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SIBLING CONFLICT RESOLUTION SKILLS TRAINING IN A TARGETED DEVELOPMENTAL PERIOD

by

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A dissertation

submitted in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy in the Department of Psychology

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RE: Your application dated 10/29/2012 regarding study number 3809: Sibling Conflict Resolution Skills in a Targeted Developmental Period

Dear Ms. Grimes:

Thank you for your response to requests from a prior review of your application for the new study listed above.

You are granted permission to conduct your study as most recently described effective immediately. The study is subject to continuing review on or before 10/29/2013, unless closed before that date.

Notify the HSC of any adverse events. Serious, unexpected adverse events must be reported in writing within 10 business days.

Submit progress reports on your project in six months. You should report how many subjects have participated in the project and verify that you are following the methods and procedures outlined in your approved protocol. Then, report to the Human Subjects Committee when your project has been completed. Reporting forms are available on-line.

Please note that any changes to the study as approved must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. Contact Patricia Hunter (208-282-2179; fax 208-282-4529; email: humsubj@isu.edu) if you have any questions or require further information.

Sincerely,

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TABLE OF CONTENTS

List of Tables…….. viii

Abstract…….. ix

Chapter I: INTRODUCTION 1

Normal Sibling Conflict: A Brief Review 3

Measurement of Sibling Conflict and

Conflict Resolution Skills 13

Professional Interventions with

Aggressive Preadolescent Siblings 26

Theory of Mind Research and its

Relevance to Sibling Conflict 35

Cognitive Strategy Review 43

Overview of the Dissertation 49

Chapter II: METHODS 52

Participants 52

Measurements 56

Procedures 58

Chapter III: RESULTS 74

Observer Accuracy 74

Descriptive Statistics 79

Hypothesis Testing 85

Chapter IV: DISCUSSION 92

Descriptive Statistics 92

SCRST Protocol Adherence 92

Observer Accuracy 94

Discussion of Hypotheses 95

The Role of Parents in Generalization Failures 102

Limitations and Strengths 104
Future Directions 107
REFERENCES 111
APPENDICES 136
Appendix A—Parent Intake Form 136
Appendix B—Sibling Play Analog Coding Instructions 137
Appendix C—SCRST Parent Handouts 143
Appendix D—Sample BRC 147
Appendix E—SCRST Protocol 148

LIST OF TABLES

TABLE 1 53
TABLE 2 73
TABLE 3 75
TABLE 4 77
TABLE 5 78
TABLE 6 80
TABLE 7 81
TABLE 8 82
TABLE 9 83
TABLE 10 84
TABLE 11 87
TABLE 12 88
TABLE 13 91

Abstract

As children develop their language, perspective-taking and cognitive skills gradually improve, thereby increasing their verbal problem-solving abilities. A lack of such social skills has been hypothesized to underlie aggressive and antisocial behavior in pre-adolescent children. Consequently, social skill training has been a standard intervention component for aggression in middle-childhood. Although peer conflict has received the preponderance of research attention, sibling conflicts are common and can rise to the level of a clinical problem. A literature review indicated that children in the transition to middle-childhood (i.e., 5.0 to 6.9-year-olds) appear to have the necessary perspective-taking skills and language skills to self-regulate a substantial repertoire of social skills relative to younger children (i.e., children under age 5.0 years). However, recent empirical research has provided evidence that this group may be no more skillful than their younger peers (Grimes, 2012). While sibling conflict resolution skills training is beneficial for aggressive siblings in middle-childhood, the benefit of sibling social skills training for children who are in transition to middle-childhood has not been substantiated. The current project investigated an intervention protocol designed to improve sibling conflict resolution skills in 5.0 to 6.9-year-old children. Data indicated improved skill repertoires in both the targeted children and older siblings. Repertoire enhancements, however, were not associated with improved cooperative play or verbal justifications observed in clinic and home generalization settings. Possible reasons for the failure of siblings to generalize new skills are discussed, along with the future research implicated by these findings.

Chapter I: Introduction

Sibling Conflict Resolution Skill Training in a Targeted Developmental Period

Sibling conflict is a common occurrence that has been linked, paradoxically, to the development of prosocial skills. Conflict provides the opportunity for siblings to acquire and practice verbal problem-solving. Thus, normally developing children demonstrate increased proficiency in social problem-solving during development. However, conflict among siblings can be destructive. An absence of verbal problem solving strategies has been hypothesized to contribute in part to aggressive and antisocial behavior in middle childhood, with links to negative outcomes in adolescence and early adulthood. Quite reasonably, social skill training has become a standard intervention approach during which verbal problem-solving strategies are taught and reinforced to substitute for aggressive solutions. However, the acquisition of social skills requires that an individual possess perspective taking ability (i.e., theory of mind) and can implement strategic thinking that dictates how to select and implement specific problem-solving skills given a particular social context. Normally developing children in middle-childhood (i.e. over age 7.0 years) appear to possess these skills. Therefore, if a clinician is presented with sibling aggression, training siblings in conflict resolution skills is conceptually reasonable for those in middle childhood. In contrast, for aggressive siblings under age 7.0 years, it is uncertain if clinicians should embark upon skill building approaches to treatment, since the readiness of these children to profit from such training is unclear. In particular, recent research has indicated that normally developing children in the transition to middle childhood may be no more skillful at sibling conflict resolution than children in early childhood (Grimes, 2012). Thus, it is currently unknown whether children in the

developmental transition to middle childhood would receive the same benefit from sibling social skills training as those above age 7.0 years.

The literature reviewed here will first provide an overview of social skill development from general developmental psychology and then discuss social skill assessments and interventions currently available in child clinical psychology. These areas were reviewed by Grimes (2012); however, this content is also applicable to the current project. First, the review provided by Grimes (2012) of sibling conflict, its measurement, and its treatment is partially reproduced here with an inclusion of recent findings from the literature. Second, Theory of Mind (TOM) research is briefly reviewed with an emphasis on the development of perspective-taking skill that occurs during the transition from early to middle childhood. Third, the development of cognitive strategies to solve both academic and social problems will be reviewed with a discussion of how cognitive strategies may be applied to social skill acquisition. Finally, the current project will be introduced based on the literature reviewed. The dissertation proposes to implement a sibling conflict resolution skills training protocol with children in the transition to middle childhood (5.0 to 6.9 years) and an older sibling (7.0 to 11.9 years). The focus of the project will be to determine if the social skills in the younger sibling improve, and if so, will the interaction quality of the sibling dyad also improve. The project will evaluate the improvement in social skills using established behavioral measurements as well as the introduction of a novel method to assess generalization of social skills to the home setting in which child awareness of the purpose of the measurement is obscured.

Normal Sibling Conflict: A Brief Review

The relationship between siblings is complex and can be influenced by many factors, such as child temperament, child age, parent behavior, and family structure (Stocker, Dunn, & Plomin, 1989). Sibling conflict typically appears soon after the birth of a second child which changes the availability of maternal attention (Vandell, 1987). Vandell (1987) posits that although first-born children may not engage in direct conflict with their infant sibling, they may display an oppositional behavioral reaction. In fact, increased rates of misbehavior in the first born child have been observed upon the birth of a second child (Kendrick & Dunn, 1980). This increase in misbehavior has been described as "deliberate naughtiness" that typically occurs when the mother is attending to the newborn sibling. Although an important distinction made by Kendrick and Dunn is that the birth of a second child does not necessarily decrease the amount of positive interaction between a mother and the first born child. Kendrick and Dunn hypothesize that the combination of the first-born's misbehavior and changes in maternal permissiveness may interact to increase negative interactions between mother and the first born child.

As the infant sibling matures, interactions between the sibling dyad become more frequent (Abramovitch, Corter, & Lando, 1979; Lawson & Ingleby, 1974). Particularly in early childhood, children identify their siblings as the main providers of companionship (Buhrmeister & Furman, 1987). However, the relationships between siblings are multidimensional. Interactions between siblings are characterized by both positive and negative interactions (Abramovitch et al., 1979). Thus, it is common to see siblings who will engage in high rates of play and shared activities, but who also experience frequent

conflict. Sibling conflict in early childhood is typically instigated by the desire for a shared object, such as a toy (Abramovitch et al., 1979). A likely scenario to cause disruption is when one sibling forcibly takes a toy away from another. Another factor that has been repeatedly associated with sibling conflict is differential treatment by the mother (Stocker et al., 1987) or father (Brody, Stoneman, McCoy, & Forehand, 1992). Thus, when a child perceives his or her sibling to be receiving positive parental attention not available to him/her, jealousy and conflict may ensue. However, conflicts over personal possessions appear to be more common than those sparked by parental favoritism (Felson, 1983; McGuire, Manke, Eftekhari, & Dunn, 2000).

There appears a distinction between the types of conflict that siblings experience. In their review of the sibling conflict literature, Vandell and Bailey (1992) describe the common distinction between *constructive conflict* and *destructive conflict*. The former refers to a conflict style that has a moderate display of affect and remains focused on the original issue. For example, Ross, Ross, Stein & Trabasso (2006) found that sibling dyads who engaged in successful conflict resolution avoided discussing past transgressions and focused on mutual planning. There has been a positive association found between constructive conflict and enhanced sibling relationships (Shantz & Hobart, 1989). In contrast, *destructive conflict* is described as having a high degree of negative affect, and the conflict grows beyond the original issue. Destructive conflict has been associated with poor sibling relationships (Vandell & Bailey, 1992).

Routine sibling conflicts occur at high rates among young children. Dunn and Munn (1985) observed an average of eight conflict episodes an hour when at least one member of the sibling dyad was 18-24 months old. However, this rate of conflict

typically decreases as children develop. For example, McHale and Gamble (1989) demonstrated that siblings in middle-childhood engaged in only 1-2 conflicts per day. Along with a decrease in the rate of conflict, sibling maturity is typically associated with a decrease in the intensity of conflict. Dunn (1988) observed that as siblings age their conflicts become less distressed. For example, at 18-months old, children were observed to exhibit negative emotional distress during 25% of conflicts. However by the age of 36 months, negative emotional distress was seen in only 9% of conflicts. Dunn (1988) found that this reduction in negative affect covaried with siblings' tendency to use language-based skills, such as increased justifications and reference to social rules. Ross and colleagues (2006) have observed that older siblings are more likely to use sophisticated language strategies for conflict resolution. Recently, Nakaha and Roberts (2010) found similar patterns when comparing pre-school aged sibling dyads to middle childhood sibling dyads in a laboratory free play context. The older sibling dyads manifested greater cooperative play and justifications to resolve issues than their younger counterparts. Importantly for the current study, both cooperative play and verbal justifications covaried significantly with a behavioral analog role play test called the Sibling Conflict Resolution Skills (SCRS-III; Thomas & Roberts, 2009), suggesting that siblings actually use the skills they possess in the repertoire (i.e., the SCRS III measurement) during play.

Sibling conflict appears to be unique in presentation and resolution when compared to conflict with other family members and peers. Dunn and Herrera (1997) examined children's conflict with their mothers, friends, and siblings, and found no significant relationships among rates of resolution or negotiation. Thus, children who

engaged in high rates of conflict with their siblings may or may not have demonstrated more attempts at resolution and negotiation with their parents or peers. This lack of consistency across interacting agents also held true for children who showed low rates of conflict with their siblings. Such children may or may not have had higher rates of conflict with their mother or peers. This differential in conflict maintenance or resolution may be due to the many differences in hierarchy, role, expectation, and social history that differentiate the various relationships (Dunn & Herrera, 1997).

In summary, siblings provide a primary source of companionship for one another, particularly during early childhood. Sibling relationships are complex, and often include both positive and negative aspects. Sibling conflict appears to be a normal developmental process, at least as indicated by British and European-American observational research. Conflict typically appears soon after the birth of a sibling and the rate of conflict is particularly high during early childhood. Conflict can be considered constructive, and may actually aid in the development of social skills. Destructive conflict, however, is not associated with such positive outcomes. The rate and intensity of conflict appears to decrease during middle childhood. Normal children appear to develop a repertoire of conflict resolution strategies at least by middle childhood that include verbal justifications and pronouncement of social rules to resolve conflicts. Conflict among siblings appears to be unique and, thereby, may or may not be associated with conflict with parents or peers.

The development of prosocial skills. In normally developing children, social skills improve during the course of development. For example, older siblings are more likely to use verbal strategies to resolve conflicts than younger siblings (Dunn & Munn,

1986; Nakaha & Roberts, 2010). As most children mature, they gain sophistication in their ability to resolve conflicts using social skills (Dunn & Munn, 1987; Nakaha & Roberts, 2010). They learn to be assertive and to discuss rules with noncompliant peers (Joshi, 2008). If these strategies fail, they employ other resolution strategies or simply forgo their initial request (i.e., take "no" for an answer) (Joshi, 2008). These strategies allow children to manage conflicts using appropriate prosocial behaviors. This allows them to maintain peer relationships and sets the occasion for healthy social functioning in adulthood. Increased reliance on verbal problem solving may be associated with an ability to engage in greater perspective taking. Previous research has found that children who performed well on perspective-taking tasks also demonstrated better communication skills in peer relationships (Gottman, Gonso, & Rasmussen, 1975; Slomkowski & Dunn, 1996). These authors discussed that an increase in ability to consider another person's perspective is possibly related to social performance because both tasks require skills in a larger social-cognitive domain.

The initial signs of prosocial skills emerge early in childhood. Dunn and Munn (1986) observed sibling dyads at 18- and 24-months of age. They showed that even at these very young ages, children are able to demonstrate some prosocial behaviors, such as cooperation, comforting, and sharing. Although the total frequency of these actions was low, they demonstrate that early attempts at prosocial behaviors can be present in late infants and toddlers. In contrast, these children's older siblings (ages 3 to 5) were much more likely to demonstrate behaviors such as sharing, helping, and comforting. This is consistent with the idea that an increase in prosocial skills may be associated with

an increase in cognitive development, language development, and motivation to comply with parental expectations, all of which covary with child age (Dunn & Munn, 1986).

It has been hypothesized that sibling conflict can have a positive impact on the development of prosocial skills in children (Shantz & Hobart, 1989). One of the hypothesized mechanisms behind this bold assertion is that children experiencing sibling conflict may adopt the conflict resolution skills demonstrated by their siblings. Dunn and Herrera (1997) observed children at 33 months of age interacting with a sibling, and then later at 72 months of age while they were interacting with a friend. When older siblings were observed using "other-oriented" conflict resolution strategies (e.g., taking perspective and acknowledging the needs of the other person) during the first observation, children during the later observation were more likely to engage in compromise and negotiation when interacting with friends. It is possible that one explanation for this relationship may be in children's tendency to imitate older siblings (Pepler, Abramovitch, & Corter, 1981). Modeling is a powerful method of transmitting social skills (Bandura, 1977). For example, Dunn and Kendrick (1982) found a positive association between the frequency of imitation by the younger sibling and prosocial and affectionate behavior between siblings.

There are other ways in which sibling interaction and conflict can influence the development of prosocial skills. During routine interactions such as play, siblings may have opportunities to discover and practice social problem solving strategies. For example, Piotrowski (1997) reported that during episodes of play siblings frequently discuss social rules. Ram and Ross (2008) showed that siblings could negotiate conflicts over toys in a constructive manner, using shared information to identify common goals.

Opportunities to solve conflicts and discuss rules may come about frequently because sibling interaction may often set the stage for competition and conflict. In her review on sibling conflict, Bryant (1982) noted that factors such as unequal power distribution between siblings of different ages might inspire opportunities for conflict, but also resolution, given their shared family environment. As noted above, Nakaha and Roberts (2010) recently demonstrated that middle childhood sibling dyads were more likely than pre-school aged dyads to engage in cooperative play and to use verbal justifications to solve disputes. Nakaha and Roberts proposed that the act of cooperative play sets the occasion for conflict which in turns compels the use of conflict resolution skills to maintain cooperative play.

In summary, it is clear that the development of social skills occurs gradually as a complex interaction of biological, psychological, and social variables. The sophistication displayed by a normal grade school child is quite remarkable. By late middle childhood, normally developing children can assume others' perspectives, consider the social context, and resolve sibling and peer conflicts with a variety of socially acceptable strategies. The contribution of sibling experiences is clearly evident in this process, to the benefit of the child.

Sibling induced coercive processes. It is assumed that children learn both prosocial and antisocial interpersonal interaction strategies from parents, siblings, and peers. Patterson, Dishion, and Bank (1984) defined *deviancy training* as a process by which under certain conditions, hostile and aggressive interactions between family members could produce later aggression in childhood. The deviancy training model suggests that aggressive sibling interactions may provide a kind of "training ground" for

later aggression with peers. The model advanced by Patterson and colleagues (1984) describes a sequential process of "negative microsocial exchanges" between family members (pp. 261). The process begins with a child engaging in a negative behavior toward a sibling which the parent fails to effectively discipline. The failure of parental discipline allows an increase in coercive exchanges between siblings, which typically escalates into hitting. The coercive behaviors in the sequence are negatively reinforced when parents withdraw their attempts at punishment, and they are positively or negatively reinforced when siblings acquiesce to the child's demands. Over time, the aggressive behavior can generalize to other contexts, such as peers at school (Patterson et al., 1984).

An important implication of the deviancy training model is that aggressive behavior appears likely to occur first within the larger family context. For example, Arnold, Levine and Patterson (1975) found no significant difference between rates of misbehavior among children referred to the clinic for treatment when compared to the misbehavior displayed by their siblings. Furthermore, conflict among siblings appears to occur within a familial context of aversiveness. Patterson (1976) found that siblings with high conflict who were referred for treatment tended to come from families with high rates of marital conflict and negative affect. In other words, a child is not hypothesized to develop aggression in isolation. Aggression may be modeled by family members, and children may be negatively and positively reinforced for using aggression, thus creating an environment where aggression can be acquired and maintained through social learning principles (Patterson, DeBaryshe, & Ramsey, 1989).

Evidence for deviancy training is shown through the demonstrated relationship between sibling aggression and children's later aggression with peers. Patterson et al. (1984) found that aggressive sibling interactions in particular may generalize to other contexts, such as at school and with peers. Garcia, Shaw, Winslow, and Yaggi (2000) demonstrated that sibling relationships characterized by high rates of physical or verbal aggression made a unique contribution to the prediction of subsequent externalizing behavior problems in boys. Much research has focused on the development of externalizing behavior, specifically aggression in boys (Moreland & Dumas, 2008). This is possibly because previous research has found that boys display aggressive behaviors earlier and tend to engage in higher rates of aggression compared to girls (Archer & Cote, 2005). However, research that has included both genders has replicated the relationship between sibling aggression and children's later externalizing behavior (Natsuaki, Ge, Reiss, & Neiderhiser, 2009; Ostrov, Crick, & Stauffacher, 2006). Ostrov and colleagues found that both genders display higher rates of relational and physical aggression when these behaviors are demonstrated by an older sibling.

High rates of sibling conflict in the process of early development may have negative implications for subsequent social functioning and psychopathology. Several longitudinal and retrospective studies have linked sibling conflict in early and middle childhood with negative outcomes. For example, Ensor, Marks, Jacobs, and Hughes (2010) found that sibling conflict at age 3 predicted bullying and antisocial behavior with peers at age 6. Low, Shortt, and Snyder (2012) found the sibling relationship to have both direct and indirect pathways to adolescent substance use. Specifically, an older sibling's substance use may provide a model of substance-use for a younger sibling (i.e.,

direct effect). However, conflict among siblings may socialize a younger sibling into a deviant peer group, which makes substance use more likely (i.e., indirect effect). Criss and Shaw (2005) found that in a sample of 10-year-old boys, sibling conflict was significantly associated with antisocial behavior and associating with a deviant peer group at age 12. Notably, this relationship remained significant after controlling for hostility within the mother-child relationship. Stocker, Burwell, and Briggs (2002) also demonstrated a significant association between sibling conflict in middle childhood and later delinquent behavior which remained robust after accounting for other family conflict variables (e.g., maternal hostility). This sample included both males and females, which may indicate that the impact of sibling conflict is not gender-specific. Further, the association between the early sibling relationship and later adjustment has been found in both European and underrepresented groups (Mondry-Mandell, Gamble, and Taylor, 1996). Sibling conflict is also associated with internalizing symptomology. For example, sibling conflict in middle childhood has been predictive of depression and anxiety in adolescence (Kim, McHale, Crouter, & Osgood, 2007; Stocker et al., 2002). The impact of sibling conflict may persist into early adulthood. Morrill-Richards and Leierer (2010) found that college students who reported hostility or abuse within their sibling relationships were more likely to have a negative sense of well-being.

Several lines of research indicate that high rates of sibling conflict are associated with negative outcomes. This finding is exacerbated by the fact that parents frequently choose to remain passive during young siblings' conflicts (Perozynski & Kramer, 1999). While exposure to constructive conflict may provide siblings the opportunity to develop verbal problem-solving skills, chronic patterns of destructive conflict may allow for

antisocial skills to become reinforced and a maladaptive trajectory to become established. Thus, there is a clear rationale to intervene in childhood sibling aggression. While empirical treatment of sibling conflict has not been thoroughly researched, there is a clear need to examine the importance of this intervention. As noted by Stocker and colleagues (2002), parents and clinicians may fail to realize the negative potential that sibling conflict can have on developmental outcomes because it is presumed to be developmentally normal. However, there is a rationale to target siblings in intervention because they are a key part of the socialization process (Low et al., 2012). Specifically, it has been recommended that siblings learn and practice conflict resolution, non-aggressive problem-solving strategies, and assertiveness skills (Kiselica & Morrill-Richards, 2007).

