EVALUATION OF INTERPERSONAL PROBLEM-SOLVING SKILLS PROGRAM FOR PRESCHOOL AND ELEMENTARY CHILDREN

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TABLE OF CONTENTS

Chapter Page

Chapter Page

Chapter Page

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

CHAPTER I

INTRODUCTION

Children and youth encounter and experience a variety of risk factors that may influence their likelihood for poor school involvement, premature sexual activity, alcohol and substance use, violence, delinquency, and other problematic behaviors. Research indicates that the greater the number of risk factors for children, the greater the likelihood of a negative behavioral outcome later in life (Hawkins, Catalano, & Arthur, 2002; Rutter, 1987; Seifer, Sameroff, Baldwin, & Baldwin, 1992). Studies of children with social and academic skill deficits indicate disproportionate representation in groups experiencing such difficulties (Parker & Asher, 1987). Various social-emotional skill deficits often go hand-in-hand for young children with behavior problems (Wester-Stratton & Taylor, 2001) and this mixture of circumstances increases the likelihood of risk for difficulties in school and peer relationships (Gagnon, Craig, Tremblay, Zhou, & Vitaro, 1995). Furthermore, problematic behaviors which emerge in early childhood years tend to be quite stable through childhood and adolescence (Campbell, 1997; Gagnon et al., 1995; Moffit, Caspi, Dickson, Silva, & Stanton, 1996). There appears to be consensus that intervening early in children's development is crucial and most effective to disrupt the course of harmful influences that may lead to antisocial behavior, dropping out of school, and poor socialization in adolescence and adulthood (Mihalic, Fagan, Irwin, Ballard, & Elliott, 2004; Shonkoff & Phillips, 2000).

There is considerable evidence of numerous positive early experiences which moderate the impact of risk as children develop through the school years, including the child's competence, self-esteem, social support, and social and problem-solving skills (Rutter, 1987; Seifer et al., 1992). Development of children's social and emotional competence is an essential link in reducing problem behavior (Catalano, Hawkins, Berglund, Pollard, & Arthur, 2002; Wright & Masten, 2005). In turn, possession of these skills is integral to a child's later social adjustment and well-being throughout life (Rose-Krasnor, 1985). A key skill for successful social development and involvement is developing the capacity to solve problems in a positive manner, including both cognitive and behavioral abilities to appraise social situations, interpersonal communication, and non-aggressive conflict resolution (Masten & Coatsworth, 1998). Substantial evidence supports an association between solutions children generate in response to particular social problem situations and their exhibited behavior (Crick & Dodge, 1994).

A considerable base of research indicates programs promoting interpersonal cognitive problem-solving skills are instrumental in preventing early high-risk behaviors and later more serious problems (Fraser, Galinsky, Smokowski, Day, Terzian, Rose, & Guo, 2005; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; Shure, 2001; Webster-Stratton & Taylor, 2001). A growing body of scientific evidence has shown effective prevention programs can reduce problem behaviors and enhance social competence and prosocial behavior of children and youth (Greenberg, Domitrovich, Graczyk, & Zins, 2005; Lopez, Tarullo, Forness, & Boyce, 2000). Programs that teach children self-control, social skills, and problem-solving skills have been recognized as effective (Mihalic et al., 2004) and the Centers for Disease Control and Prevention identified

social-cognitive approaches as “best practices” for violence prevention (Thornton, Craft, Dahlberg, Lynch, & Baer, 2002). Such approaches focus on enhancing children’s skills to effectively handle difficult social or interpersonal situations such as conflicts with peers or teachers, handling frustration, and other typical daily challenges.

A well-reported program is *I Can Problem Solve* (ICPS; Shure, 2000) which emphasizes the manner in which children think concerning social situations rather than the content or specific behaviors, and includes the abilities to generate alternative solutions to problems, recognize consequences, and use cause and effect reasoning (Shure, 2001). Evaluations of the ICPS program suggest intervention with teachers and children starting in preschool or by early elementary grades can have significant positive and enduring effects on diverse groups of children (Kumpfer, Alvarado, Tait, and Turner, 2002; Shure & Spivack, 1982).

Implementation of evidence-based practices in early childhood that promote and reinforce young children’s social and emotional competence to prevent and reduce the incidence of challenging or problematic behaviors are critical (Shonkoff & Phillips, 2000; U.S. Surgeon General, 2000). School-based programs can be an effective and essential approach to strengthen children’s social skills and environments (Farrell, Meyer, Kung, & Sullivan, 2001; Fraser, et al., 2005; Zimmerman & Arunkumar, 1994). Great concern has been voiced regarding the use of prevention programs that have not been proven effective by rigorous research evaluations, especially in schools (Mihalic et al., 2004). Problems encountered in replicating programs and effective methods for sustaining quality implementation have been identified as important (Fagan & Mihalic, 2003). Numerous factors challenge the successful adoption of programs and may lead to poor

implementation or program failure. Receiving greater attention in recent years is the significance of implementing a program with fidelity to the original design. It is important to study whether empirically validated programs are effective when implemented in the "real world" and when done so by different providers (Domitrovich & Greenberg, 2000; Mrazek & Haggerty, 1994) as well as how intervention programs can be applied to a variety of community contexts including rural areas (Blyth & Leffert, 1995; DuBois, Felner, Brand, Adan & Evans, 1992; Zimmerman & Arunkumar, 1994). Non-urban children and families have received less attention in the empirical literature.

The ICPS program has not been adapted or broadly utilized in a statewide initiative, especially through the Cooperative Extension Service (CES). Literature appears to lack evaluation of the program in rural communities. As the ICPS program has not been disseminated or evaluated through the CES, examining the impact of this delivery approach on children would be beneficial. Therefore, the current study is to examine the effects of the ICPS program on preschool and early elementary children utilizing the CES system to disseminate the ICPS program in partnership with teachers.

CHAPTER II

REVIEW OF LITERATURE

Current explanations, definitions, and conceptual frameworks for the development of social competence and interpersonal cognitive problem-solving skills for children particularly between the ages of four and eight years old are presented followed by the implementation and evaluation of prevention programs in local communities. Primary bases of literature reviewed include children's social and cognitive development, prevention science and program evaluation especially in school settings. The purpose of the present study is to examine the effects of the *I Can Problem Solve* (Shure, 2000) program utilizing the Cooperative Extension Service system in partnership with teachers of preschool and early elementary school-age children.

Theoretical Foundations

The design, function, and key implementation components of a prevention or intervention program should be driven by theory which, in turn, increases the prospect of its success (Greenberg et al., 2005). The specification of theory underlying a program model provides a foundation for how it will attain desired goals (Fitzpatrick, Sanders, & Worthen, 2004). *Program theory* (Chen, 1990) specifies required actions and processes to reach expected goals and anticipated impacts. It explains the "how and why" participants of intervention programs change (Jacobs, 2003). Chen (1990) proposed that a comprehensive program theory for evaluation must include two aspects. First, *causative*

theory explains the characteristics, means, and mechanisms by which an intervention program is expected to achieve particular outcomes. Second, *prescriptive theory* articulates the details of how the program should be carried out to ensure successful implementation including the program goals, guidelines, and context. Weaknesses in either the causal or prescriptive areas of the program theory may reduce the program's effectiveness or success (Greenberg et al., 2005). In this dissertation, two causative theoretical models and one prescriptive theory are presented: Social Information Processing (Dodge, 1986), Social Learning (Bandura, 1977), and Diffusion of Innovations (Rogers, 1995).

Social Information Processing

The social information processing (SIP) model (Dodge, Pettit, McClaskey, & Brown, 1986) explains the connections between children's cognition and their behavior in terms of how they process and organize information in response to social situations (Crick, Ostrov, Appleyard, Jansen, & Casas, 2004; Crick & Dodge, 1994; Dodge, 1986). According to SIP, children employ a series of five steps to encode and interpret social cues, and generate, evaluate and select potential responses for action (Dodge). In the first step, the child perceives and encodes social cues from the environment through sensory processes. In the second step, the child interprets and integrates the cues incorporating them with memories of past experiences. Third, the child explores and generates possible behavioral responses. As individuals have an array of available responses even in early childhood, mental organization processes are developed to assist in retrieving responses that are appropriate to particular stimuli. The fourth step is deciding on a response by evaluating the potential outcomes and consequences of each generated response in

consideration of the situation, environment, and personal abilities. Once the most favorable response is chosen, the final step is enactment of the behavior (Crick et al.).

The SIP steps are considered to be integral to competent social behavior. Skillful, efficient, and accurate processing of social information heightens the potential for competent responses and behaviors. Conversely, lack of accurate interpretation or skillful responses at any one of the steps heightens the potential that the child will display incompetent, and perhaps destructive behaviors (Crick et al., 2004). A deviant outcome may be a function of any step or combination of steps (Dodge, 1986).

The SIP model hypothesizes that the association between social information processing and social adjustment is reciprocal and transactional, acknowledging that social interactions are cyclical processes that incorporate mental representations of past events which, in turn, are components of future behaviors (Crick & Dodge, 1994; Dodge, 1986). Therefore, the process does not cease when enacted. As social interactions involve other people, assessing the effects of one's own behavior on others is part of the process. If the results of the chosen action are not effective, changes or new options may need to be enacted using additional environmental input as new cues. Thus, the process repeats and the steps are not static or discreet; instead they relate in a dynamic fashion very rapidly (Dodge). The fundamental elements of SIP are assumed to function similarly both consciously and subconsciously (Dodge). Further, it is assumed that the ability to self-monitor evolves as part of development through a cycle of rehearsal, feedback, and practice (Crick et al., 2004; Dodge). As children experience more social situations, it is likely they increase the quantity and quality of skills and strategies for handling and adapting to various circumstances such as conflicts with peers (Crick & Dodge).

Encoding cues, response generation, and behavior enactment are considered as data-generating or action concepts while cue integration, assessing consequences and response selection as well as self-regulation are considered as data evaluating or decision concepts (Crick et al., 2004). While the SIP steps are considered reciprocal, each step of the process can be measured separately although an assessment of one step may be confounded by the effects of preceding steps. Therefore, earlier steps must be standardized and held constant (Dodge, 1986).

A considerable body of research has mostly supported the proposed relation between SIP and social adjustment and, in particular, studies on aggressive behavior problems in children and youth have validated the model (Crick & Dodge, 1994; Krasnor, 1983). Deficient social cognitive skills and a greater likelihood of impulsivity in response to social problems are common in aggressive children. Aggressive as well as depressed children are more likely to have greater trouble or deficits with encoding and interpreting social cues (Crick & Dodge, 1996; Dodge et al., 1986; Quiggle, Garber, Panak, & Dodge, 1992). Aggressive children tend to attribute hostility to the intent of others at significantly higher levels as well as have greater difficulty generating, choosing, and acting upon non-aggressive responses than nonaggressive children (Dodge et al.; Mayeux & Cillessen, 2003; Quiggle et al.; Webster-Stratton & Taylor, 2001). Relationally aggressive children also display social-cognitive biases that may support their use of such behaviors (Crick et al., 2004).

In addition, children with poor emotion regulation show deficits in social information processing (Lemerise & Arsenio, 2000). Crick and Dodge (1994) explained that emotion is a vital, although less clearly defined, element of the SIP model. Lemerise

and Arsenio argued that children's processing of social information and decision making in challenging social situations are impacted by emotional regulation skills.

In the development of the SIP model, Dodge et al. (1986) drew on the cognitive and social psychological literature as well as social learning theory (Bandura, 1977). Social learning emphasizes the interaction between individuals and their environment.

Social Learning

Grounded in a behaviorism, social and cognitive psychology, and developmental perspective, Bandura (1977) posited human learning is primarily a social experience that evolves through a combination of direct experiences, interactions, and observations of others. This learning influences the process of socialization. Bandura's social learning theory has been frequently applied to many aspects in social and behavioral sciences including aggressive behavior, children's interactions with parents and teachers, peer interactions, and emphasizes the role of both cognition and environmental influences on social development (Barber & Erickson, 2001; Burnett, 1996; Dulmas & Rapp-Paglicci, 2000).

Bandura's (1977) reciprocal determinism process incorporates behavior, the person, and environment in an interactional, circular manner; each of these components influences and is influenced by the other two. An individual initiates specific behaviors and interprets, responds to, and is reinforced by the behaviors of others and the environment. Each of the components imparts information, serves as a motivator, and regulates behavior. Bandura proposed five cognitive capabilities that manage this mutual interplay and are needed to learn and change behaviors: using and organizing symbols to

represent or put meaning to experiences, vicarious learning, forethought to the possibility of future rewards and consequences, self-regulation, and self-reflection or self-efficacy.

In addition, Bandura (1977) identified four processes of social learning: *attentional* is developing an awareness of the behaviors and models that are observed; *retention* is the ways information is coded, stored, and rehearsed; *motor reproduction* is the capacity to recollect and mentally arrange information corresponding with modeled behavior; and, *motivational* determines whether or not the person will respond or act on modeled behavior based on standards and reinforcement. Learning and adapting behavior by observing the modeling of another individual's behavior pattern is a primary notion of social learning theory.

Also, a verbal exchange of information is not required, therefore both nonverbal and verbal communication are essential to behavior change. Social learning concepts can be applied to diffusion of innovations, a theoretical perspective which also emphasizes the exchange of information and modeling as fundamental aspects of behavior change (Rogers, 2003).

Diffusion of Innovation

Diffusion is a process in which an innovation is communicated through specific social networks, whether in a planned or spontaneous manner (Rogers, 2003). An *innovation* can include ideas, practices, or items considered as new by others, although it may not actually be new (Rogers). Diffusion of Innovation Theory (Rogers, 1995) proposes that innovations are adopted with diverse levels of speed and fidelity based on many environmental factors. Five stages of adoption include awareness, when an individual is initially exposed to an innovation and has some information; interest, when

an individual is interested in a new idea and seeks more information; evaluation, when an individual assesses the applicability of the innovation to current and future circumstances; trial, when the innovation is put into full use; and, actual adoption happens when a decision is made to utilize the innovation on an ongoing basis. Adoption of an innovation is an active process and some innovations may be adapted with more flexibility than others (Rogers).

The diffusion of the innovation is impacted by the social network or system structure which may aid or hinder the process (Rogers, 2003). Research on diffusion indicates that most individuals rely on subjective appraisals about an innovation communicated from other similar people who already adopted the innovation rather than referring to scientific studies (Rogers). Therefore, the diffusion process is very social, involves interpersonal communication through relationships, and suggests modeling and imitation of others in a potential adopters' network (Rogers). Study of diffusion of innovations comes from various disciplines including anthropology, sociology, marketing, geography, and education (Rogers). Rural sociology, a subfield of sociology that focuses on the social problems of rural life, has particularly contributed to the diffusion research framework (Rogers).

These three theoretical foundations – social information processing, social learning, and diffusion of innovations – can be applied to the implementation of prevention programs for children. More specifically, they inform and support programs to build social competence, particularly social cognitive problem solving.

Social Competence

The capacity to interact socially starts evolving very early in life. As they grow, children will come across many predicaments the majority of which involve other persons. Developing skills to effectively and appropriately relate to other people and cope with social problems are key factors as young children grow. The development of social competence has been identified as a primary task in early childhood and such abilities are the foundation of positive social adjustment in adolescence and adulthood (Rose-Krasnor, 1985), yet many children grow up with serious deficiencies in this area. Boosting children's social competence can result in ongoing protection from various risks to avoid negative outcomes (Barber & Erickson, 2001; Masten & Coatsworth, 1998; Raver & Zigler, 1997).

Descriptions of Social Competence

There are numerous definitions of social competence, although there appears to be little agreement on an operational definition (Rose-Krasnor, 1985). Goldfried and D'Zurilla (1969) defined social competence as a person's capability of effectively responding to problematic situations. According to Rubin and Rose-Krasnor (1992), social competence is "the ability to achieve personal goals in social interaction while simultaneously maintaining positive relationships with others over time and across situations" (p. 285). In another description of social competence, Yeates and Selman (1989) emphasized social-cognitive skills and knowledge as mediators of behavior in certain situations that are viewed as successful and have the potential for positive psychosocial outcomes. In general, social competence is effectively adapting to the

environment and functioning in a healthy successful manner (Masten & Coatsworth, 1998).

