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Effects of Social Competence Promotion on Aggressive Behavior: A Meta-Analytic Review

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EFFECTS OF SOCIAL COMPETENCE PROMOTION ON AGGRESSIVE
BEHAVIOR:

A META-ANALYTIC REVIEW

BY

DIANE WHIPPLE

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Abstract

This meta-analysis of 13 samples examined outcomes of social competence promotion (SCP) with aggressive children (total $N = 1,179$). Aggression levels post-treatment were summarized with the standardized mean gain statistic. The results indicate that SCP produced small/moderate (Hedge's $g = -0.28$) decreases in children's aggression. Teachers ($g = -0.32$), however, perceived higher decreases in children's aggression post-treatment than parents ($g = -0.12$). Standard multiple regressions revealed that 55% of variance in aggression levels are explained by the percentage of Whites in the sample as well as by the length of treatment (Beta $R^2 = 0.551$). Age was not related to aggression levels, however. The percentage of Whites in samples made the strongest unique contribution to explaining aggression levels (Beta = -0.603 , $p < .05$). The length children received training was not found to significantly contribute to the prediction of aggression levels. In conclusion, while both parents and teachers noted decreases in aggression post-treatment, teachers reported fewer aggression behaviors than did parents post-treatment. Also, as the percentage of White participants in the sample increased, the levels of aggression decreased after SCP training.

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Table of Contents

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Tables.....	vi
Introduction.....	1
Behavior Disorders.....	1
Social Skill Deficits.....	2
Importance of Early Intervention.....	3
Social Skills/Social Competence.....	3
Social Skills Training/Social Competence Promotion.....	5
Parent Training.....	7
Evidence from Previous Meta-analyses.....	8
Summary.....	19
Method.....	21
Literature Searches.....	21
Selection and Inclusion Criteria.....	21
Publication Status.....	22
Data Extraction.....	22
Study Descriptors.....	22
Sample Descriptors.....	22
Treatment Descriptors.....	22
Dependent Measure Descriptors.....	23

Statistical Analysis.....	23
Results.....	28
Treatment Integrity/Consumer Satisfaction/Attrition.....	34
Discussion.....	35
Post-treatment Aggression Level Outcomes.....	35
Study Limitations.....	39
Future Research Directions.....	40
Bibliography.....	42

List of Tables

	Page
Table 1. Characteristics of Sample of Included Studies.....	30
Table 2. Children’s Aggression Levels after Social Competence Intervention.....	31
Table 3. Parent Ratings of Children’s Aggression after Intervention.....	32
Table 4. Teacher Ratings of Children’s Aggression after Intervention.....	33
Table 5. Model Summary.....	33
Table 6. Coefficients.....	34

Introduction

A national concern of mental health professionals and educators is finding empirically supported initiatives that hold promise for developing socially competent children and youth (McNamara, 2002). Indeed, clinicians regularly hear complaints of students' noncompliant, aggressive, and antisocial behavior (Wicks-Nelson & Israel, 2003). Various terms have been used to describe these types of behavior problems—acting out, disruptive, externalizing, undercontrolled, oppositional, antisocial, conduct disordered, and delinquent. Researchers (Sugai, Horner et al., 2000; Sugai, Sprague, Horner, & Walker, 2000; Taylor-Greene et al., 1997) assert that students with chronic behavior problems who are at risk for future externalizing behavior disorders (BD) represent around 1% to 5% of the school-age population. Further, estimates indicate that 15% to 20% of children and adolescents go on to meet the diagnostic criteria for a clinical-level BD (Costello & Angold, 1995a; Weist, 1997).

Behavior Disorders

Psychiatrists and psychologists employ primary labels for the persistent engagement in antisocial behavior. One kind of BD, oppositional defiant disorder (ODD), is characterized by at least four of the following behaviors: Losing temper, arguing with adults, actively defying or refusing to comply with requests or rules of adults, deliberately doing things that will annoy other people, blaming others for his or her own mistakes or misbehavior, being touchy or easily annoyed by others, or being spiteful or vindictive (American Psychological Association, Diagnostic and Statistical Manual of Mental Disorders-IV-revised edition [DSM-IV-TR], 2000). Another kind of BD, conduct disorder (CD), is characterized by aggressive conduct that causes or

threatens physical harm to other people or animals, non-aggressive conduct that causes property loss or damage, deceitfulness or theft, and serious violations of rules (*DSM-IV-TR*, 2000).

Within the school system, psychiatric labels may also be used for students displaying serious behavior problems which include antisocial behavior. According to the Individual with Disabilities Education Act (IDEA, 1999), emotional and behavioral disorders (E/BD) are characterized by an inability to learn because of the emotional disturbance (ED), an inability to enter or maintain relationships with peers and teachers, odd, bizarre, or unusual behavior under normal circumstances, a pervasive mood of unhappiness or depression, and a tendency to develop physical symptoms or fears related to personal or school problems. Children and adolescents classified as having E/BD have significant difficulties in the development of and maintenance of satisfactory interpersonal relationships, exhibition of pro-social behavior patterns, and social acceptance by peers and teachers (Gresham, 1998; Kauffman, 2001; Walker, Ramsay, & Gresham, 2004). If left unaddressed, children with ODD, CD, and E/BD will continue to engage in behaviors such as violence, substance abuse, educational failure, adolescent delinquency, and adult criminal involvement which cause stress, suffering, and costs for victims, parents, the society and the perpetrators themselves (Losel & Beelmann, 2003).

Social Skill Deficits

The focus in psychology and education has shifted from examining overt problem behaviors and environmental causes of ODD, CD, or E/BD to an emphasis on internal constructs such as social and emotional status as guides to the development of

intervention (Gibson, 1994; Robins, Gosling, & Craik, 1999). Ineffective skills for socializing are common among children and youth who are victims or perpetrators of aggression (Olweus, 1994). Further, childhood disorders characterized by aggressive behavior patterns include in their diagnostic criteria a long-standing nature of social skills deficits (Forness & Knitzer, 1992; Skiba & Grizzle, 1991). Increasingly, documentation (Egan & Perry, 1998; Welsh, Parke, Widaman, & O'Neil, 2001) of the connection between ineffective social skills and poor social-emotional development supports the importance of utilizing interventions that improve aggressive children's social competence.

Importance of Early Intervention

Research indicates that early intervention to address challenging behavior helps to divert antisocial children from a pattern of destructive outcomes (Eddy, Reid, & Curry, 2002). Indeed, this population becomes extremely resistant to intervention with increasing age (Kazdin, 1987; Walker, Colvin, & Ramsey, 1995). If antisocial behavior patterns are not addressed early on, these children and youth are at risk for academic failure, impaired social relationships, escalating rates and forms of aggressive behavior, substance abuse, and delinquent behavior (Coie & Jacobs, 1993; Kazdin, 1987; Parker & Asher, 1987; Stattin & Magnusson, 1989; Walker et al., 1995; Walker, Irvin, Noell, & Singer, 1992).

Social Skills/Social Competence

A review of the social skills literature indicates that the term social skills is defined and conceptualized in numerous ways (Merrel & Gimpel, 1998). Indeed, Merrel and Gimpel (1998) found 15 definitions for the term cited in the literature.

How the social skills construct is conceptualized has implications for assessing social skillfulness.

One widely used definition is referred to as the social validity definition. According to this perspective, social skills are specific behaviors (e.g., cooperation, assertion, responsibility, empathy, and self-control) or behavioral patterns that predict or result in important social outcomes for youngsters (Gresham, 1983). Socially important outcomes refer to outcomes that improve an individual's adaptation and functioning relevant to societal expectations (Hawkins, 1991). Examples of socially important outcomes include peer acceptance and friendships (Newcomb, Bukowski, & Pattee, 1993; Parker & Asher, 1987), parent and teacher acceptance (Gresham, 1992), and school adjustment (Gresham & MacMillan, 1997; Walker et al., 1992).

The social validity perspective makes a distinction between the concepts social skills and social competence (McFall, 1982). According to this view, social skills are specific behaviors and behavioral patterns that an individual exhibits to perform competently in interpersonal relationships (e.g., initiating a conversation or entering an ongoing play group). Social competence, on the other hand, is a term that refers to socially important outcomes such as peer acceptance and friendships (Newcomb, et al., 1993; Parker & Asher, 1987), parent and teacher acceptance (Gresham, 1992), and school adjustment (Gresham & MacMillan, 1997; Walker et al., 1992). Thus, social competence may be defined as "the interpersonal social performance of children with other children or adults as judged by significant social agents in the child's environment" (Odom & McConnell, 1985, p. 9). Socially skillful behavior is posited

to lead to social competence, which is the overall effectiveness and positive social impact of an individual's behavior (Walker et al., 1995).

Although distinctions are made between the terms social skills and social competence (McFall, 1982), the terms are best viewed as complementary (Sheridan & Walker, 1999). For the present study, social skills will be defined as “social behaviors (e.g., cooperation, assertion, responsibility, empathy, and self-control) that children must learn and master to perform competently on a task” (Gresham, 1983). Social competence will be defined as “how children's social behaviors are evaluated by important others.”

Social Skills Training/Social Competence Promotion

Given the lack of unanimity of agreement in the definition and conceptualization of social skills, it is not surprising that there is diversity in the nature and types of available SST and SCP programs. The general goal of SST or SCP programs is often to develop and refine prosocial behavior and is also used to promote skill acquisition, to enhance skill performance, or to eliminate problem behavior (Gresham, 2002). SST and SCP programs have been based historically on behavioral, social learning, and cognitive-behavioral theories (Elliott & Gresham, 1993).