Measurement of Sibling Conflict and Conflict Resolution Skills

While several measurements of social skills have been developed, there have been comparatively less research on the measurements of sibling conflict and sibling conflict resolution skills (Thomas, 2004). The benefit of measuring conflict resolution skills is that the resulting information could be applied to discriminate underlying factors in behavioral problems and to assist in treatment decisions. As noted above, a child who possesses an adequate repertoire of context-relevant social skills, yet engages in aggressive behavior, may benefit from a motivational approach to treatment (such as a token reinforcement system). However, a child who lacks the skill sets for resolving conflicts with language may require an intervention which teaches those social skills. Reviews of specific conflict resolution measurements are provided in Thomas (2004) and Grimes (2012). Presented below is an overview of measurement categories and conflict resolution tests representative of each specific method. Further, a current literature

search of measurements for the term “conflict resolution” was performed and results that assessed specific conflict resolution skills (as opposed to more broad social competence assessments) in an early to middle childhood population are included.

Informant completed ratings of conflict resolution skills. The most common available assessments of conflict and the associated conflict resolution skills are limited to parent or teacher interview or informant report (e.g., a parent or teacher checklist). Thomas (2004) reviewed the literature for existing measurements of conflict resolution skills and social skills. Thomas (2004) and Grimes (2012) described available parent-rating scales, such as the Home and Community Social Behavior Scales (HCSBS; Merrell & Caldarella, 1999). The HCSBS was designed to be completed by a parent as a measure of a child’s behavior and social skills in grade-school children and adolescents and includes items specific to conflict resolution. The HCSBS has demonstrated discriminant, convergent, and construct validity (Lund & Merrell, 2001; Merrell, 1998; Merrell & Boelter, 2001). Thomas and Roberts (2009) demonstrated treatment sensitivity of the HCSBS; siblings who participated in a conflict resolution skills training were rated as more socially competent by their parents on the HCSBS compared to children in a measurement only condition.

One parent-report measure that is specific to sibling conflict is the Sibling Conflict Questionnaire (SCQ; Reed, 1992). The SCQ is an unpublished parent report measure of a children’s ability to solve sibling conflicts. Instead of only focusing on conflict resolution skills of an individual, the SCQ can also be scored to provide an indication of the degree of resolution skills within the dyad. The 10 items on the SCQ present common sibling conflict situations identified by Arnold (1990). Reed (1992)

found evidence that the SCQ showed differences in parent report between younger and older members of sibling dyads, with older members displaying greater skills. However, Grimes (2012) did not find convergence between the SCQ and other parent report measures.

Kramer and Baron (1995) developed the Parental Expectations and Perceptions of Sibling Relationship Questionnaire (PEPC-SRQ). This rating scale can be used to obtain a direct report or assessment of the amount of discrepancy between a parent's current appraisal versus expected level of warmth, agonism, and rivalry/competition in their child's sibling relationship. The PEPC-SRQ has demonstrated high internal consistency, test-retest reliability and has demonstrated concurrent validity with siblings' daily report of relationship interaction quality (Howe, Karos, & Aquan-Assee, 2011; Kramer & Baron, 1995, Kramer & Rady, 1997). Further, the PEPC-SRQ has demonstrated treatment sensitivity; parent reports of sibling relationship quality demonstrated significantly increased warmth, and decreased agonism and rivalry/conflict after participating in a sibling social skills intervention (Kennedy & Kramer, 2008). Notably, Kennedy and Kramer reported that the PEPC-SRQ converged with observational measurements of sibling conflict in that both systems detected reductions in conflict behaviors and increases in prosocial skills.

One other parent-report measure specific to sibling behavior is the Sibling Social Behavior Scale (SSBS; Graham-Bermann, 2000 as cited in Miller, Grabel, Thomas, Bermann, & Graham-Bermann, 2012). The SSBS asks parents to rate the relationship qualities of a child and his/her closest sibling. The SSBS is designed for use in preschool-aged children and was adapted from the Brother-Sister Questionnaire (BSQ;

Graham-Bermann, 1994), a self-report measure used with school-aged children. The measure rates child behavior within the sibling relationship on three factors: Cooperative Sibling Behavior, Sibling Victimization, and Aggressive Sibling Behavior. The SSBS has been used to measure rates of sibling aggression which were found to be similar to previously obtained national prevalence rates (Miller et al., 2012). Further, Miller and colleagues (2012) investigated the relationship between sibling aggression and several family and contextual variables using the SSBS. They found that maternal depression and exposure to violent media were associated with increased levels of sibling aggression. Also, this study reported that exposure to community violence was related to increased sibling aggression when paternal violence was also present.

Self-report measurements of conflict resolution skills. Self-report measurements are widely used due to their efficiency and low cost of administration; these measurements include interview and paper-pencil type inventories seeking information from the child/youth. There are many self-report measurements that pertain to social competence, and several include specific assessment of conflict resolution skills, such as those that include a structured interview (Rose & Ascher, 1999; Selman, Beardslee, Shultz, Krupa & Podorefsky, 1986).

An example of a self-report measurement of sibling conflict resolution skills is the structured interview used by Rose and Ascher (1999), reviewed by Thomas (2004). Children are asked to respond to 30 hypothetical scenarios in which they have a conflict with a friend. Responses are coded in one of three categories: accommodation/compromise, self-interest assertion, and hostile. Rose and Ascher (1999) found that responses on the interview predicted friendship adjustment as measured by

sociometric ratings in the classroom. Troop-Gordon and Asher (2005) used an adaptation to this interview and discovered that children with behavior problems tended to engage antisocial strategies when their initial attempts at conflict resolution were unsuccessful.

Many studies have used an interview method to investigate sibling conflicts using slight variations of the procedures described by Rose and Ascher (1999) (e.g., McGuire et al., 2000; Wilson, Smith, Ross, and Ross, 2004). Interview methodology has been particularly useful in gaining insight into qualitative aspects of siblings' conflicts (McGuire et al., 2000) and children's perceptions of sibling conflict. For example, Wilson and colleagues (2004) separately interviewed members of a sibling dyad about a conflict nominated by their parents. Responses were coded into conflict or justification and denial categories. They reported that older siblings were more likely to justify their actions, whereas younger siblings were more likely to deny their actions. Ross, Siddiqui, Ram, and Ward (2004) interviewed sibling dyads which included a younger (3.3-5.5 years) and an older (5.5-8.9 years) child about a recent conflict both members of the dyad rated as significant. The interview was coded for statements of goals, actions, and any statements relating goals and actions, and how these concepts related to statements of self or the sibling. The majority of dyads agreed on the basic structure of their conflicts, such as the goals of self and siblings, requests, and actions. However, siblings in the older group engaged in more perspective taking by focusing more on their partner siblings goals compared to the younger sibling group.

Although self-report measurements are common in assessment, self-report measurements of sibling conflict resolution skills are notably absent from the literature. However, there are some instruments designed to assess the quality of the sibling

relationship, although they do not measure conflict resolution skills per se. The Sibling Relationship Questionnaire (SRQ; Furman & Buhrmeister, 1985) measures a child's perspective of the warmth and closeness, rivalry, conflict, and relative status/power within the sibling relationship. The SRQ has demonstrated adequate test-retest reliability and concurrent validity by demonstrating differences within the sibling relationship that are thought to occur with development (Buhrmester & Furman, 1990; Furman & Buhrmester, 1985). The self-report SRQ can be used in children as young as 8.0 years through adolescence (Buhrmester & Furman, 1990). There is also a parent-report version of this measure that can be utilized with younger sibling dyads. Treatment sensitivity of the SRQ to detect changes in social skills, however, is not well established. Kramer and Rady (1997) used the parent-report version of the SRQ and a sibling observation in a pre/post measurement of siblings enrolled in a social skills training program. Compared to pre-test measurements, post-test observational measurements indicated siblings increased in their prosocial behaviors (i.e., increased acceptance of play invitations and perspective taking), while maternal SRQ reported only modest increases in sibling warmth, and actually reported increases in conflict.

The Brother-Sister Questionnaire (BSQ; Graham-Berman, 1994) is a self-report measure that measures empathy, boundary maintenance, similarity, and coercion in the sibling relationship. This measure was created for use with school-age children and has been used to successfully discriminate between victim, perpetrator, reciprocal conflict, and low conflict groups of college students reporting on their sibling relationships. A parent-report version has been created for use in preschool children (see SSBS description above).

The Sibling Issues Checklist (SIC; Campione-Barr & Smetana, 2010) was developed to measure the frequency and intensity of common adolescent conflicts. The responses are measured by two factors: Equality and Fairness and Invasion of the personal domain. Campione-Barr and Smetana found that in a sample of adolescents, conflicts on the Invasion of the personal domain factor, such as incidents that dealt with personal space, property, and insults, were more common than conflicts that dealt with equality and fairness.

The Sibling Inventory of Behavior (SIB; Hetherington, Henderson, & Reiss, 1999) is an inventory that has been used as a self-report instrument (Menesini, Camodeca, & Nocentini, 2010) and a parent-report inventory (Meunier, Roskam, Stievenart, van de Moortele, Browne, & Kumar, 2011) that measures six facets of the sibling relationship: involvement, empathy, teaching, rivalry, avoidance, aggression. These subscales can be combined to measure a larger construct. For example, Kolak and Volling (2011) combined the rivalry and aggression scale to create an indicator of sibling conflict. Previous research has established adequate internal consistency and association across these subscales (Volling & Blandon, 2005, as cited in Meunier, et al., 2011). Meunier and colleagues (2011) used the SIB and the SRI to measure sibling relationships and found that a child’s externalizing behavior problems were significantly related to the relationship with their closest-in-age sibling. This association was moderated by parental differential treatment; children’s' externalizing behavior intensified when they were favored by their parents. Menesini and colleagues (2010) demonstrated that high levels of conflict and low levels of empathy on the SIB were predictive of sibling bullying, which was as a significant predictor of peer victimization.

The Sibling Relationship Inventory (SRI; Stocker & McHale, 1992 as cited in Meunier et al., 2011) is a self-report measure designed to assess conflict, affection, and rivalry in the sibling relationship. The SRI has demonstrated adequate internal consistency (Lecce, Pagnin, & Pinto, 2009). Meunier and colleagues (2011) demonstrated a significant association between the SRI the SBI (a parent-report measure of sibling relationships), although the variance accounted for in the relationship was small (e.g., 4%). Several studies have utilized one or more of the 5-item subscales instead of administering the full SRI. For example, Shanahan, McHale, Crouter and Osgood (2008) used the sibling conflict subscale of the SRI and measures of perceived differential treatment to report that first and second born children reported different sibling relationship behavior patterns in the presence of differential parental treatment. Specifically, differential maternal treatment was related to decreased warmth in the sibling relationship for first born children and differential paternal treatment was related to increased conflict in the sibling relationship for second born children. Jenkins, Rasbash, Leckie, Gass, and Dunn (2012) used the affection and hostility subscales of the SRI to study changes within sibling relationships within families over time. They reported that sibling relationship qualities are similar within families. Further, changes in sibling hostility and affection over time were explained by family variables (e.g., maternal depression, differential parenting, etc.).

The Sibling Behavior and Feelings Questionnaire (Mendelson, About, & Lanthier, 1994) is a self-report measurement that has been used to assess children's perceptions of their sibling relationships. Children report on a 7-point scale regarding the companionship, support, closeness, identification, positive feelings, and conflict in their

sibling relationships. With younger children, the rating scale has been adapted to a 3-point pictorial scale (e.g., Howe & Recchia, 2005). Howe and Recchia (2005) used this inventory to interview children about their sibling relationships in a study investigating associations between sibling relationship, play and teaching behavior. They reported that the SBFQ was not associated with play behaviors (e.g., collaboration, affect, shared pretense) and had a small association with teaching behavior (e.g., older siblings who rated the relationship positively tended to engage in more control teaching strategies). In contrast, there was a strong association between the observed play and teaching measurements. In a follow-up study, Howe and Recchia (2009) reported that early reports of the sibling relationship as measured by the SBFQ were not predictive of later play and teaching behaviors. However, like their previous results, there was an association between play and teaching; early prosocial interactions in play were predictive of later effectiveness of teaching. Although the internal consistency of the SBFQ appears adequate, evidence of the measure's validity appears to be lacking.

Observational measurements of conflict resolution skills. Thomas (2004) and Grimes (2012) reported that several observational methods for assessing conflict resolution skills have been developed, although few have demonstrated adequate psychometric properties (Wood, Michelson, & Flynn, 1978 as cited in Thomas, 2004, Williams, 1990, as cited in Thomas, 2004, Blackford, 1993, as cited in Thomas, 2004). There have been observational methods designed specifically to measure sibling interactions. Ram and Ross (2001) developed a coding technique for conflict resolution with sibling dyads. They instructed sibling pairs to work together to divide toys among themselves. They coded the siblings' physical and verbal actions into categories of

problem solving, contention, or struggle. They reported that siblings who were more likely to use problem solving strategies were also more likely to come to an agreement that satisfied both children (Ram & Ross, 2001).

Ross, Ross, Stein, and Trabasso (2006) investigated problem solving between sibling dyads. They observed siblings discussing a previous conflict and coded their interactions into opposition or planning moves. They reported that older siblings made more frequent contributions to problem solving efforts, particularly when making the first offer to solve the problem. Younger siblings tended to agree to plans, or suggest modifications. The majority of sibling pairs solved the conflict by compromise or a win/loss agreement. However, sibling relationship quality was an important factor; older siblings who viewed their younger sibling more negatively were less likely to engage in compromises and were more likely to pursue their own self-interests.

Kramer and Rady (1997) implemented a coding system designed to measure sibling conflict and prosocial actions. Sibling dyads were observed during a 30-minute, unstructured free play which occurred in the home. The session was coded using a 30-second interval sampling method to detect the presence of six skills demonstrated by the older sibling: initiating play, accepting an invitation to play appropriately, perspective-taking, refusing an invitation to play appropriately, dealing with angry feelings appropriately, and management of conflict. The most frequently demonstrated skills were initiating play, accepting an invitation to play appropriately, and perspective taking. Siblings who participated in a social skills training demonstrated higher rates of accepting an invitation to play and engaging in perspective-taking during a follow-up evaluation.

In a follow-up study evaluating observed sibling interaction quality following a social skills intervention, Kennedy and Kramer (2008) used The Sibling Interaction Quality coding system (Kramer, Perozynski, & Chung, 1999). Sibling dyads were filmed during a 20-minute free play which occurred in the children's home. Coders used a Likert scale to rate the prevalence of warmth and involvement, agonism, control, and rivalry/competition in 5-minute intervals. Kennedy and Kramer (2008) reported high inter-rater agreement, as well as significant correlations between free play observations and parent report of sibling relationship. Sibling dyads who participated in a social skills intervention demonstrated significantly higher levels of warmth and involvement during the observation compared to pre-intervention levels.

Nakaha (2010) developed the Sibling Play Analog (SPA) to measure the interaction quality of preschool and middle childhood siblings. This observational measure allows an observer to code different types of interactions between siblings while they are at play. Younger dyads (2 to 7) play in the presence of a parent who is instructed to remain busy and only structure child interaction if necessary. Older dyads (7 to 11) play while the parent is occupied in an adjacent room. Nakaha demonstrated the SPA is sensitive to the expected developmental progressions in interaction quality of normally developing siblings. Specifically, middle childhood sibling dyads used more justifications and cooperative play than preschool dyads. Children's performance on the SPA was also related to performance to the SCRS-III (Nakaha & Roberts, 2010). The more justifications displayed during the SPA, the higher the SCRS III total score. As noted above, Nakaha and Roberts proposed that children with a repertoire of sibling conflict resolutions skills (high SCRS III total scores) are able to play cooperatively with

their sibling in the absence of a parent in part because of their ability to use justifications to repair routine conflicts that emerge during cooperative play.

Numerous adaptations or versions of previously reviewed observational measurements are routinely employed in developmental studies of sibling relationships (e.g., Ensor et al., 2010; Howe et al., 2002, Perlman, Garfinkel, & Turrell, 2007). These measures often use an interval approach to approximate frequency and/or intensity of a specific class of sibling interactions. Also, coding systems designed for observing other interpersonal interactions have been applied to siblings. For example, Low and colleagues (2012) used the Specific Affect Coding System (SPAFF; Gottman, McCoy, Coan, & Collier, 1996), originally designed to code microsocial exchanges between marital couples' conflict discussions, to code exchanges between siblings and peers.

Role-Play analogs of conflict resolution skills. Role-play analogs have been developed in which children are asked to respond to social dilemma scenarios as if they were going to solve the problem. Thomas (2004) and Grimes (2012) reviewed the Children's Constructive Conflict Resolution Scale (CCCRS; Secor, 1997). The CCCRS asks children to respond with solutions to a series of conflict situations. In children 11-13 years of age, the CCCRS was found to be related to a measurement of school behavior (Secor, 1997, as cited in Thomas, 2004). High CCCRS scores covaried with better social behavior at school. Also, in females the CCCRS is associated with the quality of interpersonal relationships (Secor, 1997, as cited in Thomas, 2004). For females, but not males, the high scores on the CCCRS covaried with higher quality interpersonal relationships.

The Sibling Conflict Resolution Scale (SCRS-III; Thomas & Roberts, 2009) is a 16-item behavior-analog test in which a child interacts with a doll held by an actor that represents the child's brother or sister. Each item represents a conflict scenario that the child is directed to resolve. The child is instructed to use his or her "…best behavior, the way your mother/father/teacher want you to act toward your brother/sister". The child's responses are coded on a 5-point scale where a "1" or "2" represents physical (1) or verbal (2) coercion, a "3" represents an intermediate reaction, a "4" represents verbal coping, and a "5" represents more sophisticated verbal coping.

Grimes (2012) summarized the development of the SCRS-III which is briefly reviewed here. The first version of the SCRS was created by Arnold (1990), who demonstrated adequate test-retest and observer reliability and concurrent validity with Compliance Test scores (Roberts & Powers, 1988). Roberts, Arnold, and Magnum (1992) revised the original version of the SCRS and updated testing procedures, scoring rules, and item content. The SCRS-II retained the original internal consistency and observer reliability demonstrated by Arnold (1990). However, the SCRS-II failed to replicate the previous relationship with the Compliance Test. Thomas and Roberts (2009) demonstrated that the SCRS-II was sensitive to treatment. Thomas (2002) demonstrated a positive correlation between receptive language and SCRS-II total scores and replicated the age association found in Arnold (1990). Thomas also detected gender differences in sibling conflict; girls scored higher than boys, even when controlling for language differences. Thomas and Roberts (2009) made revisions to the SCRS II and developed what is now the current version, SCRS-III Form A. Compared to SCRS-II, the shortened version still retained internal consistency, observer accuracy, validity and

treatment sensitivity. Nakaha and Roberts (2010) demonstrated that SCRS-III total scores entered a web of correlations that included verbal justifications (a fundamental SCRS skill) and cooperative play, especially in older sibling dyads. In general, preschool siblings dyads tended to use little verbal coping during play and lower SCRS-III scores, while middle childhood siblings demonstrated better verbal skills during play and had higher SCRS-III scores. Grimes (2012) established a reliable alternate form of SCRS-III (Form B) and demonstrated a positive association with age for both versions.

Professional Interventions with Aggressive Preadolescent Siblings

Currently there are several effective treatments available for children diagnosed with ODD and CD (cf. McMahon et al., 2006). Several lines of research indicate that aggressive children lack appropriate social skills (e.g., Spivack & Shure, 1985). Many intervention programs for aggressive youth address social skills at some level, with varying degree of focus (McMahon et al., 2006). While there are several effective treatments designed for children with externalizing disorders (Eyberg, Nelson, & Boggs, 2008), there has been less attention given to developing interventions for aggressive siblings (Kramer, 2004; Vandell & Bailey, 1992). A brief review of treatment studies targeting sibling aggression will be presented below.

Parent Management Training. Several programs have been developed to teach parents to reduce noncompliant and aggressive behaviors of pre-adolescent children. These programs have targeted disruptive behavior in early childhood (e.g., Eyberg & Robinson, 1982; Webster-Stratton & Reid, 2007) and middle childhood (e.g., McMahon & Forehand, 2003; Kazdin, 2005; Patterson, Reid, & Eddy, 2002). These interventions, collectively referred to as Parent Management Training (PMT), teach parents to reinforce

prosocial behaviors and either punish disruption (e.g., token fines) or prevent its reinforcement (e.g., timeout). Several reviews (e.g., Eyberg et al., 2008) and lists of empirically supported treatments (e.g., Chambless & Ollendick, 2001) have concluded that PMT is an effective therapeutic strategy for childhood disruption.

The effectiveness of PMT appears to extend beyond the referred child. O'Learly, O'Leary and Becker (1967) demonstrated that teaching parents a system that implemented token reinforcement and time-out significantly reduced deviant sibling aggression. Arnold, Levine, and Patterson (1975) showed that after PMT intervention, rates of coercive behaviors decreased in the referred child, but also the untargeted siblings in the home. The generalization of PMT's effectiveness is important because rates of misbehavior between a referred child and his or her siblings are not significantly different (Arnold et al., 1975). Parent management training techniques appear to be beneficial when applied to aggressive siblings. Immediate timeout for sibling aggression has effectively reduced fighting among preschool siblings (Jones, Sloan, & Roberts, 1992). Kelly and Main (1979) used PMT principles in a sibling dyad of aggressive brothers. Results showed that after the treatment there was a significant reduction in physical fighting. Research on improving a parent's ability to verbally intervene in sibling conflict through reprimands, explanation, and reinstruction has shown to reduce rates of sibling conflict in a recruited sample of normal children (Vickerman, Reed, & Roberts, 1997). Teaching parents other techniques, such as differential reinforcement and overcorrection, have also shown to be effective in reducing sibling conflict (Adams & Kelley, 1992; Leitenberg, Burchard, Burchard, Fuller, & Lysaght, 1977).