Social competence is considered to encompass various skills and knowledge factors that span the different domains of development (i.e., emotional, cognitive, and behavioral). These factors include emotional competence such as awareness and expression of affect, emotion identification, situational knowledge, and emotion regulation (Denham, 1998; Saarni, 1999), cognitive skills such as attention, inhibitory control, and problem solving (Blair, 2002), and behavior such as self-regulation and interaction essential for positive social functioning (Raver, Blackburn, Bancroft, & Torp, 1999; Rudolph & Heller, 1997; Youngstrom, Wolpaw, Kogos, Schoff, Ackerman & Izard, 2000). Competence may vary from one domain to another and may do so as a function of social context. Social-cognitive processes mediate the context and the behavior (Yeates & Selman, 1989).

Socially Competent Behavior

Children who select and enact behavior that is effective in the attainment of social goals and suitable for the situation are considered socially competent (Rose-Krasnor, 1985). In general, social competence can be conceptualized on a continuum with high competence on one end spanning to very low competence on the other end (Odom, McConnell, & Brown, 2008). Children high in social competence tend to choose behavioral approaches that are considered appropriate, effective and facilitate peer group acceptance (Vaughn, Colvin, Azria, Caya, & Krzysik, 2001) while children deficient in social competence have a propensity to be aggressive and disruptive (i.e., externalizing problems) or be socially withdrawn and isolated (i.e., internalizing problems) and

rejected by peers (Cook, Greenberg, & Kusche, 1994; Odom et al.; Parker & Asher, 1987). Crick and Dodge (1994) explained social adjustment as the "degree to which children get along with their peers; the degree to which they engage in adaptive, competent social behavior; and the extent to which they inhibit aversive, incompetent behavior" (p. 82). Effective development of cognitive processes and an array of social-cognitive skills are crucial contributors to successful social functioning (Walker, Irving, & Berthelsen, 2002).

Competent children have the ability to organize and control their emotions and behavior when confronting challenges (Denham, 1986). Social competence is identified as a key attribute of resilient children and has been shown to significantly predict various outcomes in adolescence and adulthood such as academic achievement, peer acceptance, compliance with norms of social conduct and other positive life outcomes (Blair, Denham, Kochanoff, & Whipple, 2004; Kumpfer, 1999; Masten et al., 1995). Young children who do not develop self-control and the ability to comply with requests tend to have lower social competence, academic functioning, and increased problem behaviors (Ladd, Kochenderfer, & Coleman, 1997; Masten & Coatsworth, 1998) which can lead to school failure, criminal conduct, and employment instability (Parker & Asher, 1987; Tremblay, Masse, Perron, Leblanc, Schwartzman, & Ledingham, 1992). These children have a greater chance of being rejected by peers and receive less positive teacher feedback leading to more distractions and less instruction time (Shores & Wehby, 1999). Therefore, there is substantial evidence that in addition to children being prepared cognitively and academically, their emotional, social, and behavioral adjustment is equally crucial (Hoglund & Leadbeater, 2004; Raver & Zigler, 1997).

While social competence is a complex concept and outcomes should be viewed from a long-term perspective, a number of shorter-term variables can mediate or predict adaptation (Yeates & Selman, 1989). Cognitive functioning, social-cognitive skills, self-regulation skills and emotion regulation skills have been used by researchers as indicators of social competence in children and there is substantial evidence that problem-solving skills, intellectual functioning, and language are all important factors in children's competence and the reduction of, or adaptation to, risks (Dulmas & Rapp-Paglicci, 2000; Fraser et al., 2005; Masten et al., 1995; Masten and Coatsworth, 1998). An important indicator is the ability to manage social situations and interactions with others, especially peers (Blair et al., 2004; Webster-Stratton & Lindsay, 1999). Peer acceptance, peer group entry behaviors, and peer interaction as well as engagement in prosocial acts have become frequently used indicators of social adjustment or maladjustment (Crick & Dodge, 1994). Aggression, both verbal and physical, deficient social skills, and deficient prosocial behaviors are common characteristics of high-risk children (Webster-Stratton & Taylor, 2001).

Prosocial Behavior

The presence or absence of prosocial skills has been effectively used as a predictor of children's social competence (e.g., Crick & Dodge, 1994; Rose & Asher, 1999; Webster-Stratton & Lindsay, 1999). Considered to be a multifaceted construct, prosocialness includes such conduct or attributes as cooperativeness, helpfulness, sharing, empathy, comfort or sympathy, and protectiveness (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Zahn-Waxler & Smith, 1992). It also includes being sociable and assertive, socially skilled and appropriate, effective at social problem

solving, friendliness and positive peer status, high self-esteem, internalized moral values, and positive emotionality (Eisenberg & Fabes, 1998).

Caprara and colleagues (2000) reported findings indicating that 8th graders' level of academic achievement was predicted by their prosocial behavior in the 3rd grade, after accounting for their early academic achievement. Research has demonstrated that prosocialness has multiple beneficial effects on children's developmental outcomes such as reduced aggressiveness and more positive peer relations (Caprara et al.; Eisenberg & Fabes, 1998).

Aggression

In general, aggressive behaviors are actions which may cause or threaten to cause harm to other persons including direct or overt forms (e.g., physical and verbal) as well as indirect or covert forms (e.g., social, relational; Card, Stucky, Sawalani, & Little, 2008; Crick, 1996; Loeber & Hay, 1997). Relational aggression is non-physical yet hurtful by damaging or threatening to damage a relationship with peers or the child's social group (Crick, 1996; Crick et al., 1999). This type of behavior includes exclusion, retaliation, friendship withdrawal, or harming an individual's reputation.

Some degree of aggression is part of typical childhood behavior with some children using aggression routinely to handle conflicts while other children use aggression less frequently. Patterns of aggression in childhood have been linked to a variety of externalizing and internalizing problems and later negative social outcomes such as school failure and criminal behavior (Bierman & Wargo, 1995; Card et al., 2008; Coie, Terry, Lenox, & Lochman, 1995; Parker & Asher, 1987), although the timing of onset and pathways of development may vary (Loeber & Hay, 1997). Aggressive

behavior, including relational aggression, has shown significant stability from early onset in childhood through adolescence (Crick et al., 2004; Crick, 1996; Rubin, Bream, & Rose-Krasnor, 1991). Studies with various ages of children from preschool through adolescence have shown a significant connection between relational victimization and poor peer relationships and peer rejection, externalizing and internalizing (e.g., depression, anxiety, and loneliness) problems, and deficient prosocial skills (Crick et al.; Crick). High intercorrelation indicating overlap of direct and indirect aggression has been commonly reported (Card et al.). However, other analyses indicate that relational and physical victimization each account for distinct variance suggesting that both forms be included in research involving young children (Crick, Casas, & Ku, 1999). Direct aggression has been strongly linked with low prosocial behavior while a unique connection between indirect aggression and high prosocial behavior has been shown (Card et al.). The latter may be due to the relational nature of indirect forms of aggression.

Relational manipulation (Harrist et al., 2006) is a construct recently emerging out of relational aggression and SIP research defined as “non-aggressive, not intentionally harmful use of relationships, feelings of acceptance, friendships, or group inclusion as a means of achieving a social goal or solving a social problem” (Harrist, Rutledge, Dodge, Pettit, & Bates, 2008). Similar to relational aggression, Harrist and colleagues (2006) found some children’s responses to hypothetical social dilemmas for problem solving used relationships (e.g., friendships, peer relations) to meet goals but without the intent to harm others. In a study comparing kindergarten through third grade children’s relationally manipulative, relationally aggressive, and physically aggressive responses,

findings suggest relational aggression has a significant positive correlation with both relational manipulation and physical aggression, while relational manipulation and physical aggression are negatively correlated. Thus, relational manipulation may be a socially competent response type (Harrist et al., 2008).

Emotion Regulation

Emotion regulation has been defined by Eisenberg and colleagues (1997) as "the ability to inhibit, enhance, maintain, and modulate emotional arousal to accomplish one's goals" (p. 642). Emotional regulation includes various behavioral, psychological, physiological, attentional, and affective systems that interact to facilitate children's effective social functioning (Cole, Martin, and Dennis, 2004). It explains the role of emotions in influencing affective, cognitive and behavioral processes and experiences such as the ability to concentrate, problem solve, and engage in relationships (Blair et al., 2004; Cole et al.; Eisenberg et al.).

Negative as well as unregulated emotions have been identified as predictors of children's externalizing and internalizing adjustment problems (Garber, Quiggle, Panak, & Dodge, 1991). Poor regulation of anger, lack of restraint of socially prohibited behavior, and low levels of fear or social anxiety may contribute to externalizing disorders such as aggression and conduct problems, hostile behavior, and hyperactivity while anxiety or despair, poor attentional control, and high inhibition may be factors more associated with internalizing disorders (Garber et al.). Denham (1998) reported that preschoolers' passive emotional coping strategies such as avoidance and/or denial in response to a problem situation may interact with temperament to impact both externalizing and internalizing behaviors.

The development of emotion regulation has been linked to numerous aspects of social functioning in preschoolers and early elementary school children and is important to establishing and sustaining positive peer relationships (Denham, Blair, DeMulder, Levitas, Sawyer, Auerbach-Major, & Queenan, 2003). Frequency of problem behaviors has been positively associated with high general emotional intensity and low emotional regulation in nonclinical kindergarten through 3rd grade children (Eisenberg, Fabes, Guthrie, Murphy, Maszk, Homgren, & Suh, 1996). The linkage between emotion regulation and quality of social functioning appears to be quite stable between 4-10 years of age (Eisenberg et al., 1997). In general, children with better emotional and emotion-related behavior management are more likely to utilize appropriate and socially competent behavior in school while high negative emotionality and low regulation is associated with poorer social functioning. More emotionally reactive children may have greater challenges using suitable behavior. Therefore, efforts that assist children to develop self-regulation are suggested to enhance prosocial behaviors and reduce the potential for problem behaviors (Denham, 1998; Rubin, Coplan, Fox, & Calkins, 1995). In addition to emotion regulation, social interaction is another critical factor in how young children's social behavior evolves (Rubin et al.).

Social Withdrawal

Young children who more frequently interact with peers appear to be more competent socially and cognitively (Rubin, 1982). Preschool and kindergarten children considered as socially isolated are less likely to be approached by peers than other more sociable children, may be more likely to suggest aggressive (e.g., hit, grab) strategies to conflicts, and be less assertive (Rubin, 1985; Rubin, Burgess, & Coplan, 2002). School-

age withdrawn children experience more social rejection and failure (Parker & Asher, 1987; Stewart & Rubin, 1995). They tend to have a lower sense of self-efficacy for accomplishing assertive goals and more often choose social strategies that are passive and avoidant than either aggressive or non-aggressive and non-withdrawn peers (Wichmann, Coplan, & Daniels, 2004). Socially withdrawn children may be more at-risk for internalizing problems from preschool through adolescence (Rubin, 1985; Rubin, Chen, McDougall, Bowker, & McKinnon, 1995; Wichmann et al.). Some researchers have posited that socially withdrawn children may have greater difficulty with their ability to perform prosocial behavioral responses because of social inhibition and poor emotional regulation rather than lacking competent social-cognitive skills (Rubin et al., 2002; Wichmann et al.).

Social and Interpersonal Cognitive Problem Solving

In general, *social problem solving* (SPS) is the process of accomplishing social goals, whether explicit or ambiguous, and is a framework for considering social competence (Rubin et al., 1991). *Interpersonal cognitive problem solving* (ICPS; Spivack & Shure, 1974) is a facet of social and emotional learning that influences social cognition, adjustment and competence (Masten & Coatsworth, 1998). ICPS emphasizes the manner in which children think concerning social situations rather than the content or specific behaviors, and includes the abilities to generate alternative solutions to problems, recognize consequences, and use cause and effect reasoning (Shure, 2001).

Spivack and Shure (1974) theorized that the capacity to deal constructively with solutions to personal problem situations, consider consequences, recognize thoughts, feelings, and motives, and employ prosocial behaviors like helpfulness, sharing, and

caring distinguish children who are aggressive, impulsive or withdrawn from those that are not. Studies conducted by the researchers indicated that children who were lacking *alternative-solution thinking* skills, the ability to generate different applicable options to a problem situation, and *consequential thinking* skills, the capacity to consider potential results, were more likely to be children who were impulsive, impatient, reacted emotionally to frustrating situations, utilized verbal and physical aggression, had difficulty making friends, were less empathetic, and had a low capacity for sharing and cooperating with others (Shure, Spivack, & Jaeger, 1971; Spivack, Platt, & Shure, 1976; Spivack & Shure, 1974).

The pioneering work by Spivack, Shure and colleagues (1974, 1976) launched from the assumption that children utilize a set of distinct social information processing operations to determine how to solve interpersonal conflicts (Yeates & Selman, 1989). In turn, sufficient cognitive operations were indicative of a child's social competence. Spivack and Shure (1974) indicated that social problem solving skills consist of a number of interrelated elements including the abilities to: (a) understand or recognize interpersonal problems; (b) produce alternative solutions to solve these problems; (c) think of steps to reach social goals (*means-ends thinking*); (d) express potential consequences of social actions (*consequential thinking*); and (e) identify and understand the motives and behaviors of others. The latter three abilities are not completely present in early childhood as they require perspective-taking skills and a grasp of consequences which are not yet fully developed (Spivack, Platt, and Shure, 1976).

The work of Dodge and colleagues (1986) to advance the SIP model showed support for applications of social-cognitive operations in several behavioral domains such

as peer group entry and response to provocation (Yeates & Selman, 1989). Expanding evidence has shown a connection between social problem solving competence and acceptance and relations with peers (Crick & Dodge, 1996; Garner & Lemerise, 2007; Mayeux & Cillessen, 2003). Studies suggest that children's aggressive behaviors are at least partly mediated by social-cognitive thinking skills. Aggressive children from the preschool through elementary school years are more likely than their nonaggressive peers to suggest they would use harmful or other maladaptive strategies to handle interpersonal dilemmas such as acquiring an object, resolving a peer conflict, or initiating friendship (Rubin et al., 1991). Twelve-year old children from four culturally and geographically diverse communities were less likely to have used substances if they had a higher level of social problem solving skills in kindergarten while greater deficits in social problem solving skills uniquely contributed to the prediction of early-onset substance use (Kaplow, Curran, Dodge, & Conduct Problems Prevention Research Group [CPPRG], 2002). Social problem solving may act as a moderator for the relationship of negative life stress and depression in children (Goodman, Gravitt, & Kaslow, 1995).

Spivack and Shure's (1974) conceptual framework views social problem solving skills as an important part of adjustment. Cognitive skills assist children to identify personal problems and to develop effective means for resolving such difficulties (Durlak & Wells, 1997). Thus, it is proposed that the ICPS processes mediate behavior and the prevention of future problems. Rather substantial evidence has been documented supporting an association between the solutions children generate in response to particular situations and their exhibited behavior (Crick & Dodge, 1994; Shure et al., 1971).

Assessments of Social Cognitive Problem Solving and Behavior

Hypothetical Problem Interviews

The most frequently used method to measure children's ability to actively think and reflect is the hypothetical problem situation interview in which children are presented stories to solicit their solutions (Crick & Dodge, 1994; Rubin & Krasnor, 1986). This method has particularly been used to assess step three of the SIP process, generating potential behavioral responses, with the first two steps held constant (Dodge, 1986). The primary procedure involves asking a child to generate one or more behavioral solutions, a range of strategies, to a set of hypothetical social problems (Dodge; Shure & Spivack, 1974). A commonly used assessment procedure has been the *Preschool Interpersonal Problem-Solving Test* (PIPS; Shure, 1992) as well as similar adaptations including the Social Problem Solving Scale (CPPRG, 1991) and the WALLY Social Problem-Solving Test (Webster-Stratton, 1990).