The behavioral approach focuses the intervention on overt behavior (Elliott & Gresham, 1993). Strategies include reinforcement of positive behaviors, extinguishing of negative behaviors, and manipulation of antecedent and consequent events. Changes in the frequency of the target behavior are typically used to measure treatment outcome or more broadly social skillfulness or competence.

The social learning approach also focuses treatment on overt behaviors (Elliott & Gresham, 1993). Methods such as modeling, role playing, and self-instruction are used in this approach. Changes in learned responses and the adequate performance of new responses post-treatment generally indicate treatment efficacy or social skillfulness and competence.

The cognitive-behavioral approach focuses intervention on problem solving skills and their relation to overt behaviors (Elliot & Gresham, 1993). Intervention procedures include methods such as coaching, problem solving, and self-instruction. Changes in problem solving skills as well as the ability to create new behaviors typically are measures of treatment outcome or social skillfulness and competence.

Earlier SST and SCP programs classified treatments based on only one of the theoretical frameworks. Current intervention programs, on the other hand, need to be differentiated from earlier interventions because they are comprehensive programs drawn from more than one theoretical framework and use theoretically diverse strategies such as modeling in addition to problem-solving techniques (Baum, Clarke, McCarthy, Sandler, & Carpenter, 1986). Previous meta-analyses (Ang & Hughes, 2002; Beelmann, Pfingsten, & Losel, 1994; Denham & Almeida, 1987; Losel & Beelman, 2003; Schneider, 1992; Schneider & Byrne, 1985) examining the efficacy of early and current SST and SCP intervention with the E/BD population have provided support for the use of SST irrespective of their theoretical origin and specific strategy employed with children diagnosed with a BD. One of the purposes of the current study is to draw from studies that have employed multiply derived strategies to address children's aggressive behavior.

Parent Training

Given that current SST and SCP programs employ multiple treatment strategies, it should be noted that often the focus of treatment is child, parent, and teacher training or a combination of treatment agents. Evidence increasingly supports the notion that a parent or family component to intervention is critical to treatment efficacy (Brestan & Eyeberg, 1998; Eddy et al., 2002; Kazdin, 1997). Indeed, parent training (PT) is among the most successful interventions to reduce aggressive, noncompliant, and antisocial behaviors in youngsters (Eddy et al., 2002).

Parents are typically taught child management skills that include using positive reinforcement, effective discipline strategies that incorporate contingencies, follow through, developmentally reasonable expectations, appropriate supervision of children and youth, and effective problem-solving skills (Dishion, Andrews, Kavanagh, & Soberman, 1996; Kazdin, 1997). Parenting skills are also important in preventing the development of or maintenance of coercive relationships created by negative reinforcement principles (Patterson, Reid, & Dishion, 1992). Parents are taught to identify problems, to observe and record behavior, to effectively use social and nonsocial reinforcers for appropriate pro-social behavior, and to effectively withdraw reinforcers for undesirable behavior.

Research (Forehand & McMahon, 1981; Long, Forehand, Wierson, & Morgan, 1994; Serketich & Dumas, 1996; Webster-Stratton, 1984, 1990, 1994; Webster-Stratton, Hollinsworth, & Kolpacoff, 1989; Wells, Forehand, & Griest, 1980) supports the use of PT in treatment of children with aggressive, noncompliant and antisocial behaviors. Indeed, several research studies (Forehand & McMahon, 1981; Long et al.,

1994; Webster-Stratton, 1984, 1990, 1994; Webster-Stratton et al., 1989; Wells et al., 1980) showed that the majority of children who were displaying behavior problems whose parents received child management training performed in the normal range on measures of internalizing and externalizing behaviors, social competence, emotional adjustment and relationship with parents. In addition, a meta-analysis (Serketich & Dumas, 1996) on PT for antisocial children indicated that on all child outcome measures, the treatment group had a better outcome than around 80% of the control group. Still, evidence exists that around 35% of parents who received training report that their children's behavior problems remain within the clinical range, and teachers also report that these children have externalizing behavior in the clinical range (Webster-Stratton, 1985). Thus, although PT is clearly an important component in intervention plans for behavior problems, interventions with this population must include additional social agents (i.e., peers, teachers) that have an influence in a developing child's life to ensure optimum efficiency of techniques to decrease the prevalence of antisocial behavior.

Evidence from Previous Meta-analyses

Although previous meta-analytic investigations (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Kavale, Mathur, Forness, Rutherford, & Quinn, 1997; Losel & Beelman, 2003; Mathur, Kavale, Quinn, Forness, & Rutherford, 1998; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999; Schneider, 1992; Schneider & Byrne, 1985) provide some insight into the efficacy of SST and SCP with youngsters displaying aggressive behavior, analyses in this area generally focus on participants ranging from 3 to 19 years of age rather than on either children

or adolescents even though intervention has been found to be more effective with younger children compared to teenagers (Eddy et al., 2002; Kazdin, 1987; Walker et al., 1995). Also, prior meta-analytic findings are based on SST and SCP programs that do not ensure incorporation of a parent component even though PT is widely accepted as the most effective type of treatment for this population (Eddy et al., 2002). A final limitation of prior meta-analyses of SST and SCP with youngsters engaging in antisocial behavior is that these syntheses included studies that incorporated earlier SST and SCP interventions which typically classified treatments based on only one of the theoretical frameworks (i.e., behavioral approach, social learning approach, cognitive-behavioral approach) with studies that used interventions drawing from more than one theoretical framework and incorporating theoretically diverse strategies such as modeling in addition to problem-solving techniques (Baum et al., 1986). Thus, it is difficult to ascertain the overall effectiveness of current SST and SCP programs with children displaying antisocial behavior.

A review of each previous meta-analysis will help show the contribution that each analysis has made to our understanding of the efficacy of SST/SCP with this population. Many researchers (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelman, 2003; Schneider, 1992; Schneider & Byrne, 1985) have found support for the use of SST/SCP with children displaying aggression. Ang & Hughes (2002) meta-analyzed 38 studies published between 1975 and 1999 assessing the efficacy of a variety of SST techniques (i.e., coaching, modeling, guided practice, instruction, discussion, and games) in children and youth with antisocial behavior patterns. Participants between 6 and 18 years of age were described as

having the following externalizing behavior problems: Aggression; ODD behaviors; CD behaviors; violent behavior; and delinquency. Of the 38 studies, 18 did not report ethnicity of participants. The remaining studies reported the following ethnic representations: 47.7% Anglo-American, 52.5% Black, and 1.9% Hispanics. Seventy-three percent of the studies included in the analysis randomly assigned participants to treatment and control groups. The average treatment duration in weeks was 12.92. Overall findings indicated between moderate to large effects ($d = 0.55$) on antisocial behavior ratings and skill acquisition measures for participants who received training compared to controls. Results were not reported for efficacy of treatment by age of participant, treatment length, or ethnicity of the children.

Beelmann and colleagues (1994) performed a meta-analysis on the effects of SCP with children between 3 to 15 years of age in 49 studies conducted from 1981 to 1990. Participants were classified as having externalizing syndromes (i.e., aggressiveness/CD and childhood rejection), internalizing syndromes (i.e., social withdrawal and depression and childhood neglect), intellectual problems (i.e., learning disability and mental retardation), at-risk groups (i.e., social deprivation and children confronted with critical life-events), and normal children with no indicated problems. Participants' ethnicity was not reported. SST incorporated behavioral, cognitive, or cognitive-behavioral treatments directed toward training and/or modifying motor, cognitive and affective components of children's social behavior. Studies included in the analysis used an experimental or quasi-experimental design with at least one control group. Overall results indicated small to medium effects ($d = 0.47$) on children's social-cognitive skills, social interaction skills, social adjustment skills, and

self-regulated cognitive-affective skills post-treatment compared to baseline scores. Children classified as having externalizing problems, however, had lower treatment effects ($d = 0.36$) on measures of social adjustment (i.e., aggression and popularity). Although social competence training led to significant changes in all age groups, the older children in the sample tended to benefit more from training than did younger children. Specifically, children 3 to 5 years of age were found to have significantly less positive change in behavior ($d = 0.11$) than participants aged 6 to 8 years ($d = 0.19$), 9 to 11 years ($d = 0.17$), and 12 to 15 years ($d = 0.31$). Also, there were no significant differences among various types of SST (i.e., behavioral, social problem-solving). Although the percentage of number of hours of treatment and number of sessions were reported for many of the included studies, no results were reported for treatment efficacy by treatment length.

In a meta-analysis of social-problem-solving intervention programs, Denham and Almeida (1987) found that while these programs had a strong impact on children's social problem-solving skills ($d = 0.78$), they had less of an effect on their aggression levels ($d = 0.26$). Children in the sample were classified as at-risk for a BD, non-disordered, or special-needs. Participants were between 3 and 12 years of age. Ethnicity of participants was not reported. Intervention effects, whether the outcome was interpersonal cognitive problem-solving measures or behavioral effects (i.e., social behavior), were stronger for the younger children in the sample compared to the older participants. Specific ages at which treatment effects were strongest were not reported, however. Also, longer-duration training was found to be more effective than

shorter-duration training. Specifically, treatment lasting for 40 or more sessions tended to lead to higher teacher ratings on interpersonal cognitive-problem solving skills.