Tiedemann and Johnston (1992) adapted a PMT approach to focus on improving prosocial sibling interactions by teaching parent's strategies to promote sharing among their children. They used an individual and group format to teach parent's behavioral techniques, such as positive reinforcement. Both treatment groups demonstrated enhanced sharing among siblings compared to a wait-list control group, however there was a greater benefit for the participating families who were administered the program individually. This study is unique in that the direct focus was increasing siblings' sharing. While parents were taught strategies to handle anger and other problem behaviors, it is unclear what specific strategies were implemented. Sharing is a crucial skill for children to learn, but it is one of many that make up a skill repertoire. There are occasions where sharing may not be appropriate. For example, if sharing an object is not appropriate or possible, it may be equally beneficial for a sibling to learn to take "no" for an answer. In the instance of coercion, a sibling may need to recognize when to seek adult assistance.

Smith and Ross (2007) also adapted a PMT approach to train parents to mediate their children's disputes. Parents were instructed to remain impartial to the conflict, establish ground rules for discussion, and encourage communication and problem solving. Compared to a control group, siblings whose parents were trained to mediate conflicts remained calm and demonstrated perspective sharing and problem solving at a higher rate. Further, enhanced problem solving was evident between siblings when a conflict arose and the parent-mediator was not present. This study provides evidence that constructive conflict may provide an avenue for learning prosocial skills. For sibling conflict, the addition of parent-mediation to other PMT components may be beneficial.

Parent Management Training plus Social Skills Training. Social skills training has supplemented PMT programs to increase children's repertoire of skillful alternatives to aggression. Increasing repertoire may be an important addition to PMT approaches; in the absence of sibling conflict prosocial interactions do not necessarily increase and siblings may actually decrease their rate of contact (Leitenbert et al., 1977). Olson and Roberts (1987) investigated a treatment for sibling aggression that included social skills training, timeout, or a combination of both in a sample of aggressive, clinic-referred children. Parents in the timeout condition were trained to recognize and implement a timeout routine contingent upon sibling aggression. Parents were trained with a combination of videotape and role-play. Children involved in a social skills condition were taught social skills via videotaped modeling and role-play. Specifically, these children were presented conflicts and instructed on how to use a variety of skillful alternatives to aggression, such as: ignoring, using appropriate verbal assertion, requesting adult assistance, sharing, and negotiation (Olson & Roberts, 1987). At the end of the treatment period, parents in the timeout and combined conditions reported the least amount of child aggression. Parents in the social skills condition reported the highest frequencies of child aggression. These results indicated that including a discipline component in the treatment of sibling aggression may be important (Olson & Roberts, 1987). Enhancing a child's repertoire of social skills in the absence of a discipline component may be ineffective. In the Olson and Roberts study, children in all three experimental conditions displayed a decline in sibling aggression. By the end of treatment, however, the reduction was maintained only for the two conditions that included the timeout component. Social skill training alone was ineffective. There are

several possible explanations for why social skills training in isolation did not produce lasting improvements. Since social economic status was higher in the combined skill/timeout condition, Olson and Roberts speculated that social skill training might be most effective for parents with a history of success in educational formats. Another possibility is that because the ages of participants in the sample ranged from 1.7 to 10.3 years, it is possible that timeout was a more effective treatment for the youngest participants in the study, thus minimizing the number of participants who would potentially benefit from the social skills training alone.

Social skills approaches without PMT. Social skills training has been routinely applied for the prevention and treatment of antisocial behavior, although there has been wide variation in the theoretical orientation, duration, and population included in training. In a meta-analysis, Loesl and Beelman (2003) reported that the modal social skills intervention was delivered from a cognitive-behavioral approach, lasted less than 10 sessions, and included children ages 7 to 12-years-old. The overall mean effect of training was positive, but mild (d = .30) and the largest effect size was demonstrated with high risk samples (d = .45). In a comparison of age groups, 4 to 6-year-olds were reported to have the largest post-intervention effect when the dependent variable was measured by improvement in social skills or social-cognitive skills. While several social skill training programs have been developed and evaluated for peer-based social interaction (i.e., Webster-Stratton, Reid, and Hammond, 2001), there have been few social skills interventions developed specifically for siblings.

Some projects have focused exclusively on improving children's social skills working under the hypothesis that repertoire deficits were the primary factor in sibling

aggression. Kramer and Radey (1997) evaluated a social skills training program designed to improve relationships among siblings. They trained normal (non-clinic referred) children on social skills, such as: initiating play, accepting and declining an invitation, perspective taking, coping with anger in others, and conflict resolution. Children received instruction via live social skills training, or through books, videotapes and group discussion. By the end of the treatment, children who received live social skills training group received higher reports of warmth and were rated as having improved sibling interactions and lower levels of rivalry, problematic sibling exchanges, and decreased power struggles (Kramer & Radey, 1997). Children in the alternative training condition (videotape, books, or discussions) did not experience these benefits, suggesting that actual practice in simulated conditions was important. A follow-up to this study demonstrated that siblings in the treatment group increased the quality of their sibling relationship and their emotion regulation ability, which has been hypothesized as being a key component of social-emotional functioning (Kennedy & Kramer, 2008).

Thomas and Roberts (2009) investigated methods to assess and intervene with sibling conflict. A sample of 4 to 8-year-old siblings performed a behavioral analog measure of social skills. The training group also participated in a social-skill training targeting verbal reasoning, assertiveness, and acceptance skills. Compared to the measurement-only group, the training group significantly improved in their demonstration of skills on the behavior analog measure and on parents' perception of social functioning at home.

Few studies have evaluated the generalization of enhanced sibling social skills to other contexts (e.g., at school with peers). However, there is evidence that social skill

training may have a positive effect across contexts. Gentry and Beneson (1993) investigated the effect of a conflict management and peer mediation training for 4th and 6th grade students conducted in the school setting. Reports from teachers indicated that children who completed the training increased their sense of self-esteem. A notable finding from this study was that ratings of sibling conflict performed by parents and teachers declined. Therefore, social skills taught in the framework of one social context may have an impact on a child's broad socio-cognitive reasoning and influence their interpersonal interactions in other contexts.

Other Treatments: Family Therapy, Sibling Therapy, Play Therapy, and Non-Intervention. Family therapy has been an intervention used to address childhood aggression. Most family therapies have been designed to address conflict between the parents and child(ren). In a review of family therapy, Furman and McQuaid (1992) described the two forms of family therapy most often applied: Functional Family Therapy and Problem Solving Communication Training. These interventions focus on improving communication between family members through a discussion based process with a therapist. Both of these treatments have demonstrated improvement in communication compared to other discussion-based therapies, however, their generalization to improved conflict outside of the family has not been addressed (Furman & McQuaid, 1992).

Sibling therapy is proposed as a type of group therapy that explores relationships and addresses problems between siblings (Gnaulati, 2002; Lewis, 1988). The purpose of this approach would be to explore underlying feelings (i.e., transference) between siblings and to discuss difficulties within family functioning. Lewis (1988) posits that sibling therapy could be utilized within any theoretical orientation; however, it appears

that sibling therapy is most easily translated into a process-oriented approach that focuses on in-session interaction. This distinguishes sibling therapy from other approaches that typically employ behavior observation methods, individualized treatment, and repeated measurements of progress (Lewis, 1988). Gnaulti (2008) recommends exploring themes which may underlie siblings' aggressive behavior, such as an unmet need for intimacy.

Release play therapy is a modality described by Kaduson (1997). In this treatment, a child and therapist recreate a sibling interaction in a play-based context; this is typically aided by toys and props, such as dolls. The child can recreate the sibling conflict through the symbolic use of dolls and release built up tension, anger, and anxiety; thus the child benefits from catharsis. Kaduson hypothesizes that repeated recreation of the sibling conflict may allow children to gain a sense of control over their feelings and behavior. Although the current literature appears to contain several case examples where play therapy has been applied with aggressive siblings, this approach appears to lack empirical support. Play therapy has gained support as a component of treatment for other clinical presentations, such as Parent-Child Interaction Therapy for early childhood disruptive behavior (Eyberg & Robinson, 1982). However, when aggressive siblings lack prosocial skills, other approaches that attempt to restructure responding may be necessary (Kaduson, 1994).

Some researchers have recommended that parents take a radically different approach. Levi, Buskila, and Gerzi (1977) proposed that parents should avoid intervention in routine sibling conflicts. The rationale for non-intervention is that the responsibility to resolve a conflict remains with the sibling dyad, rather than the parent (Levi et al., 1977). An investigation into this approach yielded mixed results. Overall,

parents did report less sibling conflict after four weeks of non-intervention. Some parents reported that non-intervention reduced their own stress, while others reported they still needed some form of family intervention regarding sibling disputes (Levi et al., 1977). Although allowing siblings to solve their own problems is relatively simple, there have been cautions against its use. Bennett (1990) indicated that by refusing to intervene in sibling conflict, the possibility arises that one child could be victimized and develop a sense of learned helplessness, while the other might harbor beliefs of the legitimacy of acting like a bully.

In summary, the clinical science on the best intervention for sibling aggression is only now emerging. Some combination of social skill training and parent management training appears the most promising. Teaching parents child management skills such as clear communication, token reinforcement, and timeout might be a sufficient intervention if siblings were aware and able to perform pro-social alternative responses to coercion to resolve conflicts. On the other hand, if children lack repertoires of non-aggressive methods to solve routine sibling problems, PMT as a stand-alone intervention might fail. For example, children faced with sibling conflict, while recognizing the possibility of timeout or fines for aggression, might simple opt out of the social system altogether. In an early study of sibling aggression, O'Leary, and colleagues (1967) found just that. Siblings decreased interacting with one another, given the presence of effective discipline for aggression. Teaching siblings social skills provides prosocial options that children may use to gain sibling reinforcement, at least on a partial reinforcement schedule. Further, a skillful sibling may access social reinforcers from parents for choosing a positive alternative to aggression or coercion. Because sibling aggression has been

shown to be related to several negative outcomes, early intervention is necessary. However, it is currently unclear at what age children can be taught verbal problem solving, which is the central feature of all the sibling conflict resolution skills attempted to date (e.g., Thomas & Roberts, 2009). As reviewed below, perspective taking and readiness to profit from cognitive strategy training both appear to be relevant. The results of Grimes' thesis (2012) indicated that 5 to 7-year-old children were no more skilled than their younger peers in sibling conflict resolution skill repertoires. In contrast, the middle childhood age group (7.0 to 12.0 years) performed consistently better on SCRS III than either younger group. This result was surprising because developmentally, the transitional 5.0 to 7.0 year age group has typically mastered some perspective taking skills and, thus, would be expected to outperform the younger 4-year-old cohort who struggle with perspective taking tasks. The focus of the current project is to explore the possibility of improving sibling conflict resolution skills in the 5 to 7-year-old age group. Evidence for their developmental readiness to engage in verbal problem solving is presented below.

Theory of Mind Research and Its Relevance to Sibling Conflict

The ability to infer on another individual's conscious experience is a fundamentally important and adaptive human behavior. This ability, known as Theory of Mind (ToM) in the modern literature, has been an active area of research in developmental psychology (Flavell, 2000). There are important cognitive and behavioral implications that are dependent on the status of ToM development. For example, a child who has perspective-taking ability may learn important social lessons through casual, but commonly available empathy training provided by normal parents and teachers (e.g.,

"You need to learn to ask nicely, how do you think your friend felt when you grabbed that toy from him without asking?"). In contrast, a child who is unable to engage in perspective taking would not benefit from such an explanation. Theory of mind is an important part of the development process that increases social cognition and facilitates further development (Flavell, 2000). Foundational theories in cognitive development (e.g., Piaget) posited that normal children were unable to perform perspective-taking tasks until middle-childhood (i.e., at least age 5.0, but surely by age 7.0). However, subsequent lines of research have indicated that ToM skills begin to develop much earlier with increases in sophisticated perspective taking ability occurring during the transition to middle childhood (i.e., by age 5.0 years). Further, ToM development shows an important relationship with environmental factors, such as family constellation and social behavior. The current review is limited to the normal developmental process and does not include ToM development in special populations (e.g., those with developmental disabilities).

Jean Piaget (e.g., Piaget & Inhelder, 1969) is considered one of the great contributors to developmental psychology for his theory of child development that detailed the progression and integration of cognition, affective, perceptual, and motor skills in a series of developmental stages. Piaget's stage theory detailed a sequence of stages that a child navigated from infancy through adolescence and adulthood. During ages two through seven, children entered the *Preoperational* stage where the first appearance of representational thinking emerges. Although preoperational children demonstrate rudimentary ability to think in terms of concepts, they lack the ability to perform logical mental operations and have a tendency toward simplistic correlational

reasoning and ego-centric perspectives. Although children in the Preoperational stage become markedly more interactive, given their cognitive development and the rapidly improving language skills, their ability for socialization is limited by their *centration* of thought (Piaget & Inhelder, 1969). Preoperational thinkers do not consider multiple perspectives, only their own, when trying to solve a problem. Children in the preoperational stage demonstrate egocentrism; they assimilate new information in reference to their own orientation, unable to take on the perspective of another (Piaget & Inhelder, 1969). In contrast, around age seven most children reach the *Concrete Operational* stage, where they are able to consider multiple perspectives, and apply reason and logic. In this stage, de-centration of thinking occurs and multiple perspectives can be considered. Consequently, such perspective taking skills and verbal/cognitive strategies as manifest by the middle childhood group in Grimes's thesis (2012) were consistent with classical Piagetian theory. The implication of a Piagetian perspective is that children's social-cognitive understanding is quite limited until the approximate age of seven when the stage of Concrete Operations is reached. However, subsequent research investigating when and how children develop an understanding of representational mental states shows this ability begins to develop much earlier than proposed by Piaget (Wellman, Cross, & Watson, 2001).

Evidence of the precursors to ToM show up in infancy. For example, infants show an interest in human faces and react differently to humans than objects (Robledo, Deák, & Kolling, 2010). Infants progress in their interactions with adults by sharing, following, and directing attentional activity (Carpenter, Nagell, & Tomasello, 1998). By 18-months of age infants understand that a person should be given a food they reacted to

with pleasure, rather than food they reacted to with disgust (Repacholi & Gopnik, 1997). This latter finding would not have been predicted by Piagetian theory in such a young child. Further, during language development of the normal 18-24 month olds, infants appear to understand that a spoken word references the object a speaker is looking at, not what the infant is looking at when the word was spoken (Woodward & Markman, 1998). By the early preschool period (3.0 to 4.5 years), children can engage in simple visual perspective-taking tasks. For example, they can determine if an object could be seen or not from a different perspective (this is also known as a "Level 1" visual perspective-taking task) (Flavell, 1992). However, at a later preschool age (approximately 4.5 to 5-years old), children make considerable gains in ToM, particularly in terms of beliefs and mental representations. Specifically, older preschool children understand that visible objects may have a differential appearance from different perspectives (Flavell, Everett, Croft, & Flavell, 1981).

Rapid development in mental understanding of others' beliefs occurs by age 5.0 years as well. One of the most well researched developments at this age is that children can understand that their thoughts and beliefs may differ from those held by another, a classic ToM task (e.g., Wimmer & Perner, 1983). False belief tasks measure the extent to which a child can determine if another person is capable of holding a belief that is false when the child knows the 'truth'. A common variation of the task involves an unexpected location of an object. The task is set when the child sees an actor (typically a doll or puppet) put an object in a location and then leave. When the actor leaves the object is moved. The child is asked where the actor will look for the object when he or she returns. A child who understands that thoughts and beliefs of individuals differ as a

function of information received will realize the actor will surely look for the object in the first location; because the actor is unaware the object was moved. Children who have not yet developed this skill will answer that the actor will look for the object in the new location, unaware that the actor would hold a different, or false, belief about the object's location. False belief tasks have many variations (e.g., unexpected contents, appearance-reality), but all appear to measure a general ability to distinguish between one's own thoughts and beliefs from those of another (Wellman et al., 2001). The false belief measurement is particularly important in ToM research, as it is routinely used as a criterion indicator of ToM development. A recent meta-analysis of ToM research with a variety of false belief task paradigms has provided strong evidence that between the ages of 3.5 to 5-years-old, performance on false belief tasks significantly improves (Wellman et al., 2001). The consistent finding that age and ToM development have a positive association has allowed for the scaling of ToM tasks to reflect the developmental progression that occurs within typical populations. For example, younger children successfully pass easier representational tasks (e.g., those involving desires), while older children pass increasingly difficult representational tasks (e.g., false belief) (Wellman & Liu, 2004). The ability to comprehend disparate beliefs that typically develops by age 5.0 years appears to be well documented in the literature.

The transition to middle childhood, between the ages of 5.0 and 7.0-years-old, has been observed as a rapid period of physical, cognitive, and emotional changes in the life of a child. During this transition, children become more aware of their thoughts as a form of spontaneous and ongoing mental activity (Flavell, Green, & Flavell, 2000). The transition to middle childhood affords the ability to understand more complex

representations of sarcasm, irony, and subtle deception (Happe, 1994), ambiguity (Carpendale & Chandler, 1996), the influence of previous beliefs (Pillow & Henrichon, 1996), and moral dilemma (Lagattuta, 2005). Continued improvement in ToM has also been well-documented. For example, by ages 7 to 8 children understand more complicated *second-order false belief tasks*, where the beliefs of multiple characters are dually embedded in a scenario (e.g., "Sue wrongly believes that Sally thinks the box has pencils in it.") (Perner & Wimmer, 1985). The comparison of first and second order false belief tasks indicate increased social-cognitive complexity; however Chandler and Lalonde (1996) argue for a broader view of the development of ToM that acknowledges the onset of an interpretative view of knowledge. While false-belief tasks may assess the degree to which a child is cognizant that different beliefs may be formed based on differences in information received, these tasks do not assess the recognition that sometimes individuals hold different beliefs even when they have experienced the same phenomenon or have access to the same information. This ability to understand beliefs and mental representations as part of an interpretive process increases dramatically through the transition to middle childhood (Carpendale & Chandler, 1996). Although transition-age children become more sophisticated in their perspective-taking ability, they demonstrate difficulty with flexibility in perspective taking. Lagattuta, Sayfan, and Blattman (2010) found that 6 to 7-year-olds had a tendency to assume different people would develop different beliefs and had difficulty realizing when they may share beliefs. A notable finding was the tendency to over generalize a rule of false beliefs that was unique to the 6 to 7-year-old group; neither the younger or older groups in the study displayed difficulty knowing when two people would share a perspective. Lagattuta et al.

(2010) compared the overgeneralization of false belief to the tendency of early language learners to overgeneralize grammatical rules; that these early perspective takers were mistakenly over-applying the newly acquired knowledge that people can form different beliefs. Thus, during childhood through adulthood, ToM ability appears to continue to develop with increases in ability being described in both linear and non-linear trends.

Increases in emotional understanding also develop in association with Theory of Mind. Naito and Seki's (2009) research with Japanese children found that by middle childhood, emotional display rules and ToM became part of an integrated skill-set. Thus, the understanding of complex mental states including beliefs, emotions, and the display of such mental states are all part of the social-cognitive developmental process of middle-childhood. These social cognitive developments that occur in the transition to middle childhood are important because they have positive implications for a child's ability to enhance verbal problem-solving repertoire.

Theory of Mind development appears to be strongly associated with family constellation and social interaction as evidenced by differential development of ToM. Jenkins and Astington (1996) found that family size was a significant predictor of ToM development and remained significant after the effects of age and language development were controlled. Specifically, children have been observed engaging in mental-state talk more frequently with their siblings and peers compared to their parents (Brown, Donelan-McCall, & Dunn, 1996). Therefore, larger family size would facilitate the frequency of mental-state verbalizations, given the presence of siblings. Ruffman, Perner, Naito, Parkin, and Clements (1998) suggest that older siblings in particular have a facilitative role in ToM acquisition of their younger siblings Ruffman et al. (1998) suggest an older

sibling may be more likely to engage a child in pretend play, which has been suggested as a mechanism for acquiring ToM skills (e.g., Harris, 1991). Hughes and Leekam (2004) offer alternative explanations, suggesting perhaps an older sibling can help bridge the younger sibling's ToM ability to a more sophisticated level (i.e., comparable to a Vygotsky "zone of proximal development") or may provide an observational model of interpersonal interactions. While the theoretical basis underlying individual differences have yet to be determined, children who engage in discussion of internal states, beliefs, and feelings with their siblings and parents appear more likely to have increased ability of Theory of Mind (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991). Theory of Mind development is also strongly associated with language skills and sophisticated cognitive tasks, also known as *executive functions*. As children's language skills improve, their ToM performance improves (Hughes & Dunn, 1998). Further, increases in ToM performance is associated with developments in inhibitory control and working memory (Carlson, Moses, & Breton, 2002; Carlson, Moses, & Claxton, 2004). Given the associations of ToM ability to social relationships, language, and executive functions, theoretical models have been proposed linking these factors in a hypothesized model of ToM development (e.g., Farrant, Maybery, & Fletcher, 2012).

Theory of Mind has several implications for interpersonal relationships. Children with enhanced social-cognitive understanding tend to engage in more cooperative play with their siblings and peers (Cutting & Dunn, 2006). Further, ToM has been negatively related to problem behaviors in young children (Guajardo, Snyder, & Peterson, 2009). Bengtsson and Arvidsson (2011) reported longitudinal data that indicated a positive relationship between perspective-taking ability and emotion regulation. While the

directionality between social-cognition and interpersonal functioning is unknown, it is possible that the ability to take the perspective of another facilitates the ability to interact with others positively and reduce conflict. However, children do not always appear to use perspective-taking skills for benevolent purposes, as ToM has also been linked with proactive aggression and bullying (Renouf, Brendegen, Seguin, Vitero, Boivin, Dionne, Trembly, & Perusse, 2009; Sutton, Smith, & Swettenham, 1999). Clearly, enhanced social-cognitive understanding allows a child to consider multiple perspectives and affective states; however this knowledge can lead to prosocial and/or antisocial applications. The purpose of the present project is to harness this emerging perspective-taking ability and teach behavioral strategies that may enhance social functioning in specific social contexts by adding specific sibling conflict resolution skills to the transitional child's existing repertoire. It does appear from the review of ToM studies, that normal children over 5.0 years possess sufficient perspective taking ability to recognize that her/his sibling may have different beliefs from themselves about the proper way to act under specific social conditions. Consequently, "correcting" those mistaken beliefs through the use of context specific verbal information and actions may be effective and perceived as credible by normal children in the transitional age group.