The assumption is that responses children provide in the interviews will reflect the types of thinking and strategies they would use if observed in a natural environment (Rubin et al., 1991). Socially competent children more often suggest prosocial and cooperative strategies in response to hypothetical social problems than their less competent peers (Battistich, Solomon, Watson, Solomon, & Schaps, 1989). Preschool children who are better adjusted in social behavior generate a greater variety of strategies to handle interpersonal problems and those with low problem-solving skills give a higher ratio of forceful solutions than high problem solvers, regardless of sex, verbal ability, or IQ (Shure et al., 1971; Spivack et al., 1976). The selection of a strategy may be based

upon factors such as prior experience, ease of performance, projected likelihood of success, and social acceptability of each potential strategy (Rubin et al., 1991).

Quantity versus quality of solutions. Spivack and Shure's (1974) alternative solutions methods primarily focused on the number of generated solutions followed by sorting solutions into several qualitatively different categories. More solutions were assumed to be better (Shure, 2001). Some researchers have criticized that the model did not specify mechanisms for growth in this skill (Yeates & Selman, 1989). Another argument made by researchers has been that just the generation of as many solution responses as possible will not necessarily result in positive behavioral outcomes, unless the strategies are of competent quality (Dodge, 1986). Some have argued that generating deviant responses may increase the potential that the child will behave in a deviant manner (Dodge). Therefore, quantitative measures alone may be insufficient indicators to explain children's social cognitive processes and qualitative indicators may be crucial to describe the relationship with adjustment (Fischler & Kendall, 1988; Rubin et al., 1991).

Findings have been somewhat mixed in examinations of whether fewer solutions to social problems are generated by deviant boys in comparison to non-deviant peers. Richard and Dodge (1982) reported such differences whereas Guerra and Slaby (1989) found no differences between aggressive and nonaggressive boys on the number of solutions generated. Moreover, there is evidence that generation of competent alternatives may be restricted to a single response in aggressive children (Dodge, 1986; Evans & Short, 1991; Guerra & Slaby; Richard & Dodge). In an assessment of SPS skills, verbal problem solving, and social behavior with Caucasian boys ages 8 to 11, Evans and Short

used means-end problem stories. After controlling for verbal reasoning ability, the results indicated that the boys' first solutions were not significantly different for deviant and normal groups, yet the second responses were. When compared to aggressive and withdrawn boys, those considered as nonaggressive and non-withdrawn generated a higher percentage of competent second responses. These findings support the notion that the response generation stage of problem solving is essential to successful peer interactions along with the capability to produce at least two competent solutions (Evans & Short). Guerra & Slaby also found no apparent group difference for the effectiveness of the first choices, yet nonaggressive boys chose a competent second solution significantly more often than the aggressive group.

Children's initial responses likely reflect how they would really make contact with peers, thus the quality of the first response that a child suggests to an interpersonal dilemma rather than the number of generated solutions may be more useful to determine behavior (Mize & Cox, 1990; Mize & Ladd, 1988). Using the PIPS interview with 4 and 5-year olds, Mize and Cox found a positive relationship between the number of solution responses and observed positive behavior with peers as well as teacher ratings of cooperative peer play. They further discovered that children suggesting a friendly first solution had significantly higher teacher ratings of cooperative peer play and lower aggression, although the correlation was about the same level as the number of strategies generated.

Solution responses and behavior. On the whole, hypothetical problem situation interviews have been beneficial in assessing social cognitive aspects of childhood aggression (Rubin et al., 1991). There is strong empirical support that poor SIP and ICPS

skills are associated with early onset conduct problems. Young children ages 4 to 7 years old with such behavior problems are more aggressive, may hold hostile attributions regarding peers and have a skewed awareness about their personal social competence, indicating they have difficulties with encoding cues (Webster-Stratton & Lindsay, 1999). Webster-Stratton and Lindsay reported this group of children, when compared to a group of non-conduct problem children, generated significantly fewer different positive solutions to hypothetical conflict situations and their ratio of positive to negative strategies was significantly less. This ratio was related to negative conflict management behaviors with peers and low reciprocal play. In addition, the children with conduct problems were reported by teachers to have significantly less peer acceptance, positive behavioral conduct, and prosocial behaviors than their comparison group peers.

Zahn-Waxler et al. (1994) reported that 4 and 5 year olds with behavior problems showed a range of positive and negative themes in response to interpersonal conflict and concerns. Choosing from established problem solutions, children most frequently selected prosocial options although children at risk were less likely to do so. Using an ambiguous provocation stimuli, an inverse association between positive social problem-solving responses and physical victimization in a sample of preschoolers was reported by Garner and Lemerise (2007). Children at lower risk of being physically victimized provided more assertive, neutral, and/or prosocial responses to problem situations while those at higher risk offered more ineffective and aggressive responses.

Negative life stress and the competence of alternative solutions significantly predicted level of reported depression in a sample of mostly minority, low SES, inner-city 8 to 12-year old children (Goodman et al., 1995). Solution competence added nearly

one-quarter of the variance to the proposed model. Among children who had more negative life experiences, those with greater solution effectiveness reported less depressive symptoms than children with lower solution effectiveness. The same moderation did not appear for the number of generated alternative solutions.

Withdrawn young children tend to have more SPS deficiencies as evidenced by fewer relevant and alternative solutions to social dilemmas, are more likely to request adult intervention in response to social conflict with peers (Harrist, Zaia, Bates, Dodge, and Pettit, 1997; Rubin, 1985) and are less assertive which may be indicative of poor social confidence (Rubin & Krasnor, 1986). Stewart and Rubin (1995) observed that kindergarten, second grade, and fourth grade children from public schools considered to be very socially withdrawn offered significantly less attempts or initiations at problem solving, fewer assertive commands, and more indirect requests than more outgoing peers. Of additional interest is that withdrawn children were significantly more likely to experience failed strategies then were subsequently less likely to try again. The number of social initiations or strategy types did not significantly differ across grades (Stewart & Rubin). However, Harrist and colleagues found that competent solution responses declined after kindergarten for a subgroup of withdrawn children identified as ‘active isolates’ (i.e., immature, lacking in restraint, and highly defiant).

In regards to the use of hypothetical situation interviews, there has been some critique about whether the procedures may elicit inappropriate responses from children just because of the method procedures (e.g., PIPS) asking the children to think of more and different unique solutions to a problem (Seaman & Sloane, 1984). This may result in children feeling compelled to, or understanding that they should, provide any additional

response whether or not it may be appropriate or effective (Mayeux & Cillessen, 2003; Seaman & Sloane). The strategies may not fully be an accurate measure of competence (Rose-Krasnor, 1985). Furthermore, since the hypothetical interview method and ICPS model focus on children generating as many solutions as possible and acceptance of all solutions, there has been debate about whether children should be provided feedback specific to the appropriateness or effectiveness of their responses (Seaman & Sloane). Seaman and Sloane found that children who generated more inappropriate solutions to conflict situations also were observed to put inappropriate solutions into action beginning with the first scenario, suggesting that it was not only a result of exhausting potential appropriate solutions due to the demands of the procedures.

Some studies have compared hypothetical interview results with behavioral observations. Concern has also been expressed that the hypothetical scenario situations may not be comparable to those used in observations, therefore the methodological differences may reduce the cognition-behavior connection (Rubin et al., 1991). Researchers have recommended that observational methods may be better measures than the hypothetical methods (Rubin et al., Webster-Stratton & Lindsay, 1999), yet the practicality of doing so in prevention studies with large numbers of children due to time and cost is usually prohibitive (Pellegrini & Urbain, 1985). Assessing SIP and social adjustment in young children (i.e., preschool through 2nd grade) is more challenging and costly (Crick & Dodge, 1994).

Teacher Ratings

Ratings by teachers have also been frequently utilized to assess behavior while direct or observational assessments of child skills or behaviors are more rare

(Domitrovich, Cortes, & Greenberg, 2007). Teacher reports have been a common method to assess aggressive and antisocial behaviors (Crick, Casas, & Mosher, 1997) and have been shown to be a valid and reliable source of information (Boxer, Musher-Eizenman, Dubow, Danner, & Heretick, 2006; Gagnon et al., 1995). In a sample of over 1,000 boys, Gagnon and colleagues found that teacher ratings in kindergarten were predictive of externalizing (e.g., aggressive behavior, disruptive behavior) and internalizing (e.g., anxiety, withdrawal) problems at ages 10 through 12 years. Similar results were reported by Boxer et al. in a study of 221 pre-kindergarten through sixth grade teachers using a brief survey. The teachers' reports regarding aggressive behavior were consistent with the students' self-reports and school disciplinary records.

The use of outside raters or teachers blind to study conditions has been emphasized by many researchers to control for potential bias. Others have argued it is best to conduct interventions and evaluations within the school environment as teachers are most effectively able to judge children's behavior and cannot be assumed to rate ICPS trained children as more socially competent than untrained children (Denham & Almeida, 1987).

Taking the social cognitive approach, Spivack and Shure (1974) set out to develop and test an intervention that would enhance ICPS skills, thereby positively changing children's behaviors and adjustment. Spivack and Shure theorized that certain critical cognitive skills mediate the quality of one's social adjustment.

I Can Problem Solve Program

Program Description

From their studies, Spivack and Shure postulated that *how* children think about problem situations and potential results is more important than only *what* they think (Shure, 2001; Shure & Spivack, 1979; Spivack & Shure, 1974). Spivack et al. (1976) proposed that the key goal of ICPS training is to promote adjustment by improving an individual's ability to think through and resolve interpersonal conflicts effectively, not by direct modification of behaviors.

Spivack and Shure (1974) adopted teaching strategies that encourage children to learn effective problem-solving inductively through guided questioning, systematic exposure to a variety of problem situations, and discussing and practicing ways to handle those situations (Weissberg, 1985). Age-appropriate interventions were designed for teachers to utilize in preschool and kindergarten classes as well as for elementary grades (Shure, 2001). The resulting program, titled *I Can Problem Solve* (Shure, 2000), utilizes a variety of methods including word concepts, illustrations, games, role-play, puppets, and group interaction to develop students' thinking skills. Situations and problems occurring in children's daily lives are used as examples. The primary emphasis is on the process of thinking through hypothetical and real-life problem situations rather than focusing on solution content.

In addition to structured and semi-structured lessons, teachers demonstrate and reinforce skills to develop the children's process of thinking (Shure, 2001). It also incorporates *dialoguing* in which the teacher assists the child with acquiring thinking skills in everyday situations by asking the child questions that support problem

identification, considering consequences of their actions, reflecting their own feelings and those of others, and generating alternatives to solve a problem (Shure). Other key concepts include consideration of their own feelings as well as the feelings of others (empathy) including the possibility that two individuals can have different feelings and thoughts.

Empirical Studies of the ICPS Program

Studies by Shure and Spivack. Enhanced ICPS-skills have been shown to mediate behavior and problem-solving skills in preschool and kindergarten children, controlling for IQ, and these differences were still apparent up to two years afterwards (Denham & Almeida, 1987; Shure & Spivack, 1979, 1980, 1982). Children ages 4-5 years received the ICPS training as a whole classroom from teachers with 20-minute daily lessons over eight weeks (Shure & Spivack, 1979; Shure & Spivack, 1982). As compared to control children who were not trained, significant improvements in ICPS skills were exhibited by the children who received the program especially in their ability to generate alternative solutions and their consequential thinking. They also showed improved prosocial behaviors such as empathy for peers and self-regulation, and reduced negative behaviors such as impulsivity, impatience, over-emotionality, physical and verbal aggression, and social withdrawal (Denham & Almeida; Shure & Spivack, 1979, 1980, 1982; Spivack & Shure, 1974).

A subsequent five-year longitudinal study showed that children trained in both kindergarten and first grade were superior in both ICPS skills and behavioral adjustment at the end of 4th grade as compared to those trained in kindergarten only (Shure, 2001). Still, children trained in kindergarten only were superior to those never trained.

Additionally, improvements in standardized achievement test scores and reading level led the researchers to suggest that ICPS skills may help children better attend to learning tasks.

Meta-analyses. Reviews and meta-analyses of ICPS interventions ranging in intensity and complexity reported mostly positive results, although some have been mixed. Evaluations have shown that preschool and elementary school-age children, both normal and socially maladjusted across a wide IQ range have been able to learn ICPS skills and improve their performance on measures of cognitive problem solving (Pellegrini & Urbain, 1985). In their meta-analysis, Denham and Almeida (1987) concluded that training effects on problem solution skills across program studies to that point had been reliable, however the magnitude of effects were not consistently large especially in regards to behavioral ratings or the mediation of ICPS on behavior change. Trained children exhibited significantly greater ICPS skills scores at post-test compared to untrained children with a moderate to large magnitude of difference. There was some evidence of association between increases in ICPS skills and improvement in rated behavioral adjustment with a moderate effect size. Findings differentiated between adjusted and nonadjusted children. Positive effects were seen across all children, yet the interventions appeared to have greater impact on the social behavior of those considered "at-risk" as well as on younger children (Denham & Almeida).

Denham and Almeida (1987) found the dialoguing technique exerted a significant effect; when used, children obtained higher post-test ICPS scores but for behavioral questions dialoguing was nonsignificant. In dialoguing with teachers during actual daily social problems, students gain valuable practice in ICPS skills use, are also reinforced by

their own success, and probably by their teachers, when they emit appropriate responses. The effects of teacher dialoguing on social behavior have not been well studied.

Other studies of ICPS. Sharp (1981) attempted to control for certain design issues in order to more clearly measure the relationship between ICPS cognitive-based instruction and children's behavioral change. Classroom teachers were not used as trainers and were unaware of the program content. 'Blind' observers rated children's social competency. Also, there was no in-class reinforcement (e.g., dialoguing). With a sample of approximately 100 African-American low-income preschoolers, one group received training from the ICPS manual, a second group received the ICPS program without the initial 12 lessons on prerequisite language skills, and a third group received a general cognitive enrichment program instead of ICPS. Alternative solutions scores using the PIPS were in positive direction. Overall, neither teacher ratings nor independent observations supported a direct relationship between problem-solving skills and behavioral adjustment. However, trained children identified as aggressive, dominant, and impulsive showed significantly greater improvement in alternative solutions scores than similar children in the control group, replicating the findings of Spivack and Shure (1974). Sharp suggested that the ICPS training indeed impacted the children's ability to cognitively generate more alternative solutions to a problem, but it does not necessarily translate to increased or improved prosocial behavior in actual problem situations.

A study by Ridley and Vaughn (1982) randomly assigned a sample of children in a private preschool. The treatment group received an ICPS program enhanced with a component on empathic communication for 40 15-20 minute sessions over 10 weeks. Training was provided by a graduate student rather than a teacher outside of their normal

classroom; the control class was led by their teacher in other "fun activities." The PIPS, a behavioral version of PIPS to determine ability to generate alternatives to problems with a peer in real-life situations, and an empathy measure were used to assess the children. Compared to the control group, the trained children demonstrated higher effectiveness in solving peer problems and the results were maintained three months past the training, however there were no apparent effects on empathy skills. Ridley and Vaughn found the behavioral measure was more sensitive to detecting the effects than the PIPS verbal interview measure, although both methods efficiently produced solutions from the children.

Another class of kindergarten children was randomly assigned to receive either 19 sessions of 27 10-25-minute activities of the ICPS program or a reading and oral comprehension program taught by the experimenter and assistant separate from their regular classroom (Seaman & Sloane, 1984). Socially appropriate behavior and the relation between cognitive and behavioral functioning were assessed using behavioral observation in a conflict situation with a peer and PIPS with a 'blind' evaluator and reliability observer. Scores on the PIPS peer test and behavioral measure correlated only modestly. The treatment group used more appropriate, inappropriate, and total responses over the full PIPS test. Across all measures, no significant differences in appropriate responses appeared between groups but the ICPS trained group used significantly more inappropriate categories. In general, significant differences were found between the two groups for the number of inappropriate and total solution categories. Children who received the problem solving program generated a larger number of solutions to story problems findings similar to those reported by Spivack and Shure (1974), however the

generation of more socially inappropriate solutions may contribute to this result (Seaman & Sloane).

