feedback are used to teach the skills. A response cost system with tokens is also used to reinforce skills in addition to mini-homework assignments. The use of programmed and systematic problem solving skills are designed to reduce the child's impulsive behaviors in scenarios where they may typically display more disruptive behaviors. In a study examining the effectiveness of PSST on antisocial behaviors in children, it was found that PSST led to more significant reductions of these antisocial behaviors than those in a nondirective relationship therapy group or control group (Kazdin, Esveldt-Dawson, French, & Unis, 1987). Participants were children in a psychiatric facility who exhibited behaviors such as fighting, being unmanageable at home or school, truancy, running away, and stealing and were clinically elevated on scales of aggression or delinquency. At post intervention, the children who received PSST showed the most improvement on the behavior problem scales and school functioning of the Child Behavior Checklist and aggression and overall adjustment on the School Behavior Checklist compared to the Relationship Therapy group and control group. There were no significant changes in behavior at the 1-year follow up point for the PSST group. This establishes that PSST is effective for decreasing antisocial behavior in the home and in the school with gains maintaining in the long term.

The Rational Emotive Mental Health Program (Block, 1978) is a treatment that resides under the umbrella of cognitive behavioral therapies. When addressing disruptive behaviors, it is designed for implementation in schools and is designed for 11th and 12th graders who are at risk for dropping out of school. Students meet in small group sessions to work on cognitive restructuring and rational appraisal through group activities, group discussions, and homework. Group leaders take an active role in providing structure and emphasis on role playing skills

learned in the sessions. The Rational Emotive Mental Health Program takes a direct teaching approach as concepts are being taught, thus the educational format fits well into the school setting. In a study by Block (1978), disruptive upper level high- school students were randomly selected to either the Rational Emotive Therapy group, a psychodynamic based human relations group, or a control group to address disruptive classroom behaviors and school achievement. At post treatment, the Rational Emotive group had significantly fewer incidents of disruptive classroom behavior compared to the human relations or control group. Additionally, the Rational Emotive group had significantly fewer incidents of cutting class and higher GPAs at post treatment.

The Solution Focused Group Program (Shin, 2009) is a treatment that targets youth on probation and rests on the assumption that children already possess the abilities to display positive behaviors and solve problems. Therapists aim to reveal the child's strengths and resources through probe-like questioning that serve specific goals (e.g. "relation questions" allow the youth to consider contextual variables that have contributed to negative or positive interactions). Answers to questions uncover intended solutions to the child's problem and the goals the child wishes to reach. Reducing impulsive behaviors and improving their adjustment to social situations is the goal. The continuous probe-like questioning style of this treatment has shown to be effective for teenagers with problematic behaviors (Shin, 2009), but may be inappropriate for younger children who do not yet possess the cognitive abilities to reflect on complex concepts or the sustained attention to withstand long sets of questioning. In a sample of forty Korean youth on probation, half were assigned to a Solution Focused Group treatment with the other half assigned to a control group in order to assess for changes in aggressiveness and social adjustment (Shin, 2009). At post test measurement, the Solution Focused group

significantly reduced their levels of aggression while the control group actually increased levels of aggression according to self-report scales. Additionally, self-report scales of social adjustment (i.e. family life, living habits, self esteem, emotion control, problem solving skills) significantly increased for the Solution Focused group but decreased for the control group. These results show that the Solution Focused Group Program is effective in treating problematic behavior, like aggression, in offending youth.

Aggressions Replacement Training + Positive Peer Culture (EQUIP) (Gibbs, Potter, & Goldstein, 1995) is a group format therapy aimed to target disruptive behaviors within correctional facilities. A facilitator trains youth to help each other identify and replace cognitive distortions. This is to create a culture where the youth are responsible for one another. Additionally, structured sessions on aggression replacement are included where there is a focus on anger management, social skills, and social decision making. The accountability from group members provides a seamless set up for group therapy. In an outcome study assessing the effectiveness of the EQUIP program against a control group and a group that received a motivational message, participants in undergoing the EQUIP program had conduct gains (Leeman, Gibbs, & Fuller, 1993). In a sample of 57 adolescent juvenile delinquents within a locked facility, those in the EQUIP group showed a significant decrease in institutional misconduct (i.e. fighting, verbal abuse, defiance) compared to the control groups at post test, according to disciplinary records and questionnaires. Additionally, the EQUIP group had the lowest rates of recidivism twelve months after being released from the facility. This shows that group level CBT programs are effective for treating disruptive and antisocial behavior. However, there is some literature suggesting that individuals in group therapy who have disruptive or aggressive behaviors can reinforce these negative behaviors for the other group members

(Arnold & Hughes, 1999). This can be done through peers promoting attitudes toward antisocial behavior and general affiliation or identification with deviancy once placed in a group where the other members are labeled as deviant (Arnold & Hughes, 1999).

The aim of these treatments is to get the child to restructure their initial, hostile, and aggressive thoughts so that they can more appropriately evaluate a problem or assess a situation in a less contentious way. This, in turn, should impact the child's behavior so that it is less disruptive to the environment and provide a solution that is fitting to the problem via a learned process. A major benefit to these cognitive-behavior based therapies is that the clinician is working directly with the child on skill development. The child is the consumer of the intervention and is the agent for change as they directly learn and develop skills. In some cases, this set up is more advantageous than parent training or family therapy. This is especially true if the parent is unmotivated to undergo training, have difficulty in getting to parent training sessions, or if the child does not have a stable parent/primary caregiver (Webster-Stratton, Reid, & Hammond, 2001; Kazdin, Esveltd-Dawson, French, & Unis, 1987). This shows to be a concern as the parents are the primary agent for behavior change within a parent training or family therapy context. In some instances, parent training or family therapy may be more beneficial to child outcomes, such as if the child is too young to participate in the cognitive complexities of CBT or the problematic behavior only occurs in the home setting. However, child-directed CBT would be the more logical mode of treatment for children who exhibit disruptive behavior in settings other than the home (i.e. school), if they have the developmental capabilities to think meta-cognitively, or if lack of resources prevents the parents from being an active participant in treatment (McCart, Priester, Davies, & Azen, 2006; Webster-Stratton, Reid, & Hammond, 2001; McCart & Sheidow, 2016).

Psychosocial Treatment in Schools

It is clear that there is a wealth of interventions that aim to decrease disruptive behavior in children and adolescents. However, not many have been conducted within a school setting nor have they typically considered the effects of interventions on disruptive behaviors at school. The traditional treatments for disruptive behaviors in schools have taken a behavioral approach. Teachers and school personnel may implement interventions such as token economies, school-home notes, and group contingencies. Much success has been found when using this behavioral orientation with the aforementioned techniques for treating disruptive behaviors in schools (Wilson & Lipsey, 2007; Owens et al., 2005; Maggin, Pustejovsky, & Johnson, 2017). A meta-analysis conducted by Wilson and Lipsey (2007) found that individually or small-group delivered school-based behavioral interventions for aggressive and disruptive behavior had greater effects for high-risk students compared to those targeting lower risk students or those that lacked a behavioral component. Additionally, extensive and comprehensive school-based mental health programs have been found to decrease symptom severity and improve functioning in children with inattentive and disruptive behaviors (Owens et al., 2005). Using a randomized delayed treatment control design, children in grades K-6 participated in the Youth Experiencing Success in Schools (Y.E.S.S) program (Owens et al., 2005). This program was delivered through the children's school where target behaviors were tracked by a Daily Report Card with rewards for success. Additionally, parents participated in psycho-education sessions regarding child behavior and communication skills, clinicians consulted with the children's teachers for behavior management strategies, and children participated in individual sessions to address social and emotional impairment. From parent ratings of the Disruptive Behavior Disorders rating scale, there was a significant reduction in the severity of several symptoms including hyperactivity and

impulsivity, oppositional defiant behavior, and impairment of peer relationships for the treatment group. Parents ratings from the Child Behavior Checklist also showed a significant decrease in symptomology for the treatment group that included aggressive behaviors, externalizing behavior problems, conduct disorder problems, and total behavior problems. Teacher rating results did not exactly mirror the parent reports, but did show that the treatment group had a reduction in inattention and reduction in the combined variable of inattention and hyperactivity. While comprehensive in its programming, the Y.E.S.S intervention relies heavily on the teachers, parents, and consultants without investigating the effects of child-centered therapy sessions on their own.

Schools are advantageous for delivering psychosocial treatments to children for several reasons. The first is that many problematic behaviors are exhibited within the school context making the school a natural environment to treat those behaviors (Nelson, 1996). Second, some children may not have the familial resources to seek out treatment in the community or from private organizations. The majority of children attend school, which provides them an avenue to access to treatment if they are at a school that supports programming for psychosocial treatments (Owens et al., 2005). Third, due to the Related Services section of the Individuals with Disabilities Education Act (2004), most schools have supportive adults with diverse professional training who are potential treatment agents. Between counselors, social workers, school psychologists, and special education specialists, many schools have a qualified individual to carry out a treatment protocol and monitor progress.