Losel and Beelmann (2003) performed a meta-analysis of 84 studies published from 1972 to 2000 that examined the effect of SST with children and youth 4 to 18 years of age at risk for developing antisocial behavior patterns because of social skills deficits, a multiple-problem family milieu (i.e., antisocial parents, low socio-economic status), and/or displaying antisocial behavior. Participants' ethnicity was not reported. Only studies using a randomized control group design in which participants were randomly assigned to treatment and control were included in the analysis. Types of treatment included behavioral, cognitive, cognitive-behavioral, or counseling. Treatment duration ranged between up to one month and greater than 12 months. Overall effects indicated a small to moderate effect ($d = 0.38$) on measures of social skills and social-cognitive skills. Although the age of participant was not found to be a significant moderator of the total post-intervention outcome, the youngest group aged 4 to 6 years ($d = 0.74$) and the oldest group aged 13 years and older ($d = 0.78$) revealed the largest effects compared to children in the 7 to 12 year age group ($d = 0.20$). However, the findings for the oldest group were based on only two studies. When the various outcome criteria were considered, the 4 to 6 year age group had significant effects only for social and social-cognitive skills and not on antisocial behavior measures. The other groups, 7 to 12 years ($d = 0.27$) and older than 12 years ($d = 0.39$), revealed significant change in antisocial behavior post-treatment. Also, no significant differences were found for type of treatment administered. Specifically, intervention that included behavioral, cognitive, cognitive-behavioral, or

psychotherapy components were equally effective. Treatment efficacy by treatment length was not reported.

Schneider and Byrne (1985) synthesized 51 studies that assessed SST with children and youth between 3 to 19 years of age. Participants were categorized as normal, withdrawn, learning disabled, BD, or developmentally handicapped. Ethnicity of participants was not reported. Studies included in the analysis used either a control group or a quasi-treatment comparison group and a quantitative measure of social behavior. The overall effect size (ES), collapsed across modeling, operant procedures, coaching, and social-cognitive treatment categories, indicated a moderate to large effect ($r = .31$) on measures of social interaction, aggression, and social-cognition. Observed separately, operant procedures had the strongest effect ($r = .39$), followed by modeling ($r = .35$), coaching ($r = .31$), and social-cognitive procedures ($r = .27$). All effects, however, were in the medium to large range. Follow-up analyses indicated that children in the 5 to 10-year-old group derived significantly less benefits from SST than either preschool children aged 3 to 4 years or children aged 14 to 19 years. Also, shorter length interventions tended to produce higher treatment benefits than longer duration programs. There were no statistically significant differences among the duration blocks (i.e, less than 5 days, 5-20 days, 21-50 days, and more than 50 days). Thus, there was no empirical evidence to conclude that shorter interventions are more effective than longer duration programs.

Schneider (1992) conducted a meta-analysis as a follow up to the Schneider and Byrne (1985) review to examine the efficacy of didactic methods to enhance children's peer relations in 79 studies conducted between 1942 and 1987. Children's

ages ranged from around 5 years to 17 years. Participants were classified as normal, unpopular, withdrawn, or aggressive. More stringent study selection criteria were used for this analysis compared to the initial study. Selected studies had to include a control group (i.e., non-treatment, wait-list, or placebo) and a quantitative measure of social behavior. Overall, this multi-technique program (i.e., modeling, operant procedures, coaching, and social-cognitive treatments) was found to largely enhance peer relations, academic achievement, and self-concept ($r = .40$). ESs limited to measures of social behavior (excluding academic achievement and self-concept) yielded a higher ES ($r = .47$) which was also within the large range. The number of treatment sessions, which ranged between 1 and 80, were found to not be related to treatment outcome. In addition, age of the participants was not related to treatment efficacy.

In summary, researchers (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 2003; Schneider, 1992; Schneider & Byrne, 1985) have generally found positive SST/SCP treatment effects on measures of social competence with children displaying antisocial behavior. Lower effects have consistently been found on measures of aggression, however (Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 1994). No consistency in treatment efficacy has been found depending on age of participants (Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 2003; Schneider, 1992; Schneider & Byrne, 1985) or treatment length (Denham & Almeida, 1987; Schneider, 1992; Schneider & Byrne, 1985) in prior meta-analyses. Also, no treatment effects were reported for different ethnic groups in prior meta-analyses.

Depending on the meta-analysis (Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 2003; Schneider & Byrne, 1985), different age groups were found to respond better to SST/SCP training while another review (Schneider, 1992) found no differences in treatment efficacy based on age of participant. Researchers (Denham & Almeida, 1987) found significantly stronger treatment effects for younger children in a sample of children 3 to 12 years old, while other researchers (Beelmann et al., 1994; Losel & Beelmann, 2003) found significantly lower treatment effects in children 3 to 5 years old compared to children in the age ranges of 6 to 8 years, 9 to 11 years, and 12 to 15 years. Schneider and Byrne (1985), however, revealed significantly lower treatment effects for children in the 5 to 10 year age range compared to children who were 3 to 4 years old and adolescents 14 to 19 years old.

In prior meta-analyses, the duration for which the participants' received SST/SCP also did not show consistency in treatment outcome (Denham & Almeida, 1987; Schneider, 1992; Schneider & Byrne, 1985). Denham and Almeida (1987) found longer length SST to produce higher treatment effects than shorter duration intervention programs. Although the effect for treatment length and treatment efficacy was not significant, Schneider and Byrne (1985) found that shorter length programs tended to produce higher treatment effects than longer duration programs. Schneider (1992), however, did not find a relationship between treatment duration and treatment efficacy.

Other researchers (Kavale et al., 1997; Mathur et al., 1998; Quinn et al., 1999) have reportedly not found improvement in children and youth social competence after SST/SCP. Two studies (Mathur et al., 1998; Quinn et al., 1999) extended an earlier

review (Kavale et al., 1997) that included group designs and single-subject designs to analyze the two different samples separately. Researchers (Kavale et al., 1997) explored the efficacy of SST, which consisted mainly of “experimental” programs and some commercially available SST programs, with children and adolescents with an average age of 10.34 years classified as having E/BD. “Experimental” programs consisted of either new techniques or procedures being tested in the study, or a program representing an amalgam of available methods combined for the purposes of the study. Thirty-five group studies and 64 single-subject design studies through 1995 were included in the analysis. Across the group-design studies, the average ES was relatively small ($d = 0.199$). Specifically, about 58% of children and teenagers with E/BD benefited from SST. Across the single-subject design studies, a moderate treatment effect was found. On average, 62% of the youngsters in the sample benefited from the SST intervention. Although treatment effects were within the small to moderate range, these researchers concluded that SST has relatively little empirical support for its use in treating children and adolescents with E/BD.

The single-subject design studies and the group-design studies were subsequently analyzed separately. When the single-subject studies were analyzed separately, researchers (Mathur et al., 1998) found a mean percentage of nonoverlapping data (PND) of 62% with a standard deviation of 33%, which represents only a mild intervention effect. Children classified as delinquent (PND = 76) showed the greatest and most significant effect compared to children with E/BD (PND = 64). Also, mild but stronger effects were found for elementary (PND = 63) and secondary instructional (PND = 66) level students with E/BD and/or delinquents

than for preschool (PND = 55) level children in these categories. Similar to Schneider (1992), but in contrast to Denham and Almeida (1987) and Schneider and Byrne (1985), these researchers (Mathur et al., 1998) did not find a correlation between overall treatment efficacy and the length of time that participants received training.

Quinn and associates (1999) meta-analyzed the 35 group-design studies involving SST with children with E/BD with an average age of 11.53 years. Overall results indicated a small effect ($r = .10$) for training using broad-based measures of prosocial behavior (i.e., social relations, social behavior, social problem solving and social competency), measures of problem behavior (i.e., problems with family relations, school behavior, social communication, and disruptive behavior), and measures of specific behavior traits of the participants (i.e., anxiety, adjustment, cooperation, interactions, self-concept/esteem, and aggression). While slight effects were found for the broad-based measures such as social competence ($d = 0.22$), little to no effect was found on the disruptive problem behavior measures ($d = 0.13$). Also, greater effects were found for participants with anxiety as a behavioral trait ($d = 0.42$) and smallest for participants characterized as displaying aggression ($d = 0.13$).

Researchers (Gresham, Cook, & Crews, 2004) suggest that the divergence in the findings between the Quinn and associates (1999) group-based review and other group design meta-analyses (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelman, 2003; Schneider, 1992; Schneider & Byrne, 1985) is due to the less stringent inclusion criteria for studies in the Quinn et al. (1999) meta-analysis and the nature of the dependent measures upon which the ES is based for this study. For example, the meta-analysis (Quinn et al., 1999) was posited to be based

solely on group design studies of students labeled as ED under the IDEA (1999). However, closer examination of the studies revealed that two of the 35 individual studies included in the analysis were actually single-subject research designs (Gresham et al., 2004). Also, in only two of the 35 studies were students actually found eligible for ED under IDEA (1999). In the 33 other studies, participants were classified as general education students, students with Down Syndrome, and students who were simply poorly accepted by peers (Gresham et al., 2004). Therefore, Quinn's analysis contained serious flaws in the criteria that were used to include studies.

The overall ES of $r = .10$ found in the Quinn and colleagues' (1999) meta-analysis was far below the average ES of $r = .29$ found in other meta-analyses (Ang & Hughes, 2002; Beelmann et al., 1994; Losel & Beelman, 2003; Schneider, 1992; Schneider & Byrne, 1985). Researchers (Gresham et al., 2004) suggest that the divergence in the magnitude of ESs may also be due to the nature of the outcome measures upon which the ES is based in the Quinn and colleagues' (1999) review. For example, approximately 22% of the ESs included in the meta-analysis were based on measures of academic achievement. Although academic achievement is a correlate of social competence, including academic achievement in the overall effect for SST is questionable (Gresham et al., 2004). Moreover, eight ESs were based on personality test measures. Thus, around 40% of ESs included in the Quinn and associates' (1999) meta-analysis were based on dependent variables (DV) that SST was not intended to impact (Gresham et al., 2004). Therefore, due to types of studies included in Quinn and colleagues' (1999) synthesis as well as how the outcome of SST was measured in

this study may cast doubt on its use as a measure of the efficacy of SST/SCP with children with E/BD.