Kumpfer and colleagues (2002) tested ICPS along with a preventive family intervention (*Strengthening Families)* to evaluate the effectiveness of the two programs on variables associated with substance use risk including school bonding, parenting skills, social competence, family relationships, and behavioral self-regulation. First grade children and their families from 12 rural school districts were randomly assigned to one of three experimental conditions (ICPS only with children, combined ICPS for children and full family intervention program, or ICPS for children and partial family intervention parent training) or a no-treatment control group. Participants were mostly middle class, primarily Caucasian and some Hispanic backgrounds. Children in ICPS classes received 83 20-minute lessons delivered by trained teachers. Compared to the control group, the ICPS-only program resulted in significant improvement in school bonding and self-regulation pre- to post-intervention, but not on the other three variables. The study found that the most effective program delivery consisted of the ICPS plus full family intervention. Kumpfer and colleagues concluded that the impacts of the interventions are directed to specific behaviors instead of broad behavior changes. The magnitude of effects appeared robust.

Vestal and Jones (2004) reported on the effects of intensive training for teachers in Head Start centers serving children ages three to five years old from 11 classrooms. Six intervention teachers received training on conflict, conflict resolution, violence prevention, diversity, and social-emotional development in addition to the ICPS curriculum. They then utilized 59 ICPS lessons with their students over two months.

Other teachers and children were in a matched control group. Trained teachers used significantly more ICPS dialoguing and less non-ICPS dialoguing pre-to post assessment. Children in classrooms with trained teachers generated a higher amount of relevant solutions to hypothetical problem situations than children whose teachers were not trained. Furthermore, there was a significant difference in the intervention children's solutions having a lower force ratio (proportion of forceful solutions to relevant non-forceful solution responses) and higher relevancy ratio (proportion of relevant solutions to no-solution responses) than the control group children. Therefore, the study demonstrated that changes in the Head Start classroom environment as facilitated through teacher training, modeling, and the ICPS curriculum positively affected the ability of preschoolers' to resolve interpersonal problems (Vestal & Jones).

Other Programs Incorporating ICPS Concepts

Problem-solving skills are commonly included in interpersonal skills training programs, although with varying levels of emphasis (Webster-Stratton & Taylor, 2001). Research on a number of prevention and intervention program models incorporating the ICPS concepts of Spivack and Shure (1974) have shown great promise, especially when integrated as part of a comprehensive program that includes training for classroom teachers on effective behavior management, delivery of a social-cognitive curriculum to classrooms, targeted small-group peer-skills training, and support for their parents and families. The value of universal prevention interventions to enhance social-emotional, behavioral, and cognitive skills including social problem solving in preschool and school-aged children is supported by considerable data (Catalano et al., 2002; Domitrovich et al., 2007; Greenberg, Domitrovich, & Bumbarger, 2001; Izard, Trentacosta, King, &

Mostow, 2004; Weissberg & Greenberg, 1998). Such research-based programs include the Incredible Years Dinosaur School curriculum (Webster-Stratton & Reid, 2004), Fast Track (Bierman & CPPRG, 1997), Making Choices: Social Problem Solving Skills for Children program (Fraser et al., 2005), Metropolitan Area Child Study Research Group (2002), Second Step (Grossman et al., 1997) and the Social Development Model (Hawkins et al., 1999).

Based on ICPS concepts, the Incredible Years Dinosaur Social Skills and Problem-Solving Child Training Program (Webster-Stratton & Reid, 2004) is a classroom-based prevention program to build children's social competence. Webster-Stratton & Reid assessed implementation of the program in Head Start and kindergarten classrooms from low-income schools. Four days of training on classroom management and the program curriculum were provided to the teachers followed-up by weekly meetings to review lesson plans. Teachers and research staff co-taught 30 to 34 lessons, twice weekly, in each classroom. In response to hypothetical problem situations, the intervention class children generated significantly more prosocial responses than did the control class children. Significant differences were also found between control and intervention students on compliance to teacher requests, cooperation, social contact, and aggression. The intervention classrooms had significantly greater positive classroom atmosphere ratings and school readiness scores than did the control classrooms (Webster-Stratton & Reid, 2004).

Second Step, a classroom curriculum also derived of Shure's ICPS program concepts, is a universal prevention program for children preschool through grade 8 designed to promote prosocial behavior and improve anger management and

interpersonal problem-solving skills. Teachers receive one day of training and the curriculum consists of 30 lessons for children taught once or twice a week (Frey, Hirschstein, & Guzzo, 2000). A study of nearly 800 second and third grade children in 12 urban and suburban schools conducted by Grossman and colleagues (1997) found observed physical aggression of trained students declined pre- to post-test while control group children did not, a significant difference between the groups. Similar though non-significant differences were found for verbal hostility. These results were maintained six months later. However, no changes were reflected in teacher reports of antisocial or prosocial behavior for either the intervention or control groups. Another examination of Second Step was initiated in 15 schools with second and fourth graders over a two-year period (Frey, Nolen, Edstrom, & Hirschstein, 2005). According to teacher ratings, trained students significantly increased social competent behavior and decreased antisocial behavior compared to students in the control group with robust group differences after the first year of the program but not the second year. Intervention group children were also observed to display lower aggression compared to control children. Effects were higher for children identified as exhibiting antisocial behavior at the beginning of the study.

By and large, the findings of these programs suggest that intervention with teachers and children starting in preschool or by the early elementary grades can have enduring effects on diverse groups of children. Over 30 years of research on ICPS skills has provided evidence that programs promoting such skills are instrumental in preventing early high-risk behaviors and later more serious problems (Shure, 2001). Many programs have shown effectiveness in enhancing social-emotional skills and thus improving

prosocial behavior and peer acceptance (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Durlak & Wells, 1997). In turn, it is hypothesized that such programs reduce the likelihood of future risk behaviors and social problems (Fraser et al., 2005).

Summary of ICPS Efficacy

The ICPS program (Shure, 2000) has been recognized as meeting the scientific effectiveness criteria of a "promising program" for school-based risk prevention (U.S. Surgeon General, 2000; Office of Juvenile Justice and Delinquency Prevention, 2004; Center for Substance Abuse Prevention, 2001; Office of Safe, Disciplined, and Drug-Free Schools, 2001), as an "exemplary prevention program" (National Mental Health Association, 1999), and as a "select program" (Collaborative for Academic, Social, and Emotional Learning, 2003). The ICPS approach has now been widely adapted and utilized through school, home, and clinic-based settings and continues to be a subject for further empirical work (Masten & Coatsworth, 1998).

Although some positive outcomes have been achieved using the SPS/ICPS approach, findings have not been consistent leading to debate about its effectiveness, effects on behavioral adjustment, generalization beyond training, and long-term outcomes (Bierman, 1989; Rubin & Krasnor, 1986; Urbain & Kendall, 1980; Taylor, Eddy, & Biglan, 1999; Weissberg, 1985; Yeates & Selman, 1989). It is uncertain whether these mixed findings may be due to the degree to which problem-solving abilities can be used to mediate social behaviors, the assessment or measurement procedures, or the appropriateness for different groups of children (Pellegrini & Urbain, 1985; Work & Olsen, 1990). There has also been considerable debate about whether ICPS training should guide children on appropriate, prosocial behavior. Spivack et al. (1976) emphasize

the importance of solution quantity over quality. Children are taught to make their own judgments about which solutions are good by considering their consequences. In ICPS, this is reinforced through dialoguing by the teachers. Other researchers believe it is important for programs to specifically teach children skills to distinguish appropriate or inappropriate problem-solving solutions and rehearse behavior thus increasing consequential thinking skills (Battistich et al., 1989; Seaman & Sloane, 1984; Weissberg, 1985).

However, overall, evidence appears to support the effectiveness of teaching the skills to children. Studies suggest ICPS training is generally effective in improving the behavior of children who show early signs of social maladjustment, and non-clinical groups have also demonstrated cognitive gains although with fewer verified changes in social behavior and peer acceptance. It is strongly recommended that such programs be integrated into regular classroom curriculum and daily life (Boxer & Dubow, 2002; Elias & Weissberg, 2000).

Individual and Contextual Influences

Age

There is substantial evidence that age influences both social information processing and social adjustment (Crick & Dodge, 1994). From infancy, cognitive structures develop which allow children to assimilate information from their environment with increasing proficiency. Concurrently, children are acquiring communication skills that enable them to understand and speak, reason with and think about language. These cognitive and language abilities are basic skills for later success in school as well as

positive social interactions and may partially mediate the link between social experiences in young children and developmental outcomes (Fraser et al., 2005).

Children's developmental ability varies greatly between ages of three to eight years (Webster-Stratton & Reid, 2004). Some children may read well and others may not. Poor language skills may increase the risk of behavior problems (Coie & Dodge, 1998; Kaiser, Cai, Hancock, & Foster, 2002). A child's progression or delay in social cognitive development may influence their behavior as well as impact their interpersonal relations with peers, teachers, or parents. Responses from others may, in turn, further influence their behavior or perspectives. Developmentally, children's social cognitive skills as well as their experience with peers, including problem-solving competence, likely expand particularly between six to eight years of age (Mayeux & Cillessen, 2003; Yeates & Selman, 1989).

Age and SPS/ICPS Skills

Developmental differences in problem-solving skills have repeatedly been found (Spivack et al., 1976). Associations between problem-solving abilities and social competence appear to differ by age, at least in part due to general cognitive and social development (Pellegrini, 1985; Rubin & Krasnor, 1986). Empirical evidence supports that with age comes a pattern of increasingly competent SPS skills including the ability to produce alternative solutions to social problems (Mayeux & Cillessen, 2003; Rubin & Krasnor). In early childhood, alternative-solution thinking may most distinguish behavioral adjustment levels while in middle childhood alternative solutions along with means-end thinking are more appropriate measures (Kendall & Fischler, 1984). With preschoolers, causal thinking, means-ends thinking, and sensitivity to interpersonal

problems do not add significantly to the variance accounted for by alternative thinking performance when predicting teacher ratings of behavioral adjustment (Shure et al., 1971; Spivack and Shure, 1974). In middle childhood, linkages between producing alternative strategies and ratings of behavioral adjustment tend to decline, while more advanced ICPS skills appear to become better predictors of adjustment (Spivack et al., 1976). Typically, older children generate a greater quantity as well as a more competent quality of alternative solution strategies than younger children (Dodge, 1986).

Research has shown that children as young as four years of age have the cognitive capability of generating various solutions for problem-solving (Spivack & Shure, 1974). In a two-year longitudinal study of kindergarten and first grade boys, Mayeux and Cillessen (2003) reported that as the children got older, their capacity to encode and interpret social information improved, the quantity of different solution responses increased, and their awareness of the appropriateness and effectiveness of responses grew. Webster-Stratton (1993) found that deficits in social problem solving skills were related to poor adjustment in elementary school children six to eight years of age. Other research findings have confirmed that differences in interpersonal problem-solving ability were significant between the second, fourth, and sixth grades in school children (White & Blackham, 1985).

Furthermore, the reliability and stability of children's solutions in response to hypothetical situation interviews appears to increase with age. Compared to younger peers, older boys generate a larger number of unique as well as more effective solutions (Dodge and Price, 1994; Feldman & Dodge, 1987; Mayeux & Cillessen, 2003). Mayeux and Cillessen found that for the most part, boys' solution responses were prosocial yet

with a substantial number of avoidant and antisocial strategies also included, suggesting that children may use a mixture of approaches in response to a social situation. The stability of children offering suggestions of antisocial, assertive, and prosocial responses appeared modest yet significant.

Age and Behaviors

Toddler and preschool age children exhibit lower levels of prosocial behavior which subsequently rise throughout the early and middle elementary-school years (Zahn-Waxler & Smith, 1992). Prosocial behaviors, such as helping, sharing, and cooperation, emerge during the second year of life (Zahn-Waxler & Smith). By that time, in simple distress situations children have some ability to interpret overt conditions of other people and empathize (Zahn-Waxler & Smith). For most children, their capacity to identify another person's emotions starts in infancy and their ability to recognize more than one emotion at a time increases throughout middle childhood (Boxer, Goldstein, Musher-Eizenman, Dubow, & Heretick, 2005). Some children begin to understand more complex ideas, like thinking ahead to assess consequences, while others function more in the moment (Webster-Stratton & Reid, 2004). According to Piaget (1965), abilities to take another person's perspective and empathize do not evolve until the concrete operational stage, between the ages of six and eight years. The ability for children to distinguish between their personal ideas and actions and those of another person's in a situation typically does not occur until eight to 10 years of age (Boxer et al.).

Studies have shown that serious conduct problems such as aggressive, impulsive, oppositional and disruptive behaviors may appear by the preschool years and are relatively stable often lasting into school-age years (Campbell, 1997; Loeber & Hay,

1997; Lopez, Tarullo, Forness, & Boyce, 2000; Zahn-Waxler & Polanichka, 2004). Some of these early-onset behaviors may be due to reasons beyond normative development and result in enduring emotional and behavioral problems (Zahn-Waxler & Polanichka). Yet, while about half of preschool children with serious conduct problems may experience long-term difficulties, the others will improve over time as the children continue their development (Campbell, 1997). Lacking intervention, according to Eron (1990), children's inclinations for aggressive behavior become clearer and more set by about the age of eight years.

Displays of antisocial behavior are not a substantial part of the daily lives of most young children. In a study by Willoughby, Kupersmidt, and Bryant (2001), 40 teachers' reports of behaviors in a normative sample of 391 preschoolers (three to five years old) indicated about 10 percent exhibited very high rates (i.e. six or more incidents) of antisocial behavior each day while approximately 40 percent demonstrated at least one antisocial behavior each day. Both overt and covert behaviors were included. An investigation of a large data set of nationwide reports by teachers revealed that about half of kindergarten children had difficulties with academic skills, following directions, and working as part of a group while 20% of teachers also reported half of the children have social skills problems (Rimm-Kaufman, Pianta, & Cox, 2000). Given this data, early childhood educators and elementary school teachers face frequent challenges in their classrooms, although the extent varies.

Compared to older children, preschool and early school-age children require more time to complete various forms of cognitive problems and to practice learning new social-cognitive concepts and skills (Boxer et al., 2005). Furthermore, younger children

often have less control inhibiting their behavioral responses than their older peers who develop a greater capacity to prevent themselves from engaging in a behavior and select alternative choices (Boxer et al.). Similarly, in regards to relationally aggressive behaviors younger children tend to be more direct, simple, reactive, and immediate to the present situation in comparison to school-age children who develop more indirect and sophisticated approaches (Crick et al., 2004). Preschoolers tend to offer more simple directives and requests for intervention by an authority in peer interactions indicating a heavy reliance on adult support and direction (Walker et al., 2002).

Age and Programmatic Implications

A child's age and stage of physical, cognitive, and emotional development must be considered in programmatic applications as various risk and protective factors may have different influences depending on age and stage (Boxer et al., 2005; Catalano et al., 2002; Farrell et al., 2001; Wright & Masten, 2005). Numerous analyses have shown that programs are most effective when initiated in preschool or the early elementary years (Hawkins et al., 1999; Metropolitan Area Child Study Research Group, 2002; Taub & Pearrow, 2005; Wilson, Lipsey, & Derzon, 2003). Programs teaching interpersonal problem solving skills to children beginning in early childhood until about age eight years have a strong positive impact on their social development and are particularly effective at preventing later negative outcomes such as academic failure, substance abuse, delinquency and violent behavior (Durlak & Wells, 1997; Kumpfer et al., 2002; Webster-Stratton & Lindsay, 1999; Webster-Stratton & Taylor, 2001). Social problem solving programs, particularly *I Can Problem Solve* (Shure, 2000, 2001), were most effective

with children in this age group. Therefore, it is important to consider this growth and the capacities of children when designing and evaluating programs.