It is particularly important to consider psychosocial treatment in schools for children with disruptive behaviors, as these types of behaviors are detrimental to the classroom environment. Lum et al. (2017) noted that a large proportion of public school teachers felt that student

misbehavior interfered with teaching and that disruptive behavior negatively impacted achievement for the offending student *and* the classmates. Additionally, teachers who experienced student misbehavior reported higher levels of classroom stress which lowered their levels of self-efficacy for classroom management (Klassen & Ming Ming Chiu, 2010). This points to a directional interaction of student misbehavior on teacher's ability to manage the classroom. In other words, disruptive behavior in the classroom could potentially decrease the effectiveness of teacher's perceived ability to manage the classroom setting overall.

With the extensive literature showing the effectiveness of cognitive behavioral therapy for disruptive behaviors in children, it is logical that CBT could also be used in the school setting. Several studies have successfully used cognitive behavioral therapy to treat disruptive behavior in schools establishing that it is an acceptable treatment in this type of setting. Cognitive behavior modification in a school setting was found to reduce aggression in a meta-analysis (Robinson, Smith, Miller, and Brownell, 1999). Sixteen effect sizes were calculated with a mean weighted effect size of 0.64 and 88% of the effect sizes were positive. Another meta-analysis looking at the success of cognitive behavioral therapy to reduce disruptive behavior in schools found that those children who received CBT had fewer disruptive behaviors than those who did not (Ghafoori & Tracz, 2001). Ghafoori and Tracz reported an effect size of 0.29. This meta-analysis also found that conducting CBT within a school environment was not a disadvantage to the treatment outcome with effect size for treatment administered in a school setting and effect size for treatment administered in a non-school setting being roughly equal (0.30 and 0.27, respectively). It is clear that CBT does work to reduce aggression and disruptive behaviors when implemented in a school environment as seen through moderate to large effect sizes from meta-analyses. Additionally, implementing CBT in schools provides for unique

practical advantages in that the resources may be available in the school and the child/adolescent may already be attending the school.

Larkin and Thyer (1999) further established that school-based cognitive-behavioral group therapy with disruptive elementary school students can have beneficial outcomes. Weekly group sessions were conducted with a school social worker where students engaged with psycho-education regarding anger, problem solving strategies, modeling of positive behavior, roleplaying through scenarios, social skills training, and behavioral feedback. An immediate treatment group participated earlier in the school year while a delayed treatment group participated later. This intervention was conducted in groups once a week for eight weeks, with session duration lasting one hour. Both teachers and teacher's aides gave behavioral grades for the participant's classroom behavior for the past month at each of the three time points within the study. These grades could range from D (poor behavior scored as a 4) to A (excellent behavior scored as a 1). Using a 2x3 ANOVA of group by time period, both of the teachers' behavior grades and teacher's aides' behavior grades had significant results. There was a significant between- group difference once the immediate treatment group underwent the intervention compared to the delayed treatment group. Specifically, t-test analysis showed a significant effect in the immediate treatment group for all three time point comparisons in the teachers' behavior grades and two of the three time point comparison for teacher aide grades. The results from this study show clear evidence for the effectiveness of a CBT treatment for students with disruptive behaviors as seen through statistically significant results when comparing an active treatment group and a delayed treatment group. It also establishes the use of a trained school personnel conducting weekly CBT sessions as a viable format for structuring and administering treatment.

Another CBT-based intervention to target disruptive behavior that has been implemented in the school context has considered both direct skill training for the child and the role of active teacher support. In a randomized control trial using the Keep Cool, Start at School, a manualized a child-focused cognitive behavioral therapy, children were found to have positive post-treatment effects on their disruptive behavior compared to a waitlist control (Liber, De Boo, Huizenga, & Prins, 2013). School aged participants worked on social information processing, problem solving skills, and social skills. This was done through cognitive restructuring, psychoeducation, modeling, role playing, and positive reinforcement of skills over a 9 session group format. In addition to the child component, teachers either received five sessions of active support (i.e. using behavioral contingencies in the classroom) or five sessions of general psychoeducation (i.e. learning how CBT can treat disruptive behavior). Teachers reported a significant reduction in disruptive behavior in the treatment condition compared to the waitlist control condition from pre to post treatment. Moderate to large effect sizes were seen in the treatment condition, with Cohen's d values ranging from .30-.59. Results also showed that there was not a significant difference between teachers playing an active role or a general educational role in treatment. In other words, children did not show a difference in disruptive behaviors at post treatment when comparing those who had teachers with general psycho-education training versus those who had teachers that provided active contingency management and modeling of positive behaviors. It appears that utilizing teachers to provide a regimented behavior plan in class does not necessarily improve disruptive behavior above and beyond the CBT intervention with the child based on the evidence and specific procedures from this single study. This further suggests the importance of CBT style interventions to treat disruptive behaviors in schools.

Overall, there is clear evidence suggesting that not only are psychosocial treatments a standard component to addressing disruptive behaviors in schools, but cognitive-behavioral based therapy is effective and feasible in schools too (Robinson, Smith, Miller, & Brownell, 1999; Ghafoori & Tracz, 2001; Larkin & Thyer, 1999; Liber, De Boo, Huizenga, & Prins, 2013). There is some evidence (Liber, De Boo, Huizenga, & Prins, 2013) that indicates complex, active teacher-based interventions are not necessary to see decreases in disruptive behaviors if an effective direct child treatment approach is taken to confront these problematic behaviors. This relationship is undoubtedly complex with interactions between the child's needs, learning history, environment, and the teacher capacities. A great deal of additional research is needed regarding the achieving an efficacious balance between direct and indirect treatment for youth exhibiting disruptive behavior. However, it remains clear that direct treatment alone can be effective (Southam-Gerow, 2003). This leads to one direction for additional research examining use of skill building sessions with children and practicing of skills taught or led by a school professional. It should also be noted that teachers have many demands place upon them during the school day beyond just teaching academic content. Dependence on teachers to implement behavior interventions can be resource consuming and take away from their main duty of teaching. The use of an intervention that is guided by a trained clinician in the school and requires minimal to some effort on behalf of the teacher. In some treatment situations direct treatment may be an efficacious option or it may be the only practical way to address student needs.

Problem Solving Skills

One major theme in all of the cognitive-behavioral therapy programs for disruptive behaviors is strengthening problem solving skills in treated youth. Examples of problem solving

skills within this treatment mode include assessing social cues, analyzing attributions, generating possible solutions, and evaluating chosen outcomes. The consistency of this particular skill within a variety of CBT treatments for disruptive behaviors points to it potentially being a critical component to decreasing disruptive behaviors. Social problem solving skills are an integral part of adaptive functioning in interpersonal contexts. In fact, the presence of social problem solving skills has been found to be positively related to behavioral competence and positive psychological well-being. Social problem solving skills can also reduce the negative impacts of stress. Individuals with with problem solving deficits have been found to exhibit greater depression, anxiety, substance abuse, and offending behavior (D’Zurilla & Nezu, 2010). Individuals with disruptive behaviors often become angry and engage in conflict with others due to misattributions of others’ behaviors (Sukhodolsky, Kassinove, & Gorman, 2001). Being able to effectively identify solutions for interpersonal conflict may be useful in decreasing instances of disruptive behavior.

Research examining the Incredible Years Dinosaur program addressed not only problem solving skills, but also cognitive-behavioral training, social skills, and anger management as a means to treat conduct problems in children. Overall, this program was found to decrease conduct problems and increase prosocial skills (Webster-Stratton, Reid, & Hammond, 2001). Using the Incredible Years Dinosaur program, children ages 4-8 were taught conflict resolution skills, perspective taking, coping skills, and problem solving skills through the use of discussing, modeling, and practicing in hypothetical situations over the course of 18-22 group sessions. The treatment package included videotaped modeling of positive skills, homework, and skill generalization. Participants were expected to practice concepts at home while teachers and parents reinforced the skills through tracking on a weekly behavior chart. Compared to a waitlist

control group, the Dinosaur treatment group had significant reductions in conduct problems post intervention. This was shown from both teacher and parent report measures. Additionally, the treatment group was able to provide more positive solutions to hypothetical social problems compared to the control after the intervention took place. The child-centered nature of this treatment suggests that a child training approach, rather than intensive parent training, can be effective in treating conduct problems for at least some youth. While the omnibus positive treatment effects are encouraging, it is difficult to determine the importance of each component of the treatment “package”. Particularly, it would be helpful to determine the direct effects of problem solving on reduction of conduct problems.