Summary

Overall, SST and SCP treatment has been shown to be effective with the BD population. Indeed, researchers (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 2003; Schneider, 1992; Schneider & Byrne, 1985) have generally found increases in children and youth social competence after this type of treatment. Lower effects are consistently found on measures of aggression, however (Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 1994).

Although early intervention to divert antisocial children from a pattern of destructive outcomes is critical (Eddy et al., 2002; Kazdin, 1987; Walker et al., 1995), most prior meta-analytic reviews (Ang & Hughes, 2002; Beelmann et al., 1994; Losel & Beelmann, 2003; Schneider, 1992; Schneider & Byrne, 1985) included studies with participants ranging from 3 to 19 years of age. Inclusion of children and adolescents does not show the efficacy of these programs before children become extremely resistant to intervention during their teen years. Thus, analysis of the effectiveness of SST and SCP with younger children is important to determine how effective this mode of treatment is within this age group. Moreover, given the importance of a parent component in treatment plans for youngsters with BD (Eddy et al., 2002), it is important to note that no prior synthesis (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 2003; Schneider, 1992; Schneider &

Byrne, 1985) included in their criteria the necessity of a parent component along with additional treatment agents to ensure optimal treatment efficacy.

Finally, prior meta-analytic reviews (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Kavale, et al., 1997; Losel & Beelman, 2003; Mathur, et al., 1998; Quinn et al., 1999; Schneider, 1992; Schneider & Byrne, 1985) on the efficacy of SST and SCP for children with high levels of aggressive behavior combine early programs which classified treatments based on only one theoretical framework with newly developed complex programs. Current intervention approaches are comprehensive programs drawn from more than one theoretical framework and using theoretically different strategies (Baum et al., 1986). Thus, to better understand the effect that current comprehensive SST and SCP packages have on children's antisocial behavior, a synthesis of studies examining the efficacy of more updated programs with this population is desirable. Indeed, an analysis of the treatment efficacy of more recent comprehensive SST and SCP programs will determine whether these newer interventions can be profitably applied to treatment programs for children with high or clinical levels of aggressive behavior.

Therefore, the purpose of this project is to perform a meta-analysis of studies which employed multiple SST and SCP strategies based on a variety of theoretical frameworks published between 1990 and 2005 that were used with children aged 3 to 12 years with high levels of aggressive behavior. The SST/SCP program must include PT as one focus of intervention. The meta-analysis will focus on parent and teacher perceptions of behavior change before and after their children/students are exposed to SST/SCP programs.

Method

Literature Searches

English-language studies were located using several search strategies. First, the computerized databases PsycINFO (CSA) and the Educational Resources Information Center (ERIC) documents were searched using the keyword combinations of antisocial behavior, BD's, behavior problems, ODD, CD, emotional competence, ED, intervention, prevention, school competence, seriously ED, SST, and social competence. Second, additional searches were conducted using names of authors who are affiliated with SST and SCP as key word descriptors. Finally, reference sections of primary studies located from the two aforementioned methods were examined.

Selection and Inclusion Criteria

Studies were included in the meta-analysis if they applied to, empirically, eight criteria. First, the study's participants had to have been labeled as having a BD or with high levels of aggressive behavior. Second, the primary purpose of the research article had to indicate that it addressed the efficacy of a SST or SCP intervention. Third, the SST or SCP program had to include a parent component in addition to at least one other intervention agent (i.e., clinician, teacher). Fourth, the article had to be published from 1990 through 2005, when studies that incorporated the most recent SST/SCP programs were likely to have been published (Baum et al., 1986). The fifth criterion was that the target population of the study had to focus on children between 3 and 12 years of age. Six, the outcome data reported in the study had to be measured with a parent and/or teacher rating and include a before and after measure of the same participant samples to allow for the calculation of a mean gain ES. Seven, the study

must have either provided the correlation between the pre- and post-measures or an estimation of the correlation had to be available from outside sources such as the test/reliability of the dependent measure. Finally, only peer-reviewed studies published in journals were included in the analyses.

Publication status

Non-English language studies and studies not available through the library consortium or interlibrary loan were excluded from this analysis. Unpublished studies (e.g., doctoral dissertations) were deliberately excluded because they are often inaccessible to most consumers. Also, excluded from this review were studies that overlapped the child population with the adolescent population since the focus of this research was on young children.

Data Extraction

Study descriptors. Studies were coded for type of publication (e.g., journal article). The publication year of the study was extracted. Attrition rate, treatment integrity, and consumer satisfaction were also extracted.

Sample descriptors. Age was coded as the mean age of the sample in years. Gender was based on the percentage of males in the sample. Race was coded as the percentage of the sample that was White. Pre-treatment risk status of children in the sample was coded as CD, ED, ODD, or engaging in high levels of aggressive behavior.

Treatment descriptors. Treatment was coded as PT plus at least one additional intervention agent. Treatment duration was also coded according to the length of treatment in months.

Dependent measure descriptors. Pre- and post-test means and standard deviations were extracted. Time 1 and Time 2 correlations were coded. Finally, the treatment group sample size was extracted.

Statistical Analysis

In choosing Time 1 and Time 2 values, general decision rules were followed. First, if the test-retest reliability for the sample or the behavioral inventory measure was provided in the article, it was used in the analysis. Second, if the author(s) did not report Time 1 and Time 2 values, the original source of the behavioral inventory was located and the reported test-retest reliability was used. Third, if the author(s) of the article referenced the original source of the behavioral inventory or another article, the source was located and the reported test-retest reliability was used. If the original source of the behavioral inventory could not be located or if a study used a composite scale to collect pre- and post-data without reporting test-retest reliabilities for each scale, an average of the available test-retest reliabilities from the pool of parent or teacher measures, depending on type of rater for the inventory, in the analysis was computed using Fisher's Z_r -transform (Hedges & Olkin, 1985),

$$Z_r = .5 \log_e \left[\frac{1+r}{1-r} \right], \quad (1)$$

where r is the correlation coefficient and \log_e is the natural logarithm.

Each test-retest reliability measure was first transformed using Fisher's Z_r -transform. Next, the transformed scores were totaled and divided by the number of

transformed scores. Finally, the Z_r -transformed mean correlation was transformed back into standard correlation form using the transform z' to r formula,

$$r = \frac{e^{2ES_{Z_r}} - 1}{e^{2ES_{Z_r}} + 1} , \quad (2)$$

where r is the individual or mean correlation, ES_{Z_r} is the corresponding individual or mean Z_r -transformed correlation, and e is the base of the natural logarithm.

Rates of aggression from each sample were used as measures of the effect of SST/SCP outcomes. Although ESs for sub-samples from the same study share dependencies (Wolf, 1990), these dependencies are assumed to be small (Lipsey & Wilson, 2001). Thus, studies with more than one independent sample were assigned independence at the sample level.

For purposes of obtaining an overall assessment of the magnitude of effect of skills training on measures of externalizing behavior within these children's daily lives, parent and teacher ratings for each sample were extracted and averaged if available. Otherwise, parent or teacher ratings were extracted and synthesized along with the combined ratings to produce an overall magnitude of effect of SST/SCP within the different areas of these children's lives, home and school. For samples that reported more than one rating per parent or teacher relevant to the hypothesis, a single rating from among them was chosen per rater based on the measure that most adequately determined aggression levels at Time 1 and Time 2 and the availability of the correlation of the two time points or relevant information to obtain the measure's test-retest reliability.

Reported pre- and post-test scores, the correlation between Time 1 and Time 2 values, and sample size from each contributing sample were used to calculate the standardized mean gain score. These procedures involved comparing the central tendency on the aggression variable at one time with the central tendency of the same variable measured the same way on the same sample at a later time (Lipsey & Wilson, 2001). ES estimates were calculated using the following source data: means, standard deviations, Time 1 and Time 2 correlation or test-retest reliability of measure, and sample size. Meta-analytic software (Borenstein, 2004) was used to perform the calculations. First, the standardized mean difference (d) was computed as follows:

$$\text{PairedDiff} = (m_2 - m_1), \quad (3)$$

where m_2 is the mean of the sample at Time 2 and m_1 is the mean of the sample at Time 1.

$$\text{PairedDiffSD} = \sqrt{(s_1^2 + s_2^2 - 2 * r * s_1 * s_2)} \quad (4)$$

where s_1 is the standard deviation of the sample at Time 1, s_2 is the standard deviation of the sample at Time 2, and r is the Time 1 Time 2 correlation.

$$\text{PairedDiffSe} = \frac{\text{PairedDiffSD}}{\sqrt{n}}, \quad (5)$$

where PairedDiffSD was computed with formula (4) and n is the sample size.

Next, the independent standardized mean difference was computed:

$$\text{StdDiff} = \frac{\text{PairedDiff}}{\left(\frac{\text{PairedDiffSD}}{\sqrt{(2 * (1 - r))}} \right)}, \quad (6)$$

where *PairedDiff* was computed with formula (3), *PairedDiffSD* was computed with formula (4), and *r* is the Time 1 Time 2 correlation.

$$\text{StdDiffSe} = \sqrt{\left(\frac{1/n + \text{StdDiff}^2}{(2 * n)} \right) \sqrt{(2 * (1 - r))}}, \quad (7)$$

where *n* is the sample size, *StdDiff* is computed with formula (6), *n* is the sample size, and *r* is the Time 1 Time 2 correlation.