Sex

Research findings show that sex differences have an important role in children's early social and behavioral development (Hoglund & Leadbeater, 2004; Maccoby, 1990) and may moderate the influence of SIP on social behavior (Crick & Dodge, 1994). Girls tend to utilize more socially appropriate, prosocial behavior, and to be more passive, emotional, and interpersonal in social interactions while boys appear to utilize physical aggression, controlling, avoidance, and dominating approaches with peers (Crick & Grotpeter, 1995; Fischler & Kendall, 1988; Walker et al., 2002; Zahn-Waxler et al., 1994). Hoglund and Leadbeater (2004) reported that first grade girls exhibited higher levels of social competence and greater reductions in behavioral problems than boys. Girls are viewed by teachers as prosocial more so than boys (Crick et al., 1999).

Aggression and Sex Differences

During early childhood, aggressive behavior is present in both girls and boys. Boys are more prone to behavior problems compared to girls (Coie & Dodge, 1998; Kaiser et al., 2002). Willoughby et al. (2001) reported that while rates of daily antisocial behaviors in a normative sample of preschoolers were comparable for males and females, boys exhibited higher rates than girls for hitting and kicking, pushing and shoving, calling names or teasing, and playing mean tricks, although they did not differ on other items including push, shove or grab, argue, threaten or 'boss around', and 'tell others not to play.' Aggression exhibited by girls tends to be more indirect and focused on harming peer relationships (Crick & Grotpeter, 1995). Relational aggression in preschool children

is evident more so in girls than boys while physical aggression is associated more with boys (Crick et al., 1999; Crick et al., 2004). Results from a meta-analytic review by Card et al. (2008) indicated moderately strong differences supporting that boys employ direct aggression more often than girls. The study found girls showed significantly higher levels of indirect aggression (e.g., relational, social, covert) than boys, yet differences were low in magnitude, suggesting boys and girls are more similar than distinct when it comes to indirect strategies. Harrist, Rutledge, Dodge, Pettit, and Bates (2008) also found that boys more often used physical aggression and girls more relational aggression and relational manipulation.

SPS/ICPS Skills and Sex Differences

In particular, boys and girls may differ in their social problem solving (Erwin, Firth, & Purves, 2004; Musun-Miller, 1993; Walker et al., 2002). Musun-Miller examined the association of social problem solving skills and social acceptance by same-sex four and five- year old peers. There were significant main effects due to sex in the types of solutions given suggesting differences in how each think about and interpret problem situations. Girls were more likely to suggest a specific outcome or possible intent while boys more likely to say "I don't know." It is possible that social or verbal skills are more developed in young girls (Musun-Miller).

However, Shure et al. (1971, 1980) found main effects for sex were not significant for differences in total number of solutions, mean ICPS scores, or the association between ICPS scores and behavior of preschool and kindergarten children. In responses to separate male and female dilemma vignettes which were developed based on evidence of gender-based peer relationships and play preferences, Erwin et al. (2004)

reported six to eight-year old boys showed greater liking for male-preferred tasks and higher alternative solutions scores on male dilemmas (e.g., playing a sport or computer game). The same was found for girls in regards to female-preferred tasks and female dilemmas (playing a table game or art activity). However, there were no significant differences between boys and girls in the amount of alternative solutions responses or number of anticipated consequences to problems that either sex may encounter suggesting children can employ SPS skills to various issues regardless of gender. Therefore, the researchers suggested that gender need not be a major concern using or considering the effectiveness of ICPS.

Walker et al. (2002) found significant sex differences in competency in children's use and experience of a range of social problem-solving strategies. In a sample of Caucasian, middle class preschool-age children, boys and girls appeared to respond differently to both ambiguous provocation and intentional provocation situations but only when the target child was a boy. The same was true for responses to peer group entry situations yet only when the target group was female. The boys provided less competent responses to provocation and peer group entry than did girls. Results of this study suggest that the sex of the responding child as well as of the interacting partner affect preschool-age children's responses to problem situations. The researchers concluded that the situation context and gender of the children in an interaction impact young children's response strategies. Walker et al. suggested that gender differences should be considered when evaluating SPS competence.

Cultural and Environmental Context

In addition to age and sex when studying SPS and SIP, another important consideration is cultural background and context. Socially competent behavioral norms may differ according to cultural context, environment, and the persons involved (Mayeux & Cillessen, 2003).

Studies utilizing the ICPS program have been conducted with diverse ethnic and income groups (Shure, 2001). While the initial trials were primarily with African-American preschoolers in inner-city Head Start centers, the ICPS program or its similar interpretations have also been tested with successful results with middle SES children in private preschool (Ridley & Vaughn, 1982), Caucasian and some Hispanic children in rural public schools (Kumpfer et al., 2002), African American along with some Hispanic and Caucasian children in Head Start centers (Vestal & Jones, 2004), and diverse multi-ethnic low-income children in metropolitan area Head Starts and elementary schools (Webster-Stratton, Reid, & Stoolmiller, 2008).

In general, research and literature on prevention intervention programs in rural populations has been very limited (Spoth, 1997). As with urban areas, rural areas are very diverse across the country and definitions highly vary. Variations and challenges in rural areas include population density, isolation, ethnic or racial composition, traditions, socioeconomic status, availability of services and, perspectives that may be more welcoming or limited to those outside the community (Molgaard, 1997; Spoth, 1997). Studies indicate that, compared to urban youth, rural youth are at significantly higher cumulative risk for substance use (Spoth, Goldberg, Neppl, Trudeau, & Ramisetty-Mikler, 2001). Teachers have reported a higher rate of adjustment problems with children

transitioning to kindergarten in rural areas, followed by urban, then suburban areas (Rimm-Kaufman et al., 2000).

Higher levels of school disadvantage (the proportion of children eligible for free lunch) in the early grades have been associated with children's increased risk for emotional and behavioral problems (Hoglund & Leadbeater, 2004; Kellam, Ling, Merisca, Brown, & Ialongo, 1998; Rimm-Kaufman et al., 2000; Thomas, Bierman, & CPPRG, 2006). Higher-risk settings (e.g., Head Start) may experience an elevated rate of problem behaviors (Willoughby et al., 2001). Classrooms with low concentrations of prosocial behaviors and high concentrations of aggression as well as peer victimization have also been linked to higher risk such as future aggression (Hoglund & Leadbeater; Kellam et al.; Thomas et al.). Classroom concentration of prosocial behaviors (helping, caring, sharing behaviors) were shown by Hoglund and Leadbeater to predict increases in social competence after controlling for children's school-entry behaviors, sex, and classroom level of victimization, however it was not enough to reduce levels of aggressive, disruptive behaviors. In prosocial classroom environments, competent peers may model helping and caring behaviors for other children (Bandura, 1977; Criss, Pettit, Bates, Dodge, & Lapp, 2002). Kellam et al. reported that a classroom-based program to enhance prosocial behaviors appeared to buffer the impact of classroom aggression on boys' risks for behavior problems.

In sum, expanding scientific evidence indicates that effective prevention programs promoting social-emotional and interpersonal cognitive problems-solving skills can reduce problem behaviors, enhance social competence and prosocial behavior with diverse children (Greenberg et al., 2005; Fraser et al., 2005; Hawkins et al., 1999;

Kumpfer et al., 2002; Lopez et al., 2000; Shure, 2001; Webster-Stratton & Taylor, 2001). Such programs offered in preschool and elementary school settings can positively impact classroom and peer-related behavior.

Diffusion, Implementation, and Evaluation of Prevention Programs

Overview of Diffusion, Implementation, and Intervention

The successful transition of empirically-supported prevention programs to application in communities is a challenging, extensive endeavor that involves various stages (Durlak & DuPre, 2008; Kumpfer et al., 2002). These stages include *dissemination*, communicating information about the program and its potential effects to organizations or communities; *adoption*, when a local organization or group decides to initiate the program; *implementation*, the establishment and trial period of performance of the program; and *sustainability*, maintaining the program over time (Durlak, 1998; Durlak & DuPre). A final stage in the diffusion process, often referred to as *going to scale*, happens with widespread dissemination of proven programs (Greenberg et al., 2005). In order to benefit as many people as possible, effective programs must be successfully diffused to multiple communities. However, impact often weakens through the diffusion process and information does not sufficiently reach many communities (Durlak & DuPre, 2008).

Implementation has been further defined as putting an innovation to use (Rogers, 2003) by a community, agency, or practitioners incorporating the program or practice (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). It includes what composes the program when it is delivered in certain environments (Durlak & DuPre, 2008) and the quality with which it is actually carried out (Durlak, 1998). Implementation is a

continuous construct of the degree to which an innovation's essential elements expected to contribute to a program's effects are delivered as well as any modifications (Durlak, 1998; Fixsen et al., 2005). *Interventions* are defined as either treatment or prevention activities provided to consumers (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). It is essential to differentiate activities and outcomes related to the actual intervention from those connected to the implementation (Fixsen et al.). Research findings indicate that the quality of implementation influences intervention outcomes and that programs are applied with great variation in actual practice (Durlak, 1998; Durlak & DuPre; Spoth, Guyll, Trudeau, & Goldberg-Lillehoj, 2002). The influence of programs on participants in any location is not consistent (Carter, Betts, Marczak, Rogers, & Huebner, 1998). Some interventions can show strong, reliable effects in some locations but not others (Biglan, Ary, & Wagenaar, 2000). There is clear evidence that implementation varies across providers (Durlak).

The diffusion of an innovation requires testing the program's theory, using theory to guide the implementation and, in turn, using local program implementation experiences to verify the program theory (Domitrovich & Greenberg, 2000; Durlak & DuPre, 2008; Greenberg et al., 2005). As stated by Domitrovich & Greenberg, "A well-designed program that is based on a strong conceptual model is necessary, but not sufficient, to produce behavior changes in target groups" (p. 198). Investigating how the outcomes of research-proven prevention programs are affected by real world implementation has been rather overlooked (Domitrovich & Greenberg, 2000; Durlak, 1998; Fagan & Mihalic, 2003; Lillehoj, Spoth, & Trudeau, 2002).

Program Evaluation

Definitions

Several descriptions of *program evaluation* have been noted with little consensus among scholars or professional evaluators as to a precise definition (Jacobs, 2003; Fitzpatrick et al., 2004). Evaluation has been explained as using comparable skills as research to improve the effectiveness of a program or practice in particular circumstances (Priest, 2001). It is considered to be an applied science that seeks to understand the workings of a program's design, implementation, impact, and sustainability in the community context (Mancini, Marek, Byrne, & Huebner, 2004). From Jacobs, evaluation is "a set of systematically planned and executed activities designed to determine the merit of a program intervention, or policy or to describe aspects of its operation" (p. 63). Evaluation can be categorized into two key types, process (formative) and outcomes (summative) both of which are essential (Fitzpatrick et al., 2004; Priest, 2001).

Process or formative evaluation. This type of evaluation describes the operations of a program based on expectations and assumptions about how it is supposed to operate and recommendations for improvement (Braver, Smith, & DeLusé, 1997; Fitzpatrick et al., 2004; Mancini et al., 2004). Process or formative evaluation measures fidelity, the similarities or differences in how a program is actually implemented (i.e., content, activities, format, delivery) compared to the intended design, plan, and factors that influenced the implementation of the program (Dumka, Roosa, Michaels, & Suh, 1995; Matthews & Hudson, 2001; Priest, 2001). Such evaluations help identify corrective actions, modifications, and refinements that may improve the program delivery or approach so that it will better address identified needs and increase effectiveness (Dumka

et al.; Matthews & Hudson; Priest). Data are typically collected from or about individuals who deliver the program, organizations, or others connected to the program implementation.

Summative, outcome, or impact evaluation. Such evaluations are intended to measure changes and effects on participants or the target group by comparing what was actually produced against expectations, objectives, benchmarks, or baseline measures (Dumka et al., 1995; Mancini et al., 2004; Priest, 2001). Summative evaluation assesses whether a program or approach worked and under what conditions (Fitzpatrick et al., 2004). The results are used to validate effectiveness of whether a program achieved its objectives and assist with making decisions about future use of the program (Fitzpatrick et al.; Priest). In general, data for summative evaluations may be collected from or about program participants, agencies supporting the program, administrators, as well as program personnel.

Comparing Evaluation and Research

Research and evaluation have distinctive purposes and differences between them have been noted (Fitzpatrick et al., 2004; Priest, 2001). The traditional intention of research is to generate and contribute scientific knowledge in a field of study, develop and test theory, seek conclusions, and establish certain facts that can be generalized to larger populations (Bailey & Deen, 2002; Fitzpatrick et al.; Rogers, 2003). However, basic traditional research usually does not focus on actual practical application of the knowledge although results from basic research may be used for applied purposes (Rogers). Evaluation, or applied research investigations, may also add to scientific knowledge yet the chief goal is to lead to judgments about the value of a program

approach or activity with the specific intent of addressing practical problems (Fitzpatrick et al.; Rogers). Transitioning findings from an academic lab to the community service setting has been termed *translational research* (Huffman et al., 2002). These varying goals influence the approaches and methods that are employed (Fitzpatrick et al.).

The importance of theory in evaluation design is no less important than in traditional research (Farrell et al., 2001). Usefulness and relevance to context are elemental to evaluation theory and practice (Huffman et al., 2002; Jacobs, 2003). High-quality standards when developing and implementing evaluations and interpreting results have been endorsed (Patton, 1997). It has been asserted that an evaluator should employ a rigorous evaluation process yet with flexibility, aiming for standardized implementation in accordance with the program's design (Weissberg & Greenberg, 1998).

Research is expected to have high standards for internal validity (causality) and external validity (generalizability), the extent to which study findings can be applied to other circumstances or groups. Attaining a greater level of generalizability includes rigorous selection or control of subjects, the variables and treatments, and measurements being studied (Priest, 2001). On the other hand, evaluation does not cleanly fit the stringent research framework and some argue that the prediction or generalization to other programs or situations cannot be made (Bailey & Deen, 2002; Priest). Evaluation is very specific to the context in which it is conducted. Initial program evaluation that shows effectiveness may then be researched to determine if it can be replicated to other groups or locations (Priest). Others have stated that applied research conducted with populations in real community conditions reduces the external validity limitations of controlled efficacy studies (Fixsen et al., 2005).

Efficacy and Effectiveness

The distinction between efficacy and effectiveness is important in this discussion. *Efficacy* indicates that an intervention has demonstrated success in multiple clinical trials typically utilizing controlled randomized research conditions and relatively small samples (Durlak, 1998; Matthews & Hudson, 2001; Mrazek & Haggerty, 1994). *Effectiveness* of an intervention is tested when a program is delivered in a natural community setting (Durlak; Matthews & Hudson; Mrazek & Haggerty). It is necessary to conduct effectiveness studies following the establishment of program efficacy (Mrazek & Haggerty). In general, implementation quality may be higher in efficacy trials due to tighter experimental control than in effectiveness trials conducted in local field-based settings by staff learning new procedures and who often have many other demands (Durlak). Thus, efficacy trials are considered to have higher internal validity yet lower external validity.

Evaluation challenges

Evaluators of community and school-based programs are challenged in different ways than traditional researchers. Experimental researchers tend to have or take much greater control over the study and the settings while evaluators have far less control (Carter et al., 1998; Priest, 2001). Evaluators of community-based programs often work with others that may include service providers, staff, consumers, program designers or suppliers, communities or organizations many of whom may lack knowledge of or experience with traditional research (Carter et al.; Myers-Walls, 2000; Priest). The environments and contexts in which intervention evaluations are conducted are continually in flux and new or unexpected factors may enter the scene. Therefore,

different strategies have been proposed and utilized to conduct applied research evaluating community-based programs (Carter et al.).

Participatory Evaluation

When utilizing the participatory evaluation approach, according to Cousins and Earl (1992), individuals involved in the delivery of a practice (decision-makers, service and program providers) jointly share the responsibility in collaboration with trained evaluation personnel (researchers). This approach is typically utilized for formative evaluation. The evaluator coordinates, trains, and supervises key program personnel on the necessary skills to carry out the research project in a successful manner including the provision of technical support and maintenance of quality control (Cousins & Earl). In short, the practitioners are taught to conduct their own research and evaluation (Carter et al., 1998). This method is in contrast to the passive role participants usually serve in traditional research (Carter et al.; Cousins & Earl).