There is further evidence that teaching problem solving skills is beneficial for reducing behavioral problems. In a pre-post test group design assessing the effects of a problem solving skills training intervention on 23 Nicaraguan girls living in a group home, researchers found a significant effect for reduction in externalizing problems, conduct problems, and an increase in adaptive skills (Lee, 2015). The problem solving skills intervention was implemented for three weeks and utilized the Coping Power Program. The Coping Power Program is step-by-step method for teaching problem solving skills to individuals with disruptive behavior problems. The steps are as follows: P.I. (Problem Identification), C (Identify Choice), and C (Choose the best solution). The intervention also incorporated a token economy for the participants. Check marks were given to participants on a weekly behavior chart if they demonstrated use of a problem solving skill. Check marks could be exchanged for daily privileges such as extra TV time or extra sleep time in the morning. Paired sample t-tests showed a significant difference pre and post intervention on several subscales of the Behavior Assessment System for Children-2 (BASC-2) including externalizing problems, conduct problems, and adaptive skills. Effect sizes,

reported as Cohen's d , were medium to large. Functional communication and social skill scores from the BASC-2 did not change after the intervention. Several limitations of this study are worth considering. A rather small sample size was used, no control group was used as a comparison for the intervention group, and materials were not standardized as to adapt to the group home context.

Integrating CBT and Problem Solving Skills Psychoeducation

Many of the treatments directly serving youth described above provide some balance of psychoeducation and CBT to participants. It could be argued that at some level the constructs themselves are difficult to reliably differentiate and that some distinctions between treatments are ones of degree and emphasis. The Problem Solving Skills Training is an example of an evidence based treatment that combines psychoeducational/problem solving and CBT elements (Kazdin, 2017). PSST aims to change distorted cognitive processes that are often displayed in individuals with disruptive behavior or conduct problems by identifying and selecting prosocial solutions to interpersonal problems (Weisz and Kazdin, 2010). The direct treatment methods align with some of the core cognitive deficits as seen in disruptive youth including lack of incorporating appropriate social cues and responses, using aggression as a means to solve problems, and relying on a hostile attribution bias within social situations (McCart & Sheidow, 2016). In original investigations of the effectiveness of PSST, strong effects were found for a decrease in disruptive behavior from pre to post treatment (Kazdin, Siegel, & Bass, 1992). In an out-patient clinic sample, 97 children ages 7-13 who displayed aggressive and antisocial behavior were randomly assigned to one of three conditions: PSST, parent management training (PMT), or a combined PSST + PMT group. Improvements in delinquent behavior were evident for all three groups at post treatment. The combined PSST + PMT group had significantly less overall

antisocial and conduct problems compared to the single PSST and PMT groups. These data suggest that in this sample combined treatment was more effective. From child report measures, aggression and delinquent behaviors were significantly lower in the PSST group and the PSST +PMT group. Slightly more significant reductions were found on measures of aggression, delinquent behaviors, and conduct problems for PSST over PMT. At the one year follow up, PSST and the PSST + PMT groups showed improvements on measures of aggression, antisocial behavior, and delinquent behavior compared to pre treatment. While the PSST + PMT combined group showed the most gains after treatment, the PSST group showed more improvements over the PMT group.

PSST has also shown to be effective in treating children with severe disruptive behavior in an inpatient psychiatric facility (Kazdin, Esveldt-Dawson, French, & Unis, 1987). Fifty-six children ages 7-13 were randomly assigned to one of three intervention groups: PSST, nondirective relationship therapy, or a non-directive control. Compared to those children who underwent relationship therapy or a non-directive control group therapy, the PSST group showed a clinically significant decrease in internalizing behaviors, externalizing behaviors, and aggression according to the Child Behavior Checklist and School Behavior Checklist. Additionally, the PSST group had the largest increase on the activities, social, and school scales of the CBCL showing improvements in prosocial behavior.

Thus far, there has not been published evaluations of PSST in a school setting. Implementation of this intervention would be advantageous for treating disruptive behaviors in children for several reasons. The first is that children who often engage in conflict may learn how to appropriately respond through the use of systematic problem solving in social situations. Second, a clinician can implement the intervention thus removing the primary responsibility of

skill training from teachers. Third, the effectiveness of PSST can be investigated in a setting other than a clinical or in-patient environment as has been done in the past. Furthermore, the use of evidence based interventions in schools has gained priority in recent years based on the rising standards and accountability from educational policy makers for a strong research basis in school programming (Shernoff & Kratochwill, 2007). Implementing an established evidence-based intervention such as the Problem Solving Skills Training to treat students with disruptive behaviors would align with professional standards for evidence based research in education policy and a method for accountability to improve outcomes for children in schools (Slavin, 2002).

Purpose

The purpose of the present study is to investigate the use of the Problem Solving Skills Training (PSST) as an intervention for children with disruptive behaviors in the school setting. The author has not been able to locate an example of PSST specifically being used in a school environment even though other forms of cognitive-behavior therapy have been utilized in schools, including programs that include PSST as an element of a larger package.

METHOD

Participants and Setting

Twenty-eight participants ages 8-13 years were recruited from a local K-8 charter school, where teachers were asked to nominate students with “disruptive behaviors”. Approximately 32% of the participants were female. A letter was sent home to the nominated students’ parents describing the study details and asking permission for their child’s participation in the study. When parental consent was obtained, students were asked for their verbal assent. Using G*Power to compute required sample size given an alpha level of .05, power of .80, a correlation between measures of .5, and an effect size of .3, a total of 24 participants would be the required to obtain the target power. Due to the potential for participant drop out and the desire to provide a margin for error in the power estimate, the goal sample size during recruitment included 30 students for participation, with two equal groups of 15 students each. However, with attrition, twenty-eight participants were in the final sample. Relatively small sample sizes for group designs (i.e. those below 100 total participants) have previously been utilized in testing the effects of PSST. This can be seen from a seminal study investigating PSST within a hospital setting (Kazdin, Esveldt-Dawson, French, and Unis, 1987) where 56 total participants were used. In the current study, students participated in sessions roughly once per week for 7 weeks either individually or in small groups (2-3 students) based on scheduling and availability during the school day. Sessions took place in quiet room in the school and lasted roughly 30 minutes in duration.

Measurement of Dependent Variables

Teachers provided pre and post intervention behavior ratings by completing the Strength and Difficulties Questionnaire (SDQ-T). The SDQ-T is a 33-item behavior rating scale used to

assess for psychosocial functioning in children that includes five relevant domains: conduct problems, emotional symptoms, hyperactivity, peer relationships, and prosocial behavior (Goodman, 1997). The SDQ-T utilizes two forms – one with language consistent with pre-intervention and one with language consistent with post-intervention. Pre and post intervention specific forms are further specified for ages 4-10 and another for ages 11-17. According to a meta analysis, the SDQ-T has good psychometric properties with adequate to good weighted mean internal consistency (.63-.85), adequate to good weighted mean test-retest correlations (.68-.85), and adequate concurrent validity with the CBCL for similar psychosocial problems (.53-.79) (Stone et al., 2010). The SDQ is an appropriate behavior rating scale to assess for disruptive behaviors in the school context.

One common punitive discipline strategy for students with disruptive behavior is time spent in a time out room (TOR) (Ryan, Sanders, Katsiyannis, & Yell, 2007). A TOR is a room separate from the student's classroom within the school that is intended to serve as punishment for inappropriate behavior. The student will spend a varied amount of time in this room with the intent to decrease disruptive behavior before returning to class. Students are often asked to discuss or reflect their problematic behavior and to continue with their regular classwork. Frequency of referrals to the TOR three weeks prior to the start of intervention and three weeks post intervention for each student was calculated and compared. This information was gained through the school's online software to track student behavior, called Dean's List. Teachers and staff log incidents of student misbehavior in real time including send outs to the TOR.

Materials

Problem Solving Skills Training (PSST): The PSST program is a cognitive-behavioral based intervention for children that focuses on the use of problem solving steps to manage

impulsive and disruptive behavior in various situations (Weisz & Kazdin, 2017). It follows a guided format of weekly sessions with a therapist lasting about 30-50 minutes. The program contains 12 total sessions with additional sessions available, if needed. Session 1 begins with an introduction of the problem solving steps in a game like format. In sessions 2 and 3, the participant applies the problem solving steps to simple problems and homework begins to be assigned. In session 4, the participant applies the steps to identify solutions which are then role played. Session 5 is a parent-child meeting where the child teaches the steps to the parent and the parent learns to provide attention and contingent praise for the child's use of the steps. Sessions 6-11 are continued applications of the problem solving process to situations that the child is likely to encounter. Session 12 involves a "wrap up" and a chance for the child to reverse the roles of teacher and learner with the therapist. There is also a behavioral contingency component to the intervention that utilizes a token economy. Children begin each session with a set amount of tokens. Tokens can be removed for lack of homework completion or misusing the problem solving steps and tokens can be gained for exhibiting strong prosocial behaviors. Tokens are exchanged for small prizes at the end of each session.

For purposes of the current study the PSST was adapted to a seven session format that was more manageable in schools and focused on repeated feedback and practice of targeted skills. To serve as a training guide, session content and sequence was extracted from the Problem Solving Skills Training for Children and Adolescents: An Overview (Yale Parenting Center, 2011). Both the main and secondary experimenter read and reviewed this guidebook in length. The guidebook outlined the problem solving steps and tasks; modeling, social reinforcement, and labeling techniques from the experimenters; the self-evaluation process; role play scenarios; and in-vivo procedures and examples. The content of each specific session is described below under

Procedures. The detailed session outlines for each session are provided in Appendix A.