Cognitive Strategy Review

Solving everyday problems requires important mental operations, also referred to as a cognitive strategy. The mental processes that are considered strategic are those that can be employed smoothly, but are not so automatic that they cannot be circumvented, interrupted, or abandoned (Pressley & Hilden, 2006). An important part of cognitive development in childhood includes learning to apply cognitive strategies. Much research

in this area has focused on academic tasks, such as memorization, reading, and mathematic skills. The use of cognitive strategies can be applied outside of normal developmental research as a way to conceptualize improvement in behavioral and interpersonal functioning.

Several years ago Flavell, Beach, and Chinsky (1966) observed that young children failed to implement cognitive strategies to help them with a verbal memory task. Kindergarten, second-grade, and fifth-grade children were shown a series of pictures of common objects and asked to recall a small subset. Flavell and colleagues observed that older children were much more likely to engage in overt verbalization during memorization periods. When asked about what techniques they used to remember the objects, 5th grade participants commonly reported using verbalization as a memory strategy, whereas Kindergarten participants rarely did so. Second grade participants fell in the middle of these two extremes; approximately half of the sample reported using a verbalization strategy whereas the other half did not. Flavell and colleagues proposed that the younger children had a tendency to display a *production deficiency*; they were capable of using the cognitive strategy, but failed to do so. Subsequent research has shown that younger children fail to implement various types of cognitive strategies, such as clustering information into categories (Moely, Olson, Halwes, & Flavell, 1969) and implementing visual approaches (Corsini, Pick, & Flavell, 1968). However, as children develop, they tend to engage in more unprompted strategy use. For example, Salatas and Flavell (1976b) observed a correlation between age and performance on a memory task for preschool through college-age participants when they were required to use categorization as a memorization strategy.

There are various reasons why children may fail to implement cognitive strategies in problem solving. In the case of production deficient children, it appears that despite having the necessary skills, they are unaware the strategy exists. Strategy training has shown to be a successful intervention in production deficient children, in which a specific cognitive strategy to enhance performance is taught (Moely et al., 1969). For example, children's recall is improved when instructed to "remember" versus "look" at a group of pictures (Salatas & Flavell, 1976a). However, the type of instruction required to implement a successful strategy appears to vary with age. For example, Bray, Justice, Ferguson, and Simon (1977) demonstrated that in a group of production deficient children who improved on a verbal memory task after strategy instruction, younger children required modeling whereas older children improved their performance when prompted to engage in cumulative rehearsal. Originally, strategy training involved simply instructing the child in which strategy to use, whereas subsequent research has shown strategy use increases when metamemory, self-efficacy, and motivational factors are considered (Pressley & Hilden, 2006). For example, Ghatala, Levin, Pressley, and Lodico (1985) demonstrated that strategy monitoring training enhanced children's performance on a memory task in which they had to select between alternative strategies of differential utility. Participants who were instructed on how to select a strategy and evaluate its effectiveness performed significantly better than participants who were not given such training.

Cognitive strategy use has been shown to increase with typical development. The enhanced ability to implement cognitive strategies with development has been linked to improvement in other cognitive skills. For example, increases in meta-cognition, or

awareness of one's own thought process and ability, has been linked to effective cognitive strategy use (Flavell, 1979). Younger children tend to overestimate their ability to complete a memory task; compared to older children, they tend to be unaware of when they have successfully implemented a memorization strategy (Flavell, Friedrichs, & Hoyt, 1970). Memory has also been linked with cognitive strategy use. Short-term memory capacity is important for strategy implementation, particularly in regards to strategies that employ visual imagery. For example, Pressley, Carliglia-Bull, Deane, and Schnieder (1987) found that older children can more readily adopt and implement imagery strategies compared to younger children, and this relationship was mediated by short-term memory capacity.

While cognitive strategy use appears to be improved with increases in other cognitive skills, this relationship appears to be recursive in that cognitive skill use also boosts performance on measures of other cognitive skills, namely memory. Subsequent research has implicated cognitive strategy use as a mediator for working memory performance. Dunlosky and Kane (2007) found a significant relationship between strategy use and performance on working memory tasks. Turley-Aimes and Whitfield (2003) demonstrated that participants who scored low on a working memory measure were able to improve their scores after receiving instruction on implementing various cognitive strategies. Although the causal link between working memory and strategy-use has not been established, it has been hypothesized that strategy-use mediates working memory performance (e.g., McNamara & Scott, 2001). It is likely that cognitive strategies are one contributor along with a host of other cognitive skills that work together to create higher-order cognitive processes. DeMarie, Miller, Ferron, and

Cunningham (2004) proposed a model where metamemory and capacity had an indirect effect on memory performance through their influence on cognitive strategy use. Although the causal links between metamemory, memory, and cognitive strategy use have not been clearly defined, these cognitive skills share important relationships that are part of the typical development process.

The bulk of research pertaining to cognitive strategy use has focused on core academic skills of reading (Camilli, Varagas, & Yurecko, 2003), writing (Englert, Raphael, Anderson, Anthony, & Stephens, 1991, and math (Charles & Lester, 1984) and cognitive skills, such as memory (Turley-Ames & Whitfield, 2003). However, there is evidence that cognitive strategy training can be applied in other domains. For example, self-regulation strategies that target attentional focus have been shown to help bolster student performance (Zito, Adkins, Gavin, Harris, & Graham, 2007). Further, Klauer and Phye (2008) reported that inductive reasoning training improved children's performance on intelligence tests and also in academic domains. Broader application of cognitive strategies has included training in representational thinking and perspective taking. Appleton and Reddy (1996) demonstrated that performance on false-belief tasks could be improved after a 2-week training program. Iao, Leekam, Perner and McConachie (2011) and Melot and Angeard (2003) demonstrated that the effect of training on in one Theory of Mind task had a direct effect on the trained task, and also an indirect effect on different ToM tasks, which also improved.

Cognitive strategy training has been shown to be beneficial with a wide variety of cognitive tasks. However, cognitive strategy training has implications for behavioral interventions. For example, Timler, Olswang, and Collins (2005) included cognitive

strategy training in an intervention that targeted social deficits exhibited by a 9-year-old child diagnosed with Fetal Alcohol Spectrum Disorder (FASD). The intervention included strategies such as, “stop, look, and listen” during communication exchanges. The data indicated increased reference to other’s mental states during post-test evaluation, which the authors cited as evidence of increased understanding of social interactions. Other clinical applications of cognitive strategy training are possible. The current project plans to apply cognitive strategy training in a similar fashion as Timler and colleagues, in that discrete strategies will be applied to specific social interactions, with the current focus on resolving common sibling conflicts. It is unclear if the transitional age group (5.0 to 7.0) that will be targeted in the proposed research will profit from the cognitive strategy training inherent in the intervention program (described in the Method section below). The cognitive strategy enhancement efforts discussed above include children as young as kindergarten age (i.e., at least 5.0 years of age), but the tasks (i.e., memory, academics, attentional, communication, etc.) and minimum ages of successful participants are quite varied. The proposed research will specifically test if normal children in the transitional age group (5.0 to 7.0) are simply “production deficit”, and thereby amenable to positive effects of the intervention. It is certainly possible that as a group such participants are too immature to profit from cognitive strategy training in complex social discriminations and complex, branching strategies for resolving conflicts that can arise in social contexts with siblings. Such is the content of the proposed intervention, and indeed the entire field of social skill training treatment components for aggressive youth. The previous study (Grimes, 2012) certainly found clear evidence that the transitional age group was less skillful than children over the age of 7.0 years. It is an

empirical question if they can learn to think and act like their older siblings within the domain of sibling conflict.

Overview of the Project

The results of Grimes (2012) indicated that children in the transitional 5 to 7-year-old range did not perform significantly better on a measure of sibling conflict resolution skills than a group of 4-year-old children (SCRS-III). Perhaps the performance of the 5 to 7-year-old group can be conceptualized as a production deficiency; children in this age group have the general language and theory of mind skills to perform better than their 4-year-old peers, yet they did not do so. If these children were taught strategies during the course of a sibling intervention, would the scores improve? In fact, could scores be improved to the level of normal 7.1 to 11.9-year-old cohort in Grimes (2012)? In the current project, the focus was on improving the sibling conflict resolution skills of children in the transitional period (i.e., 5 to 7-years-old, hereafter referred to as the targeted children or target child). The intervention described below introduced children to behavioral and cognitive strategies to utilize during specific sibling conflict situations.

It is proposed that a comprehensive assessment strategy be developed that will determine a sibling dyad's social skill repertoire. If siblings have adequate skills, yet choose to rely on the often immediate reinforcement gained from coercive strategies, then intervention approaches (i.e., PMT) that block coercion would appear to be necessary and might be sufficient. However, if siblings do not have an adequate repertoire, social skills training is indicated. In the current study the Sibling Conflict Resolution Scale (SCRS-III) was utilized to evaluate the extent of a child's social skill repertoire. Only targeted children who demonstrated a lack of social skills were eligible to participate in the

intervention. In addition, the Sibling Play Analog measured the frequency of observed prosocial and antisocial behaviors displayed by the sibling dyad in the absence of the parent. Improvement in social skills post intervention was measured by both the SCRS-III (alternate form) and the SPA.

An important issue in intervention effectiveness is a measurement of how well skills learned in therapy generalize to other contexts, such as the home, school, and with peers. Kramer and Rady (1997) and Kennedy and Kramer (2008) implemented a home observation to assess generalization of social skills. The current project also aimed to assess how skills acquired during therapy generalize to other contexts, such as the home. To investigate this issue, a home observation was performed in which siblings were asked to interact with a standard set of toys that were designed to elicit sharing or turn-taking. The behaviors demonstrated during the home observation were compared to the measurements obtained in the clinic as a test of setting generality. Further, parents were asked to track the use of demonstrated skills in the home and community during the intervention on daily record cards. Finally, parents completed the Home and Community Social Behavior Scales (HCSBS; Lund & Merrell, 2001), a questionnaire that samples parent beliefs about children's social behavior in several contexts available to parents.

The design of this project is an uncontrolled clinical trial, similar to the design implemented by Kramer and Rady (1997) and Kennedy and Kramer (2008) in which a home observation and parent report measures were administered before and after completion of a group intervention for siblings. The current project administered the intervention to individual families, rather than groups based on the intervention and assessment approach by Thomas and Roberts (2009). Further, pre/post measurements

included multiple methods and measures including a clinic observation and a behavior analog task, a parent-report measure, and a home observation.

Chapter II: Methods

Participants

Fifteen children between the ages of 5.0 and 6.9 years old (i.e., not yet 7.0) with at least one sibling between the ages of 7.0 and 11.9 (i.e., not yet 12.0) were recruited to participate in the study. Of the 16 families who enrolled in the study, one discontinued due to scheduling conflicts. Of the completing participants, 33% were recruited from the SONA research system and 67% were recruited from the community. See Table 1 for the descriptive statistics that characterize the participating families in terms of social economic status, age, and family size. The modal participating parent reported being married (73.3%), European-American (93.3%), and of the LDS religion (40%). A smaller percentage of the sample identified as Pacific Islander (6.6%). Categories of other religious positions were reported as follows: Christian –unspecified (20%), Lutheran (6.7%), Spiritual (6.7%), and None (20%) and Not Reported (6.7).

Table 1

Demographic Information for the Completing Participants

	$\bar{X}$	S_x	Range
Family SES	44.2	(11.0)	27 - 63
Target Child (Age in Years)	5.8	(0.4)	5.2 - 6.7
Older Sibling (Age in Years)	8.4	(1.0)	7.0 - 10.2
Parent age	31.9	(4.9)	26 - 45
Total number of children in the home	2.9	(1.0)	2 - 5

Note. N = 15; For the target children 7 were male and 8 were female. For the older siblings 6 were male and 9 were female.

Socio-economic status (SES) was determined by the Hollingshead Four-Factor index in which education, employment, gender, and marital status are factored to provide an index of social position (Hollingshead, 1975 as cited in Hollingshead, 2011). The system places families into five categories, where a lower number indicates higher status category, as well as a continuous score from 8 to 63. Socio-economic status was calculated for each parent by calculating years of education and occupation based on a scale derived by Hollingshead. Education and occupation estimates are then multiplied by a factor and summed. For example, a single-parent who was employed as a social worker (occupation level = 7; multiplied by a factor of 5) and reported 12 years of education (education level = 7, multiplied by a factor of 3) would receive a score of 56 and be placed in the highest SES category of 1. Consistent with the Hollingshead system, an individual's SES data were used for families that were supported by a single parent or one employed spouse of a married couple. Also, when a married couple reported both spouses were employed, the continuous score was averaged. For the current sample the mean of the continuous SES score was 44.2 (SD = 11.0) and the modal SES category for the participating families was 2. However, it is important to note that it is unknown how well these estimates correlate with financial status. For example, individuals who reported an occupation of "student" were ranked in the same category as semi-professionals (i.e., occupation level 6). Because data regarding annual income was not reported, it is unknown if the income of these individuals was commensurate with this SES category.

Exclusion criteria included any family who had previously completed SCRS testing or sibling conflict resolution skills training at the Idaho State University

Psychology Clinic. Additionally, potential target children who met DSM-IV criteria for Mental Retardation, Autism, and/or another Pervasive Development Disorder were excluded. It is estimated that two families who took part in initial phone screenings were unable to participate due to this criterion. Finally, any potential target child who earned a score of 3.8 or higher on the SCRS-III during the Pre-Training measurement session was excluded from participating in the study. This requirement was included because a score this high indicated that the child manifests a level of sibling conflict resolution skills that is one standard deviation above average scores for 5.0 to 6.9-year-old children observed by Grimes, 2012, possibly creating a ceiling effect on any training experience. Six families were unable to participate in the project due to this criterion. If multiple children within the target or sibling age ranges were available, a selection rule was implemented that favored taking the younger child from each age range. For example, if a family presented with 5-year-old, 6-year-old, 8-year-old and 10-year-old children, the 5-year-old child was selected as the target child and the 8-year-old was selected as the identified sibling. This selection criterion is based on the observation that younger children are more likely to demonstrate a need for improvement in verbal problem solving skills and are more likely to interact more with a sibling closer in age than one who is much older.

Participants were recruited from Idaho State University (ISU) and the community. Parents recruited from ISU classes received class credit for participation in the two clinic measurement sessions and one home observation through the voluntary SONA research participation system. Parents recruited from the community via advertisements at preschools, daycares, or postings on community billboards were compensated with a $100 gift card for their participation in the two clinic measurement sessions and one

home observation (approximately $20 per hour of participation). All participating children received a prize upon completion of each administration of the SCRS-III, after each Sibling Conflict Resolution Skill Training (SCRST) session (i.e., the "intervention" alluded to above), and after the home observation.

Measurements

1. A family demographics questionnaire was completed by the parent to gather data on children's age and gender, family social economic status, and marital status. See the Demographic/Scheduling Form in Appendix A.

2. Target children and their identified sibling participated in the Sibling Play Analog (SPA; Nakaha, 2010) during both Pre-Training and Post-Training Measurement sessions. The SPA is a laboratory measurement in which sibling dyads are observed during play for 20-minutes. The SPA is coded using 20-second interval sampling to detect the presence of prosocial and antisocial behaviors for the dyad. The SPA was administered prior to the SCRS-III during both Pre- and Post-Training Measurement sessions. Measurement administration procedures are detailed below.

3. Both the target child and the identified sibling completed the Sibling Conflict Resolution Scale (SCRS-III) (Thomas & Roberts, 2009), which is a 16-item behavioral role-play test designed to measure a child's overt ability to solve routine sibling conflicts. There are two forms of this measurement (Form-A and Form-B). Half of the sibling pairs completed SCRS-III Form A during the Pre-Training Measurement session and SCRS-III Form B during the Post-Training Measurement session. The other half was tested in the reverse order. Qualified randomization was used to determine the order of administration. Measurement administration procedures are detailed below.

4. Children and their identified sibling participated in a post-training Generalization Test in the home setting. Specifically, generalizations of setting and context were sampled by using a deception for the purpose of the measurement, while providing an environment similar to the SPA. The 20-minute observation occurred within the children's home with materials provided by the researcher who videotaped the sibling interaction, purportedly to sample "…how well children of your age like these toys". The Generalization Test observation was coded using the SPA measurement system. All other measurement administration procedures are detailed below.

5. Parents completed the Home and Community Social Behavior Scales (HCSBS; Lund & Merrell, 2001). The HCSBS is a 64-item parent report measure of her/his children's social skills within the home and community settings. The measure is comprised of two scales: Scale A measures prosocial skills and Scale B measures antisocial behaviors. The HCSBS was administered both pre- and post-training for both children by the same parent.

6. Parents completed a Behavior Record Card (BRC; Nadler & Roberts, 2013). The BRC is a measurement system designed to track the occurrence of specific child behaviors. Parents tracked the use of unprompted social skills by all siblings participating in the SCRST. Parents placed a sticker on a card each time a specific skill is demonstrated (e.g., a sticker would be placed on the column marked "sharing" when the target child appropriately offers to share). This system allowed the frequency of skill use by participating siblings to be tracked daily for the duration of the social skills training. Parents received a new BRC card each week during the 5-week SCRST training.

Procedures

Overview of procedures. Participants were screened over the phone for interest and eligibility. Participants completed the first measurement session which included the administration of the SCRS-III, SPA, and HCSBS. Measurement sessions took place at the Idaho State University laboratory in Garrison House. The initial SCRST session commenced within one week (M = 3.8 days; SD = 4.2 days). The average number of days between the final SCRST session and the post-test was also within one week (M = 5.4 days; SD = 3.3 days). The Generalization Test followed shortly thereafter (M = 2.3 days; SD = 3.2 days). The five SCRST sessions required on average 33.3 days to complete (SD = 5.5 days).

Pre-Training Measurement Session. During the Pre-Training Measurement Session an overview of the project that was presented over the phone was reviewed in detail on the Informed Consent document. The target child and identified sibling were supervised in the laboratory room with toys not used in SCRS-III administration while the parent considered the Informed Consent document in a separate room. Simultaneously, the older sibling was given an opportunity to assent to the two measurements, one at a time. On one occasion a child did not provide assent for the project. In this instance the project ceased and parents were compensated for the time they had spent ($20 per hour or SONA points). For the families who provided parent consent and child assent to the project, the parent then completed the HCSBS questionnaire for both the target child and identified sibling. While the parent completed the HCSBS, the sibling dyad participated in the SPA. Next, both the target child and

identified sibling were administered the SCRS-III Form A or Form B. Both children were given a prize upon completion of the SPA and the SCRS III.

***Sibling Conflict Resolution Skills Training* (SCRST).** All participating children and their identified older siblings participated in the 5-session training protocol which was delivered in approximately weekly sessions. The training is adapted from the protocol described in Thomas and Roberts (2009) and revised by Shaw (2010). At least one parent was required to participate in each SCRST session. Other siblings not enrolled in the study were welcome to attend the SCRST sessions at the discretion of the parent. Details of the SCRST Session parameters are detailed below.

Post-Training Measurement Session. All participating families returned to the clinic for the Post-Training Measurement Session. During this session the parent completed the HCSBS for the target child and identified sibling. The sibling dyad participated in the SPA. Finally, the target child and the identified sibling were administered SCRS-III Form A or Form B with order of participation and form opposite of that from the first measurement session.

Generalization Test Home Observation. The Generalization Test was scheduled to occur after completion of the Post-Training Measurement Session. The sibling dyad participated in a home observation using the procedures described below. At the end of the home observation, both children were debriefed and the older sibling was asked to provide assent for the home observation. All participating older siblings provided assent for the home observation. Following the completion of the home visit, participating families who were recruited from the ISU SONA system were awarded SONA credits,

and families recruited from the community were given a gift card to a local retailer for their participation in the study.

***SCRS-III* Administration (applicable to both Form A and Form B)**

Materials. Materials required for the SCRS-III include a table and chairs, a male and female doll, tokens, a prize box, and the specific toys needed to present each of two sets of 16 scenarios (e.g., Legos, Etch-a-Sketch, art supplies). The set of toys required for each item of SCRS-III Form A and Form B are included in the item descriptions which are identical those published by Grimes (2012) and will not be reproduced here.

Administrators. Two adults are required to conduct the SCRS administration. One is designated the Narrator (N) and the other Actor (A). Basically, the N frames the scenario with information and gestures, while the A acts out the role of the child's sibling. Administrators included graduate students and undergraduate assistants.

Room Structure. The SCRS was administered in a lab at Idaho State University. A video camera was placed in plain view in a corner of the room. All SCRS sessions were videotaped for subsequent coding. The room included a chair on one side of the room which acted as a "resting chair", where the child sat between item administrations. Each item was presented while the child stood at a "start position" (an "X" taped to the floor) or sat at a table. Toys needed for SCRS administration were placed on a bench adjacent to the testing area for easy access by the N and A, who placed the toys in relevant positions prior to item onset. Token reinforcers (plastic chips) were placed by the resting chair for delivery to the child for participation effort.

Instructions to the Child. The child was instructed to sit on the resting chair while the N read the script explaining the SCRS-III as "The Brother-Sister Game." The following (Thomas & Roberts, 2009) was read to the child:

> "Okay now it's time to sit in your chair. Today we're going to play the Brother/Sister Game. In the Brother/Sister game you get to pretend. I want you to pretend to do things just like you are supposed to do them at home. It's easy. To make the game fun, you get to earn a prize. You get to earn chips for sitting nicely and playing the game. Here's your first one. (N puts chip in child's container.) Sitting here and listening is an important part of the game. Let's see what prizes you can buy with your chips (N shows the prize box to the child). We have to have a helper for our Brother/Sister Game, so we found this doll to help us out. Do you have a brother or sister? (N allows child to answer.) What's his/her name? (N allows child to answer.) We're going to pretend this doll is (Sib's Name). I want you to treat this doll like your brother/sister (name – which is always one of the two targeted siblings). Show me your best behavior, the way your (Mother/Father/Teacher) want you to act toward your (brother/sister) _____. [For the older child only] "Since you are over the age of 7, I must know if this is OK with you, so are you willing to do this?"] [assuming assent] OK, let's begin."