With participatory evaluation, the evaluator learns about the realities of the program from the program professionals and they jointly determine which evaluation methods will best fit with the program goals, available resources, and the daily program operations and limitations. It is important to develop clear and concise protocols regarding each of their responsibilities and participation in the evaluation process (Mancini et al., 2004). With this method, evaluators must be able to tolerate imperfection, errors and mistakes that are likely to be common throughout the process (Cousins & Earl, 1992).

The evaluator takes into account the needs of those involved in the program and takes a “big picture” view of the program from various perspectives while also

maintaining sufficient technical rigor (Cousins & Earl, 1992; Fitzpatrick et al., 2004). This method incorporates flexibility, consideration of contextual variables, and inclusion of data collection procedures intended to assess important yet less apparent facets of individual and organizational behavior (Fitzpatrick et al., 2004). Training staff, teachers, or other users in the evaluation process builds their technical knowledge and skills to conduct useful applied research (Cousins & Earl; Fitzpatrick et al.). The participatory evaluation method can offer a more thorough and true perspective of the program ingredients thereby enhancing its credibility, relevance, and immediate utility for providers and audiences within the local context (Cousins & Earl; Fitzpatrick et al.; Myers-Walls, 2000).

Yet, the participatory evaluation approach has been criticized due to several potential limitations. These include subjectivity and bias due to human observation and individual perspectives by those who are also expected to demonstrate a successful program and outcomes (Fitzpatrick et al., 2004; Myers-Walls, 2000). This approach can be labor intensive and difficult to control. Great caution must be used in making interpretations and drawing conclusions; most results might be best considered specific to the context in which they were evaluated to base, then test, tentative generalizations (Fitzpatrick et al.).

Taking Prevention Programs from Research to Practice

Without a research base, the diffusion of efficacious programs is less apt to be successful (Rohrbach et al., 1996). The scientific knowledge base on real-world program implementation including measurement, factors influencing quality, and linkages between implementation quality to outcomes on children and communities has been

limited and slow in development (Mrazek & Haggerty, 1994), yet the science to practice gap is lessening (Biglan et al., 2003). Given the need for innovative and effective community and school-based programs, the path leading from early research stages to the diffusion of effective models requires more attention (Rohrbach et al., 1996).

A large amount of aggression or violence prevention programs for schools with reported evaluations are demonstration programs designed and conducted for research purposes (i.e., to determine program efficacy under controlled conditions; Wilson et al., 2003). A meta-analysis conducted by Wilson and colleagues found minimal research literature reporting evaluations of the actual implementation and effects of programs in schools. Furthermore, schools tend to frequently select programs without evidence of their efficacy or effectiveness (Rohrbach et al., 1996).

Practitioners frequently want to adapt programs to fit their local or organizational needs, which can often be contrary to what researchers intended (Dusenbury, Brannigan, Falco, & Hansen, 2003). Merging research and practice often raise a number of challenging issues such as translating findings to diverse cultural and community contexts, designing and carrying out controlled evaluation studies in contexts with little control, as well as facilitating collaboration among researchers, practitioners, and community members with different perspectives and purposes (Domitrovich & Greenberg, 2000; McHale, Crouter, Fennelly, & Tomascik, 1996). Many, if not most, prevention programs are not implemented in the same manner or with the same quality as their initial evaluations (Gottfredson & Gottfredson, 2002; Greenberg et al., 2005). Program features may be intentionally or unintentionally omitted. Limited schedules,

inadequate funding or insufficient training may prohibit effective implementation (Greenberg et al.).

Researchers of prevention programs emphasize that the outcomes from replications of empirically validated prevention approaches are at least partially based on fidelity of implementation (Dusenbury et al., 2003; Greenberg et al., 2005; Kam, Greenberg, & Walls, 2003). The attainment of program integrity enhances the likelihood that a community program will be effective. Integrity of program delivery has been shown to significantly predict short-term outcomes such as students' skills, program-specific knowledge, beliefs, and program acceptance (Rohrbach, Graham, & Hansen, 1993). Therefore, the study of fidelity is vital to understand the feasibility and translation of research into effective practice programs, the maintenance of quality, and how adaptations and other contextual factors influence outcomes (Dane & Schneider, 1998; Dusenbury et al.; Greenberg et al.). It is important to explore and document adaptations and effectiveness in the implementation process as a program is transmitted to various contexts and locations (Greenberg et al; Rohrbach et al.). The assessment of implementation is essential to understanding the contextual factors, optimal conditions, and community influences necessary for an intervention to have generalizable effects for successful broad and effective program dissemination (Biglan et al., 2000; Durlak, 1998; Durlak & DuPre, 2008; Rogers, 1995). This includes the process of how programs are spread and utilized in communities through different service delivery systems such as the Cooperative Extension Service, preschools, Head Start, and elementary schools.

The Cooperative Extension Service

The Cooperative Extension Service (CES) has a long history of applied preventive education, programming and research in both urban and rural communities, as well as building effective relationships with children, youth, families, and community leaders (Molgaard, 1997). Established by the Smith-Lever Act signed into law in 1914, CES was intended to provide quality, practical, research-based information and education to all citizens in the United States, particularly in rural areas. The government-supported extension system is a fundamental component of every land-grant university (Bailey & Deen, 2002; Molgaard; Rogers, 2003). As articulated by Rogers (2003), "The extension service is probably the oldest diffusion system in the U.S....certainly, by reputation it is the most successful" (p.166).

Extension services are located in over 3,100 counties across the country staffed with county agents or educators (Bailey & Deen, 2002). The county offices and staff establish and maintain relationships in their communities to provide educational programs, individual consultations, and media coverage to meet the needs of local citizens and are known as a valuable, trusted, and relevant source of education and support, especially in rural areas (Molgaard, 1997). From the university level, state extension specialists link and interpret current research-based knowledge in their specialized fields to the county extension employees, and thus indirectly to clients (Molgaard; Rogers, 2003).

A weakness is that most evaluation research of local programs conducted by CES has focused on outputs of program delivery and utilization rather than more careful, rigorous study of outcomes and effectiveness (Bailey & Deen, 2002; Molgaard, 1997).

There appears, however, to be growing interest and involvement among the CES in rigorous program evaluation. Local extension staff can assist researchers with needs identification, community access, understanding local culture and perceptions, identifying available resources and potential barriers, pilot testing programs, facilitating partnerships and participation, and collecting evaluation data (Molgaard). They can also provide valuable input regarding a program's core elements as well as adaptation of some components to fit local needs (Molgaard).

The CES system can be an effective and efficient network to disseminate, implement, and evaluate evidence-based prevention programs (Molgaard, 1997; St. Pierre & Kaltreider, 2004). Many CES educators have experience coordinating research-based programs and training other professionals and volunteers to deliver them (i.e., train-the-trainer approach; Molgaard; St. Pierre & Kaltreider). CES regularly collaborates with and serves as a linkage to schools and a wide variety of human service agencies and organizations (Bailey & Deen, 2002; Spoth, Greenberg, Bierman, & Redmon, 2004).

Preschool, Head Start, and Elementary Schools

Public schools, child care and preschool settings including Head Start are the largest systems capable of impacting the majority of children and children spend a large amount of their daily life at school. Schools are a primary context for social development (Bronfenbrenner, 1979) and socialization is a central element of education (Yeates & Selman, 1989). In turn, schools have become a very important setting to provide programs to promote social adaptation and well-being and reduce behaviors that place them at risk (Greenberg et al., 2005; Rohrbach et al., 1996; Taub & Pearrow, 2005).

Numerous examples of classroom-based preventive interventions for preschool children and children in the early elementary school years utilizing behavior management, social skills, and problem-solving training have been documented (e.g., CPPRG, 2002; Lopez et al., 2000; Shure, 2001; Vestal & Jones, 2004; Webster-Stratton & Taylor, 2001). School-based programs can be an effective and essential approach to strengthen children's social skills and environments (Farrell et al., 2001; Fraser et al., 2005; Zimmerman & Arunkumar, 1994). A positive school atmosphere and characteristics, and close relationships with adults can exert protective effects (Rutter, 1979). Engagement with and support from school have been shown to moderate risk behaviors (DuBois et al., 1992; Jessor, Turbin, & Costa, 1998). Teachers have a crucial role in helping children learn skills that will increase their resilience when faced with difficult situations (Lynch, Geller, Hunt, Galano, & Dubas, 1998). Interventions based in a social-cognitive perspective incorporate learning, thinking, and reasoning which are concepts and skills in line with the basic agenda of schools. Thus, schools are a suitable context for prevention programs emphasizing social-cognitive information processing functions and skills (Boxer & Dubow, 2002).

However, diffusing programs in schools can be an immense challenge. Schools typically have learned about prevention programs through informal networks or by commercial vendors rather than objective sources of research-based information (Rohrbach et al., 1996). Many systemic issues create obstacles to implementation of educational innovations such as district structures, funding, reforms, schedules, testing, morale, and political pressures (Rohrbach et al.). Particular features of psychosocial-based prevention programs may cause concerns that hinder acceptance or are not viewed

as a good fit with priorities and needs. Program strategies and approaches may be different from the teaching style, skills, and experience of teachers (Lynch et al., 1998; Rohrbach et al.).

Extension-Schools Collaboration

As stated by Spoth et al. (2004), "partnerships among schools, universities, and communities…can build upon previously developed public education infrastructures for provision of training, technical assistance, and other resources used to enhance capacity for sustained implementation of evidence-based programs" (p. 32). Collaboration, teamwork, and open communication between practitioners, service providers, and researchers are necessary to facilitate this process (Dusenbury & Hansen, 2004; Rohrbach et al., 1996).

Schools need guidance and information about innovations supported by solid research evidence from knowledgeable, trustworthy sources (Rohrbach et al., 1996). In regards to the successful implementation and delivery of a program, teachers need help to understand critical elements and acceptable modifications through ongoing training and support and interactive teaching (Dusenbury & Hansen, 2004; Rohrbach et al.; Tobler & Stratton, 1997).

University researchers and community or school-based practitioners have overlapping but differing goals, concerns, and priorities that may greatly influence a program's implementation and effectiveness (Weissberg & Greenberg, 1998). Such collaboration brings many challenges. As previously mentioned, the implementation and evaluation of programs in real community-based environments such as CES, preschools,

Head Start centers, and elementary schools requires much more flexibility than traditional, controlled research.

Rural Locations

In rural areas, teachers often deliver classroom prevention programs due to limited external resources (Lillehoj et al., 2002). Schools and teachers in rural areas often have limited affordable opportunities for training and technical assistance for prevention intervention programs and are in need of such resources and support (Lillehoj et al.). Evaluations of prevention program delivery in rural schools have been sparse in the literature (Lillehoj et al.). Relative to urban areas, rural schools tend to be smaller, more geographically dispersed, and are more stable and closed social systems (Beirman & CPPRG, 1997). Reports from the multi-site comprehensive prevention program, Fast Track, suggest program needs, design, and implementation issues are fairly similar whether in rural or urban locations (Beirman & CPPRG). Concerns were expressed by teachers about the program requirements of teaching curriculum lessons three times per week as well as the possibility of their supervisors receiving negative evaluations about their performance. Rural school teachers presented as many or more curriculum lessons as urban teachers (Beirman & CPPRG). Awareness and sensitivity to local issues and organizational systems and building personal trusting relationships between program staff and key community members including teachers are essential to program success regardless of rural or urban environments.

Summary and Purpose of Study

From the literature review, a number of inferences can be drawn and several gaps identified. There appears to be a general consensus in the field of research and practice

for the need to assist children's development of social competence so that, in turn, the likelihood of later problems and maladjustment will be reduced. Empirical evidence indicates that interpersonal cognitive problem-solving may be a particularly important and effective skill for this purpose. The prime opportunity to achieve the best results is between the ages of 4-8 years. School-based settings including preschools, Head Start centers, and public elementary schools are important and potentially effective sites for such prevention efforts.

I Can Problem Solve has substantial support as an efficacious and effective preventive intervention program. However, there are some limitations. The linkages between ICPS skills and resulting behavior change, and the magnitude of the effects, have been inconsistent across studies. Different methodologies and samples may be a contributing reason for these discrepancies. The debate between the quantity versus quality of generated problem solutions is one key issue. It appears that both need to be explored.

Prevention programs are not implemented in the exact fashion or with the same quality as initial trials and efficacy evaluations. Programs or practices have certain components that may be critical to produce and assess desired outcomes. ICPS is no different. Adherence to the curriculum outline, the number of lessons presented to children, the teacher's use of dialoguing, and integration into the regular classroom appear to be vital elements. Among the literature specific to evaluation of the ICPS program authored by Shure (2001), it appears that Kumpfer et al. (2002) is the only published study reporting fidelity and quality of delivery. Otherwise the rare assessments of the implementation process have been conducted for modified or expanded program

models (e.g., Webster-Stratton & Reid, 2004). However, it is important to note that those studies were large rigorous research projects and involved direct teacher training, monitoring, and data collection by the researchers and their associates. Until now, the ICPS program has not been adapted, broadly utilized, or evaluated through the Cooperative Extension Service. Furthermore, who provides ICPS training to the children has been an issue. Prior investigations have all focused on direct training of teachers without an intermediary. Thus, the diffusion of the ICPS program through the CES delivery system to provide training and technical support to preschools, Head Start centers, or elementary schools has not been tested. There have been no assessments of similarities or differences in program implementation or effectiveness of ICPS based on whether preschool, Head Start, elementary teachers or county extension educators provide the program. In addition, evaluation of the ICPS program across multiple sites in diverse rural areas is lacking except for the Kumpfer et al. (2002) investigation. More study with rural populations would be valuable.

Diffusion and implementation of effective prevention programs at the community and school level is a very complicated endeavor. The nature of research as applied in "real world" settings creates different difficulties when conducting program evaluation. As a result, traditional research strategies are often inappropriate or not feasible for evaluation purposes (Bailey & Deen, 2002; Biglan et al., 2000; Carter et al., 1998; Jacobs, 2003; McHale et al., 1996; Myers-Walls, 2000). For the present study, a participatory evaluation approach is employed in which county educators were instrumental in the evaluation process and procedures. Data were generated by and

collected from the county educators and teachers. Given limited financial resources, it was not possible to hire independent data collectors or monitors for the project.

Study Purpose and Research Questions

Therefore, the purpose of the current study is to examine the effects of the ICPS program on preschool and early elementary children utilizing the Cooperative Extension Service system to implement the ICPS program in partnership with teachers. The approach is applied in a universal fashion to general school and classroom populations regardless of risk status (Mrazek & Haggerty, 1994). To investigate child outcomes, two primary research questions are to be addressed: (a) Will children receiving the ICPS program exhibit a higher level of social-cognitive skills (i.e., number of alternative solutions, relevance of solutions, and competence of solution types) than the control group? and (b) Will teachers' ratings for children who received the ICPS program indicate more competent behavior (i.e., more prosocial behavior, better emotional regulation, lower aggression, less withdrawal, and more positive academic conduct) than ratings for the control group? In addition, formative evaluation data on the implementation process will be examined and described.

Hypotheses

Two preliminary assumptions are set forth. First, a significant correlation will exist between children's social-cognitive skills (alternative solutions, relevancy ratio, solution types competence) and competent behavior (prosocial skills, aggression, emotional regulation, withdrawal, academic skills) at time 1. Second, the sex of the children (boys or girls) will be significantly associated with social cognitive skills and competent behavior at time 1 as follows: (a) girls will generate a higher proportion of

competent solution types than boys, (b) girls will have higher ratings of prosocial behavior than boys, and (c) boys will have higher ratings of aggressive behavior than girls. Based on the literature, neither the direction nor significance of associations between the children's sex and social-cognitive skills (alternative solutions, relevancy ratio, and solution competence) or competent behavior (overall, emotional regulation, withdrawal, and academic skills) are predicted. If effects of sex on social-cognitive skills or competent behavior are significant at time 1, sex will be explored as a factor in further intervention tests.