Additional materials needed to implement the intervention included small tokens, small prizes, and school software to access TOR referral counts (i.e. Dean's List).

Procedure

Intervention: To adapt to the limited available time resulting from school schedules, and accounting for the time needed to gather TOR data three weeks prior to implementing the intervention, the PSST program was shortened to 7 sessions total for the present study. Session sequence was as follows: 1) Session 1 remained the same as the standard protocol where the problem solving steps are introduced in a game-like fashion. The token economy was also introduced. 2) In session 2, the child reviews the problem solving steps learned in session 1. The child starts to apply the problem solving steps to simple problems and homework was introduced. Homework required the participant to use the problem solving steps outside of the session and then re-enacted with the therapist in the following session. 3) In sessions 3-6, the session started with review of the previously assigned homework. Bulk of the sessions consisted of continued application of the problem solving steps to real-life situations. Situations varied in the type of conflict (participant generated vs. therapist generated; teacher conflicts vs. parent conflicts vs. peer conflicts) and the preferred solutions were role-played with the therapist. Some examples of role-played conflicts included having a project ruined by a classmate, losing a game, hearing a rumor about oneself, and being given criticism from a teacher. A fading procedure was introduced in these sessions where the problem solving steps were said aloud, then in a whisper, then silently. Homework was also still assigned. 4) Session 7 was the "wrap up" where the participant explained and modeled the skills they've gained to the therapist. The therapist then provided a verbal summary of the progress the participant has made. At the end of every session,

the child and experimenter completed a performance rating based on the child's accuracy with the PSST procedure during that session. Matching ratings allowed the child to receive a token. Tokens were cashed in for prizes at the end of every session, if the child desired.

Experimental Design

The study utilized a randomized delayed treatment control design to determine the effect of the PSST intervention on participants. Each group received the intervention, 7 sessions of the PSST, to determine the effectiveness of the program. Participants were placed in either the Treatment group or the Delayed Treatment group through simple random assignment via a random number generator. The Treatment group received the intervention in the Fall 2019 semester while the Delayed Treatment group received the intervention in the Spring 2020 semester. A delayed treatment control design is preferable for this study as it provides a comparable control group while allowing the control group to receive intervention for their problematic behaviors. The intention was for data to be collected at three time points for each group: Time 1 as the pre-intervention data collection point for both groups before entering treatment; Time 2 as the post intervention data collection for the primary treatment group and a control follow-up pre-treatment measurement for the delayed treatment control; Time 3 as the follow-up measurement (maintenance) for the primary treatment group and post-treatment for the delayed treatment control. However, during the data collection period, the COVID-19 pandemic effected school operations and forced the closure of the research site. At that time, the majority of the initial treatment group had already completed treatment, depending on when they started. The majority of the delayed treatment control group was still in the midst of receiving treatment. Due to school closures and the inability to capture student behavior, post-treatment

data was unable to be collected for the delayed treatment control group and maintenance data was unable to be collected for the primary treatment group.

Procedural Integrity

To ensure procedural integrity, the main experimenter filled out a checklist of key session components for each session conducted (see Appendix B). . The checklist varied depending on which session number is being conducted. For example, the checklist for session 1 included steps such as teaching each step of the problem solving process individually while the checklist for session 6 included steps for reviewing last session's homework and practicing skills through a new hypothetical situation A second experimenter accompanied the main experimenter for roughly 8.5% of the total sessions completing a second, identical checklist. Procedural integrity calculated to be 98.16% across all sessions. This was calculated by dividing the number of completed steps by total number of steps and multiplying by 100. Inter-observer agreement calculated to be 98.00% across the 8.5% of sessions with a second observer. This was calculated by dividing the number of agreed upon steps by total number of steps and multiplying by 100.

RESULTS

Due to the small sample size, the Kolmogorov-Smirnov test (K-S test) was used to assess for normality of the sample distribution. For the active treatment group, SDQ and TOR Send Out scores did not deviate significantly from normality with the exception of Time 2 Send Out scores, $D(11) = 0.269, p < .05$. For the Wait to Treat group, all SDQ and Send Out scores did not deviate significantly from normality, see Table 1. Since the bulk of the data was normally distributed the data were not transformed. Descriptive statistics for both the active treatment group and the wait to treat control group for both time points are shown in Table 2.

Table 1. Test of Normality

	Group	Kolmogorov-Smirnov		
		Statistic	df	Sig.
T1 SDQ Scores	Active Treatment	.145	14	.200
	Wait to Treat	.192	14	.170
T2 SDQ Scores	Active Treatment	.127	12	.200
	Wait to Treat	.118	13	.200
T1 Send Out Counts	Active Treatment	.178	12	.200
	Wait to Treat	.138	13	.200
T2 Send Out Counts	Active Treatment	.269	11	.026
	Wait to Treat	.152	13	.200

Table 2. Descriptive Statistics for Group by Time Point

	Group	M	SD	n
T1 SDQ Scores	Active Treatment	17.979	5.139	12
	Wait to Treat	19.865	5.274	13
	Total	18.960	5.190	25
T2 SDQ Scores	Active Treatment	13.083	6.097	12
	Wait to Treat	19.212	5.679	13
	Total	16.270	6.552	25
T1 Send Out Counts	Active Treatment	6.636	4.717	11
	Wait to Treat	7.000	4.583	13
	Total	6.833	4.546	24
T2 Send Out Counts	Active Treatment	3.363	3.501	11
	Wait to Treat	7.462	5.060	13
	Total	5.583	4.800	24

A two repeated-measures analyses of variance (RM-ANOVA) were conducted to assess for the effects of the PSST intervention on SDQ scores and frequency of TOR referrals separately. The randomized groups served as the between-subjects variable and time served as the within-subjects variable. Scores on the SDQ and Send Out counts from pre-intervention (time 1 for treatment group; time 1 and time 2 for waitlist control group) to post-intervention (time 2 for treatment group; intended time 3 for waitlist control group) were compared. The repeated measures ANOVA is the most appropriate analysis for this design due to the differences in what each dependent variable is measuring. They do not represent a single underlying construct. The SDQ is likely to be sensitive to both maladaptive internalizing and externalizing behaviors while the TOR referrals are likely to be exclusively sensitive to disruptive and socially deviant behaviors. Knowing that the SDQ measures for behaviors other than disruptive behaviors, it would not be appropriate to consider the two dependent variables as measuring a single underlying construct, thus ruling out a repeated measures MANOVA as a form of analysis.

There were only two levels of the repeated-measures variable, therefore sphericity was met. With sphericity assumed, there was a significant main effect for time on SDQ scores, $F(1) = 4.732, p = .040, \eta_p^2 = .171$. A repeated-measures ANOVA was then conducted for Send Out counts. With sphericity assumed, there was not a significant main effect for time on Send Out counts, $F(1) = 3.243, p = .085, \eta_p^2 = .128$. These results show that SDQ scores significantly changed from Time 1 to Time 2, but Send Out counts did not when data were collapsed across both groups. Using a repeated-measures ANOVA, a significant main effect was found for Group on SDQ scores, $F(1) = 4.835, p = .038, \eta_p^2 = .174$. A significant main effect was not found for Group on Send Out scores, $F(1) = 1.752, p = .199, \eta_p^2 = .074$. These results show that the two groups significantly differed in SDQ scores but not Send Out counts, regardless of time. A

significant interaction was not found for SDQ scores by time and group, $F(1) = 2.765$, $p = .110$, $\eta_p^2 = .107$. However, a significant interaction was found for Send Out counts by time and group, $F(1) = 5.723$, $p = .026$, $\eta_p^2 = .206$. These results suggest that the changes SDQ score changes were accounted for by the changes within the time and group factors. However, some caution is warranted in interpreting these results in this manner given the small final n and the obtained probability level (0.11).

Further analysis for post-hoc tests using independent samples t-test shows that the active treatment group ($M = 17.982$, $SE = 1.461$) and the wait to treat control group ($M = 19.804$, $SE = 1.356$) did not significantly differ in SDQ scores at time 1, $t(26) = -.914$, $p = .369$, $CI [-5.92, 2.28]$. This was expected as the two groups were created by random assignment. Another independent samples t-test shows that the active treatment group ($M = 7.286$, $SE = 1.273$) and the wait to treat control group ($M = 7.000$, $SE = 1.271$) also did not significantly differ on Send Out counts at time 1, $t(25) = .159$, $p = .875$, $CI [-3.42, 3.99]$. Examining for differences between groups at time 2, an independent samples t-test show that the active treatment group ($M = 13.083$, $SE = 1.760$) and wait to treat control group ($M = 19.212$, $SE = 1.575$) did significantly differ in SDQ scores, $t(23) = -2.602$, $p = .016$, $CI [-11.02, -1.24]$. An Independent samples t-test also showed that the active treatment group ($M = 3.364$, $SE = 1.055$) and the wait to treat control group ($M = 7.461$, $SE = 1.403$) also significantly differed in Send Out counts at time 2, $t(22) = -2.263$, $p = .034$, $CI [-7.75, -.45]$.