SCRS-III Form A items were presented in the order validated by Thomas and Roberts (2009) and Nakaha and Roberts (2010). SCRS-III Form B items were presented in the order validated by Grimes (2012). Each item was presented to the child with a specific script, followed by a prompt from N and sometimes by both N and A Based on

the child's response, N and A repeated the prompt up to two more times. Prompting ceases if the child displayed a 5-point response. In addition, there were specific scenarios for which the child may preclude further prompting despite the absence of a 5-point reaction. For example, a child could unassertively "give-in" to an Actor demand, rendering additional prompts illogical. See the published item scripts for more details. The 5-point item response scale is described below.

The child was awarded a token after participation on specified items regardless of performance. Each time the N said, "This time you get a chip for sitting nicely and for playing the game". Tokens were not presented for each item, progressing from a continuous reinforcement schedule to a variable ratio (VR2) schedule. If a child inquired about the frequency of token distribution, the N responded politely, "You don't get a chip every time" and directed the child to the next item. At the beginning and on three occasions during the SCRS (after items #1, #6 and #11) the child was reminded to, "Remember, show me your best behavior, the way your Mother/Father/Teachers want you to act toward your (brother/sister)_____". The N and the A continuously referred to the item administration booklet which was held and/or viewed throughout test administration. After all items were presented, the child was praised for participation and his/her "points" totaled. The child was encouraged to count up the tokens earned and then allowed to choose a prize from a prize box regardless of the actual number of tokens.

SCRS-III Scoring Methods. The basic method of rating child reactions to the SCRS-III items was adopted from Arnold (1990). Responses were awarded a score on a scale from 1 to 5, where:

1 = Motoric coercion (e.g., pushes the doll away)

2 = Verbal coercion (e.g., "You're so stupid; just stop it!")

3 = Neutral (i.e., all responses not codeable as a 1, 2, 4, or 5)

4 = Verbal Coping (e.g., "Please don't jump on the bed")

5 = Sophisticated Verbal Coping (e.g., "Those belong to everyone, so please share them with me.")

If a child exhibited a "5" point response at any point during the administration of an item, the item administration was discontinued and the child was awarded a 5. However, if a child exhibited any response other than a 5, the N repeated the prompt up to two more times. In addition, if a two component verbalization were required for a Category 5 response, the two components could occur at any point during the item administration, including cumulatively across the three available prompts. The child was always awarded the highest score earned across the three trials.

Sibling Play Analogue (SPA) Procedures

Materials. Materials required for the SPA are restricted to a xylophone with 2 batons, a beach ball, building blocks, and three games: Connect Four, Trouble, and Uno.

Setting. The SPA took place in a laboratory room in Garrison Hall. A video camera was mounted on the wall to record the SPA for subsequent coding. The materials described above were placed in the room. The sibling dyad was instructed as follows:

"Your mom (dad) is going to work in a different room, filling out forms for us. We want to see how you two play together when you have to wait for your mom (dad). We have some different games and toys you can play with while you wait. See the camera up there? We will have to videotape you two so we can look at it

later and see how you got along while your mother works. [Older child's name], since you are over the age of 7, I must ask you if you are OK with us videotaping you and your little brother/sister to see how you two get along while your parent is in a different room. Is this OK with you? [assuming assent] Thanks."

Scoring. The SPA was scored as described in Nakaha (2010). Coders used a continuous 20-second interval sampling system to code videotaped sibling interactions. The coding detects the presence or absence of five distinct classes of behavior during each 20-second interval: Angry-Cry-Yell, Verbal Harassment, Physical Antagonism, Justification, and Cooperative Play. Children are treated as a single dyad in SPA. Consequently, the entire 20-second interval was coded for a specific behavior class regardless of which child displayed the behavioral class. All sessions were videotaped. All coding was performed off the videotapes, which provided temporal markers at 20-seconds, 40-seconds, and the start of each minute. Verbal response classes (i.e., Verbal Harassment and Justification) that overlapped interval boundaries were coded only in the interval in which the criteria for the behavior class is finally met. In contrast, more continuous behavioral classes which start in one interval and end in the next interval were coded as present in both intervals. More detailed coder instruction rules and several examples for each operational definition of the presence or absence of each specific behavior class are found in Appendix B. The short version is a follows:

<u>1. Angry-Cry -Yell</u>

The presence of "cry" is defined by the presences of a broken, sobbing sound which is sustained for more than a few seconds and directed at the sibling. Scream-Yell is defined by a raised volume and negative affect, also clearly directed at the sibling.

2. Verbal Harassment

The presence of Verbal Harassment is defined by threatening talk, negative evaluation, or rude expressions. Threatening talk must indicate aversive consequences; negative evaluation must include an evaluative term synonymous with “bad”; and rude expressions include sarcastic or demeaning verbalizations (e.g., “shut-up”) that do not meet criteria for negative evaluation.

3. Physical Antagonism

The presence of grabbing (rough, abrupt, or resistant grab and pull) or physical fighting (hit, push, kick, etc.)

4. Justification

The combined display of an overt command (i.e., Do X or Stop Y) and a reason why the sibling should comply with that command. In addition, an explanation by a sibling why he/she will not comply with a command from the other also meets criteria for a justification

5. Cooperative Play

A synchronized sequence of motor actions by both siblings to perform a common task or take turns with a structured game. If the sequence begins in one interval but is not defined as synchronized until the following interval, it is only coded in the second interval.

Generalization Test Home Observation Procedures

The home-observation was scheduled after the Post-Training Measurement Session. Professional observers arrived at the homes at pre-arranged times. The visits lasted approximately 40 minutes, although formal coding was limited to 20 minutes.

Materials. Materials required for the home observation included a 3-dimensional tic-tac-toe game, a card game, a puzzle, a drum with two batons, a travel-size Hungry Hippo game, and a Jenga game.

Administrators. One researcher was necessary to conduct the home observation. The researcher was required to establish the room boundaries, manage the recording equipment, read instructions to the sibling dyad, video-tape the 20 minute Generalization Test, provide a prize at completion to each child, and debrief the sibling dyad after the measurement.

Room Structure. The home observation was administered in a living room or identified common area in the homes of the participating families. A video camera was placed on a tripod in plain view in a corner of the room. A target area was created by using natural boundaries (e.g., door, shelving) supplemented by marking a boundary with masking tape on the floor (e.g., each corner was marked or doorway or entry into an adjacent room). The boundary was designated to ensure adequate play space and to keep both children continuously within camera range.

Observation Procedure. The sibling pairs were asked to sit in the play area while the following instructions were read. The following was read to the children:

> "Hello (child1 name) and (child2 name). My name is (researcher name) and I am from Idaho State University. I have an important project, and I really need your help. Helping is easy; all you have to do is play with these toys for 20-minutes. We want to find out which of these toys kids your age really like and will actually play with. I am going to record what you two play with on this video camera. At the end of 20-minutes you will earn a prize as a "thank-you" for helping with the

project. Here is my prize box (researcher briefly shows prize box). So, will you help me with my project? [wait for child assent]. [assuming assent] The most important rule is that you can only play with these toys, none others, and the TV, computer, and any electronics must be turned off for the whole 20 minutes. I want to see how well you like THESE toys. You must remember one other rule: Stay inside the tape markings (points out tape markings). If you go outside the boundary, I cannot see you on my camera. I am going to stand right here and be the camera-person. I need to get the best pictures I can of you two at play. Now, if you need to use the bathroom, please do that right now, since I don't want to have to stop videotaping. [Wait for any child to use the bathroom and repeat the two keys rules upon that child's return] Okay, go ahead and play together with the toys as you wish."

The researcher then operated the camera (direction and zoom) to provide the best possible video of the children at play. The researcher did not intervene in the observation unless the siblings required a prompt to remain in the observation area (or a break to use the bathroom). The parent was sought only if the children engaged in a dangerous activity. If any violation of the observation protocol occurred (e.g., leaves area, turns on TV, brings own toys, a third sibling enters the space, etc.), videotaping ceased until standard observation conditions were resumed After the 20-minute observation the researcher thanked the children and gave each child a prize. Finally, both children were debriefed regarding the true purpose of the home visit. Older siblings were asked to sign a child assent allowing for the retention of their data in the project.

Scoring. The home observation data were scored using the same 20-second interval sampling system used for the SPA which was presented above and is detailed in Appendix B. Once a coder met criteria for accuracy for the SPA condition, he/she was authorized to perform coding for the Generalization Test. Data analyses were identical to the SPA procedures.

Sibling Conflict Resolution Skill Sessions (SCRST)

General Session Outline. The five social skills training sessions occurred over a period of approximately five weekly sessions. Each session was led by a primary therapist with the aid of assistant therapists or helpers who served as actors during role-plays. Two assistants held dolls representing two siblings for all models. However, if only one assistant was available, the therapist performed two roles, one as session coordinator and the other as a model for conflict conditions and resolutions. The sessions were attended by the target child, identified older sibling, and at least one parent. Other children in the family were allowed to attend at the discretion of the parents. At the beginning of each session, the topic of the session was introduced and the parent was given a handout elaborating on the session content and recommendations for supporting skills actually displayed at home that parents happen to observe. Parent Handouts for all SCRST sessions are provided in Appendix C.

A behavior record card (BRC) was introduced during the first session on which parents were instructed to track the unprompted use of specific social skills demonstrated by any participating child. Parents were instructed to place a sticker on a card to represent the specific skill the child demonstrated (e.g., a sticker on column marked "sharing" would indicate the child requested sharing and provided a reason for doing so).

At the beginning of subsequent sessions, the BRC was reviewed and earned stickers were exchanged for points which were redeemed at the Clinic Store at the end of the session. After each session a new BRC card was given to the parents with the newly introduced skills added to the card. An exemplar BRC card is reproduced in Appendix D.

During each session the conflict and targeted skill(s) were briefly described by the therapist. Specific conflicts and resolutions were then modeled (see the five session protocols in Appendix E). First, the dolls displayed "fight/squabble" as the "wrong" response to the specific conflict class; subsequently, the dolls displayed a skillful response to resolve the conflict. After each modeled scenario, participating siblings were asked two basic questions (e.g., "What did the doll do that was wrong?", and conversely, "What smart thing did the doll do this time?"). On some occasions, the therapist asked "why" questions of the children if there was a relevant response (e.g., "Why is fighting wrong?"). Therapists used their judgment regarding which child to ask what question to provide activity for all children and to prevent lapses of participation due to inadequate attention from the therapist. Any correct answers to any questions immediately resulted in a "plus sign" placed on a large dry-erase board under that child's name. Children were reminded that the more points they earn during the lesson, the better the prize they could obtain from the Clinic Store at the end of the session

Each child was prompted to role-play the skillful resolution option to the conflict. During initial role-play sessions each sibling reacted to the assistant who held the doll and presented the conflict. Once skills were displayed by both siblings, and subject to the judgment of the therapist, children were sometimes asked to assume both roles for the scenario. However, for assertive conditions in which the doll was "rude" or "aggressive"

in some manner, only the assistant played the role of the misbehaving child, while the sibling practiced the pro-social skillful resolution. As with verbal tasks, any correct role-playing immediately resulted in a "plus sign" placed on the dry-erase board under that child's name. Mistakes in role playing yielded repetition of the previously modeled skill and/or a second try at role-playing. The therapist used judgment as to how many trials to administer in order to provide activity for all children and to prevent lapses of attending. Specific skills and associated conflicts were reviewed at the beginning of subsequent sessions, challenging the siblings to "show us what your remembered" from last week, with a focus on role-playing skillful responses to the doll.

At the end of each session the siblings added up their earned points from home and from the session. Each had the opportunity to use points to buy a prize (estimated value between $0.50 and $3.00), bank their points for more expensive prizes, or exchange their points for money (each point valued at $0.05).

The following session flow portrays the basic template of content and order of presentation, rather than a strict guideline. Sessions were influenced by the number of children present, the pace of skill acquisition, and any issues raised by parents or children that needed to be addressed to maintain the alliance with the family. No family required more than 5 sessions to complete the curriculum.

Session 1. The first session focused on sibling disputes that occur over common property or activities. This includes items that are not shareable (e.g., a computer) and items that can be shared (e.g., family art supplies). These conflicts arise when a toy or activity that neither sibling has ownership over becomes the subject of dispute. The first session covered common property disputes and introduced strategies for requesting

access to shareable items (i.e., make a polite request with a reason, repeat the request with additional reasons, socially reinforcing the sibling's compliance or seeking adult help to enforce access) and non-shareable items (i.e., making a polite request with a reason, suggesting turn-taking or a tie-breaking strategy, waiting patiently for access, and socially reinforcing the sibling's compliance or seeking adult help to enforce access). After Session 1 parents began tracking social skill use with a BRC with "Sharing", "Take Turns", and "Tie-Breaking" as the specific skills targeted. Children's session points were summed and decisions to spend or save points were made.

Session 2. The second session introduced strategies to resolve ownership issues. First, the individual owner has the right to say, "yes" or "no", to a request to use an item that is a personal possession. The individual owner is taught to supplement denials with reasons. When the owner permits access, a limit may be set on the item to put a boundary on its use (e.g., "You may use my markers, but please give them back when I ask"). Second, the owner is taught to use polite assertion when the sibling ignores the limit. The owner can solicit parent assistance if needed. The BRC given to parents after this session included the previous skills and added "Ownership Resolutions".

Session 3. The third session added sibling noncompliance to the other sibling's requests as the conflict condition e.g., the sibling refuses a request to play, or to allow use of personal possession, or to allow room access). The specific skills covered included making a polite request, giving a reason, giving additional reasons, negotiating (e.g., making a deal), and then either socially reinforcing the sibling for compliance or "taking no" for an answer. After Session 3 the BRC card included the previous skills and added "Accepts No".

Session 4. The fourth session focused on assertiveness skills. Specifically, how to be appropriately assertive when the sibling is violating the child's rights. Conflict conditions included entering child's space without permission, cheating at game rules, and teasing/taunting. Taking a child's possession was reviewed as well, since it had to be introduced earlier regarding ownership issues (Session 2). The specific skills covered included making an authoritative request, giving a reason, socially reinforcing sibling compliance, and, given continued sibling violation of the other's rights, determining whether to tolerate the sibling's continued misbehavior (i.e., ignore or leave the context) OR to seek adult assistance. The BRC card provided to the parent after this session included the previous skills and added "Assertive".

Session 5. The fifth and final session of the social skills training course was a review of all skills presented during Sessions 1 through 4. Participating siblings reviewed skills in the same format as Sessions 1-4 (role-play and verbal rehearsals). Models and questions were utilized at the discretion of the therapist to assist the review if a child failed to correctly role-play the targeted skill. All available points were spent on Clinic Store prizes or exchanged for money during Session 5, since it was the final session.

Treatment Fidelity Procedures. For all participating families, the SCRST sessions were videotaped and coded in terms of session activities prompted by the therapist. Specifically, the number of models presented was tracked, as well as the number of role-plays involving the target child and older sibling and the number of questions asked to either child. This information was obtained to provide descriptive data about SCRST sessions. The SCRST is designed to be flexibly administered in order to

adjust to the specific needs of the participating families. Consequently, the actual number of presented models, role-plays, and questions varied somewhat across families. The treatment fidelity data are presented in Table 2 as mean session frequency for each teaching strategy across participating families.

Table 2

Descriptive Data for Sibling Conflict Resolution Skills Sessions

		Target Children		Older Siblings	
	Models $\bar{X}$ (S_x)	Question $\bar{X}$ (S_x)	Role-Plays $\bar{X}$ (S_x)	Questions $\bar{X}$ (S_x)	Role-Plays $\bar{X}$ (S_x)
Session 1	8.6 (0.9)	9.5 (1.8)	4.3 (1.0)	9.4 (1.9)	4.1 (0.8)
Session 2	6.2 (0.7)	8.1 (2.1)	8.2 (1.6)	7.5 (2.0)	7.7 (0.7)
Session 3	6.4 (1.0)	8.3 (2.1)	9.0 (2.0)	8.4 (2.4)	7.7 (0.8)
Session 4	9.3 (0.5)	11.6 (2.1)	9.5 (1.6)	11.1 (2.0)	8.8 (1.3)
Session 5	0.4 (0.8)	2.4 (1.9)	9.2 (1.1)	2.8 (2.1)	8.6 (1.2)

Note. N = 15. Data presented as mean frequency per session.

Chapter III: Results

Observer Accuracy

Data analyses were performed to estimate the accuracy of the SCRS-III using the scoring system described by Nakaha (2012). The researcher who coded all SCRS-III administrations was unaware of which participants would be chosen for the observer accuracy evaluation. Independent reliability coders were trained to score the SCRS-III Forms A and B. Observer training included an instructional session with the researcher. The coding system was explained and modeled using a videotaped SCRS-III administration. The reliability coders and researcher then independently scored an SCRS-III administration and compared their scores, discussing discrepancies. Training continued until each coder reached 80% agreement with the researcher across the 16-items for both Form A and Form B. After passing criterion, the reliability coders independently scored the randomly selected SCRS-III presentations for the SCRS-III pre-test and post-test for both target children and older siblings. The coders' ratings were then compared to the researcher's scores. The accuracy estimates were performed on half of randomly selected SCRS-III presentations (15 pretest: 7 target children and 8 older siblings; and 15 post-test: 7 target children and 8 older siblings). The researcher, who coded all SCRS sessions, was unaware which tapes would eventually be selected at random to perform the accuracy checks.

The results of the accuracy estimates are presented in Table 3. First, the average item scores of each child obtained independently by each observer were compared. Group mean scores for the Researcher (coder 1) and the Reliability Coders (coder 2) were tested for significant differences. See the means, standard deviations, *t*-scores, and *p*-

values in Table 3. All tests of differences were insignificant. The average item scores obtained by the two independent coders were correlated and reported as "Inter-observer reliability coefficients" ($.80 < r_{xy} < .97$). Finally, agreement at the item level was calculated. The number of agreements (i.e., both coders independently rating a child's performance at the exact same score for each specific item) was divided by the number of opportunities. These agreement ratios are also reported in Table 3.

Table 3

SCRS-III Inter-Observer Accuracy Estimates

Form: Sibling	Researcher $\bar{X}$ (S_x)	Reliability Coder $\bar{X}$ (S_x)	*t*	*p*	Item Agreement Ratios	Inter-observer Reliability Coefficients
Pre-SCRS: Target Child	3.3 (0.3)	3.3 (0.3)	0.00	*ns*	78% (100/128)	.97**
Pre-SCRS: Older Sibling	4.0 (0.2)	3.9 (0.3)	-2.16	*ns*	82% (104/127)	.94**
Post-SCRS: Target Child	3.6 (0.4)	3.7 (0.5)	0.76	*ns*	73% (82/112)	.86*
Post-SCRS: Older Sibling	4.2 (0.4)	4.3 (0.3)	1.00	*ns*	73% (93/127)	.80**

Note. Analysis includes the subset of presentations randomly selected for reliability estimation. SCRS scores are presented as average item scores. * denotes significance beyond $p < .05$, ** denotes significance beyond $p < .001$. A paired samples t-test was conducted to assess for mean differences on scores assessed by the separate coders.

Reliability estimates were also produced for the SPA, as well as the Generalization Test. Roughly half of the SPA Pre-Training tapes (7), the Post-training tapes (7), and the Generalization Test tapes (7) were selected at random to evaluate coder accuracy. An independent reliability coder was trained to score the SPA. Coder training included an instructional session with the researcher. The coding system was explained and modeled using videotaped SPA administrations from prior projects. The reliability coder and researcher independently scored an SPA administration and compared their scores, discussing discrepancies. The coder completed the training when she had successfully scored an SPA video tape from prior projects with 50% or higher occurrence ratios for low probability classes (i.e., Angry-Cry-Yell, Verbal Harassment, Physical Antagonism, and Justifications) and 70% or higher occurrence ratios for the higher probability behavioral class (i.e., Cooperative Play). Several videotaped SPA administrations from prior projects were reviewed until the coder had demonstrated criterion performance. Only then was the reliability coder authorized to independently score the randomly selected SPA and Generalization Test administrations. The coder's ratings were compared to the researcher's scores.

The results of the observer accuracy were evaluated in two ways: Occurrence Ratios and Reliability Coefficients. First, the number of agreements (i.e., both coders independently coding the presence of an occurrence during the same 20-second interval) was divided by the number of opportunities to calculate an agreement of occurrences within an interval. Occurrence ratios do not consider agreements on the absence of the response class. Occurrence Ratios are presented in Table 4. Second, the percent occurrences of each of the five response classes for each dyad were computed for each

coder. The correlations of these session scores were calculated as the "Interrater Reliability Coefficient". Interrater reliability coefficients for the SPA and Generalization test are displayed in Table 5.

Table 4

Pre/Post SPA and Generalization Test Inter-Observer Occurrence Ratios

Behavior Class	Pre-SPA	Post-SPA	Generalization Test
Angry-Yell	60% (6/10)	71% (5/7)	50% (1/2)
Physical Antagonism	50% (2/4)	N/A	100% (1/1)
Verbal Harassment	100% (7/7)	67% (2/3)	100% (3/3)
Justification	80% (48/60)	80% 44/55)	88% (30/34)
Cooperative Play	84% (147/176)	89% (101/114)	90% (93/103)

Note. Analysis is based on 7 independently coded sessions selected at random. Zero occurrences of Physical Antagonism were recorded by both observers during all 7 sessions.