Two principal hypotheses are predicted: (a) ICPS trained children will generate significantly better social-cognitive skills at time 2 than the control group as indicated by a higher proportion of alternative solutions, relevance, and solution competence, and (b) ICPS trained children will have significantly higher competent behavior as rated by teachers at time 2 than the control group as indicated by more prosocial behavior, better emotion regulation, lower aggression, less withdrawal, and better academic skills.

Given identified variations in social-cognitive skills and differences in school and grade environments for children between the ages of 4-8, it may be important to examine subgroups of children by age. All age levels of children will initially be analyzed as a combined group. If the findings are non-significant, further analyses will be conducted by removing one grade at a time beginning with the preschool children.

CHAPTER III

METHODOLOGY

Study Background

In 2007-2008, the Oklahoma Cooperative Extension Service (OCES) conducted a pilot implementation of the *I Can Problem Solve* (Shure, 2000) program in 20 counties across the state. This project emanated from a multi-year targeted impact program. The development of the design and procedures was led by the principal investigator in her role as an assistant state extension specialist. County extension educators in Family and Consumer Sciences/4-H Youth Development (referred to as county educators) who are employees of Oklahoma State University and served on the impact program team provided training and technical support on the ICPS program to classroom teachers in elementary schools, Head Start, and other preschool centers. The program was targeted to children ages four to eight years old. Evaluation measurements and methods assessed program outcomes and process through the use of child interviews, teacher ratings of individual child behavior, and teacher and county extension educator assessments of program delivery.

Research Design

A quasi-experimental pre-test/post-test non-equivalent control group design was employed for this study and involved the use of an intervention group and a control

group. Given the intent to implement and evaluate the program through county educators serving on the impact team and in educational settings spread across the state, neither random selection of locations and teachers nor random assignment of subjects into groups was feasible. Pre- and post-test administration of outcome measures provides a basis for assessing the effects of the intervention. A non-equivalent control group design can control for threats of internal validity (e.g., history, maturation, testing, and instrumentation), but this is dependent on the extent to which students in the two groups are comparable. It is especially important that groups are recruited in a similar manner and students in both groups have similar scores on outcome measures at pre-test. The design may be particularly vulnerable to the threat of regression if pre-test mean scores for either group are extreme. Pre-testing of both groups and collecting demographic and background data on students in both groups will permit assessment of threats to internal validity.

The intervention was aimed at individual teachers so it is desirable to analyze outcome data at that level rather than the classroom level. Since it was not possible to randomize teacher assignments or treatment groups, an attempt was made to standardize procedures for program delivery and assessment as described in the following sections. Of course, due to the nature and intent of the project, it was impossible to monitor and control for all differences. However, this can be viewed as an important feature of this study in that it allows the examination of the program as it may naturally occur through regular community-level Cooperative Extension and school-based education systems and with minimal contamination by outside investigators.

Sample

Participants

Sampling Population

The sampling population was preschools, Head Start centers, and public elementary schools with teachers and classes of children ages four through eight years (preschool through second grade). Using convenience sampling, each participating county educator recruited one local preschool, Head Start, or elementary school teacher to pilot the ICPS curriculum with students in their respective classrooms. In addition, each county educator was to recruit a control teacher with a classroom of similar age and/or grade in the same or nearby school facility who would not be trained or receive the ICPS program. All except two participating county educators recruited control classrooms in the same school site as the intervention classrooms; one county used Head Start classrooms in two separate locations within the same community and one county used early childhood education and child care classes at different centers in the same community.

All local contacts were made personally by the county educators based on their knowledge of the communities within their geographic area and with whom they believed the program could be successfully implemented. Some selected school locations with which they had previous working relationships while others established new contacts with school settings. In some instances contacts were initiated directly with teachers and in others contacts were initiated with center directors or school principals who then identified potential teachers. Voluntary involvement was emphasized.

Recruitment and Consent

Standard letters describing the ICPS curriculum, purpose, and scope of the evaluation research study and to request consent for participation were provided to the county educators. Each county educator delivered a letter addressed specifically to the elementary school principals, preschool, and Head Start center directors. Once the principal or center director provided signed consent, similar letters requesting consent to participate were given to identified teachers. Different versions were written appropriate to the intervention teachers and the control teachers. The letters stated that each intervention teacher was to be provided a copy of an ICPS manual as well as a kit of educational resource materials to use for the ICPS program valued at approximately $65.00. Both the intervention and control group teachers were offered $30.00 to be paid by check upon their completion and submission of the program evaluation documents.

Teachers then distributed letters requesting consent to parents or guardians of all children in their classrooms. Again, different versions were distributed to the intervention and control classes. Parents returned consent forms to the teachers. The teachers submitted their own signed consent form along with those received from parents to the county educator. Copies of all consent forms were then delivered to the principal investigator. No other advertisements were utilized to recruit participants. Signed consent forms were received for 70.8% of intervention class children to participate and for 54.7% of comparison class children. Evaluation data were collected only on children whose parents consented but all children in the intervention classrooms received the ICPS program intervention.

Final Sample

Of the 21 county educators participating in the impact team project, 17 completed program delivery and nearly complete sets of evaluation data were collected including, child interviews, teacher ratings of child behavior, and program delivery questionnaires. From these sites, 368 children and 34 teachers served as subjects for the present study. The sample included 212 students and 17 teachers in the intervention classes, and 156 students and 17 teachers in the control classes for whom signed consent forms were received. Of the four county educators and sites excluded from the analyses, one was unable to complete the program due to a series of turnovers in Head Start teaching staff, one reported being unable to obtain consent from an elementary school principal and thus did not collect or submit data, one started but did not finish the protocol, and another did not implement the program or evaluation protocol as planned. Children missing substantial pre-test or post-test data were deleted. The final sample for analyses was 335 children, 202 in the intervention group and 133 in the control group.

School and community characteristics. Data are summarized in Table A1 in Appendix A. Participating schools included three child development and day care centers, three Head Start centers, and 13 public elementary schools. All schools are in primarily rural to small micropolitan communities: three with populations less than 2,500, nine with 2,500 to 10,000, and three with 15,000 to 30,000, except for one urban metropolitan area with more than 537,000 (U. S. Census, 2000). Elementary schools range in student populations size from 99 to 629 (M = 390) and serve a variety of grades from pre-kindergarten extending to second grade up through eighth grade (Oklahoma Education Oversight Board, Office of Accountability). Enrollment at participating non-

elementary school affiliated Head Start, child development, and day care centers ranged from 18 to 89 (M = 53) Of the participating elementary schools, the mean rate of children qualifying for free and reduced lunch in 2007 was 74% compared to the state average of 56% (Oklahoma Education Oversight Board, Office of Accountability). Similarly, participating Head Start, child development and day care centers had a mean rate of 74% children considered as low income. Therefore, the sample for the study was drawn from school sites with a substantially lower income population.

Child characteristics. Data are presented in Table 1. The race/ethnicity, sex, and birth date of participating children (intervention and control) were obtained before program implementation. The request for this information was included on a brief questionnaire with the parental consent form. For analyses, sex was coded (boys = 1, girls = 2), grade cohorts had coded indicators (first grade = 1, second grade = 2, kindergarten = 3, preschool = 4), and race/ethnicity was coded (African American/Black = 1, American Indian = 2, Asian = 3, Caucasian/White = 4, Hispanic/Latino = 5, Multiracial = 6, other = 7). Children's birthdates were transformed into ages by year and months.

The final sample (N = 335) included 50.7% boys and 49.3% girls. Children ranged in age from 3 years and 4 months old to 9 years and 9 months old (M = 6 years and 3 months) with data missing for 8 children (2.4%). Participating children reflected rather similar amounts in each grade, 28.4% preschool, 23.3% kindergarten, 26.9% first grade, and 21.5% second grade. The racial/ethnic composition of the children was 66.0% Caucasian/White, 13.1% American Indian, 5.4% Hispanic/Latino, 3.9% African American/Black, 13.1% multiracial, and 0.6 Asian, with 8 children missing data (2.4%).

Table 1

Demographic Characteristics of Final Sample of Children by Group

Characteristics	Intervention	Control	Total
	n = 202 (60.3%)	*n* = 133 (39.7%)	*N* = 335
Age[a]			
3	9 (4.6)	7 (5.3)	16 (4.8)
4	21 (10.7)	22 (16.8)	43 (12.8)
5	51 (26.0)	30 (22.9)	81 (24.2)
6	54 (27.6)	26 (19.8)	80 (23.9)
7	40 (20.4)	28 (21.4)	68 (20.3)
8	18 (9.2)	17 (13.0)	35 (10.4)
9	3 (1.5)	1 (0.8)	4 (1.2)
Grade			
Preschool	59 (29.2)	36 (27.1)	95 (28.4)
Kindergarten	46 (28.8)	32 (24.1)	78 (23.3)
1st	55 (27.2)	35 (26.3)	90 (26.9)
2nd	42 (20.8)	30 (22.6)	72 (21.5)
Sex			
Boys	102 (50.5)	68 (51.1)	170 (50.7)
Girls	100 (49.5)	65 (48.9)	165 (49.3)

Table 1 (continued).

Characteristics	Intervention	Control	Total
Race/Ethnicity[a]			
African American/Black	9 (4.6)	4 (3.1)	13 (3.9)
American Indian	22 (11.2)	22 (16.9)	44 (13.1)
Asian	2 (1.0)	0	2 (0.6)
Caucasian/White	134 (68.0)	87 (66.9)	221 (66.0)
Hispanic/Latino	10 (5.1)	8 (6.2)	18 (5.4)
Multiracial	20 (10.2)	9 (6.9)	44 (13.1)

[a]Missing data for 8 (2.4%) of children.

In comparison to the state of Oklahoma's population (U.S. Census QuickFacts, 2007), the sample reflects about 6% fewer White (non-Hispanic), 4% fewer African American/ Black, and nearly 2% less Hispanic/Latino persons, and a higher percentage of American Indians and multiracial persons, over 5% and 9% respectively.

Chi-square tests indicated no significant ($p < .05$) differences between the intervention and control groups on age, grade, sex, or race/ethnicity. Data are provided in Table A2, Appendix.

Program Implementation and Assessment

Procedures for Program Implementation

Training and Consultation

In April 2006, the OCES county educators received 1 ½ days of primary training on the ICPS program from an experienced associate of the program author, Dr. Myrna Shure. County educators hired after the training were provided four hours of training by the principal investigator. The training covered core program components, skills practice and role play, review of ICPS manuals and lessons, and information and recommendations for implementation in schools and working with teachers.

The trained county educators were instructed to provide individual training, consultation, and mentoring on the ICPS curriculum to the intervention classroom teacher each had secured. The county educators were instructed to schedule and maintain regular contact with their identified intervention teacher via personal meetings, phone calls and e-mail, an average of about one hour per week with some weeks requiring more time while other weeks less so. (Data on actual time spent in training and contact will be presented in the Results chapter). It was not necessary to meet in person every week. The county educators received a tool kit of materials with which to train and provide teachers including seven sets of PowerPoint slides covering necessary ICPS key concepts. The control group classes received no ICPS training information or program materials and continued their regular school curriculum and activities.

The intervention teachers were to provide the majority of ICPS lessons and related concepts to their classrooms of children. Instructions emphasized that the county educators should focus on skill building, technical support and training with the teacher

rather than directly teaching lessons to children in the classroom, however they could co-teach or model teaching a lesson until the teachers were familiar with the ICPS curriculum. The goal was for the teacher to present the lessons, utilize dialoguing techniques, and integrate the ICPS concepts with daily classroom activities. County educators were not required to be present in the classroom for every lesson presentation, yet were encouraged to observe the teacher's grasp and presentation of the ICPS lessons, concepts, and skills when possible to provide appropriate technical support and feedback. However, as will later be described, it became apparent that some county educators more frequently co-taught and/or directly presented lessons to children in the classrooms.

Intervention Program and Implementation Procedures

The ICPS program emphasizes the manner in which children think concerning problematic social situations rather than the content or specific behaviors, and includes the abilities to generate alternative solutions to problems, recognize consequences, and use cause and effect reasoning (further information is covered in the literature review; Shure, 2001). Other key concepts include consideration of their own feelings as well as the feelings of others (e.g., empathy). The ICPS curriculum is developmentally age specific and utilizes a variety of methods including word concepts, pictures, role-play, puppets, stories, and group interaction. Daily real-life problems are used as examples. Teachers are trained to demonstrate and reinforce skills beyond the actual lesson presentations using vocabulary words, dialoguing techniques, and other supplementary activities. There are also complementary applications included for teachers to enhance interaction in the classroom, curriculum ideas, and visuals such as classroom posters.

Both authored by Shure (2000), the ICPS Preschool manual includes 59 lessons and the ICPS Kindergarten & Primary Grades manual contains 83 lessons. From each manual, 36 lessons were scheduled to be presented for this project. It was determined that there would not be adequate time or participation if the full array of lessons were required. With consultation from the program author, reviewing related literature, and a thorough review of all manual content, the final lessons were selected to ensure that all core program concepts were covered. Lessons omitted were considered to be reinforcements or similar to the other included lessons. To promote consistency, detailed lesson schedules were developed for each of the two ICPS manuals. Based on the age or grade level of the classrooms with which they would be working, the appropriate lesson schedule was distributed to the county educators and the intervention teachers (included in Appendix B). County educators and teachers were instructed that the 36 lessons were to be presented as a minimum yet additional lessons could be used.

Each ICPS lesson takes approximately 10 to 30 minutes to facilitate and lessons are presented in a sequential fashion. For this project, three to four selected lessons were to be utilized each week over approximately 10 weeks. The schedule could be slightly modified if preferred or necessary by condensing lessons into 9 weeks or stretching to 11 or 12 weeks. This allowed adjustment for times when children were out of school based on the local school schedule, teacher illness, or other circumstances. It was believed that this flexibility was important for the county educators and teachers to successfully implement the curriculum. The importance of following the protocol, curriculum lessons, and maintaining program quality and fidelity was emphasized to the county educators.

The teachers and students were involved in the program and evaluation process approximately three to four months. For this project, the ICPS program was presented and evaluation data were collected between February 2007 and April 2008. Plans were not realistic for the protocol implementation to occur within a consistent time frame across sites and there was greater variability than anticipated. Seven county educators completed the protocol in spring 2007, six initiated the protocol early in the fall of 2007 and completed required tasks by the holiday break of the fall semester, and another four started later in the fall of 2007 and continued into the spring semester of 2008. The county educators were instructed to obtain consent and pre-program evaluation data within the two weeks prior to lesson implementation and post-program evaluation data within one to two weeks at the end of all intervention class lessons.

Protection of Human Subjects

The Oklahoma State University Institutional Review Board approved this dissertation study on September 4, 2008 (in Appendix C). Two hours of online training on evaluation procedures including consent and confidentiality was provided to participating county educators in 2006-2007. The county educators, graduate assistants, or other staff persons assigned to this project signed a confidentiality agreement. All information about participants was kept confidential. All adults and children were given the opportunity to stop the evaluation procedures with no penalty.

Assessment of Program Implementation

Measures and procedures for the formative evaluation of program implementation are explained first followed by the variables, measures, and procedures for the summative evaluation of program outcomes (instruments are in Appendix B). Variables were chosen

based on theory and previous program intervention studies, models, and instruments (e.g., Fagan, Hanson, Hawkins, & Arthur, 2008; Fraser et al., 2005; Gottfredson & Gottfredson, 2002; Gottfredson & Wilson, 2003; Lillehog et al., 2004; Webster-Stratton et al., 2008). All program implementation data were collected using written self-reports from the county educators and intervention teachers as resources were not available to utilize independent data collectors, interviews, or observation.

Program Delivery Questionnaire (PDQ)

Valid and reliable instruments to assess program implementation are relatively rare (Fagan et al., 2008). As no standardized instruments were found appropriate for this study, questionnaires were compiled from several sources to fit the needs and questions explored in this project (e.g., Fagan et al.; Kumpfer et al., 2002; Webster-Stratton, n.d.; Lillehoj et al., 2002).