Using a paired-samples t-test, differences were assessed for SDQ scores and Send Out counts within each group. A significant difference was found in SDQ scores for the active treatment group from time 1 to time 2, $t(11) = 2.231$, $p = .047$, $CI [.07, 9.72]$, but not for Send Out counts, $t(10) = 2.073$, $p = .065$, $CI [-.25, 6.79]$. Significant differences were not found for

SDQ scores, $t(12) = .473$, $p = .645$ CI [-2.36, 3.67], or Send Out counts, $t(12) = -.857$, $p = .408$, CI [-1.63, .71] for the wait to treat control group from time 1 to time 2.

DISCUSSION

This study found that school-based implementation of cognitive behavioral therapy (CBT) with problem solving psychoeducation, specifically the use of an adapted Problem Solving Skills Training intervention (PSST), was effective in decreasing disruptive behaviors for youth in schools. Through learning appropriate problem solving steps and applying these steps to solve interpersonal problems, the students were able to decrease their levels of disruptive behavior from pre-intervention to post-intervention as seen by scores on a teacher-reported measure of behavior for the treated group compared to a waitlist control group. Additionally, significant decreases in disruptive behavior were also established as seen through an interaction effect of send out counts by time and group with the treated group having fewer disciplinary actions taken against them compared to the waitlist control group. The effect size for these decreases in disruptive behavior ($SDQ \eta_p^2 = .171$; $Send\ Outs \eta_p^2 = .206$) were large. This is a partial improvement from reported effect sizes on disruptive behavior from other PSST group studies. Bushman and Gimpel-Peacock (2010) reported a Cohen's d of .36 from the parent-report SSRS which is considered a small to medium effect size. They also reported a Cohen's d of -.80 on the parent-reported CBCL externalizing scale score, which is considered a large effect size. The magnitude of treatment gains in the current study aligns with, if not improves on, the effectiveness of PSST to address disruptive behavior in children.

Disruptive behavior is a common problem seen in children that is frequently the source of outpatient mental health referrals (Ogundele, 2018) and are costly from a legal, public health, and criminal justice standpoint (Tolan & Leventhal, 2013; Cuffel, 1997). Broidy et al. (2003) established that high levels of aggression in childhood can link to a developmental pathway that leads to future criminal offenses in adolescence. Additionally, disruptive behaviors are

detrimental to the school and classroom environment. They are linked to limited and poor teacher interactions (Sutherland & Oswald, 2005), decrease in high school graduation rates and college attendance (Duncan & Magnuson, 2011), and an increase in social deficits with peers (Snyder, 2002). With the myriad of negative outcomes associated with disruptive behavior in children, there is a clear need to address and treat this issue.

Prior research for treatment of disruptive behavior shows support for two major treatment categories: 1) parent training and 2) cognitive behavioral therapy (CBT) (Eyeberg, Nelson, and Boggs, 2008; McCart & Sheidow, 2016). Parent training techniques are grounded in the work of social learning theory (Bandura, 1979) with emphasis on observation, modeling, and rewarding of positive behavior. The other treatment category, CBT, is grounded in psychoeducation and the confrontation of maladaptive thinking patterns with the client themselves. A common theme seen in CBT treatment for disruptive behavior is the teaching of restructuring thoughts to be less hostile, aggressive, or defensive. This in turn allows the individual to more appropriately use social decision making skills to solve their interpersonal problems. This is particularly useful as children with disruptive behavior often have social information processing deficits that prevent them from making appropriate choices such as, using fewer social cues, generating more negative reactions, and applying a hostile attribution bias (MaCart and Sheidow, 2016). The present study confirms the effectiveness of CBT as a treatment for disruptive behaviors as seen through the significant decreases in problematic behavior over time through teacher-report measure (SDQ) in comparison to a control group. Participants who completed the intervention were able to generate and select positive solutions to interpersonal problems within treatment sessions. Role playing and guided prompting allows the participants to discern between solutions that would bring about prosocial rather than detrimental outcomes. Importantly, these behavioral

gains were observed by teachers as is evident in the decrease in overall SDQ scores prior to treatment to post treatment for the treatment group.

Problem Solving Skills Training (PSST) is a treatment that uses this CBT approach to target disruptive behavior in children ages 7- 13 years (Kazdin, 2003). Children are taught sequential problem solving steps to address easy problems and then use these steps to generalize to solving real-life problems. Role playing, feedback, and homework are incorporated aspects of the treatment to further increase generalizability and adherence to the steps. A token economy is also used to reinforce learned skills. PSST has shown to be an effective treatment to decrease disruptive behavior within in-patient and out-patient facilities for children. PSST groups have yielded larger decreases in aggression, conduct problems, and delinquent behaviors for both child and adult measures in comparison to parent training groups (Kazdin, Siegel, & Bass, 1992). Further evidence shows that compared to a control or a relationship therapy group, a PSST group had significant decreases in internalizing behaviors, externalizing behaviors, and aggression according to parent and teacher report (Kazdin, Esveldt-Dawson, French, & Unis, 1987). The current study established that a PSST group had a significant decrease in problem behaviors compared to a wait-to-treat control group on teacher-report measures of behavior, further confirming PSST's effectiveness over alternative treatment or control groups.

With these promising results, there are surprisingly no published evaluations of PSST in the school context. The present study is the first to provide some evidence that PSST may be an effective treatment within the school environment. Despite the unforeseen challenges associated with COVID-19 during the data collection period, the implementation of PSST at a school was successful. School-based interventions are vital to the overall improvement of problem behaviors in children. Access to treatment can be difficult for many children. While we know parent

training treatments for disruptive behaviors have positive outcomes, they bring an added element of difficulty for children to receive treatment (Liber, De Boo, Huizenga, and Prins, 2013). It's been shown that parents of disruptive children have difficulty accessing mental health services (Waschbusch et al., 2005), have difficulty completing treatment (Reyno & McGrath, 2006), and may even be reluctant to seek treatment in the first place (Kazdin, Holland, & Crowley, 1997). This highlights why school-based treatment is important alternative for treating disruptive behaviors.

The present study sought to decrease levels of disruptive behavior as measured by teacher-report and disciplinary referral data. When looking at the main effects of the treatment on SDQ scores, there was a significant decrease in scores over time and significant differences by group. Upon further inspection from post-hoc tests, the active treatment group's SDQ scores from time 1 to time 2 decreased close to 5 points on average, while the wait to treat control group had stable scores. The wait to treat control group was expected to have stable scores over time as they had not completed treatment at the second measurement time point. Effect sizes were large for the main effects of SDQ scores by group and SDQ scores by time. No significant main effects were found for send outs from the PSST intervention. This shows a discrepancy from a teacher measure of behavior and a real-time observational measure of the behavior. Previous PSST studies have shown significant decreases in measures of disruptive behavior from caregiver measures (Kazdin, Siegel, & Bass, 1992; Kazdin, Esveldt-Dawson, French, & Unis, 1987). Observational behavioral data from prior PSST studies shows that disruptive behavior was significantly reduced in the home at post-treatment and follow-up as measured by frequency counts of negative behavior instances per day (Kazdin, Siegel, & Bass, 1992, Bushman & Peacock, 2010). As previously discussed, the SDQ is a measure of total problems for the child,

including externalizing and internalizing problems. The frequency of send outs to the time out room is more specific to disruptive, oppositional, or externalizing behaviors. The differences in the patterns of which specific effects were significant in this study should be approached with some caution given that the pattern in means is the same across both measures and the number of participants was modest.

An interaction effect was found for send outs counts by time and group with a large effect size. A post-hoc analysis determined that the active treatment group and the wait to treat control group differed in send out counts at time 2. There was a difference of approximately four disciplinary actions on average between the groups at time 2, with the primary treatment group having fewer send outs than the control group. PSST appears to have been an effective intervention to decrease total problems in school as rated by teachers and adverse disciplinary actions taken by teachers. Rey et al. (2007) assert that teacher support, as seen through positive behavioral ratings, can moderate children's risk for school failure. Mendez (2003) found that teacher ratings of behavior in grades 3-5 had a moderate relationship with the number of suspensions a student will receive in grade 6. Improved behavioral ratings by teachers can suggest an improved trajectory given this measure's predictive relationship to long term outcomes for students.

Issue of Generalization

With a significant interaction effect between send outs with time and group, and a follow-up analysis showing a significant decrease in send outs at time 2 for the active treatment group, it can be argued that generalization of skills learned in the PSST intervention occurred in the natural school setting. However, a significant main effect was not seen for send outs which poses the issue of whether generalizability could have been further promoted or facilitated.

Generalizability is key for the transfer of skills learned in a more analog setting to real-world situations. It has been known that skills learned in more structured settings can be difficult to generalize to other environments (Cowan & Allen, 2007). One such technique to increase generalization is to train diversely. This means using loose programming, using a variety of stimuli when teaching skills, or allowing for natural variations in the teaching conditions (Cowan & Allen, 2007). The nature of PSST sessions relies on training diversely: it incorporates a variety of problem scenarios, it allows for naturalistic problems to be chosen and practiced by the child, and problem solving skills are reinforced by homework assignments outside of the training sessions.