Finally, the standardized mean difference (*d*) was multiplied by a correction factor (*j*) to compute Hedges's *g* and the corresponding standard error and variance to correct for small sample size as follows:

Correction factor *j*

$$j = 1 - \left(\frac{3}{(4 * df - 1)} \right), \quad (8)$$

where *df* = *N*_{tot} - 2 and *N*_{tot} = sample size

Computation of Hedges's *g*

$$g = d * j, \quad (9)$$

where *d* is computed with formula (6) and *j* with formula (8).

Computation of the standard error of Hedges's g

$$\text{StdErr}(g) = \text{StdErr}(d) * j, \quad (10)$$

where standard error d was computed with formula (7) and j with formula (8).

Computation of variance of Hedge's g

$$\text{Variance}(g) = \text{StdErr}(g)^2, \quad (11)$$

where $\text{StdErr}(g)$ is computed with formula (10).

The confidence interval for the mean ES was based on the standard error of the mean and a critical value from the z-distribution (Lipsey & Wilson, 2001). The standard error of the mean was computed as the square root of the sum of the inverse variance weights (Hedges & Olkin, 1985) as shown in

$$\text{SE } \overline{ES} = \sqrt{1/\sum \omega_i}, \quad (12)$$

where $\text{SE } \overline{ES}$ is the standard error of the ES, ω_i is the inverse variance weight associated with the ES i with $i = 1$ to k ESs included in the mean.

The confidence interval was constructed by multiplying the standard error by a critical z-value representing the 95% confidence level and the product was subtracted from the mean ES for the lower limit and the product was added to the mean ES for the upper limit as shown in

$$\overline{ES}_L = \overline{ES} - z_{(1-\alpha)}(\text{SE } \overline{ES}), \quad (13)$$

$$\overline{ES}_U = \overline{ES} + z_{(1-\alpha)}(\text{SE } \overline{ES}), \quad (14)$$

where \overline{ES} is the mean ES, $z_{(1-\alpha)}$ is the critical value for the z-distribution (1.96 for $\alpha = .05$; 2.58 for $\alpha = .01$), and $\text{SE } \overline{ES}$ is the standard error of the mean ES.

Finally, the variability in ESs was studied in more detail with homogeneity analyses. Homogeneity concerns the degree of variability in the ESs in an aggregation of studies (Lipsey & Wilson, 2001). Variability between individual mean ESs and the weighted average study mean ES aggregations was tested with the Q statistic to determine if pooling of the individual ESs from the studies was due only to change (homogenous finding) or whether additional moderator variables influenced effectiveness (heterogenous finding). The formula for Q is as follows:

$$Q = \sum \omega_i (ES_i - \overline{ES})^2 \quad (15)$$

where ES_i is the individual ES for $i = 1$ to k (the number of ESs), \overline{ES} is the weighted mean ES over the k ESs, and ω_i is the individual weight for ES_i (Hedges & Olkin, 1985).

Results

Table 1 contains characteristics of children from 12 studies that produced the 13 independent sub-samples included in the meta-analysis. Of the 63 obtained studies, 51 were not included because they did not meet at least one of the criteria for inclusion in the meta-analysis. Eight of the 51 excluded studies were not included solely due to

insufficient reporting of pre and post means and standard deviations to compute a mean gain score. The sample size for included studies ranged from 22 to 445 children in a sample with a total sample size of 1,179 children. The mean age of the children was between 5 years to 11 years of age. Twelve samples were classified as predominantly male and one sample as predominantly female. The duration of time for which the children participated in treatment ranged between 3 to 18 months. Six samples were classified as predominantly White, five samples were classified as predominantly minority status, and two studies did not report racial background of participants.

Table 2 summarizes combined parent and teacher ratings of children's level of aggression after children received SST or SCP intervention. The thirteen samples produced ESs that ranged from $g = -1.77$ to $g = -0.02$. Across samples, the post-treatment average g was -0.28 (95% confidence interval [CI] = -0.31 to -0.25), denoting a small to moderate decrease in children's aggressive behavior after they participated in SST or SCP intervention. The combined Z test of these effects was significant ($Z = -17.51, p < .001$) indicating that parents' and teachers' combined ratings of the children's aggression levels were significantly lower after the children received SST/SCP intervention.

The presence of heterogeneity of variance ($Q = 483.28, p < .001$) suggests that there may be other sources of systematic variance in the relationships between the two variables, SST/SCP and children's aggression levels. Thus, subsidiary analyses were conducted.

Table 1

Characteristics of Sample of Included Studies

Source	N	Age	Gender	Duration	Race
1. Kazdin et al., 1992	37	10	78	7	69
2. Grizenko et al., 1993	30	9	77	4	NR
3. Prinz et al., 1994	42	7	43	9	24
4. Pepler, Craig et al., 1995	41	10	73	3	43
5. Pepler, King et al., 1995	34	9	85	4	NR
6. Webster-Stratton & Hammond, 1997	22	6	74	6	86
7. Walker et al., 1998	33	5	75	3	93
8. CPPRG, 1999	445	7	69	9	47
9. August et al., 2001	124	7	64	18	85
10. Lochman & Wells, 2002	59	11	65	16	16
11. Webster-Stratton, et al., 2004 _a	24	6	90	6	79
12. Webster-Stratton, et al., 2004 _b	25	6	90	6	79
13. Lavalley, 2005	263	6	71	6	44

Note. Sources were abbreviated due to space constraints, see Bibliography for full citation. Subscript letters following publication year indicate an independent subsample within the study; Age = mean age of sample in years; Gender = percentage of males in sample; Duration = length of treatment in months; Race = percentage of participants classified as White in sample; NR = not reported.

Table 2

Children's Aggression Levels after Social Competence Intervention

ID Rater	Statistics for each study				Hedges's g and 95% CI	
	Hedges's g	Lower limit	Upper limit	Z-Value	p-Value	
1 Combined	-0.95	-1.13	-0.78	-10.80	0.00	
2 Parent	-1.77	-2.04	-1.50	-13.03	0.00	
3 Teacher	-0.53	-0.68	-0.38	-6.96	0.00	
4 Teacher	-0.60	-0.75	-0.45	-7.67	0.00	
5 Combined	-0.50	-0.64	-0.37	-7.41	0.00	
6 Combined	-0.83	-1.05	-0.61	-7.40	0.00	
7 Teacher	-1.06	-1.25	-0.86	-10.52	0.00	
8 Combined	-0.02	-0.07	0.02	-1.14	0.25	
9 Parent	-0.51	-0.61	-0.40	-9.46	0.00	
10 Combined	-0.16	-0.38	0.06	-1.42	0.16	
11 Combined	-0.64	-0.86	-0.41	-5.55	0.00	
12 Combined	-0.62	-0.83	-0.40	-5.53	0.00	
13 Teacher	-0.27	-0.39	-0.16	-4.63	0.00	

Note. ID = sample number; Combined = a combined parent and teacher rating.

The ES variance was partitioned for parent and teacher ratings of children/students' behavior change after they received SST/SCP treatment. Follow-up analyses of the perceived effects of the youngsters' behavior change by type of rater indicated that both parents ($Z = - 7.26, p < .001$) (see Table 3) and teachers ($Z = - 18.61, p < .001$) (see Table 4) perceived significant decreases in children's aggressive behavior after the children participated in SST/SCP intervention. The teachers' post-treatment ratings ($g = - 0.32, 95\% CI = - 0.35$ to $- 0.28$) (see Table 4), however, indicated higher perceived decreases in students' aggressive behavior after SST/SCP intervention than did parents' ratings ($g = - 0.12, 95\% CI = - 0.15$ to $- 0.09$) (see Table 3).

Table 3

Parent Ratings of Children's Aggression after Intervention

ID Rater	Statistics for each study					Hedges's g and 95% CI
	Hedges's g	Lower limit	Upper limit	Z-Value	p-Value	
1 Parent	-0.79	-0.94	-0.63	-10.01	0.00	
2 Parent	-1.77	-2.04	-1.50	-13.03	0.00	
5 Parent	-0.58	-0.73	-0.43	-7.55	0.00	
6 Parent	-1.03	-1.24	-0.81	-9.40	0.00	
8 Parent	0.11	0.07	0.15	5.58	0.00	
9 Parent	-0.51	-0.61	-0.40	-9.46	0.00	
10 Parent	-0.12	-0.32	0.07	-1.21	0.23	
11 Parent	-0.54	-0.75	-0.34	-5.23	0.00	
12 Parent	-0.75	-0.96	-0.54	-6.94	0.00	
	-0.12	-0.15	-0.09	-7.26	0.00	

Note. ID = sample number.

A standard multiple regression was performed between aggression levels as the DV and percentage White in the sample, treatment length, and age as independent variables (IV). The percentage White in the samples was converted to proportions and the proportions converted using the arcsine transformation to standardize and normalize the distribution of proportions prior to entry into the analysis. Analysis was performed using SPSS REGRESSION.

Results of evaluation of assumptions led to omission of one variable. One IV, age, was omitted because it was correlated poorly with aggression levels ($r = -0.01$). Collinearity diagnostics indicated that multiple correlation with other variables, ethnicity and treatment length, was not high (.93), so it appears that this assumption was not violated. No major deviations from normality, linearity, and homoscedasticity were apparent and no outliers were detected.