Table 5

Pre/Post SPA and Generalization Test Interrater Reliability Coefficients

Behavior class	Pre-SPA	Post-SPA	Generalization Test
Angry-Yell	.97**	.99**	1.00**
Physical Antagonism	.93**	N/A	1.00**
Verbal Harassment	.97**	.93**	.88**
Justification	.95**	.99**	.98**
Cooperative Play	.99**	.98**	.99**

Note. Analysis includes subset of presentations randomly selected for reliability estimation. A reliability coefficient could not be computed for Physical Antagonism as there was no variation in the scores (i.e., both the researcher and research assistant coded zero occurrences across all presentations). * denotes significance beyond $p < .05$, ** denotes significance beyond $p < .001$.

Descriptive Statistics

Descriptive statistics for the pre and post measures are presented. Specifically, Table 6 presents SCRS-III average item scores for target children and older siblings at both pre- and post-SCRTS. Table 7 shows SPA, as well as Generalization Test data, for each of the five response classes coded. Data from the parent-completed Home and Community Social Behavior Scales are presented in Table 8 at both pre- and post-SCRTS.

Descriptive data for the SCRST sessions are presented in Table 2 as discussed above. A summary of social skills demonstrated outside of session as reported on BRC cards are summarized in Table 9 (target children) and Table 10 (older siblings).

Table 6

Average Item Scores for SCRS-III Form A and Form B

	Target Children		Older Siblings	
	Pre-Test	Post-Test	Pre-Test	Post-Test
$\overline{X}$	3.4	3.9	3.8	4.2
S_x	(0.2)	(0.4)	(0.3)	(0.3)
Range	3.0 – 3.7	1.9 – 4.3	3.3 – 4.3	2.7 – 4.5

Note. N = 15 in each group

Table 7

Pre and Post SPA and Generalization Test Descriptive Data as Percentage of Occurrence.

Behavior Class	Pre-SPA $\overline{X}$ (S_x)	Post-SPA $\overline{X}$ (S_x)	Generalization Test $\overline{X}$ (S_x)
Angry-Yell	2.3% (6.1)	1.6% (3.0)	2.1% (5.9)
Physical Antagonism	0.5% (1.1)	0.9% (1.8)	0.6% (1.1)
Verbal Harassment	6.1% (17.8)	1.1% (2.6)	1.8% (3.6)
Justification	12.3% (7.5)	12.5% (8.3)	7.9% (7.0)
Cooperative Play	32.9% (16.8)	26.7% (19.1)	31.1% (22.7)

Note. Analysis includes subset of presentations randomly selected for reliability estimation.

Table 8

Descriptive Data for Home and Community Social Behavior Scales at Pre/Post test for target children

	Target Children		Older Siblings	
	Pre-Test	Post-Test	Pre-Test	Post-Test
	$\bar{X}$ (S_x)	$\bar{X}$ (S_x)	$\bar{X}$ (S_x)	$\bar{X}$ (S_x)
Social Competence Total	49.5 (5.4)	53.1 (5.8)	51.1 (8.7)	57.2 (6.2)
Antisocial Behavior Total	54.9 (10.4)	49.7 (10.0)	54.5 (10.4)	48.7 (8.0)

Note. N = 15 in each condition. Scores are presented in T-scores. Higher scores on prosocial scales indicate the presence of positive skills. Higher scores on antisocial scales indicate increased problem behavior. * denotes significance beyond p <.05, ** denotes significance beyond p <.001.

Table 9

Descriptive Data for Target Children on the Social Skills Behavior Record Card (Total/card)

	Sharing $\bar{X}$ (S_x)	Turn-Taking $\bar{X}$ (S_x)	Tie-Breaking $\bar{X}$ (S_x)	Ownership $\bar{X}$ (S_x)	Taking "No" for an answer $\bar{X}$ (S_x)	Assertiveness $\bar{X}$ (S_x)
Session 1 BRC	4.5 (3.8)	2.3 (2.2)	0.93 (1.4)	-	-	-
Session 2 BRC	4.4 (4.4)	3.7 (3.3)	1.3 (.8)	1.7 (1.7)	-	-
Session 3 BRC	3.6 (2.6)	2.5 (2.1)	1.9 (1.9)	2.3 (2.0)	1.6 (1.9)	-
Session 4 BRC	2.5 (2.4)	2.4 (2.1)	1.6 (1.3)	1.4 (1.4)	1.3 (1.3)	1.2 (1.0)

Note. Data presented on available BRCs returned. For Sessions 1 and 2 BRC N = 15. For sessions 3 N = 13, for Session 4 N = 12.

Table 10

Descriptive Data for the Older Siblings Social Skills Behavior Record Card (Total/Card)

	Sharing $\bar{X}$ (S_x)	Turn-Taking $\bar{X}$ (S_x)	Tie-Breaking $\bar{X}$ (S_x)	Ownership $\bar{X}$ (S_x)	Taking "No" for an answer $\bar{X}$ (S_x)	Assertiveness $\bar{X}$ (S_x)
Session 1 BRC	3.9 (3.7)	2.4 (2.4)	0.9 (1.4)	-	-	-
Session 2 BRC	3.6 (4.1)	2.9 (3.2)	1.7 (2.0)	1.6 (1.5)	-	-
Session 3 BRC	2.4 (2.6)	2.3 (2.6)	1.5 (1.7)	1.7 (2.1)	1.5 (2.1)	-
Session 4 BRC	2.3 (2.3)	2.3 (1.9)	1.3 (1.0)	1.2 (1.0)	0.8 (1.0)	2.3 (2.0)

Note. Data presented on available BRCs returned. For Sessions 1 and 2 BRC N = 15. For session 3 N = 13, for Session 4 N = 12. Data presented as mean occurrence per week.

Hypothesis Testing

Hypothesis #1.

The first hypothesis was that significant improvement would be demonstrated from pre- to post-test measurements for the target child on the SCRS-III (Table 6) and HCSBS (Table 8). In regards to the SCRS-III, a paired-samples *t*-test found significant mean differences between SCRS-III Pre-Test (M = 3.4) and Post-Test (M = 3.9), $t(14) = -5.458$, $p < .001$. Mean changes on the HCSBS were evaluated for both the Social Competence scale and the Antisocial Behavior scale. The HCSBS Social Competence scale mean did not improve from pre-test (M = 49.5) to post-test (M = 53.1), $t(14) = -1.970$, p = ns. However, a comparison of HCSBS Antisocial Behavior Scale scores yielded a significant decline from pre-test (M = 54.9) to post-test (M = 49.7), $t(14) = 2.321$, $p < .05$.

Improvement from pre- to post-test measurements on the SCRS-III and HCSBS were also investigated for older siblings. In regards to the SCRS-III, a paired-samples *t*-test found significant mean differences between SCRS-III Pre-Test (M = 3.8) and Post-Test (M = 4.2), $t(14) = -4.236$, $p < .001$. Mean changes on the HCSBS were evaluated for both the Social Competence scale and the Antisocial Behavior scale. The HCSBS Social Competence scale mean significantly improved from pre-test (M = 51.1) to post-test (M = 57.2), $t(14) = 4.086$, $p < .001$. A comparison of Antisocial Behavior Scale scores yielded a significant decline from pre-test (M = 54.5) to post-test (M = 48.7), $t(14) = 2.281$, $p < .05$.

Hypothesis #2.

The second hypothesis was that post-test SCRS-III mean scores of the targeted children (5.0 – 6.9 years) would be indistinguishable from the oldest cohort (7.0 – 11.9 years) SCRS-III mean obtained by Grimes (2012). Descriptive data on SCRS-III scores from the oldest cohort from Grimes (2012) are reproduced in Table 11. An independent sample's t-test failed to find a significant differences between SCRS-III scores for target children at post-test (M = 3.9) and Grimes (2012) oldest cohort (M = 4.0), $t(24) = -.470$, p = ns. Note that Grimes' oldest cohort from the 2012 data set did not participate in the SCRTS intervention.

Hypothesis #3.

Hypothesis three predicted significant improvement from pre to post-test SPA measures on mean Cooperative Play and Justifications scores (see Table 7). Neither change was significant. For Cooperative Play, the contrast between the pre-test (M = 32.9%) and post-test (M = 26.7%), yielded, $t(14) = 1.993$, ns. For Justification, the contrast between pre-test (M = 12.3%) and post-test (M = 12.5%) yielded, $t(14) = -0.900$, ns.

Table 11

SCRS-III average item scores for Target Children and Grimes (2012) 7-9-year-old sample

	Target Children Post-Test	Grimes (2012) 7-9-year-old sample
$\overline{X}$	3.9	4.0
(S_x)	(0.4)	(0.5)
Range	1.9 – 4.3	3.3 – 4.7

Note. For Grimes (2012) sample N = 11. For the Target Child Post-Test N = 15.

Table 12

Descriptive data for Nakaha 2012 sample and Current Project Post SPA and Generalization Test

Type of Information	Nakaha MC Sibs $\bar{X}$ (S_x)	Post-SPA $\bar{X}$ (S_x)	Generalization Test $\bar{X}$ (S_x)
Angry-Yell	3.8% (3.6)	1.6% (3.0)	2.1% (5.9)
Physical Antagonism	4.8% (7.9)	1.0% (1.8)	0.6% (1.1)
Verbal Harassment	7.3% (8.5)	1.1% (2.6)	1.8% (3.6)
Justification	19.6% (7.8)	12.5% (8.3)	7.9% (7.0)
Cooperative Play	37.8% (28.6)	26.7% (19.1)	31.1% (22.7)

Note. Nakaha sample of middle childhood siblings N = 20. For all other measures N = 15.

Hypothesis #4.

The fourth hypothesis predicted post-test SPA levels of Cooperative Play and Justification scores would be indistinguishable from the middle childhood sample obtained by Nakaha (2010). Descriptive data from the pairs of middle childhood siblings from Nakaha (2010) have been reproduced in Table 12. An independent sample's t-test revealed significant higher mean percent occurrence of Justifications for Nakaha's middle childhood siblings (M = 19.6%) than the post-test scores for the current sample (M = 12.5%;), $t(33) = -2.598$, $p < .05$. Cooperative Play, however, failed to reveal significant differences between Nakaha's middle childhood siblings (M = 37.8%) and the post-test scores for the current sample (M = 26.7%), $t(33) = -1.297$, ns.

Hypothesis #5.

Hypothesis five predicted that Cooperative Play and Justification scores on the post-test SPA would be indistinguishable from the Generalization Test scores obtained in the home. The relevant means for comparison are found in Table 12. In contrast to the hypothesis, a paired sample t-test indicated a significant difference between mean percent occurrence of Justification at post-test (M = 12.5%) and Generalization Test (M = 7.9%), $t(14) = 2.233$, $p < .05$. The Cooperative Play contrast, however, was found to be consistent with the hypothesis, post-test (M = 26.7%) and Generalization Test (M = 31.1%), $t(14) = -0.823$, ns.

Further, it was predicted there would be significant improvement in Cooperative Play and Justification scores from the pre-test SPA data to the Generalization Test. The relevant means are in Table 7. Neither improvement was detected. The Pre-test Justification mean (12.3%) and the Generalization Test Justification mean (7.9%) yielded

$t(14) = 1.896$, ns. Similarly, the contrast between the Cooperative Play mean at pre-test (32.9%) and the Generalization Test mean (31.1%) yielded $t(14) = 0.348$, ns.

Hypothesis #6.

Lastly, it was hypothesized that parents who were more engaged in the SCRST sessions as manifest by reporting more skills on the BRC data would have children who performed better at post test than parents who were less engaged (i.e., reported less frequent BRC skill use). Correlational analyses were performed for both target children and older siblings by using the total number of BRC sibling skills reported across the entire SCRST period as a predictor. See the predictor data in Table 9 (for target children) and Table 10 (for older siblings). Criteria dimensions included all post-test measurements of skill: SCRS III, SPA Justifications, SPA Cooperative Play, Generalization Test Justifications, Generalization Test Cooperative Play, and both parent HCSBS scores. Correlations are presented in Table 13. Only one significant association between the predictor and various criteria was found. Specifically, the criterion validity coefficient for target children between BRC entry rates and post-test SPA Cooperative Play was $r = .53$, $p < .05$.

Table 13

Exploratory Correlation Coefficients Matrix for BRC and post-test Outcome Measures

Measure	BRC Total Target Children	BRC Total Older Siblings
HCSBS Social Competence Total	.26	.46
HCSBS Antisocial Behavior Total	.17	-.08
SCRS-III	-.27	-.20
SPA Justification	.14	.08
SPA Cooperative Play	.53*	.51
GT Justification	-.01	-.04
GT Cooperative Play	-.07	-.02

Note. * denotes significance beyond p <.05, ** denotes significance beyond p <.001. Generalization Test is referred to as “GT”

Chapter IV: Discussion

Adequacy of the Sample of Participants

The project recruited 22 families, 16 of which were eligible to participate, and 15 of which completed the project. The sample was predominantly comprised of married, European-American families of the Latter Day Saints religion. These demographics are representative of rural Southeastern Idaho and consistent with samples participating in prior sibling research at Idaho State University. The sample of participating children was balanced in regards to gender. Of families with multiple children, the selection criteria for participants resulted in choosing target children and older siblings at the lower end of each age limit. The selection procedures were judged to be effective in obtaining the desired family characteristics and age range of participating children. See Table 1 for a quantitative review of the sample.

Protocol Adherence of the SCRST Intervention

The skill building format simultaneously involved at least one parent and two siblings, placing a high demand on the therapist to implement the curriculum while maintaining a positive alliance with all participants. Although clearly difficult to quantify, the quality of such continuous, and often subtle interactions (e.g., eye contact, timing, facial expressions, distribution of attention, awarding of tokens, etc.), appears to have been effective in four measurable ways. First, the descriptive data in Table 2 demonstrate that during each session, the teaching tools (i.e., modeling, questioning, and role-playing) required by the curriculum were manifested in Sessions 1-4 at a high frequency and distributed equally to both target child and older sibling. Second, the standard deviations of teaching tool category frequencies were low, relative to the means,

suggesting the therapist was relatively uniform across families in engaging both the target child and older siblings. Third, the review session (i.e., the fifth and final SCRST session) revealed the expected drop in modeling and questioning frequency, while the child role-play frequency of targeted skills was maintained. Fourth, families remained engaged in the process as manifested by the small drop-out rate (1 of 16 or 6.3%). Therefore, it appears that an experienced family therapist (a fourth year doctoral student in this case) is capable of implementing the Sibling Conflict Resolution Skill Training (SCRST) protocol.

As noted in the Results Section above, the SCRST protocol was not associated with any consistent evidence of generalization of improved child repertoire skills (i.e., SCRS III improvements) to sibling interaction in the SPA or GT observation conditions. One notable and likely related finding includes the lack of anticipated effort by parents to positively reinforce sibling skills in the home setting. The BRC data that quantified the home reinforcement of clinic-defined skills (Tables 9 & 10) were disappointing. On average, parents noticed and reinforced sibling skills three times a day at best (i.e., the mean plus one standard deviation across all relevant skills for that week) and virtually zero at worst (i.e., the mean minus one standard deviation). Considering the knowledge that siblings engage in a high rate of interaction, multiple opportunities to demonstrate sibling social skills are presumed to occur. However, according to the BRC data, they did not. Obviously, this could be so for many different reasons: 1) skills were manifest, but unobserved by parents; 2) skills were not manifest; 3) conflicts requiring skills were not present; 4) the skill was manifest and the parent observed it, but failed to act. The important facts (i.e., the low rates and variability of BRC documented home

reinforcement) and alternative explanations for those facts may shed light on absence of generalization of improved child skills to the two conditions observed in this study (i.e., SPA and GT).

Observer Accuracy

Observer accuracy estimates were calculated for all observational measures of social skills: SCRS-III, SPA, and the Generalization Test. The SCRS-III was accurately coded (see Table 3). At the very conservative item level of comparison, agreement ratios exceeded 70%. At the total score level, comparisons of independently derived average item scores were not significantly different between two independent coders. Further, average item scores yielded highly significant inter-observer reliability coefficients ($.80 < r < .97$). Overall, the SCRS yielded good observer accuracy consistent with estimates from previous research (e.g., Grimes, 2012).

The SPA codes were coded with sufficient accuracy to be analyzed. At the very conservative item level of analysis, the Occurrence Ratios revealed a wide variation in agreement. Occurrence ratios reported in Table 4 ranged from 50% to 100% across the five behavior codes across all three sampling contexts (i.e., Pre-SPA, Post SPA, and GT). Physical Antagonism at Pre-SPA and Angry-Yell during the GT received the lowest percentages of occurrence (50%). Occurrence ratios reached 100% for Verbal Harassment at Pre-SPA and GT, and for Physical Antagonism at GT. It appears that two of the lower frequency behavior classes (i.e., Angry-Yell, Physical Antagonism) were most difficult to code accurately, possibly as a function of the low frequency of occurrence or subjectivity of the operational definitions. Despite low frequency, Verbal Harassment was accurately coded, possibly as a result of the salience of such verbal

interchanges. At the session level, which is the metric used in all analyses, the inter-observer reliability coefficients at the session level were excellent (Table 5), ranging from $.88 < r < 1.0$. Accuracy estimates are consistent with previous research using the SPA.

Hypothesis #1

The first hypothesis predicted significant improvement from pre to post-test measurement for the target child on the SCRS-III and the HCSBS. Although not fully supported by all three measurements, the significantly improved SCRS III scores for both the target child and older sibling are positive contributions to our understanding of sibling conflict resolution skill building. It was the relatively poor scores of children in the transition age cohort (i.e., 5.0 to 6.9 years) reported by Grimes (2012) that spurred this study to be created in the first place. The literature review conducted for the current project indicated that children above the age of 5.0 years should be able to acquire sibling conflict resolution skills. Nevertheless, the untrained sample reported by Grimes had not done so (average SCRS III item scores of 3.2). In contrast, the same transition age cohort in the current project displayed an improved score of 3.9 after just 5 sessions of SCRST. In addition to being a statistically significant improvement relative to their own pre-test scores, the current sample of transitional age children were able, on average, to provide a contextually-relevant verbal solution to common sibling conflict conditions. Given the established error of measurement for the SCRS III of 0.2 scale units, it is likely that the true scores of targeted children ranged from 3.7 to 4.1 at post intervention, which represents, on average, the desired context-relevant verbal strategy to resolve routine

conflicts. Such data clearly justify the inclusion of children as young as 5.0 years in treatment protocols like the SCRST.

Of equal importance is the finding that the older siblings also evinced improved SCRS III scores following the brief training. This cohort performed at levels consistent with Grimes (2012) sample of children over age 7 years at pre-intervention (i.e., 3.8), and improved beyond those levels following the SCRST protocol to an average item score of 4.2. Consequently, it appears that children who present with average scores around 4.0 (i.e., consistent use of context-relevant language to resolve disputes, albeit not very sophisticated language) might also profit from training by adding repertoire to include the more sophisticated use of reasons and contextual judgments, nudging average item scores well beyond the 4.0 level. Note that no child, even members of the older sibling cohort who had completed the SCRST protocol, achieved a perfect score of 5.0 on SRCS III (4.7 was the best score). Therefore, this project suggests that siblings across the 5.0 to 11.9 year age range are likely to gain repertoire by participating in the brief SCRST protocol. These data replicate the controlled finding reported by Thomas and Roberts (2009) and extend the finding to the transition age cohort.

It is true that Hypothesis 1 was only partially supported. Parent questionnaire data failed to yield significant improvement on parent judgments of Social Competence on the HCSBS. This outcome is a failure to replicate Thomas and Roberts (2009). A comparison of means and standard deviations between the two pre-post scores on the HCSBS revealed virtual comparable changes (from 49.5 to 53.1 for the target child cohort in the current project; from 49.0 to 54.2 in Thomas and Roberts). Nevertheless, the current change was not statistically significant, despite comparable sample sizes,

suggesting the absence of any robust relationship between intervention and altered parent perceptions. In contrast, the Antisocial Behavior Scale on the HCSBS significantly declined (Table 8). It is interesting that parent ratings of decreased antisocial behavior were not accompanied by a significant increase in parent-rated prosocial skills as measured by the Social Competence Scale. While the SCRST sessions focused on teaching children prosocial skills, no motivational system to actively discourage antisocial behavior was implemented in the current project. However, a decrease in antisocial behavior may have occurred as a natural byproduct of children who engaged in higher frequencies of alternative prosocial skills. This is not the first occasion, however, in which two measures with divergent methods did not correspond. Previous research has demonstrated a lack of convergence between parent-reported data and observational measures of child behavior (Grimes, 2012). It is possible that parent-perception of children's social skills do not converge with observations of demonstrated skills. A variety of reasons for this phenomenon is possible, including differences in method (i.e., questionnaire versus behavioral observation), rater (i.e., parent versus professional), and construct (i.e., sibling skills measured by the SCRS-III and SPA versus the peer skills measured by the HCSBS).

Hypothesis #2

The second hypothesis proposed that the post-training SCRS-III measurement for target children (ages 5.0 to 6.9 years) would be indistinguishable from the untrained 7 to 11.9-year-old cohort reported in Grimes (2012). The older cohort from a previous study represented a sample of community volunteers who were administered the SCRS-III. This hypothesis was supported via the absence of a significant mean difference in SCRS-

III scores between these groups. The cohort from Grimes (2012) represents a developmentally distinct group from the target child group in the current study. Notably, these older children are presumed to have increased cognitive and linguistic skills, which presumably underlies the positive association between age and SCRS-III scores (Grimes, 2012). Despite being less developmentally sophisticated, it appears that a younger cohort of children may be able to acquire strategies to enhance verbal problem solving skills to function at the level of verbal problem solving typically seen in untrained middle childhood cohorts. The lack of significant differences in SCRS-III scores between the older cohort of Grimes (2012) suggests that transitional age children can acquire the repertoires of their older siblings, given exposure to a protocol like the current SCRST.