Another element of generalization that was used within PSST was script fading. Script fading is the use of pre-determined scripts that a person may use in a naturalistic setting to promote engagement with a certain topic, question, or verbalization with the systematically decreased involvement of a prompt (Cowan & Allen, 2007; Krantz & McClannahan, 1998). At first, a facilitator prompts the individual to use the script in the applied setting. Over time, the facilitator is removed, the scripts are shortened, and the scripts are made less obvious to an observer. A key feature of PSST included the use of script fading. The problem solving steps were taught to the children with the use of a facilitator prompt, printed note cards (See Appendix C), and saying the steps aloud. As sessions continued, the steps were practiced in a whisper and then silently. The presence of the note cards and facilitator prompting could also be faded in the future.

A stronger emphasis on training diversely could also be included in future PSST trainings. This could have been seen through more extensive practice of the PSST skills in different classes, with different peers, or different teachers. It is worth noting that the purpose of

the homework assignments was to promote generalization and tokens were given for completion of homework assignments. The primary treatment group had a homework completion rate of 28.79% and the waitlist control group had a homework completion rate of 29.09% up to the time of school closures. Repeated practice of skills through the use of homework is a common feature of CBT and is one of the prescribed tenants of this form of treatment (Beck, Rush, Shaw, and Emery, 1979). Homework completion rates for adolescents undergoing CBT for internalizing disorders result to roughly 50% (Tang & Kreindler, 2017). Little work has been done to assess for homework completion base rates in children completing CBT for disruptive behaviors. However, children with disruptive behaviors often have consistent difficulty in completing traditional classroom homework (Hawkins & Axelrod, 2008). This is confounded by factors associated with behavioral disorders such as poor time management skills (Cancio, West, & Young, 2004), established patterns of non-compliance, and lack of sustained attention.

Furthermore, future adaptations of PSST could seek to incorporate teachers into the program to further facilitate through treatment. According to Liber, De Boo, Huizenga, and Prins (2013), teacher training combined with CBT in schools is likely to improve treatment outcomes when targeting children with disruptive behavior, however, even with the success of a multimodal approach, it is unclear how teacher involvement actually boosts the intervention (Webster-Stratton, Reid, & Hammond, 2004). In the original PSST, there are designated parent sessions where skills are reinforced with the child's parents. In the present study, these were removed for ease and congruity with a true school-based intervention. In future research of PSST in schools, the prescribed parent sessions could be exchanged for teacher sessions. There may be improvements in adverse disciplinary actions or larger effects for behavior change with this revision.

Additional Limitations and Future Directions

The current findings should be considered in light of the study's limitations. First, it is possible that behavioral gains were less evident through send out counts because the participants had not fully internalized the problem solving steps into a form of self-talk. Self-talk is a crucial step to succeeding in CBT as it brings awareness to an individual's inner dialogue, which can then be further monitored or altered (Latinjak, Hernando-Gimeno, Lorigo-Mendez, & Hardy, 2019). While the final session of the treatment was intended to evaluate the participant's independence and internalization with the problem solving steps, there could be further steps taken to reinforce independent problem solving.

Second, a particular barrier within the school of the participant sample should be noted. It was common practice in the sample school for educators to send students out of their classroom for both minor and major behavioral infractions. With a punitive discipline system in place, it would be difficult to see changes in send outs when the school culture promotes such a procedure. It is important for the organizational climate to be congruent with the implementation of a CBT-based treatment in order for it to be maximally successful (Lochman et al., 2019). Although there is evidence of change in adverse disciplinary actions in both the interaction test and follow-up t-tests, we don't know if there was a shift in the severity of the problems resulting in students being sent to the time out room.

Thirdly, the intended data collection period could not be completed due to COVID-19 related closures to schools in the area where the sample was collected. The waitlist control group was unable to finish treatment when schools were closed, therefore post-treatment data was unable to be collected from this group. For this same reason, follow up data was unable to be collected for the active treatment group, who had already completed treatment. While COVID-19

closures were unforeseen and unavoidable, another comparison point could have strengthened the case for treatment effects, particularly for pre-treatment to post-treatment scores for the waitlist control group. It is hoped that the active treatment group would have maintained lower levels of disruptive behavior over time. Prior work on PSST in clinic settings (Kazdin, Siegel, & Bass, 1992; Kazdin, Esveldt-Dawson, French, & Unis, 1987) has shown maintenance and many CBT programs that target disruptive behavior in youth have also shown beneficial short-term and long-term outcomes (Lochman et al., 2019).

Finally, deviation from the original procedure may have impacted the degree to which the treatment group changed over time. The prescribed number of sessions originally used by Kazdin (2018) is 12 regular sessions with the opportunity for additional booster sessions. This version, to align with school schedule demands, had a total of 7 sessions with no booster sessions. Adapting treatment methods or procedures to align with the needs of the client is a prominent topic in the field of psychological treatments. Flexible application of manualized interventions, adaptations to intervention structure, and adapting session content are considered acceptable changes in order to meet the client's needs (Connor-Smith & Weisz, 2003). When adapting an evidenced-based intervention there are certain steps to take to ensure the best outcomes (Chinman et al., 2004). Ruffolo and Fischer (2009) condensed these steps into five key categories for school-based adaptations: reviewing the literature and selecting the intervention, adapting the intervention to address delivery issues in schools, preparing staff to deliver intervention with fidelity, evaluating fidelity and outcomes of implementation, and addressing issues of sustainability. An extensive literature was conducted prior to the implementation of PSST in the school with exploration of other CBT treatments and a review of the original PSST guidebook. The intervention was adapted by condensing the amount of sessions and session length to align with delivery in the

school setting. Fidelity was addressed through completion of session adherence checklists and the use of a second observer. School staff were not utilized in treatment thus preparing staff for delivery of treatment was not addressed. As noted earlier in the discussion, further incorporation of staff could be used in the future which would warrant a more in-depth look of staff preparation. Issues of generalizability could ultimately be resolved as a means to address sustainability. In sum, several steps were taken to confront the school-based treatment adaptation.

Conclusion

Given the problematic nature and continual negative outcomes for children with disruptive behavior, it is fundamental that evidenced-based interventions be used to address this issue. Problem Solving Skills Training is a cognitive-behavioral approach to treating disruptive behavior in children. With evidence of PSST's effectiveness in clinics, the intervention was adapted and utilized in the school setting for the study at hand. Children with teacher-identified disruptive behavior participated in the PSST intervention by learning, role-playing, and having reinforcement of pro-social problem solving skills to target interpersonal conflict, defiance, arguing, impulsivity, and aggression. With an active treatment group and a waitlist control group, those in the active treatment group showed a significant decrease in disruptive behavior scores over time as indicated by a teacher-reported measure of behavior. Evidence was also seen for a decrease in student referrals to a time-out room between groups over time with those in the active treatment group having fewer referrals. These findings have substantial implications for addressing common behavior problems in schools that often plague teachers and administrators. It substantiates the claim that cognitive-behavioral interventions are effective for children with

disruptive behaviors and that this modality of intervention can be used effectively in schools to reach the maximum number of children possible.

APPENDIX A. SESSION PROTOCOLS

Session 1

Goal #1: Explain rationale for treatment

Goal #2: Introduce the problem solving steps

Goal #3: Introduce the token economy

Explain rationale for treatment:

- Members introduce each other to group, including session leader
 - Ex: Name, grade, favorite snack, favorite sports team
- Explain that we all have something in common – disruptive behavior
 - Ex: have trouble controlling our emotions, get into fights, talk back to teachers, have problems at school
- Explain how being angry/disruptive/bad at school has negative consequences
 - Ex: puts strain on our health (heart works too hard), people look down on us, people don't want to be our friend, poor grades
- Explain that our sessions will help us get better at solving our problems at school and improve behavior

Introduce problem solving steps:

SPECIFIC STEPS	SELF-STATEMENT
1. Problem definition	1. What am I suppose to do?
2. Generating solution	2. What could I do (i.e., possible solutions)?
3. Evaluating consequences	3. What would happen?
4. Choosing an answer	4. I need to make a choice.
5. Self-reinforcement or coping statement	5. I did a good job (or) Oh, I made a mistake. I need to go slower and concentrate more.

- Leader introduces the first step using the cue card
- Leader asks the members to find the corresponding self statement cue card
 - If correct, provide praise
- Continue taking turns finding order of steps and cue cards
- Once steps and statements are introduced, add in a simple example with saying the steps out loud.
 - Leader: “Now when we have a problem we will work through the steps. I’ll show you how to think out loud while doing them.”
 - L: “Let’s start with a simple problem. I can’t find my laptop charger.”