Table 4

Teacher Ratings of Children's Aggression after Intervention

ID	Rater	Statistics for each study				Hedges's g and 95% CI	
		Hedges's g	Lower limit	Upper limit	Z-Value	p-Value	
1	Teacher	-1.12	-1.31	-0.93	-11.54	0.00	
3	Teacher	-0.53	-0.68	-0.38	-6.96	0.00	
4	Teacher	-0.60	-0.75	-0.45	-7.67	0.00	
5	Teacher	-0.42	-0.54	-0.31	-7.42	0.00	
6	Teacher	-0.64	-0.87	-0.41	-5.52	0.00	
7	Teacher	-1.06	-1.25	-0.86	-10.52	0.00	
8	Teacher	-0.16	-0.20	-0.12	-7.20	0.00	
10	Teacher	-0.20	-0.43	0.04	-1.61	0.11	
11	Teacher	-0.73	-0.98	-0.49	-5.87	0.00	
12	Teacher	-0.48	-0.70	-0.26	-4.20	0.00	
13	Teacher	-0.27	-0.39	-0.16	-4.63	0.00	
		-0.32	-0.35	-0.28	-18.61	0.00	

Note. ID = sample number.

Table 5 displays how much of the variance in aggression levels is explained by the variables ethnicity and treatment length. In this case the value is $R^2 = .551$.

Therefore, the two IVs in combination explained 55.1% of the variance in aggression levels. R for regression was significantly different from zero, $F(2, 8) = 4.90, p < .05$.

Table 5

Model Summary^b

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.742 ^a	.551	.438	.33422

a. Predictors: Constant, treatment in months, percent White

b. Dependent Variable: aggression level

Only one of the IVs, however, contributed significantly to the prediction of aggression levels, percentage White in sample ($\beta = -.60, p < .05$) (see Table 6). As the percentage of White in the sample increased, aggression levels decreased. The length

for which children received social skill and social competence training did not make a significant contribution to the prediction of aggression levels.

Table 6

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Standard Error	Beta		
1 (Constant)	-.036	.433		-0.84	.935
percent White	-.457	.187	-.603	-2.446	.040
treatment in months	.028	.024	.298	1.209	.261

Treatment integrity/consumer satisfaction/attrition

Eighty-five percent of the samples included in the analysis reported observation of treatment integrity. Researchers indicated different methods to ensure appropriate implementation of the SST/SCP program. Various studies indicated that to ensure that the treatment was implemented with integrity staff received extensive training, a treatment manual was followed, the staff were closely monitored and sometimes observed through a one-way mirror, logs were kept of each training session, checklists were used by staff to ensure standardization, videotapes of sessions were reviewed and the staff received feedback, and videotapes of sessions were randomly checked for integrity.

Parent ratings of satisfaction were reported for 55% of the samples, with the various treatment programs being rated as high to very high in satisfaction. Attrition rates were also reported for 55% of the samples. Researchers reported relatively low

attrition rates overall, with most studies indicating no significant differences between participants who participated in the intervention and those who dropped out.

Discussion

Post-treatment aggression level outcomes

This meta-analytic review revealed small to moderate decreases in aggression levels after SST/SCP intervention for children classified pretreatment as engaging in high levels of aggression or with BD, according to combined parent and teacher ratings. This finding is consistent with prior research (Ang & Hughes, 2002; Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelman, 2003; Schneider, 1992; Schneider & Byrne, 1985). Although both raters perceived significant decreases in children's externalizing behavior after children participated in SST/SCP training, teachers reported small to moderate decreases in students' aggression levels post-treatment whereas parents rated only mild decreases in their children's level of aggression after SST/SCP intervention.

Other researchers (Achenbach, McConaughy, & Howell, 1987) have also found consistency between similar informant pairs (i.e., parents) but much lower consistency between different types of informants (i.e., parents and teachers) on reports of E/BD. In contrast to the present study, however, prior research (Scruggs, Mastropieri, Cook, & Escobar, 1986) has generally shown that parents perceive higher treatment benefits than do either school faculty or institutional setting professionals for early intervention for children with CD. When considering the information collected from different informants, however, clinicians should consider the general reliability of the reports (Hughes, 1990; Malik & Furman, 1993). For example, Coie, Dodge, and

Kupersmidt (1991) suggested that teacher reports of aggressive behaviors are usually quite reliable. Parent ratings, on the other hand, are posited to underestimate social difficulties experienced by their children (Malik & Furman, 1993).

Although in the present study the age of the participant was poorly correlated with the variance in aggression levels, past research (Kazdin, 1987; Walker et al., 1995) has indicated that children displaying antisocial behavior become extremely resistant to intervention in general with increasing age, especially in adolescence and young adulthood. Prior meta-analytic reviews (Beelmann et al., 1994; Denham & Almeida, 1987; Losel & Beelmann, 2003; Schneider, 1992, Schneider & Byrne, 1985) on the efficacy of SST/SCP training and age of participants have yielded mixed results. While some research (Denham & Almeida, 1987; Schneider & Byrne, 1985) found SST/SCP to be more beneficial for preschool and kindergarteners compared to elementary and middle school children, other research (Beelmann et al., 1994; Losel & Beelmann, 2003) found this intervention to be less beneficial for preschool and kindergarten level children compared to children in elementary and middle school. Still another review (Schneider, 1992) did not find a relationship between efficacy of SST/SCP and age of participant. Thus, although early intervention in general is recommended to divert antisocial children from a path of destructive outcomes (Kazdin, 1987; Walker et al., 1995), the age at which SST/SCP is optimum is still unclear at this time.

In the present study, the percentage of participants in the samples that were classified as White predicted 60% of the variance in aggression levels. As the percentage of Whites in the sample increased, the aggression levels decreased post-

treatment. No prior meta-analytic review reported efficacy of SST/SCP for different ethnic groups. J. M. Coleman (1978) and J. W. Coleman (1978) suggest that cultural background should be considered when working with children and youth.

Sociocultural considerations have been found to be important in the development of instructional programs (Tharp, 1989). For example, research (Tharp, 1989) has shown that by considering the sociocultural needs and abilities of Hawaiian children who were at high risk for reading failure, the reading program could be adapted to the children's culture which consequently improved their reading performance. Tharp (1989) incorporated the teaching-learning interactions characteristic of the Hawaiian culture into the reading instruction. In addition, further inferences were drawn that a sociocultural approach is fundamental in other areas of instruction, including SST, especially with minority students. Thus, perhaps typical SST/SCP programs included in this analysis were blind to cultural relevance of interventions.

A review of SST research (Bos & Fletcher, 1997; Garcia & Malkin, 1993) with Black students with EBD suggests that trainer characteristics also play an important role in SST/SCP intervention context because the clinician sets and influences the instruction for the participants with EBD. For example, a trainer's cultural self-awareness is directly related to the identification of cultural influences that impact SST/SCP programs. The reporting of information in the present analysis regarding trainers was limited. Indeed, only one study reported information about the race of the trainers. The Conduct Problem Prevention Research Group (1999) reported that intervention staff was hired from local communities to match the ethnic composition of the high-risk children as closely as possible. Therefore, it is possible that the trainer

characteristics played an important role in SST/SCP intervention context in the present study.

Although the correlation between percent White in the sample and length of treatment predicted aggression levels, treatment length did not significantly contribute to regression. Prior meta-analytic reviews (Denham & Almeida, 1987; Schneider 1992; Schneider & Byrne, 1985) have yielded mixed results on the efficacy of SST/SCP and treatment length. Denham and Almeida (1987) found that longer-duration intervention programs produced more benefits. Although a significant difference in treatment efficacy and duration of treatment was not found, Schneider and Byrne (1985) found that shorter-duration treatment tended to produce higher treatment effects than longer-length intervention. Still, other research (Schneider, 1992) has not found a relationship between SST/SCP treatment efficacy and length of treatment. The present results may have been influenced by the higher number of samples included in the analysis that received shorter-duration treatment, however. For example, eight samples received treatment for six months or less, three samples were in treatment for seven to nine months, and only two samples participated in training for 16-18 months. Therefore, it is quite possible that the findings result from the heavy weighting of shorter-duration treatment studies over longer-duration treatments.

Overall, SST/SCP was effective in reducing participants' level of aggressive behavior. The effect, however, was small to moderate. Teachers perceived a small to moderate decrease in students' level of aggression after treatment whereas parents rated their children as having only a mild decrease in aggression post-treatment. The

percentage White participants in samples were predictive of post-treatment aggression levels. As the percentage of White in the samples increased, aggression levels decreased after treatment in contrast to predominantly minority samples. The length of time for which the children participated in the SST/SCP intervention and mean age of the sample, however, were not predictive of aggression levels after intervention.

Study Limitations

Study results must be interpreted in light of certain limitations. First, the type of SST/SCP studies included in this meta-analysis may have influenced the results. The decision to exclude unpublished literature (e.g., doctoral dissertations) was based on pragmatic concerns alone and is acknowledged as a limitation of the findings. While the peer review process increases the completeness and accuracy of reporting, analyzing, and interpreting of research results, the process may create an upward bias in results because non-significant findings are less likely to be published (Begg, 1994; Lipsey & Wilson, 2001). Also, in spite of careful searching, other published studies may have been overlooked. In addition, many located studies were omitted due to insufficient data reporting. For example, many studies did not report the mean and standard deviation for participants' pre- and post levels of aggression. Thus, it is possible that studies included in the analysis influenced the findings noted here.

Second, a recognized limitation in meta-analytic reviews using a pre-post contrast is the difficulty in obtaining or estimating the correlation between the Time 1 and Time 2 values to compute the standardized mean gain ES and the associated inverse variance weight (Lipsey & Wilson, 2001). Although the ES estimate is posited to be robust to modest variations in the weights given to individual ESs, the

confidence interval around the mean ES and the assessment of the degree of ES heterogeneity are affected by variations in the weights (Lipsey & Wilson, 2001). Thus estimations of the included Time 1 and Time 2 correlations may have affected the observed heterogeneity.