Hypotheses #3 through #6

In general, none of these hypotheses were fully supported. Essentially, measurements on the SPA and Generalization Test demonstrated failures of generalization of the improvements manifested on the SCRS for both members of the sibling dyad. Generalization from clinic context 1 (the SCRS) to clinic context 2 (the SPA) did not yield improved Justifications, which is the skill most directly targeted by SCRST protocol. Generalization across settings (clinic to home) and context (SCRS to Generalization Task) also failed to materialize.

It is unknown why pre to post-measurement SPA rates of Cooperative Play and Justification did not generalize across the two clinic contexts. Previously, Nakaha (2012) did find significant associations between a sibling dyad's performance on the SPA and SCRS-III. Nakaha, however, performed an observational study; she did not evaluate change scores in a targeted context (i.e., the SCRS) versus change scores in a

generalization context (i.e., the SPA or the GT). In the current study, rates of Cooperative Play actually declined slightly (e.g., from 32.9% to 26.7%), while rates of Justification remained relatively unchanged (e.g., 12.3% to 12.5%). Multiple possibilities exist for this failure to generalize improvements. Perhaps children were familiar with the SPA toys and had an established repertoire for entertaining themselves in the absence of a parent. Note that the most likely coded SPA category was Cooperative Play (about 30% of all intervals of observation). Further, conflicts to resolve may simply have not occurred. Note the very low percentage of the three misbehavior classes (Angry-Yell, Physical Antagonism, and Verbal Harassment when summed occurred during 3.6% of all the SPA intervals of observation). Another explanation may be a ceiling effect that occurred as result of the relatively skillful the older siblings. Since the SPA is a dyadic measurement, a lack of improvement may be an indication of the already proficient social skills of the older siblings at pre-test. For example, the older sibling group at pre-test demonstrated proficient SCRS-III performance (M = 3.8). Perhaps the pre-SPA assessment represented the Cooperative Play and Justification percentages of a dyad with one member who was sufficiently socially proficient, precluding any impact of improvements in the target child on SPA dyadic performance.

Hypothesis #4 predicted post-test SPA levels of Cooperative Play and Justification would be indistinguishable from the sample of middle childhood siblings measured by Nakaha (2010). This hypothesis was partially supported. Specifically, no significant difference in rates of Cooperative Play was found between the current sample at post-test and Nakaha's middle childhood siblings. However, Nakaha's sibling dyads demonstrated significantly more frequent Justifications than the current sample. These

results suggest that the post-test measurement in the current project demonstrated percentages of Cooperative Play that are similar to a dyad which consists of two older children, who presumably possess the developmental and linguistic advantages which are typically associated with middle childhood (i.e., above 7.0 years). It is unknown if the SCRST intervention contributed to this finding, as the current sample did not demonstrate significant difference between pre and post-test percentages of Cooperative Play. However, it is clear that Nakaha's middle childhood dyad demonstrated more frequent Justifications. In the current sample, it is unknown if one or both siblings demonstrated relatively less verbalizations than their Nakaha counterparts. So, despite the significantly improved repertoire of sibling skills of both children in the current project, there was no evidence that as a dyad, they generalized these skills to the SPA clinic context.

The fifth hypothesis predicted that Cooperative Play and Justification scores on the post-test SPA would be indistinguishable from the Generalization Test scores obtained in the home. Further, this hypothesis predicted significant improvement on Cooperative Play and Justification scores from the pre-test SPA data to the Generalization Test (GT). Hypothesis #5 yielded only partial support. Children demonstrated significantly less Justifications during the home GT measurement than in the clinic SPA. Clearly, the children failed to generalize their improved repertoires in sibling conflict to the GT context at home. Various possibilities for this finding exist. For example, it is possible that the design of the Generalization Test did not adequately measure naturalistic interactions. The SPA is administered in a room where children perceive they are alone. Although recording equipment is brought to their attention at the onset of the assessment, it is placed in a ceiling corner and no adult is present during the

observation. The obvious presence of an adult during the Generalization Test may have influenced children's behavior. It was informally noted that while some sibling dyads did not seem bothered by the presence of a camera and cameraman in their home, others appeared notably shy. These siblings often whispered, or did not talk at all during the Generalization Test. Surely these behaviors influenced recorded rates of Justification which may have led to the disappointing decline in Justification percentages from the clinic SPA condition to the home GT conditions.

In support of Hypothesis 5, percentages of Cooperative Play between the post-test SPA and home GT conditions were indistinguishable. Children tended to engage in cooperative activities at the same percentage when at home as compared to the clinic. The apparent differences in SPA and GT Conditions (i.e., clinic versus home; adult absence versus presence) did not influence Cooperative Play data.

Hypothesis #6 predicted a positive association between parent-reported use of sibling social skills and post-measurement performance. This was an exploratory analysis that evaluated the relationship between the total number of skills reported on the BRC and all outcome measures (See Table 13). Hypothesis #6 was not supported. Of 14 possible correlations, only one was significant, which suggests that even the one significant quantitative relationship may be a chance finding. Specifically, total BRC counts of sibling skills reinforced in the home correlated significantly (r = .53) with SPA Cooperative Play at post-intervention for targeted children only. Note that the same correlation for older siblings was comparable (r = .51), but not significant. Thus, target children who were observed to display greater percentages of Cooperative Play in the post-intervention SPA were more likely to have received more frequent adult

reinforcement for skill use in the home. This, of course, is exactly what was hoped to occur. Unfortunately, analogous associations with other post-intervention measurements failed to confirm such a relation. Specifically, 13 of 14 correlations were insignificant; indeed, the median correlation of these remaining possible correlations was r =.11.

The Role of Parents in Generalization Failures

The evidence-based interventions developed for disruptive behavior have broadly acknowledged the role of parents in treating childhood pathology (Patterson, Reid, & Eddy, 2002). After all, parents continuously moderate the environment for their young children. They not only provide access to basic necessities, but are often the primary socializing agents who model and shape prosocial behavior. While it is doubtful parents ever intentionally play a role in the development of their children's problem behavior, a significant literature base has shown parents can play an active role in improving their children's behavior. Behavioral parent-training interventions specifically teach parents when, how, and why to deliver a behavioral prompt, reinforcement, or discipline. Thus, parents can be taught to deliver an effective intervention to their children and parent-training programs have been deemed an empirically well-established form of intervention for externalizing disorders of childhood (Chambless & Ollendick, 2001).

In contrast, social skills training interventions are often administered individually or at the peer group level (e.g., Lochman & Wells, 2003). The current project is no exception. Although siblings attended the SCRST with at least one parent, the parent played a passive role and acted as an observer during the sessions. All of the session content was delivered by the primary and assistant therapists in a highly structured, didactic format where specific skills were discussed, modeled, verbally rehearsed, role-

played, and positively reinforced repetitively. The results of the current project clearly demonstrate that 5.0 to 6.9 year-old children and their older siblings can increase their repertoire of social skills. However, evidence of increased repertoire was only evident under standardized assessment conditions (i.e., SCRS III) which directly paralleled SCRST intervention conditions. For example, both the SCRST sessions and the SCRS III assessments utilize dolls to represent siblings, and children are prompted to interact with the dolls in highly structured scenarios. In some cases, the primary therapist may have administered the SCRS III post-test, perhaps providing additional context which may have served as a cue for targeted linguistic/cognitive strategies to resolve conflicts. In contrast, child reactions to sibling conflict situations that did arise in the home were not observed by professionals in the current study. With the exception of the significant decrease in antisocial behavior on the HCSBS (evaluated by parent judgments), children did not demonstrate any improvements on any generalization measurement commensurate with changes on the SCRS III.

While no definitive conclusion can be drawn regarding why generalization did not occur, one likely hypothesis is that parents were not directly involved in prompting or reinforcing sibling social skills in the natural context. During SCRST sessions parents attended and observed the skills taught in each session and were provided a brief handout with a summary description of skills relevant to that week's BRC card. Parents were not given explicit training on BRC coding procedures; therefore, their reliability and accuracy are unknown. Further, parent were given no guidance regarding how active or directive they should be in prompting siblings to use their newly acquired skills. Given the low BRC daily rates of reinforcing skill use (zero per day for many child participants,

and possibly 1 to 2 per day for others at most), it is presumed that parents maintained an overall passive role throughout the process. Had parents actively prompted and then reinforced sibling social skills, it is likely generalization in the home context would have occurred. Such parent training approaches have been highly productive in addressing misbehaviors in pre-adolescent children (cf., Olledick & Chambless, 2001). Conceptually, directly training parents to prompt and reinforce sibling social skills at home might be as effective as directly training parents to manage child noncompliance and sibling aggression. An interesting and possibly relevant variable in efforts to target prosocial behavior by parents in home settings is the role of salience of child behavior to busy adult participants. Sibling aggression and noncompliance to parental instructions are much more likely to be noticed by parents, prompting parents to use the skills introduced by child clinical psychologists. In contrast, skillful behavior that successfully reduces conflict may draw no adult attention whatsoever.

Limitations

A major limitation of the study design was the lack of a control group. Although some significant differences between pre and post measurement were found on the SCRS-III and HCSBS measures, it is important to note these changes cannot be attributed to the SCRST. Only one controlled study has demonstrated that significant changes in SCRS-III average item scores are attributable to exposure to a similar version of the SCRST (Thomas & Roberts, 2009). The current project, therefore, was only a partial replication of Thomas and Roberts. Second, the sample size was small, which may have reduced the statistical power to detect small effect sizes. Had a larger sample been recruited, it is possible that changes demonstrated by the current project in the expected

direction may have been statistically significant. For example, a larger sample may have produced a significant association between older siblings' total BRC data and rates of post-test SPA Cooperative Play. Further, a larger sample may have yielded significant improvement in the post-test Social Competence Scale. Third, the sample was demographically limited to the population representative of rural, Southeastern Idaho. Finally, it is unknown how cultural variables would influence the acceptability, acquisition, and generalization of a sibling social skills protocol like the SCRST. For example, in less individualistic cultures, teaching assertiveness and ownership skills may be considered less appropriate.

This study attempted to compare developmentally distinct groups of children to assess advancement in verbal problem-solving. In order to facilitate this comparison, the current sample was compared to previously gathered data from Grimes (2012) and Nakaha (2010). Although the measures utilized in these previous studies were implemented in the current project, several issues should be noted when interpreting the analyses comparing the data. The SCRS-III and SPA data from Nakaha (2010) and Grimes (2012) were gathered at different times; the SPA in Nakaha (2010) was coded by a different research team. It is unknown if, and to what extent, these differences in methodology influenced the statistical outcomes.

Strengths

First, this study demonstrated that children in the 5 to 7-year range could profit from learning explicit social problem-solving strategies. In fact, the recruited sample improved their social skills to a range consistent with skills typically demonstrated by untrained middle childhood participants. While the generalization of these skills to other

contexts in both clinic and home was not manifest, children clearly improved their range of different, contextually appropriate strategies to manage routine sibling conflicts as measured by the SCRS-III. This finding demonstrates that complex sibling skills are malleable, even in transition aged children. While the benefits of modeling, verbal rehearsals, role-playing, and in-situ reinforcement has been clearly demonstrated in the academic and cognitive literature, the current project provides evidence that cognitive strategy training is applicable to sibling conflict resolution skills as well.

Second, in contrast to the traditional reliance on parent questionnaire data, this study used comprehensive, multi-method assessments to evaluate the context-specific, complex skills involved in the resolution of routine sibling conflicts. Moreover, the accuracy data reported above indicates that with basic training, any clinician should be able to use the SCRS-III and the SPA analogs to accurately quantify the current interaction pattern of clinic-referred, aggressive siblings. Our comprehensive assessment strategy allowed for the assessment of parent perception, social skill repertoire, analog performance, and naturalistic sibling interactions that occur during routine home conditions. Taken together, this project advances research toward a comprehensive assessment system for sibling conflict.

Third, this project adds to an existing literature on parent-collected data using the BRC system. The BRC used in the current project was adapted by the system created by Nadler and Roberts (2013). Clearly, the psychometric properties of the BRC counts of sibling skill reinforcement are unknown, but much was gained in the current project by the sheer low rates of parent reinforcement, as discussed above. Much more work will be

required to gain empirical evidence of the accuracy of parent reinforcement of home displays of sibling skill and those action's effects on sibling performance.

Future Directions

The results of this project indicate several potential directions for future research. First, replicating the current project with the inclusion of a control group would be a logical next step. This would allow for changes attributed to the SCRST to be determined, replicating prior work. Further, a replication would further provide data on treatment sensitivity for the SPA and could refine how the SCRS-III, SPA, BRC, and parent-report questionnaires can be used as a comprehensive assessment.

This project replicated previous studies which have shown that interventions specific to disruptive sibling behaviors can be successfully administered as a stand-alone treatment (Kennedy & Kramer, 2008; Kramer & Rady, 1997, Thomas & Roberts, 2009). In the current project, an existing sibling social skills training was adapted into a five session "class". While social validity was not assessed, both parents and children appeared satisfied with the SCRST. For example, throughout the project only one family dropped out once SCRST sessions began, and that family cited scheduling conflicts as their reason for ending the project. It appears possible that interventions for sibling conflict may be perceived by families to be valuable. Since sibling conflict is gaining recognition as an early predictor of subsequent pathology (e.g., Natsuaki, Ge, Reiss, & Neiderhiser, 2009; Patterson, 1984;1986), it is possible that a set of assessment and intervention strategies specifically designed to evaluate and alter the developmental path will be of substantial benefit to many children.

An important issue for further investigation includes the lack of generalization of improved skills into the natural environment. There are many possibilities as to why efforts at generalization failed in the current project. One possibility is because the test of generalization used was quite demanding. The home setting was independent from the training and assessment conditions which occurred in the clinic. The researcher was effectively disguised so that siblings were unaware of why their interactions were monitored. Moreover, no adult prompted the siblings to "…show us your best behavior…" in either the SPA or the GT conditions. Perhaps siblings need an intermediate step to display the skills in their repertoire in conditions that differed so saliently from the SCRS III. Programming generalization could include strategies built into the sibling training sessions, such as a 10-minute free-play period at the end of each session in which siblings are provided an interactive task or shared goal and are later given feedback on their use of sibling social skills. In addition, the highly structured SCRST sessions may be adapted to include some "looser" or less scripted scenarios where siblings could demonstrate decision-making about when and how to apply learned skills in addition to the discrete skills prompted in the current SCRST scenarios. Another related effort to increase generalization may be to broaden the training environments to include the home or other community settings in which sibling conflict is likely to occur.

A logical extension of the current project, and one that may enhance generalization, would be to focus on teaching parents to take an active role in the generalization of sibling social skill acquisition. Current efforts by Babbitt (in progress) are underway to investigate if a parent-training version of the SCRST can improve sibling social skill generalization. This project will explicitly teach parents to prompt

skills when needed and to reinforce skills when used in the home environment. The results of this project may yield insightful and possibly familiar information regarding the role of parents in children's socialization and skill-building process. If necessity of parental involvement is established, related issues regarding prosocial skill versus motivational deficits between siblings may be pursued. It is possible future developments of this research would find a clinic referral of repertoire-deficient, aggressive siblings to require a combination of interventions: the SCRST training to enhance social skills as demonstrated in the current project and Thomas & Roberts (2009), directive parent prompting and reinforcement to generalize skills to the natural environment (Babbitt, in progress), and the addition of a discipline system for aggression (e.g., Olson & Roberts, 1984; Shaw, 2010).

A broad area of research could explore the concept of sibling social skills as they relate to other cultures. Adapting and implementing the SCRS-III, the SPA, and the SCRST with a non-dominant cultural group could add to a literature focused on parenting interventions with cross-cultural groups. For example, Rodriguez, Baumann, and Schwartz (2011) have reported on adapting an evidence-based parenting intervention for Latino/families (Rodríguez, Baumann, & Schwartz, 2011). A similar process for assessing and intervening with sibling conflict resolution skills may enhance what is known about family process in other cultures, as well as increase access to potentially beneficial interventions.

Treatment decision-making is another area particularly relevant to child clinical psychology. Designing treatments that maximize both effectiveness and efficiency are important for families, and also appears to be increasingly relevant within managed

healthcare systems. A wide range of clinical decision making for aggressive siblings is currently made without the benefit of evidence-based processes. For example, protocols similar to the SCRST might be offered to children who clearly do not need repertoire enhancement interventions. Additionally, BRC use might discriminate which siblings need an immediate disciplinary action (e.g., chair timeouts; token fines) from those who need only an enhancement in repertoire (Shaw, 2010). Information gained from the SCRS-III in the current project identified children as having a deficit in contextually-relevant cognitive/linguistic strategies to solve those problems. Only these children participated in the project, and they all improved their skills. Recall that six children were excluded from the project as a result of SCRS III average item scores above 3.8, demonstrating the principle of evidence-based decision making. Further, the specificity of skills included in an intervention is an additional avenue to consider. While all families enrolled in the current project received all social skill content areas, it is unknown if families would benefit further by adapting the course content to be more specific to an area of social deficit (e.g., a sibling intervention that focuses just on object disputes). Currently, the SCRS III has gained its psychometric support as a total score across the gamut of sibling conflicts, rather than the psychometric qualities and malleability of training specific components.

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APPENDIX A
Parent Intake Form

1.

Participant	Partner/Spouse
Age _____	Age _____
Gender _____	Gender _____
Education completed _____	Education completed _____
Occupation _____	Occupation _____
Race/Ethnicity _____	Race/Ethnicity _____
Religious Affiliation _____	Religious Affiliation _____

2. Marital status: _____

3. List all children in household from **Youngest** to **Oldest** (use back of paper if necessary).

Name	DOB	Age	Gender	Grade	Selected for Study?
i.					
ii.					
iii.					
iv.					
v.					

4. Have any of your children been diagnosed with Mental Retardation, Autism or PDD NOS?

NO YES → If yes, which ones?

Home Address:
_____
_____
_____

Phone Numbers:
Home: _____
Cell: _____

Researcher Use:
- Referral Source: SONA Clinic Comm.
- SCRS Order: A/B B/A

- Session 2 scheduled for: _____
- Home Obs. scheduled for: _____

APPENDIX B

Sibling Play Analog (SPA) Coding Instructions

Observations will last 20 minutes. Coders will use a continuous 20-second interval sampling system to code all videotape sibling interaction conditions. The presence or absence of each of the following five child response classes during each 20-second interval will be coded. The observer completing the live coding writes out the onset cue (e.g., older sibling says, "beach ball" onset will begin at the end of the onset cue) and resets the display timer on the video to 00:00.

1. Angry-Yelling (AY): The presence of cry or yell/scream classes results in the interval coded as "AY."
   A. Cry: is defined as a broken sobbing sound. It must be sustained (e.g., more than a few seconds) and directed at the sibling (i.e., head-eye orientation). A typical example of behavior that would result in coding Cry would involve sobbing as a result of conflict with a sibling. If crying is not directed at the sibling it will not be coded as AY. For example, one of the siblings may be crying upon entering the room because they could not bring their own toy.
   B. Scream-Yell: is defined by volume and affect. The child must be clearly louder than his/her base rate volume (i.e., noticeable difference) to qualify as a yell or scream and the affective quality must be clearly negative. There is subjectivity in Scream-Yell, such that the coder must perceive a clear increase in volume AND clear negativity (i.e., anger annoyance, irritation). If unsure, do not code. Scream-Yell will not be coded for high verbal volume if such yelling appears to be part of a game or activity or part of loud, "goofy", positively valenced play. A typical example of Scream-Yell would be shouting the sibling's name in anger. An angry, raised voice is the primary way to display Scream-Yell. Consideration of the baseline volume level is taken. The scream/yell must be directed at the sibling. If it is directed at objects or mother, it is not coded. Similarly

neutral or positive affective tone, as well as whiny tone of voice, and low level negativity (i.e., disgust, disdain, or sarcasm) is NOT coded.

2. Verbal Harassment (VH): The presence of any of the following three response classes result in the interval coded as "VH."

A. Threatening Talk: Any verbalization that suggests aversive consequences, is a warning or a threat (e.g., "You'll be in trouble if you ____", or "I'm going to tell mom", or "Don't do that, they can hear us", or "Stop, they are watching us" [incidentally the latter two examples also show Justification]).

B. Negative Evaluation: A criticism of the sib's behavior or characteristics. Negative Evaluation must be directed at the sibling, sibling's behavior, the sibling's appearance, or some other aspect of the sibling. An evaluation term synonymous with "bad" must be expressed, including any curse/swear words. Negative evaluations of objects or events or a non-sibling person should be disregarded. For example, "I hate dolls" is not coded. Verbal corrections that indicate a mistake (e.g., "That's not right. You're doing it wrong") will not be coded as Negative Evaluation. Whiny tone-of-voice and negative affect do not constitute Negative Evaluation.

Examples of Negative Evaluation

1. "I hate you."
2. "Idiot." "Stupid." "Dummy."
3. "Crybaby."
4. "Weirdo. "You're Weird."
5. "You're not any good at ____; you can't do anything right."
6. "Cheater." "You cheated." "Liar."
7. "Cheater." "You cheated." "Liar."
8. "You're such a dork!"
9. "That sucks." (Referring to a sib's behavior or suggestion).
10. "That's not nice

C. Rude Expression: A negative or rude expression directed at the sibling is coded as a Rude Expression. Appropriate expressions (e.g., "Be quiet") directed at the sibling are not coded as a Rude Expression.

Examples of Rude Expressions

1. "Shut-up."
2. "You're rude."
3. "None of your business."
4. "I don't care."

3. Physical Antagonism (P): The presence at any of the following three response classes result in the interval coded as "P."

A. Grab: Grabbing any object from the sibling, including a rough, abrupt or resistant grab and pull or joint back and forth tugging over an object. Simply taking an object from a sibling is not coded. There must have been resistance or it must have been abrupt and rough.