- L: “Ok, what am I supposed to do? I’m supposed to find my charger. That’s the first step.”
- L: “Ok, next step. What could I do? I could look in my bag. I could look in the beehive. I stop doing work on my laptop for the day.”
- L: “So what would happen if I tried each of those solutions? If I looked in my bag, it could be super quick and I might find it. If I looked in the beehive, I would have to leave my office but I might find it. If I stopped working, I would get in trouble with my boss and receive a consequence.”
- L: “So now I need to make a choice. I choose looking in my bag- it’s the simplest solution.” [Look inside bag and find charger].
- L: “I did a good job thinking of solutions!”
- Have student think of their own simple problem and have them work through the steps.
 - Provide suggestions and guidance along the way: “what else can you do? What other ways can you think of? What will happen if?”

Introduce token economy:

- Explain that for the next session, students will each start with 3 tokens. [Show hanging pockets for each student’s tokens].
- If they apply the problem solving steps correctly and follow directions, they earn tokens.
 - 1 token per correct implementation of step
- If they do not follow the problem solving steps correctly or do not follow directions, they lose tokens.
 - 1 token removed for each incorrect implementation
- Explain that mini-assignments can be given between sessions. If completed and brought back, they earn 2 tokens.
- Starting at session 2, students will rate their performance. The leader will also rate their performance. If the ratings match, they earn a token.
- Tokens can be traded in for prizes at any session. Prizes vary in amounts.

Session 2

Goal #1: Review steps and self statements

Goal #2: Leader and members take turns working through steps and statements with a simple social problem

Goal #3: Repeat process with leader making a mistake

Goal #4: Rate performance

Goal #5: Assign mini-assignment

Part 1:

- Review problem solving steps and corresponding self statements together using cue cards.

Part 2:

- Have the child pick a simple problem (real or imaginary).

- Group members, including leader, take turns working through each problem solving step and **saying the self statement out loud.**
- Leader provides praise for every instance of appropriate problem solving behavior.
- Ex:
 - Member 1: “Ok, first I need to identify the problem. My problem is that I need to get water without getting in trouble.”
 - *Key point: problem goal should be *not getting in trouble*
 - Leader: “So step 2 is to think of solutions. So what could you do?”
 - Member 2: “So he could keep waiting or he could go to another water fountain or he could tell the other person to hurry up.”
 - *Key point: at least 3 solutions should be selected
 - Leader: “What’s the next step member 3?”
 - Member 3: “We have to think of what would happen. So if he waited he might miss some class but could explain that he had to wait in line. If he went to another water fountain he might get in trouble for walking away. If he told the person to hurry up, the other person might get mad and want to fight.”
 - Leader: “So now we need to make a choice. I think he should just wait in line because it causes the least amount of drama.”
 - Member 1: “The last step is figuring out if I did well. I did a good job because I picked a choice that didn’t get me in trouble.”
 - *Note:* If the child makes a crucial error in the process, the leader should provide concrete labeling of the error and remove a chip. Ex: “You lose a chip because you only thought of one solution.”
 - *Note:* If the child shows exceptional understanding, provide a chip.

Part 3:

- Repeat problem solving process with leader selecting an inappropriate solution to establish the leader as a coping model.

Part 4:

- Each member gives themselves a performance rating.
- Leader rates each member’s performance.
- Provide a chip for matching ratings.

Part 5:

- Assign mini-assignment 1.
- Explain that 2 chips will be given if completed.

Session 3

Goal #1: Review steps and statements aloud

Goal #2: Leader and members take turns working through steps and statements with a simple, social problem in a whisper

Goal #3: Repeat process with vignette and role play

Goal #4: Rate performance

Goal #5: Give mini-assignment

Part 1:

- Review problem solving steps and corresponding self statements together using cue cards **aloud**.

Part 2:

- Have the child pick a simple problem (real or imaginary).
- Explain that we will now work through out steps in a whisper.
 - Say, “Being quiet will help us in real life if we have a problem.”
 - Leader should quickly model.
- Group members, including leader, take turns working through each problem solving step and **saying the self statement in a whisper**.
- Leader provides praise for every instance of appropriate problem solving behavior.
 - *Note:* If the child shows exceptional understanding, provide a chip.

Part 3:

- Give each child a blank piece of paper and say “Imagine you’re in class and your teacher tells you to work on a drawing for a class project. Go ahead and draw whatever you want for the next 5 minutes.”
- Have the child work on a drawing for 5 min. Set a timer.
- After drawings are complete have them placed on the table in clear view.
- Start role play scenario:
 - Leader: “Great job working on those drawings. Now imagine that I’m another student in your class and you want to tell me about your drawing.”
 - Child: Explains their drawing.
 - Leader: **Take a pen and scribble over their drawing saying “Now it looks much better.”**
 - Leader: “Now work through the steps to solve this problem.”
 - *Note:* If child is not overly agitated, prompt for them to solve using a whisper.
 - *Note:* Provide praise for using steps appropriately. Provide chip for exceptional behavior.

Part 4:

- Each member gives themselves a performance rating.
- Leader rates each member’s performance.
- Provide a chip for matching ratings.

Part 5:

- Assign mini-assignment 2.
- Explain that 2 chips will be given if completed.

Session 4

Part 1:

- If child turned in their mini-assignment, have them **role play** the problem scenario and selected solution.
- Provide a chip if the selected solution was positive.

Part 2:

- Review problem solving steps and corresponding self statements together using cue cards **in a whisper**.

Part 3:

- Have the child pick a simple problem (real or imaginary).
- Explain that they will work through steps in a whisper.
 - Leader should quickly model.
- Group members, including leader, take turns working through each problem solving step and **saying the self statement in a whisper**.
- Leader provides praise for every instance of appropriate problem solving behavior.
 - *Note:* If the child shows exceptional understanding, provide a chip.

Part 4:

- Get a blank piece of paper to play hangman.
 - Word is J A W B R E A K E R
 - Back up word is F R A Z Z L E D
 - These words are chosen because they are unusually difficult words to guess in hangman.
- Members take turns guessing letters.
- For every time a member makes an incorrect guess the leader will **make an insult**.
 - *“You’re not good at this game”*
 - *“That was a terrible guess”*
 - *“WOW, so wrong. Not even close”*
- After several incorrect guesses and insults to induce frustration, stop playing the game.
 - Say, *“Ok, I’m done with this because you’re not getting it right.”*
- Prompt the members to solve this problem in a whisper.
 - Say, *“Now work through the steps to solve this problem using a whisper”*
 - *Note:* Provide praise for using steps appropriately. Provide chip for exceptional behavior.

Part 5:

- Each member gives themselves a performance rating.
- Leader rates each member’s performance.
- Provide a chip for matching ratings.

Part 6:

- Assign mini-assignment 3.
- Explain that 2 chips will be given if completed.

Session 5

Part 1:

- If child turned in their mini-assignment, have them **role play** the problem scenario and selected solution.
- Provide a chip if the selected solution was positive.

Part 2:

- Review problem solving steps and corresponding self statements together using cue cards **in a whisper**.

Part 3:

- Have the child pick a simple problem (real or imaginary).
- Explain that they will work through steps **silently**.
 - Leader should provide rationale that this is to make it more realistic for the real-world
- Group members provide their solution and reasoning
- Leader provides praise for appropriate solutions
- Leader then prompts the child to share their thinking process and other possible solutions
 - *Note:* If the child shows exceptional understanding, provide a chip.

Part 4:

- Create conversation with group members for several minutes, then say *“Oh I heard some kid in your grade talking about you (all). They said you (all) have problems and can’t do anything right and shouldn’t go to the next grade”*.
- If group members do not believe you, add more info to the “rumor”.
- Once agitated, have group members solve the problem **silently**. Say, *“Ok, what would you do an how would you solve this problem? Do it silently.”*
- Have group members share their solutions and reasoning.
 - Provide praise for appropriate solutions.

Part 5:

- Each member gives themselves a performance rating.
- Leader rates each member’s performance.
- Provide a chip for matching ratings.

Part 6:

- Assign mini-assignment 4.
- Explain that 3 chips will be given if completed.

Session 6

Part 1:

- If child turned in their mini-assignment, have them **role play** the problem scenario and selected solution.
- Provide a chip if the selected solution was positive.

Part 2:

- Review problem solving steps and corresponding self statements together using cue cards **in a whisper**.
 - If steps and self statements are correct, provide a chip for each child.

Part 3:

- Have the child pick a simple problem (real or imaginary).
- Have the child work through the steps **silently**.
- Group members provide their solution and reasoning
- Leader provides praise for appropriate solutions
- Leader then prompts the child to share their thinking process and other possible solutions
 - *Note:* If the child shows exceptional understanding, provide a chip.

Part 4:

- Create conversation with group members for several minutes, then say *“Oh I got a report from your teachers that you were not improving your behavior so now I have to take all your tokens away”*. Take away all tokens.
 - *Note: all members should have at least one token in their slot before this part begins!!!*
- Once agitated, have group members solve the problem **silently**. Say, *“Ok, what would you do and how would you solve this problem? Do it silently.”*
- Have group members share their solutions and reasoning.
 - Provide praise and a chip for appropriate solutions.

Part 5:

- Each member gives themselves a performance rating.
- Leader rates each member’s performance.
- Provide a chip for matching ratings.

Part 6:

- Assign mini-assignment 5.
- Explain that 5 chips will be given if completed.