Future Research Directions

The results of this study suggest directions for future research. First, in the present analysis, teachers' perceived a moderate decrease in their students' aggressive behavior after SST/SCP training whereas parents' perceived a relatively smaller decrease in their children's externalizing behavior after treatment. Thus, examination of factors related to differential effects of parents' and teachers' perception of the efficacy of SST/SCP on reducing antisocial children's aggressive behavior is warranted. Future studies should look at whether this type of treatment is more effective in reducing aggressive behavior within public settings rather than in a private setting such as the home.

Second, studies examining the effect of SST/SCP on adolescents' problem behavior should be included in future analyses. Since research has shown that students with antisocial behavior patterns are extremely resistant to intervention with increasing age (Kazdin, 1987; Walker et al., 1995), contrasting SST/SCP efficacy between preschool, elementary-level children and adolescents will show the magnitude of difference among the three populations of youngsters. Investigation into differences in behavior change before and after skills training among the age groups may shed light on the importance of considering age when choosing to use SST/SCP.

Third, unpublished studies should be included in future analyses. These are potentially fruitful sources of data that may have influenced the present findings. Researchers have reported that the ESs in non-published research average .16 standard deviation units smaller than those published in journal articles (Cohen, Kulik, & Kulik, 1982; Kulik & Kulik, 1982). Thus, exclusion of unpublished material such as dissertations may have created an upward bias in the present results (Begg, 1994; Lipsey & Wilson, 1993).

Using SST/SCP as an intervention to decrease aggression levels in children displaying high levels of aggression was effective. It was most effective, however, with samples of children in which the predominant race was White rather than minority status. Moreover, teachers perceived more benefits from these programs on children's aggressive behavior than did parents. Given the low to moderate reductions in student's aggressive behavior according to teacher reports and the mild reductions in children's aggression according to parent reports, this type of intervention is probably best utilized as part of a comprehensive program rather than as a stand-alone treatment.

Bibliography

References marked with an asterisk indicate studies included in the meta-analysis.

Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, *101*, 231-232.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*. Washington, DC: Author.

Ang, R. P., & Hughes, J. N. (2002). Differential benefits of skills training with antisocial youth based on group composition: A meta-analytic investigation. *School Psychology Review*, *31*(2), 164-186.

*August, G. J., Realmuto, G. M., Hektner, J. M., & Bloomquist, M. L. (2001). An integrated components preventive intervention for aggressive elementary school children: The early risers program. *Journal of Consulting and Clinical Psychology*, *69*(4), 614-626.

Baum, J. G., Clark, H. B., McCarthy, W., Sandler, J., & Carpenter, R. (1986). An analysis of the acquisition and generalization of social skills in troubled youths: Combining social skills training cognitive self-talk, and relaxation procedures. *Child and Family Behavior Therapy*, *8*(4), 1-27.

Beelmann, A., Pfingsten, U., & Losel, F. (1994). Effects of training social competence in children: A meta-analysis of recent evaluation studies. *Journal of Clinical Child Psychology*, *23*(3), 260-271.

Begg, C. B. (1994). Publication bias. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis* (pp. 399-409). New York: Russell Sage Foundation.

Borenstein, M. (2004). *Biostatistical program*. Englewood, NJ. (Information available on the web at www.meta-analysis.com)

Bos, C., & Fletcher, T. (1997). Sociocultural considerations in learning disabilities inclusion research: Knowledge gaps and future directions. *Learning Disability Research Practice*, *12*, 92-99.

Brestan, E. V., & Eyeberg, S. M. (1998). Effective psychosocial treatments of conduct-disordered children and adolescents: 29 years, 82 studies, and 5,272 kids. *Journal of Clinical Child Psychology*, *27*, 180-189.

Cohen, P. A., Kulik, J. A., & Kulik, C. C. (1982). Education outcomes of tutoring: A meta-analysis of findings. *American Educational Research Journal*, *19*(2),

- Coie, J., Dodge, K. A., & Kupersmidt (1991). Peer group behavior and social status. In S. R. Asher & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 17-59). New York: Cambridge University Press.
- Coie, J., & Jacobs, M. (1993). The role of social context in the prevention of conduct disorder. *Development and Psychopathology*, 5, 263-275.
- Coleman, J. M. (1978). The intergroup relations specialist: Change agent for public schools. *Theory Into Practice*, 17(2), 144-148.
- Coleman, J. W. (1978). *Deviant subcultures and the schools*. Hackensack, NJ: National Council on Crime and Delinquency. (ERIC Document Reproduction Service No. ED155820)
- *Conduct Problems Prevention Research Group. (1999). Initial impact of the Fast Track prevention trial for conduct problems: I. The high-risk sample. *Journal of Consulting and Clinical Psychology*, 67(5), 631-647.
- Costello, E. J., & Angold, A. (1995a). Developmental epidemiology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental Psychopathology*. (23-56). New York: John Wiley.
- Denham, S. A., & Almeida, M. C. (1987). Children's social problem solving skills, behavioral adjustment, and interventions: A meta-analysis evaluating theory and practice. *Journal of Applied Developmental Psychology*, 8, 391-409.
- Dishion, T. J., Andrews, D. W., Kavanagh, K., & Soberman, L. H. (1996). Preventive interventions for high-risk youth: The adolescent transitions program. In R. Peters & R. McMahon (Eds.), *Preventing childhood disorders, substance abuse, and delinquency*. (pp. 184-214). Thousand Oaks, CA: Sage Publications.
- Eddy, J. M., Reid, J. B., & Curry, V. (2002). The etiology of youth antisocial behavior, delinquency, and violence and a public health approach to prevention. In M. R. Shinn, H. M. Walker, & G. Stoner (Eds.), *Interventions for academic and behavior problems II: Preventive and remedial approaches*. (pp. 27-52). Bethesda, MD: National Association of School Psychologists.
- Egan, S. K., & Perry, D. G. (1998). Does low self-regard invite victimization? *Developmental Psychology*, 34(2), 299-309.
- Elliot, S. N., & Gresham, F. M. (1993). Social skills interventions for children. *Behavior Modification*, 17(3), 287-313.

- Forehand, R., & McMahon, R. J. (1981). *Helping the noncompliant child: A clinician's guide to parent training*. New York: Guilford.
- Forness, S., & Knitzer, J. (1992). A new proposed definition and terminology to replace "serious emotional disturbance" in Individuals With Disabilities Education Act. *School Psychology Review, 21*, 12-20.
- Garcia, S. B., & Malkin, D. H. (1993). Toward defining programs and services for culturally and linguistically diverse learners in special education. *Teaching Exceptional Children, 26*, 52-58.
- Gibson, K. R. (1994). The nature and scope of the presidential addresses of the American Psychological Association, 1892-1990: A content analysis. *History of Psychology Newsletter, 26*, 16-24.
- Gresham, F. M. (1983). Social validity in the assessment of children's social skills: Establishing standards for social competency. *Journal of Psychological Assessment, 1*, 299-307.
- Gresham, F. M. (1992). Social skills and learning disabilities: Causal, concomitant, or correlational? *School Psychology Review, 21*, 348-360.
- Gresham, F. M. (1998). Social skills training: Should we raze, remodel, or rebuild? *Behavioral Disorders, 24*, 19-25.
- Gresham, F. M. (2002). Teaching social skills to high-risk children and youth: Preventive and remedial strategies. In M. R. Shinn, H. M. Walker, & G. Stoner (Eds.), *Interventions for academic and behavior problems II: Preventive and remedial approaches* (pp. 403-432). Bethesda, MD: NASP Publications.
- Gresham, F. M., Cook, C. R., & Crews, S. D. (2004). Social skills training for children and youth with emotional and behavioral disorders: Validity considerations and future directions. *Behavioral Disorders, 30(1)*, 32-46.
- Gresham, F. M., & MacMillan, D. L. (1997). Social competence and affective characteristics of students with mild disabilities. *Review of Educational Research, 67*, 377-415.
- *Grizenko, N., Papineau, D., & Sayegh, L. (1993). Effectiveness of a multimodal day treatment program for children with disruptive behavior problems. *Journal of American Academy of Child and Adolescent Psychiatry, 32(1)*, 127-134.
- Hawkins, R. (1991). Is social validity what we are interested in? Argument for a functional approach. *Journal of applied Behavior Analysis, 24*, 205-213.

- Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. Orlando, FL: Academic Press.
- Hughes, J. (1990). Assessment of social skills: Sociometric and behavioral approaches. In C. Reynolds & R. Kamphaus (Eds.), *Handbook of psychological and educational assessment of children: Personality, behavior, and context*. New York: Guilford.
- Individuals with Disabilities Education Act. (1999). 34 C.F.R. 300 (Regulations implementing IDEA [1997]) (*Federal Register*) (1999) 64(48).
- Kauffman, J. M. (2001). *Characteristics of emotional and behavioral disorders of children and youth* (7th ed.). Upper Saddle River, NJ: Merrill Prentice-Hall.
- Kavale, K. A., Mathur, S. R., Forness, S. R., Rutherford, R. B., & Quinn, M. M. (1997). Effectiveness of social skills training for students with behavior disorders: A meta-analysis. *Advances in Learning and Behavioral Disabilities*, 11, 1-26.
- Kazdin, A. (1987). Treatment of antisocial behavior in children: Current status and future directions. *Psychological Bulletin*, 102, 187-203.
- Kazdin, A. E. (1997). Practitioner review: Psychosocial treatments for conduct disorder in children. *Journal of Child Psychology and Psychiatry*, 38, 161-178.
- *Kazdin, A. E., Siegal, T. C., & Bass, D. (1992). Cognitive problem-solving skills training and parent management training in the treatment of antisocial behavior in children. *Journal of Consulting and Clinical Psychology*, 60(5), 733-747.
- Kulik, C. C., & Kulik, J. A. (1982). Effects of ability grouping on secondary school students: A meta-analysis of evaluation findings. *American Educational Research Journal*, 19(3), 415-428.
- *Lavalley, K. L. (2005). The impact of first-grade "friendship group" experiences on child outcomes in the fast track program. *Journal of Abnormal Child Psychology*, 33(3), 307-324.
- Lipsey, M. W. & Wilson, D. B. (1993). The efficacy of psychological, educational, and behavioral treatment: Confirmation from meta-analysis. *American Psychologist*, 48(12), 1181-1209.
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis: Applied social research methods series*. Thousand Oaks: Sage Publications.