B. Physical Fighting: scored for any negative physical contact initiated by the child toward the sibling. Do not score "accidental" contact, (i.e., tripping on the sibling). Do not score playful "rough-housing" (e.g., wrestling, chasing) as Physical Fighting. Examples of physical fighting include hitting, spitting, kicking, pushing, biting, poking, pinching, scratching, or throwing objects intensely at the sibling (e.g., not playing catch or throwing the ball at a sibling's face). An aggressive gesture or rude touch will not be coded as a Physical Fight.

4. Justification (J): Justification is coded if a sibling offers an overt command (e.g., "Do X" or "Don't do X") or indirect command with a verb (e.g., "Will you do X" or "Do you want to do X" or "Can you stop X") AND explanation for why a sibling should behave in that particular way. The command and explanation do not have to occur in a specific order (i.e., C then E or E then C). A command

without the explanation is not coded as Justification. An explanation without a command is not coded as Justification.

Commands can also include “No” statements directed at the sibling to stop a behavior. For example, while playing UNO on sibling takes a card from the wrong spot and the other sibling states, “No, take it from that pile.” (A “No” when answering a question is not a command). Do not code “See” as a command, but do code “Look” as a command; when in conjunction with an explanation “Look” becomes part of Justification.

The explanation must occur within approximately 5 seconds of the command or, although other talking can occur during the interaction. If the explanation or the command is given after approximately 5 seconds of the other do not code Justification. For example, a sibling could say “Look,” and then 20 seconds later say, “There is a person behind the window.” This would not be coded as a Justification. Further, the explanation must be relevant to the command and might influence the sibling to understand or accept or react positively (e.g., “Hurry up, or we won’t finish”). Any “good” reason why the sibling should change his/her behavior is considered an explanation. The explanation must be “reasonable” to the observer. Saying “because” or “I want ____” not explanations. Making a request and giving a reason (i.e., explanation) why a sibling disagrees or why a game rule should be followed or why a sib should obey or behave in a specific way are also examples of Justification. Most reasons will be in reference to specific game rule. In UNO, siblings may provide explanations for why the other sibling can or cannot play a particular card (e.g., “You can’t do that, the color does not match”, “Stop, the numbers are not the same”). In the board game Trouble, a sibling may explain why the other sibling cannot start the game (e.g., “You can’t go, you have to roll a six”). For Connect Four, one sibling could provide a reason for how a person wins the game (e.g., “Wait, you have to get four in a row). When playing with the ball or the xylophone, one sibling could provide a reason for how a person wins the game (e.g., “Give me the Lego, we’re supposed to share”). An explanation could also be another command (e.g., “Come

over here, look outside" or "You can do what you want, but don't annoy me). However, a perseveration of multiple commands or rewording the original command is not coded as Justification (e.g., "Stop doing that, stop it now, No"). If a sibling begins a sentence that might be explanatory but does not finish (i.e., fragment), do not code Justification (e.g., "I want you to play Connect Four, it will be…").

Second, Justification is coded if a sibling offers any explanation for his/her refusal to comply with other sibling's overt or indirect command (e.g., "No, I'm not going to do that because it is still my turn"). For Trouble, a sibling may respond to a stop command for sending a player back to the start (e.g., "I can do that because we landed on the same spot"). * A sibling cannot use a reason to justify his/her own aversive behavior (e.g., Sibling commands, "Stop hitting me" and other sibling replies, "You made me hit you"). In addition, the sibling does not have to say "No" to the command to qualify as a justification, but must indicate reluctance for some reason. For example, a sibling may give a command to stop being destructive with a toy and the other sibling may respond, "It's my property, so I can hurt it if I want." Code as Justification.

5. Cooperative Play (CP): The presence of an synchronized sequence of motoric actions by both sibling to perform a common task or take turns with a structured game (Connect Four, UNO, Trouble) within an interval is coded "CP". For example, one sibling puts down a UNO card and the other sibling puts down a UNO card on top. In addition to the three games, Interactive sequences are defined for each of the * toys. To code "CP" for Xylophone, both siblings must engage in a sequence of using the batons (e.g., finishing the other sibling's musical sequence, copying the other sibling's musical sequence). To code "CP" for the ball, the sibling must take turns (e.g., Sibling 1 rolls/throws/kicks the ball to Sibling 2 who rolls/throws/kicks the ball back or they can take turns shooting the ball into a bucket). To code "CP" for the building blocks, Sibling 1 must place the block directly adjacent (e.g., touching) or on top of the block placed by

Sibling 2. Note that simply sharing objects within the same toy class is not coded "CP".

For the items used in the Generalization Test, Cooperative play is coded when both siblings are performing a sequence of motoric actions to perform a common task or take turns (Jenga, Hungry Hippos, Go-Fish, Tic-Tac-Toe, or the drum). The puzzle was coded as "CP" if siblings either took turns placing pieces, or organizing pieces in a cooperative fashion by physically orienting toward each other and simultaneously sorting them.

APPENDIX C

Social Skills for Brothers and Sisters: Session 1

In today's session, your children will learn about how to resolve arguments over family property. Parent's commonly report that their children get into disagreements over toys or belongings that do not have a designated owner; items that are used by everyone. Examples of these items are board games, movies, art supplies, etc. The skills your children will be learning will vary depending on if the item is shareable or not, and if it is currently in use. Here are examples of the skills that your children learned today.

Shareable Family Property. The toy is family property and is something that can be shared (e.g., art supplies). In situations like this we instruct children to ask politely to join the activity, provide a reason, and then say "thank you" when their brother or sister complies. Here is an example exchange between Sarah and her brother, Rob.

> **Sarah**: "Rob, can I please play with the art supplies with you? (asking politely) They belong to everyone and there is enough to share." (providing a reason)
> **Rob**: "Sure"
> **Sarah:** "Thank you" (praises when brother complies).

If this strategy did not work, then we would teach Sarah to continue to give reasons (such as "the art supplies belong to everyone") and finally, to seek adult assistance to help resolve the conflict.

Non-shareable Family Property. The toy or item belongs to everyone but can only be used by one person at a time (e.g., phone). In situations like this we instruct children to ask politely with a reason, suggest turn-taking, patiently wait for their turn, and then say "thank you" when their brother or sister provides access to the item. Here is an example exchange between Rob and his sister, Sarah.

> **Rob**: "Sarah, can I use the phone?" (asking politely) "I really want to call my friend and see what he is doing this weekend." (providing a reason)
> **Sarah**: "I am using the phone right now, I'm just about to call my friend about our homework"
> **Rob**: "O.k., well when you are done can I have a turn?" (suggesting turn-taking)
> **Sarah**: "O.k."
> **Rob**: "O.k. well I'll be in the kitchen, come get me when you're done" (waits patiently)
> **Sarah**: "I'm off the phone now, you can use it"
> **Rob**: "Thanks, Sarah" (praises when sister complies)

If this strategy did not work, then we would teach Rob to continue the process of requesting the item, but to seek adult assistance to help resolve the conflict.

Alternative Strategy to Turn-Taking. One alternative to suggesting turn-taking is to initiate a tie-breaking strategy. These are games such as flipping a coin, or "Rock, Paper, Scissors" that can determine who gets to go first. This is an appropriate problem-solving step, especially when an item cannot be shared, no one is currently using it, but both children want it. A common scenario when this happens is when both children want to watch a movie, but cannot agree on which movie to watch.

BRC Card Instructions: This week, please record each time you witness either of your children engaging in sharing, turn-taking, or using a tie-breaking strategy.

Social Skills for Brothers and Sisters: Session 2

In today's session, your children will learn about how to resolve arguments over ownership. Previously, the skills we have covered dealt with property and toys that belonged to everyone. However, children often have disputes over possessions or toys that have an identified owner. Examples of these items are a birthday present or a prize that was earned (e.g., an award for winning a spelling contest). The skills your children will be learning will focus on appropriately deciding if their property can be used by their brother or sister, and how to set reasonable limits on property use. Here is an example of the skills your children will learn today.

Allowing Access is a Choice. Children have a choice in deciding if toys or objects they own can be used by their brothers and sisters. In situations like this we instruct children to demonstrate polite assertion and provide reasons when communicating with their brothers and sisters.

When Access is Denied. Polite assertion is particularly important when a child decides that access to the object will be denied. Here is an example exchange between Sarah and her brother, Rob.

> **Sarah**: "Rob, can I please play with the toy Grandma gave you for your birthday?
> **Rob**: "No, it's a special toy and I don't want anyone to play with it right now" (polite assertion **and** providing a reason)
> **Sarah:** "O.k."

When Access is Granted. In this instance, the child wants to allow access to a toy, but sets a reasonable limit for its use. In this instance we instruct children to be polite and set a reasonable limit for access. Here is an example exchange between Rob and his sister, Sarah.

> **Rob**: "Sarah, can I play with your music game?"
> **Sarah**: "Yes, but please give it back after dinner because I want to play with it then" (Politely granting access and setting a limit)
> **Rob**: "O.k."

If the sibling does not respect the limit that was set (e.g., doesn't return the toy at the agreed-upon time) then we instruct children to use polite assertion and reasons. For example "Please give my toy back because you said you would give it back after dinner". However, if this strategy did not work then we instruct children to seek an adult to intervene. Adults can help by giving instructions to children who are not respecting the limit set by the child who owns the toy. For example "Rob, it is time for you to give the toy back to Sarah, it belongs to her." Adults can also help coach the siblings on how to solve the problem. For example "Sarah, why don't you ask Rob nicely and give him a reason why it is time for his to give your toy back. If that doesn't work, I will help".

BRC Card Instructions: This week, please record each time you witness either of your children resolving ownership disputes. This could include politely denying access to a toy by providing assertion and a reason. This could also include granting access to a toy or object and/or setting a limit. Please continue to track when your children engage in sharing, turn-taking, or using a tie-breaking strategy.

Social Skills for Brothers and Sisters: Session 3

In today's session, your children will learn about how to resolve conflicts that occur when one child is not complying with another child's request. Your children will learn several skills that can help resolve these conflicts. Children will be taught to make a polite request, provide reasons, offer compensation (making a deal), or to take "no" for an answer. Here is an example of the skills your children will learn today.

Ask Nicely and Give a Reason. If a child wants his sister to do something, such as play a game with him, the first step is to ask nicely and give a reason. Here is an example exchange between Rob and his sister Sarah.

> **Rob:** "Sarah will you play UNO with me? It is a fun game" (Request plus a reason)
> **Sarah:** "I don't know if I want to play UNO"
> **Rob:** "Please play UNO with me? I can't play the game by myself" (Request plus a reason)
> **Sarah:** "O.k., that sounds like fun"
> **Rob:** "Thanks, Sarah!"

Make a Deal. Sometimes asking nicely and providing reasons will not work. In this instance, the next skill a child can try is to offer compensation, such as access to a toy or assistance with a chore. Here is an example exchange between Sarah and her brother, Rob.

> **Sarah**: "Rob, can I please play with your Halloween costume?
> **Rob**: "No, It's mine and I don't want anyone to play with it right now" (Request plus a reason)
> **Sarah:** "If you let me wear your costume I will let you play with my toy airplane" (Making a deal)
> **Rob:** "O.k., that sounds good"

Take "No" for an Answer. If a child asks nicely, provides reasons, attempts to make a deal and none of these strategies work, then the smart thing to do is take "no" for an answer. Here is an example exchange between Rob and his sister, Sarah.

> **Rob**: "Sarah, can I play with your music game? It is a really cool toy" (Request plus a reason)
> **Sarah:** "No, I don't want you to play with it"
> **Rob:** "Please can I play with it? I'll be very careful with it" (Request plus a reason)
> **Sarah:** "No, it is a very special toy"
> **Rob:** "If you let me play with your music toy, I'll help you with your chore." (Making a deal)
> **Sarah:** "No thanks, I just don't want anyone else playing with my toy"
> **Rob:** "O.k., I'll just go play in my room" (Taking "No" for an answer)

BRC Card Instructions: This week, along with the skills learned in previous classes, please record each time you witness one of your children making a deal or taking "No" for an answer in an attempt to negotiate with their sibling.

Social Skills for Brothers and Sisters: Session 4

In today's session, your children will learn about how to be appropriately assertive when someone is teasing or bothering them. Your children will learn several skills that can help resolve these conflicts. Children will be taught to make a polite request, provide reasons, ignore, or seek adult assistance. Here is an example of the skills your children will learn today.

Ask Nicely and Give a Reason. If a child is being teased, the first step is to politely ask the person to stop and give a reason. Here is an example exchange between Rob and his sister Sarah.

Rob: "Sarah I'm eating the last cookie even though mom said it belongs to you."
Sarah: "Please don't, that's not nice and mom said to save it for me."
Rob: "O.k. fine, I was just joking around."
Sarah: "Thanks."

Ignore. Sometimes asking nicely and providing reasons will not work. When appropriate, the next skill a child can try is to ignore the bothersome behavior. Here is an example exchange between Rob and his sister, Sarah.

Rob: "Sarah your art project looks TERRIBLE! It looks like a baby did it."
Sarah: "Please stop teasing me; I don't like it when you do that."
Rob: "Whatever, you are such a Baby! Plus, your art project looks awful."
Sarah: (Ignores)
Rob: "Hey, are you listening to me? I said your art project looks awful."
Sarah: (Ignores)
Rob: "Alright, this is boring. I'm going to go play with something else."

Leave the Context. When asking nicely and providing reasons and ignoring behavior does not work, the another skill a child can implement is leaving the situation. Here is an example exchange between Sarah and her brother, Rob.

Rob: "This is a fun game of UNO, it's my turn." (plays correctly)
Sarah: "My turn, I'm putting down all my cards." (incorrect turn)
Rob: "Sarah, you are breaking the rules. You are supposed to put one card down at a time."
Sarah: "I don't care, I'll play how I want."
Rob: "Sarah if you don't play by the rules, then I'm not going to play."
Sarah: "I will play however I want."
Rob: "Then I am going to play with something else."

Seek Adult Assistance. If a child asks nicely, provides reasons, attempts to ignore the misbehavior (when appropriate), but is still being teased, harassed, or violence is occurring, the next step is to seek adult assistance. Here is an example exchange between Rob and his sister, Sarah.

Rob: "Sarah, I took one of your toys from your room."
Sarah: "Please give that back, it doesn't belong to you."
Rob: "I don't care!"
Sarah: "I asked you to give that back, I'm afraid you will break it."
(Rob ignores and Sarah goes to get an adult)
Sarah: "Mom, I asked Rob give back my toy but he won't listen. Will you please help?"

BRC Card Instructions: This week, along with the skills learned in previous classes, please record each time you witness one of your children handling conflicts using appropriate assertion, ignoring, or seeking adult assistance when necessary.

APPENDIX D
Sample BRC: Week 1

	Child 1			**Child 2**		
Date	Sharing	Turn-Taking	Tie-Breaking	Sharing	Turn-Taking	Tie-Breaking

APPENDIX E

Session 1: Sib/Peer Disputes over Objects/Activity Access

Family_ Target Child: Older Sibling:

Object Class I = common property; sharable; sib/peer in possession
SKILL Steps Given Non-reinforcement (Record dates of practice)
1. Polite Request + Reason
2. Repeat &/or Add Other Reasons
3. Socially Reinforce Sib/Peer compliance
4. Seek Adult to enforce right to access if noncompliance (choice?)

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Legos –Mistake/Hit					
Legos –Correct: model with doll					
Legos –Correct role-play w/sib					
Legos –Correct: model w/doll + reasons					
Legos –Correct role-play w/sib					

Object Class II = common property; only 1 child at a time; 1 child possesses
SKILL Steps Given Non-reinforcement (Record dates of practice)
1. Polite Request
2. Suggest Taking Turns
3. Wait/Signal Availability
3. Socially Reinforce Sib/Peer compliance

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Computer –Mistake/Hit					
Computer –Correct: model with doll					
Computer –Correct: Role-play with sib					
Other_____					

Object Class III = common property; neither in possession
SKILL Steps Given Non-reinforcement (neither child in possession)
1. Polite Request
2a. Allow other to "go first", OR
2b. Tie-breaking Strategy (Rock-Paper- Scissors, Coin Toss, Guess number fingers…)

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Movie–Mistake/Hit					
Movie –Correct: model with doll					
Movie –Correct: Role-play with sib					
Other_____					

Session 2: Sib/Peer Disputes Over Ownership Issues

Family_ Target Child: Older Sibling:

Review Session 1: Sharing, Turn-taking, Tie-breaking

SKILL Steps Given Non-reinforcement

1. Polite Request + Reason
2. Repeat &/or Add Other Reasons
3. Socially Reinforce Sib/Peer compliance

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Legos – Sharing					
Computer- Turn-taking					
DVD –Tie-breaking					

Object Class I = Property belongs to sibling, access is a choice

SKILL Steps Given access is a choice

1. Sibling1 asks for access
2. Sibling 2 offers polite Assertion + Reason (says no and gives reason why)
2. Sibling complies because owner has a choice

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Trophy –Mistake/Hit					
Trophy –Correct: model with doll					
Trophy –Correct role-play w/sib					

SKILL Steps to negotiate access_

1. Sibling 1 asks for access
2. Sibling 2 gives Polite Assertion + Grant access with contingency (says yes but sets a limit)

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Castle –Correct: model w/ doll, grant access					
Castle –Correct role-play w/sib					

SKILL Steps to negotiate access with subsequent noncompliance

1. Polite Assertion + Grant access with contingency
2. Polite Assertion + Repeat contingency request
3. Socially Reinforce Sib/Peer compliance
4. Seek adult assistance if continued noncompliance

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Castle –Mistake/Hit when sib disobeys limit					
Castle –Correct: model with doll, obeys request to respect limit					
Castle –Role-play with sib, obey request to respect limit					
Castle –Correct: model with doll, sib seeks adult					
Castle –Role-play with sib, sib seeks adult					

Session 3: Sibling Noncompliance

Family_ Target Child: Older Sibling:

Review Session 1-2: Sharing, Turn-taking, Tie-breaking, ownership

SKILL Review: Role-Play

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Blocks – Sharing					
Computer- Turn-taking					
Game –Tie-breaking					
Castle -Ownership					

SKILL Steps Given Sibling Noncompliance Access to Personal Possession

1. Polite Request + Reasons
2. Repeat &/or Add Other Reasons
4. Socially Reinforce Sibling compliance

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Play –Mistake/TANTRUM					
Play–Correct: model with doll					
Play–Correct role-play w/sib					
Other_____					

SKILL Steps to negotiate access_

1. Polite Request + Reasons
2. Repeat &/or Add Other Reasons
3. Make a deal
4. Socially Reinforce Sibling Compliance

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Toy –Mistake/Hit after giving reasons					
Toy–Correct model w/doll					
Toy–Correct role-play w/sib					
Other_____					

SKILL Steps to negotiate access_

1. Polite Request + Reasons
2. Repeat &/or Add Other Reasons
3. Make a deal
4. Accept noncompliance and take "no" for an answer

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Room –Mistake/Hit after making a deal					
Room–Correct model w/doll					
Room–Correct role-play w/sib					
Other_____					

Session 4: Assertiveness Skills

Family_ Target Child: Older Sibling:
Review Session 1-3: Sharing, Turn-taking, Tie-breaking, ownership
SKILL Review: Role-Play

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Blocks – Sharing					
Computer- Turn-taking					
Game –Tie-breaking					
Castle -Ownership					
Request to play –take "no" for an answer					

SKILL Steps Given Non-reinforcement
1. Verbal Assertion + Reason
2. Repeat &/or Add Other Reasons
3. Socially Reinforce Sib/Peer compliance
4. Tolerate

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Teasing –Model Mistake/Hit					
Teasing–Model request+reason					
Teasing–Model request+reason and ignore					
Teasing-Role-play with sibling					

SKILL Steps Given Non-reinforcement
1. Verbal Assertion + Reason
2. Repeat &/or Add Other Reasons (discuss leaving game)
3. Socially Reinforce Sib/Peer compliance
4. Leave Context

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Sib cheats at game–Model Mistake/Hit					
Sib cheats at game –Model Request+reason, indicate leaving if cheating persists					
Sib cheats at game –Model Request+reason, then leave context					
Sib cheats at game –Role-play with sib					

SKILL Steps Given Non-reinforcement
1. Verbal Assertion + Reason
2. Repeat &/or Add Other Reasons
3. Socially Reinforce Sib/Peer compliance
4. Seek Adult

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Takes toy out of sib's room w/o permission: mistake/hit					
Toy–Correct: Model request+reason					
Toy–Correct: Model req.+reas., seek adult					
Toy –Role-play with sib					

Session 5: Review of Skills

Family_ Target Child: Older Sibling:

Review Session 1: Sharing, Turn-taking, Tie-breaking, ownership

Session 1: SKILL Review

1. Polite Request + Reason
2. Repeat &/or Add Other Reasons, Turn-taking, Tie-breaking
3. Socially Reinforce Sib/Peer compliance
4. Seek Adult to enforce right to access if noncompliance (choice?)

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Blocks – Sharing					
Computer- Turn-taking					
DVD –Tie-breaking					

Session 2: Skill Review Ownership

1. Sibling1 asks for access
2. Sibling 2 declines and offers polite Assertion + Reason (says no and gives reason why)
OR Sibling 2 gives Polite assertion + Grants access w/ contingency (says yes, sets a limit)

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Castle -Ownership					

Session 3: Take "no" for an answer

1. Polite Request + Reasons
2. Repeat &/or Add Other Reasons
3. Make a deal
4. Accept noncompliance and take "no" for an answer

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Game–Correct role-play w/sib					

Session 4: Assertiveness

1. Verbal Assertion + Reason
2. Repeat &/or Add Other Reasons
3. Socially Reinforce Sib/Peer compliance
4. Tolerate, Leave Context, OR Seek Adult

Scenario	Model	Q TC	Q OS	Role-Play TC	Role-Play OS
Teasing –Ignore					
Breaking Game Rules-Leave					
Violating property –Seek adult					