Session 7

Part 1:

- If child turned in their mini-assignment, have them **role play** the problem scenario and selected solution.
- Provide a chip if the selected solution was positive.

Part 2:

- Inform the child that we will be reversing roles today: the child will act as teacher/therapist and the adult will act as a child to learn the problem solving steps.

- Provide the child with cue cards and say, “*Ok now you are going to act as the teacher and you will teach me how to go through the problem solving steps when there is a problem.*”
- Prompt child to teach you problem solving steps using cue cards aloud.
 - Child should explain each step with self-statement
- Prompt child to teach you how to apply problem solving steps to a real-life problem.
 - If the child does not ask for you to generate a problem, prompt them to do so.
- Ensure the child covers these other following components:
 - Transition from aloud→whisper→silent
 - Generating at least 3 solutions
 - Re-work the steps if solution was negative or problem was not solved
- Provide **feedback and clarifications** if the child makes a mistake in the teaching process!

Part 3:

- Congratulate and provide praise on their participation and acquisition of a new skill
- Ask child if they have any questions
- Cash in any remaining tokens

APPENDIX B. TREATMENT INTEGRITY CHECKLISTS

Session 1 Treatment Integrity Checklist

Leader: _____ Observer: _____ Date: _____

Part 1:

- Introduce group members
- Identify the reason for treatment is presence of disruptive behavior
- Describe negative consequences of of disruptive behavior
- Explain that sessions will take a problem solving approach and help us solve problems as school

Part 2:

- Introduce each problem solving step in order with cue cards
- Allow members to take turns matching self statement cards to problem solving cards
- Model problem solving steps with self statements using a simple, personal problem
- Have each group member generate their own simple problem
- Have each group member work through the problem solving steps *and* simultaneously verbalize the self statements
- Provide praise for correct use of steps

Part 3:

- Explain that each member will start with 3 tokens
- Explain that tokens can be earned by 1) using problem solving steps appropriately, 2) following directions in session, 3) completing mini assignments or challenges between sessions
- Explain that tokens can be removed for 1) not following problem solving steps, 2) not following directions
- Instruct that tokens can be traded in for prizes starting at the end of session 2

Completed steps: _____/14

Session 2 Treatment Integrity Checklist

Leader: _____ Observer: _____ Date: _____

Part 1:

- Review problem solving steps and self statements with cue cards

Part 2:

- Child picks a simple problem
- All members and leaders take turns working through the problem solving steps saying the self statements aloud
- Leader provides praise for appropriate problem solving behavior

- Chips given for exceptional problem solving behavior, *if applicable*
- Chips removed for inappropriate problem solving behavior, *if applicable*

Part 3:

- Repeat problem solving process from above with new problem
- Leader uses coping model by selecting wrong choice

Part 4:

- Members and leader conduct performance ratings
- Provide chip for matching ratings

Part 5:

- Assign mini-assignment 1

Completed steps: _____/11

Session 3 Treatment Integrity Checklist

Leader: _____ Observer: _____ Date: _____

Student Name(s): _____

Part 1:

- Review problem solving steps and self statements with cue cards aloud

Part 2:

- Child picks a simple problem
- Introduce whisper
- All members and leaders take turns working through the problem solving steps saying the self statements in a whisper
- Leader provides praise for appropriate problem solving behavior
- Chips given for exceptional problem solving behavior, *if applicable*
- Chips removed for inappropriate problem solving behavior, *if applicable*

Part 3:

- Have child work on drawing
- Leader scribbles over drawing
- Child works through problem solving steps
- Leader provides praise for appropriate problem solving behavior

Part 4:

- Members and leader conduct performance ratings
- Provide chip for matching ratings, *if applicable*

Part 5:

- Assign mini-assignment 2

Completed steps: _____/14

Session 4 Treatment Integrity Checklist

Leader: _____ Observer: _____ Date: _____

Student Name(s): _____

Part 1:

- Role play problem and solution from mini-assignment, *if completed*
- Provide chip *if* selected solution was appropriate

Part 2:

- Review problem solving steps and self statements with cue cards in a whisper

Part 3:

- Child picks a simple problem
- All members and leaders take turns working through the problem solving steps saying the self statements in a whisper
- Leader provides praise for appropriate problem solving behavior
- Chips given for exceptional problem solving behavior, *if applicable*
- Chips removed for inappropriate problem solving behavior, *if applicable*

Part 4:

- Group plays Hangman
- Leader provided insults for incorrect guesses
- Leader abruptly ends the game
- Child works through problem solving steps in a whisper
- Leader provides praise for appropriate problem solving behavior

Part 5:

- Members and leader conduct performance ratings
- Provide chip for matching ratings, *if applicable*

Part 6:

- Assign mini-assignment 3

Completed steps: _____/16

Session 5 Treatment Integrity Checklist

Leader: _____ Observer: _____ Date: _____

Student Name(s): _____

Part 1:

- Role play problem and solution from mini-assignment, *if completed*
- Provide chip *if* selected solution was appropriate

Part 2:

- Review problem solving steps and self statements with cue cards in a whisper

Part 3:

- Child picks a simple problem
- Child works through the problem solving steps saying the self statements silently
- Leader provides praise for appropriate solutions
- Child shares their whole problem solving process
- Chips given for exceptional problem solving behavior, *if applicable*
- Chips removed for inappropriate problem solving behavior, *if applicable*

Part 4:

- Group engages in conversation
- Leader presents “rumor”
- Child works through problem solving steps silently
- Child shares their solution and reasoning
- Leader provides praise for appropriate problem solving behavior

Part 5:

- Members and leader conduct performance ratings
- Provide chip for matching ratings, *if applicable*

Part 6:

- Assign mini-assignment 4

Completed steps: _____/17

Session 6 Treatment Integrity Checklist

Leader: _____ Observer: _____ Date: _____

Student Name(s): _____

Part 1:

- Role play problem and solution from mini-assignment, *if completed*

- Provide chip *if* selected solution was appropriate

Part 2:

- Review problem solving steps and self statements with cue cards in a whisper
- Provide a chip for each child if steps and self statements are correct

Part 3:

- Child picks a simple problem
- Child works through the problem solving steps saying the self statements silently
- Leader provides praise for appropriate solutions
- Child shares their whole problem solving process
- Chips are given for exceptional problem solving behavior, *if applicable*
- Chips removed for inappropriate problem solving behavior, *if applicable*

Part 4:

- Group engages in conversation
- Leader notifies members of “poor performance” AND removes chips
- Child works through problem solving steps silently
- Child shares their solution and reasoning
- Leader provides praise AND chip for appropriate problem solving behavior

Part 5:

- Members and leader conduct performance ratings
- Provide chip for matching rating, *if applicable*

Part 6:

- Assign mini assignment 5

Completed steps: _____/18

Session 7 Treatment Integrity Checklist

Leader: _____ Observer: _____ Date: _____

Student Name(s): _____

Part 1:

- Role play problem and solution from mini-assignment, *if completed*
- Provide chip *if* selected solution was appropriate

Part 2:

- Explain role reversal
- Provide cue cards and prompt child to teach you the steps
- Provide FEEDBACK and CLARIFICATION along the way

Check if the child did the following independently or by prompting:

Independent		Prompted	
	Explain steps AND self statements		Explain steps AND self statements
	Teach application of steps to a real problem		Teach application of steps to a real problem
	Practice in a faded fashion		Practice in a faded fashion
	Generate 3 solutions		Generate 3 solutions
	Re-work steps if inappropriate solution		Re-work steps if inappropriate solution

Part 3:

- Praise and congratulate for hard work and participation
- Ask if child has any questions
- Cash in remaining tokens, *if necessary*

Completed steps: _____/13

APPENDIX C. SCRIPTS AND CUE CARDS

<p><u>Step 1:</u> Identify the Problem</p>	<p>What am I supposed to do?</p>
<p><u>Step 2:</u> Think of Solutions</p>	<p>What could I do?</p>
<p><u>Step 3:</u> Evaluate the Consequences</p>	<p>What would happen?</p>
<p><u>Step 4:</u> Choose an Answer</p>	<p>I need to make a choice.</p>
<p><u>Step 5:</u> Check my Answer</p>	<p>I did a good job! (OR) Oh, I made a mistake. I need to go slower.</p>

APPENDIX D. IRB FORM

ACTION ON PROTOCOL APPROVAL REQUEST



Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu
lsu.edu/research

To: George Noell
Psychology

From: Dennis Landin
Kinesiology

Date: August 12, 2019

Re: IRB# 4256

Title: The use of problem solving skills training to treat disruptive behaviors in the school context

New Protocol/Modification/Continuation: New Protocol

Review type: Full Expedited **Review date:** 7/16/2019

Risk Factor: Minimal Uncertain Greater Than Minimal

Approved **Disapproved**

Approval Date: 8/12/2019 **Approval Expiration Date:** 8/11/2020

Re-review frequency: (annual unless otherwise stated)

Number of subjects approved: 30

LSU Proposal Number (if applicable):

By: Dennis Landin, Chairman 

**PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:**

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc.**

*All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>

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VITA

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