- *Lochman, J. E., & Wells, K. C. (2002). The coping power program at the middle-school transition: Universal and indicated prevention effects. *Psychology of Addictive Behaviors, 16*(Suppl4), S40-S54.
- Long, P., Forehand, R., Wierson, M., & Morgan, A. (1994). Does parent training with young noncompliant children have long term effects? *Behaviour Research and Therapy, 32*, 101-107.
- Losel, F., & Beelmann, A. (2003). Effects of child skills training in preventing antisocial behavior: A systematic review of randomized evaluations. *Annals of the American Academy of Political & Social Science, 587*, 84-109.
- Malik, N., & Furman, W. (1993). Practitioner review: Problems in children's peer relations: What can the clinician do? *Journal of Child Psychology and Psychiatry, 34*(8), 1303-1326.
- Mathur, S., Kavale, K., Quinn, M., Forness, S., & Rutherford, R. (1998). Social skills intervention with students with emotional and behavioral problems: A quantitative synthesis of single subject research. *Behavioral Disorders, 23*, 193-201.
- McFall, R. (1982). A review and reformulation of the concept of social skills. *Behavioral Assessment, 4*, 1-33.
- McNamara, K. (2002). Best practices in promotion of social competence in the schools. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 911-927). Bethesda, MD: The National Association of School Psychologists.
- Merrell, K. W., & Gimpel, G. (1998). *Social Skills of children and adolescents: Conceptualization, assessment, and treatment*. Mahwah, NJ: Earlbaum.
- Newcomb, A., Bukowski, W., & Pattee, L. (1993). Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial, and average socio-metric status. *Psychological Bulletin, 113*, 306-347.
- Odom, S. L., & McConnell, S. R. (1985). A performance-based conceptualization of social competence of handicapped preschool children: Implications for assessment. *Topics in Early Childhood Special Education, 4*(4), 1-19.
- Olweus, D. (1994). Bullying at school: Long-term outcomes for the victims and an effective school-based intervention program. In L. R. Huesmann (Ed.), *Aggressive behaviour: Current perspectives* (pp. 97-1300). New York: Plenum.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are

low-accepted children at risk? *Psychological Bulletin*, 102, 357-389.

- Patterson, G. R., Reid, J. B., & Dishion, T. J. (1992). *Antisocial boys*. Eugene, OR: Castilia Publishing Company.
- *Pepler, D. J., Craig, W., & Roberts, W. (1995). Social skills training and aggression in the peer group. In J. M. Cord (Ed.), *Coercion and punishment in long-term perspectives* (pp.213-228). New York, NY, US: Cambridge University Press.
- *Pepler, D., King, G., Craig, W., Byrd, B., & Bream, L. (1995). The development and evaluation of a multisystem and social skills group program for aggressive children. *Child & Youth Care Forum*, 24(5), 297-313.
- *Prinz, R. J., Blechman, E. A., & Dumas, J. E. (1994). An evaluation of peer coping-skills training for childhood aggression. *Journal of Clinical Child Psychology*, 23(2), 193-203.
- Quinn, M. M., Kavale, K. A., Mathur, S. R., Rutherford, Jr., R. B., & Forness, S. R. (1999). A meta-analysis of social skill interventions for students with emotional or behavioral disorders. *Journal of Emotional & Behavioral Disorders*, 7(1), 54-65.
- Robins, R. W., Gosling, S. D., & Craik, K. H. (1999). An empirical analysis of trends in psychology. *American Psychologist*, 54, 117-128.
- Schneider, B. H. (1992). Didactic methods for enhancing children's peer relations: A quantitative review. *Clinical Psychology Review*, 12(3), 363-382.
- Schneider, B. H., & Byrne, B. M. (1985). Children's social skills training: A meta-analysis. In B. Schneider, K. Rubin, & J. Ledingham (Eds.), *Children's peer relations: Issues in assessment and intervention* (pp.175-192). New York: Springer-Verlag.
- Scruggs, T. E., Mastropieri, M. A., Cook, S. B., & Escobar, C. (1986). Early intervention for children with conduct disorders: A quantitative synthesis of single-subject research. *Behavioral Disorders*, 11, 260-271.
- Serketich, W., & Dumas, J. E. (1996). The effectiveness of behavioral parent training to modify antisocial behavior in children: A meta-analysis. *Behavior Therapy*, 27(2), 171-186.
- Sheridan, S. M., & Walker, D. (1999). Social skills in context: Considerations for assessment, intervention and generalization. In C. R. Reynolds & T. B. Gutkin (Eds.), *The handbook of school psychology* (3rd ed.) (pp. 686-708). New York: John Wiley & Sons.

- Skiba, R., & Grizzle, K. (1991). The social maladjustment exclusion clause: Issues of definition and assessment. *School Psychology Review*, 20, 217-230.
- Stattin, H., & Magnusson, D. (1989). The role of early aggressive behavior in the frequency, seriousness, and types of later crime. *Journal of Consulting and Clinical Psychology*, 57, 710-718.
- Sugai, G., Horner, R. H., Dunlap, G., Hieneman, M., Lewis, T. J., Nelson, C. M., et al. (2000). Applying positive behavioral support and functional behavioral assessment in schools. *Journal of Positive Behavioral Interventions*, 2, 131-143.
- Sugai, G., Sprague, J. R., Horner, R. H., & Walker, H. M. (2000). Preventing school violence: The use of office discipline interventions. *Journal of Emotional and Behavioral Disorders*, 8, 94-101.
- Taylor-Greene, S., Brown, D., Nelson, L., Longton, J., Gassman, T., Cohen, J., et al. (1997). School-wide behavioral support: starting the year off right. *Journal of Behavioral Education*, 7, 99-112.
- Tharp, R. (1989). Psychocultural variables and constants: Effects on teaching and learning in schools. *American Psychology*, 44, 349-359.
- Walker, H., Colvin, G., & Ramsey, E. (1995). *Antisocial behavior in school: Strategies and best practices*. Pacific Grove, CA: Brooks/Cole.
- Walker, H. M., Irvin, L. K., Noell, J., & Singer, G. H. S. (1992). A construct score approach to the assessment of social competence: Rationale, technological considerations, and anticipated outcomes. *Behavior Modification*, 16, 448-474.
- *Walker, H. M., Kavanagh, K., Stiller, B., Golly, A., Severson, H. H., & Feil, E. G. (1998). First step to success: An early intervention approach for preventing school antisocial behavior. *Journal of Emotional & Behavioral Disorders*, 6(2), 1063-4266. Retrieved May 24, 2005 from Academic Search Premier database.
- Walker, H. M., Ramsay, E., & Gresham, F. M. (2004). *Antisocial behavior in school: Evidence-based practices*. Belmont, CA: Thomson/Wadsworth Learning Publishing.
- Webster-Stratton, C. (1984). Randomized trial of two parent-training programs for families with conduct-disordered children. *Journal of Consulting and Clinical Psychology*, 52, 666-678.
- Webster-Stratton, C. (1985). Predictors of treatment outcome in parent training for

conduct-disordered children. *Behavior Therapy*, 16, 223-243.

Webster-Stratton, C. (1990). Enhancing the effectiveness of self-administered videotape parent training for families with conduct-problem children. *Journal of Abnormal Child Psychology*, 18, 479-492.

Webster-Stratton, C. (1994). Advancing videotape parent training: A comparison study. *Journal of Consulting and Clinical Psychology*, 62, 583-593.

*Webster-Stratton, C., & Hammond, M. (1997). Treating children with early-onset conduct problems: A comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology*, 65(1), 93-109.

Webster-Stratton, C., Hollinsworth, T., & Kolpacoff, M. (1989). The long-term effectiveness and clinical significance of three cost-effective training programs for families with conduct-problem children. *Journal of Consulting and Clinical Psychology*, 57, 550-553.

*Webster-Stratton, C., Reid, M. J., & Hammond, M. (2004). Treating children with early-onset conduct problems: Intervention outcomes for parent, child, and teacher ratings. *Journal of Clinical Child Adolescent Psychology*, 33(1), 105-124.

Weist, M. D. (1997). Expanded school mental health services: A national movement in progress. In T. H. Ollenduck & R. J. Prinz (Eds.), *Advances in clinical child psychology* (Vol. 19, pp. 319-352). New York: Plenum Press.

Wells, K. C., Forehand, R., & Griest, D. L. (1980). Generality of treatment effects from treated to untreated behaviors resulting from a parent training program. *Journal of Clinical Child Psychology*, 9, 217-219.

Welsh, M., Parke, R. D., Widaman, K., & O'Neil, R. (2001). Linkages between children's social and academic competence: A longitudinal analysis. *Journal of School Psychology*, 39, 463-482.

Wicks-Nelson, R., & Israel, A. C. (2003). *Behavior disorders of childhood* (5th ed). Upper Saddle River, New Jersey: Prentice Hall.

Wolf, I. M. (1990). Methodological observations on bias. In K. W. Wachter & M. L. Straf (Eds.). *The future of meta-analysis* (pp.139-151). New York: Russell Sage Foundation.