Teachers and county educators each completed a Program Delivery Questionnaire (PDQ) to assess perceptions and experiences of the training process and how they used and implemented the ICPS program. Two versions of the PDQ were designed for this study, one for county educators (36 items) and one for teachers (37 items). Both were designed to associate similar information from the distinct perspectives of the county educators and the teachers in order to assess consistency or differences in responses. In each version, 29 items were short statements rated using a five-point Likert scale ranging from 1 (none/not evident/not at all) to 5 (very evident/great/very much). In the county educator version, 13 items requested ratings of the intervention teacher's use and implementation of the ICPS program including lesson adherence, understanding of program concepts, quality of delivery, interaction with and engagement of students

including dialoguing, use of program teaching tools, generalization and integration outside of ICPS lessons, and whether ICPS materials were sent home to parents. Conversely, in the teacher version, 13 items asked the intervention teacher to rate themselves on the same statements.

Another 16 items addressed the ICPS training and mentoring provided by the county educator to the teacher. In the Extension Educator version, the county educator was asked to rate themselves on the support, communications, interactions, reinforcement of ICPS concepts, amount and quality of training and mentoring provided to the teacher, as well as their level of skills and sense of confidence providing the training and mentoring. In the teacher version, the teacher was asked to rate the county educator on similar items. Teachers were also asked the number of times and length of time they spent with the county educator to receive training or consultation. The county educators were also asked whether they had previously worked with the teacher in a professional capacity or had a personal relationship. The remaining items on the questionnaires were in an open-ended format requesting information regarding what training resources or other materials were most useful and least useful, successes and barriers encountered during the training and mentoring process, and what was most helpful and recommendations for improvement. The program delivery assessment items will be summarized as descriptive data but not included in any statistical data analyses.

Inter-item reliability was calculated for the scaled PDQ items. For the teacher version, Cronbach's α for the 13 teacher self-assessment items was .77 and for 16 items for the teachers' assessments of county educators the coefficient was .88. For the Extension Educator version, alpha for the 12 self-assessment items was .81 and .84 for

the 16 items assessing the teachers. The alpha values indicate an acceptable level of inter-item reliability.

ICPS Lesson Checklist and Training and Consultation Log

Two instruments were designed to track the use of ICPS lessons and program activities, training and consultation contacts. The training and consultation log asked the county educators to specify dates and amount of time spent with the intervention teacher to present the training and practice PowerPoint slide sets, other in-person training or consultation, observations of the teacher in the classroom presenting or using the program, and other contacts via phone or e-mail. It also requested information on ICPS lessons that the county educator directly presented to the children or co-presented with the teacher.

The lesson checklist identified the ICPS lessons to be taught according to the lesson schedule provided for the appropriate age group. The checklist requested information on the date the lesson was presented, the amount of time spent, and who presented the lesson to students in the classroom (i.e., the intervention teacher, the county educator, or co-taught by teacher and county educator). Also requested was information on the use of additional ICPS lessons, reasons why lessons or activities may not have been used, and other content, resource, or activities that may have been added.

Program Outcomes and Assessment

Assessment of Social Cognitive Skills

Children's social cognitive skills were measured by the following quantitative and qualitative problem-solving skills components: (a) number of alternative solutions, (b)

ratio of relevant solutions, and (c) solution competence. The measure and procedures will be discussed followed by how each component will be determined.

Child Hypothetical Problem-Solving Interviews

Items for current study. To measure each child's ability to solve interpersonal problems, the hypothetical problem-solving situation technique was utilized in individual interviews with students in both intervention and comparison classes two times, pre- and post-program. Procedures and a series of ten scenarios and questions were compiled and adapted from the *Preschool Interpersonal Problem Solving Test* (PIPS; Shure, 1992), the *Social Problem Solving Scale* (SPS Scale; Conduct Problems Prevention Research Group, 1991), and the *WALLY Social Problem-solving Test* (WALLY; Webster-Stratton, 1990). Two items address peer interaction problems (how to obtain a toy), four items address teacher-child interaction problems (torn book pages, breaking glass bowl, late from recess, and breaking flower pot), two items address peer provocation (pushed in line, called names), and two items address peer group entry (initiate friendship; entering a game). This array of items was selected based on the review of the literature and the questions of interest for this study.

Five items were utilized from PIPS (Shure, 1992). Two peer problems involve a child who wants to play with a toy being played with by a second child. Three situations were adapted from mother-child problems in which an action made the mother angry. However, to better fit this project teachers were substituted for mothers (see also Seaman & Sloane, 1984). Validity of the PIPS test as a discriminator of behavioral adjustment, overt behavior change, and prosocial behaviors with preschoolers and early elementary school-age children has been confirmed by research studies with children in both low and

middle SES levels (Arend, Gove, & Sroufe, 1979; Barglow, Contreras, Kavash, & Vaughn, 1998; Shure, 1992; Snyder & Shanks, 1982; Spivack & Shure, 1974; Youngstrom et al., 2000). One-week test-retest reliability of PIPS with randomly-selected four-year old inner-city preschool children resulted in a coefficient of .72 and a three to five month test-retest assessment with a separate group of children produced a coefficient of .59 (Shure, 1992). These indicate the measurement's moderate stability with young children over time.

One teacher-child situation was drawn from the WALLY test (Webster-Stratton, 1990). The *WALLY* was adapted from the original PIPS test (Spivak and Shure, 1974) and Child Social Problem-Solving Test (Rubin and Krasnor, 1986). The validity of WALLY has been demonstrated by evidence that it distinguishes children with behavior problems in regards to aggressive strategies and alternative prosocial strategies. Furthermore, reports of construct validity indicate a satisfactory positive association among the WALLY total prosocial score and Rubin total positive strategies (r = .60), and the WALLY negative score and Rubin negative strategies (r = .50; Webster-Stratton, Reid, & Hammond, 2001).

Two peer provocation and two peer group entry situations were adapted from the SPS Scale (CPPRG, 1991). Internal consistency for this scale has been reported as acceptable to strong with alphas of .70 to .88 (Farmer, Bierman, & CPPRG, 2002; Miller-Johnson, Coie, Maumary-Gremaud, Bierman, & CPPRG, 2002) and has stability over four years (α = .79; Dodge, Pettit, Bates, & Valente, 1995).

Interview procedures. The county educators were trained on and conducted the interviews as it was not possible to employ independent data collectors or interviewers.

Hypothetical scenarios and questions were provided for the county educators to use along with guidelines on conducting the interviews (See Appendix B). Interviews were conducted with children in the school setting during regular class time using a private, quiet area or space. OCES county educators were to individually meet with each participating student (intervention and control) twice, prior to the beginning of ICPS program lessons and again after conclusion of ICPS lessons. The interview with each child took from 15-30 minutes. Due to the young ages of the children and their potentially limited reading and writing skills, an assent script was read to each child and verbal assent obtained before conducting interviews. Interviews were not conducted with 10 children (one in intervention class and nine in control classes) who did not provide verbal assent.

Following a brief time to develop rapport with the child, each hypothetical story or scenario of a problem was read out loud by the county educator. A brightly colored illustrated picture depicting similar age children accompanied each scenario to help tell the story and give the child a visual reference. Each situation and illustration involves a child of the same gender; separate versions were designed for boys and girls. After each scenario was read, the child was asked what the characters in the story could do to solve the problem. The children were prompted to provide as many different solutions as possible, up to four. The child's initial solution counted as their first response. Then the interviewer was to probe for up to three additional responses such as: "That is one way, now what would be another idea?" or "What else could he/she do?" If the child provided more than one initial response, the interviewer only needed to probe to get up to four responses. Any response not offering a new, relevant solution to the problem was to be

probed. If the child did not give a new relevant solution after the initial question plus three probes, they were to move on to the next story. The county educator documented the responses in writing. At the end of the interview, each child was provided a small item such as a sticker or pencil. This was given to children regardless of whether they provided assent or not, and whether they fully or only partially completed the interview process. Therefore, they were not penalized for saying no or not participating.

Coding solution categories. Each solution response was initially coded into one of 21 categories by one of two trained raters blind to the subject's group status (see ICPS Evaluation Codebook, Appendix B). The categories reflect behaviors that have been used in previous studies (e.g., CPPRG, 1991; Mayeux & Cillessen, 2003; Shure, 1992; Webster-Stratton, 1990; Youngstrom et al., 2000) and to fit the questions of interest in this study. Sixteen of the categories were relevant responses: Ask/borrow/share, relational manipulation, passive-inactive, verbal assertion, telling/tattling, trick/finagle, command, force-grab, attack/physical aggression, verbal aggression/negative gestures/threats, relational aggression, trade-bribe, replace/repair, apology-truth, manipulate affect, and positive alternatives. Relational manipulation (Harrist et al., 2006; Harrist et al., 2008) is a construct that has not been included in other published studies using the hypothetical problem-solving technique (see literature review). Four of the coding categories identified a response that was considered a repetition or enumeration of a previous relevant solution, was a non-response (I don't know), was irrelevant, or the question was skipped or missed, and one category indicated a relevant unique response that did not fit into given category groups. Regarding the latter, responses were reviewed and determined whether they could be coded into one of the other 16 relevant categories. For

each of the 10 scenarios, a given category of response was scored only once. A subsequent response that was the same or similar category for a given scenario was coded as a repetition or enumeration.

Probes. In addition to the response coding, the number of probes used by the interviewer (county educator) to prompt children's responses was rated by the coders on each interview form as (a) probed consistently (3 times), (b) probed inconsistently (1 or 2 times), or (c) no probes after first response to the initial question. This step was taken as it was determined that some county educators did not consistently prompt per interview instructions. Due to this fact and prior literature reporting various findings regarding first versus multiple generated solution responses by children (referenced in the literature review), the following three social cognitive skills components were calculated and reported in different manners. As described, some analyses included only children with whom consistent prompting with three probes was apparent, some included all children's responses regardless of the number of probes, and some focused only on initial solution responses without probes.

Number of alternative solutions. To calculate the first social cognitive skills component, codes were converted to frequencies. The total number of different relevant solutions given by the child for each of the presented problems was counted. The data were analyzed and will be reported for (1) participants who consistently received three probes, and (2) initial responses without probes.

Relevancy ratio. In addition to the number of alternative solutions, the number of repetitions, enumerations, and irrelevant responses, and the mean number of different relevant solutions given per each of the 10 problem situations, were counted. Then,

frequencies were converted to proportions. Ratios were calculated to compare the total number of relevant alternative solutions to the total number of all relevant alternative solutions and no-solution responses (includes repetitions, enumerations, irrelevant, and non-solutions). The data were analyzed and will be reported for (1) all participants in the sample including any or all probes, and (2) initial responses without probes.

Solution types and competence. To assess the third component of social-cognitive skills, the 16 solution response categories were reduced to six classifications to further explore whether the type of solutions might be differentially related to criteria of interest. The solution types and the original categories from which they are composed are as follows: (a) manipulative (relational manipulation, trick/finagle, trade-bribe, manipulate affect); (b) aggressive (force-grab, attack/physical aggression, verbal aggression/negative gestures/threats, relational aggression); (c) assertive (ask/borrow/share, verbal assertion, command); (d) tell-tattle (tell/tattle); (e) react positive (replace/repair, apology-truth, positive alternatives); and (f) passive (passive-inactive). Each of the six solution types was then calculated as a proportion comparing the total for each solution type to the total number of relevant alternative solutions offered across all vignettes (solution type/total number of relevant solutions). These are considered as ratios of children's problem-solving competence. A composite score for competent problem-solving was determined by adding the total percentage of assertive plus reactive positive solution types then subtracting the aggressive type (assertive + reactive positive – aggressive). The data were analyzed and will be reported for (1) all participants in the sample including any or all probes, and (2) initial responses without probes.

Reliability. Each of the two coders (masters level graduate students) coded 19 or 20 completed interview forms as training. The interviews were also independently coded by the principal investigator. Initial disagreements in coding and any misunderstandings or different interpretations were discussed and clarified. Initial intercoder reliability, using percent agreement, between the principal investigator and each of the two coders was 93% and 91%. These ratings indicated an acceptable level of reliability was achieved after training and the coders were able to perform further coding in a consistent manner. To test overall intercoder reliability, 19.7% of all completed interview forms were randomly selected using a random number generator and independently coded by the principal investigator in addition to one of the assigned coders. The coders were blind to status (primary vs. reliability) of the selected forms. Logs summarizing codes for the interview forms were kept to determine and report reliability. Intercoder reliability was calculated using percent agreement (number of common agreements divided by total number of agreements plus disagreements by coder A + coder B) for all individual responses. In total, 634 interview protocols were completed (n = 317 children each pre and post) and 125 were coded again for reliability. Overall intercoder agreement was 88%. This process was repeated to assess percent agreement on the six solution types. Each initial category code was re-coded to the appropriate solution type classification. Overall agreement for the six solution types was 92%.

In addition, Cohen's kappa coefficients were calculated for each of 6 solution types to determine intercoder reliability for categorical data. The $\kappa = .21$ (approximate $T = 16.24$, $p < .000$) indicating a slight to fair agreement (Viera & Garrett, 2005). The kappa

statistic corrects for chance agreement and is a conservative index of the magnitude of agreement between coders (Viera & Garrett, 2005).

Assessment of Social Competence

Two overall scales and five behavior components measured social competence: (a) prosocial skills; (b) aggression; (c) emotional regulation; (d) withdrawal; and (e) academic skills. Intervention and control class teachers were to rate each participating child in their classroom both pre- and post-program using a written form (in Appendix B). The Drexel Early Childhood Behavior (DECB) Rating Scale (Shure, 2005) and the Social Competence Scale - Teacher Version (SCS-T; CPPRG, 1990) were utilized.

DECB

The 12 items composing the DECB are physically aggressive, makes others feel bad, relationally aggressive, and verbally aggressive, liked by peers, shows concern for others, displays positive behaviors, isolated/rejected by peers, shy/withdraws/non-assertive, victimized/teased or threatened, good learning skills, and emotional control. One item on relational aggression was adapted from the Preschool Social Behavior Scale – Teacher (Crick, Casas, & Mosher, 1997). All items are rated using a scale of 1 (very little or never) to 9 (much more than average); 5 is average anchor point (same as most his/her age). Scale points of 3 to 5 are considered to be within an adjusted behavior range. For the total scale, the negative items were reverse coded for analysis of socially competent behavior so that higher scale scores reflected more competent behavior. Two subscales were constructed specifically for this study. An aggression subscale includes four items, physically aggressive, makes others feel bad, relationally aggressive, and verbally aggressive. A withdrawn scale includes three items, isolated or rejected by peers,

shy/withdraws/non-assertive, and victimized/teased or threatened. Higher aggression or withdrawal scores reflected more aggressive or withdrawn behavior.

Validity and reliability information for the DECB has not been published. To assess the internal reliability of the measure for this study, Cronbach's alpha coefficients were calculated for both pre-test and post-test data. Total social competence $\alpha = .88$ and .90, the aggression subscale $\alpha = .93$ and .94, and the withdrawn subscale $\alpha = .73$ and .79. Given the standard that .70 is the minimum acceptable alpha value to indicate inter-item reliability, the obtained values suggest the DECB total scale and subscales have adequate consistency. Internal reliability alpha coefficients for all DECB and SCS-T scales appear in Table 2.

SCS-T

The SCS-T is a 25-item measure which uses a five-point Likert scale from 1 (not at all) to 5 (very well) to yield a total competence score. Higher scores indicate higher competence. The SCS-T also includes three subscales: prosocial/communication skills includes 9 items (resolves peer problems on own, good at understanding other's feelings, shares with others, cooperates with peers, helpfulness, listens to others' points of view, not bossy, and friendliness); emotional regulation skills is made up of 10 items (accepts things not going own way, copes with failure, accepts limits, appropriately expresses needs and feelings, thinks before acting, can calm down, can wait patiently, aware of effects of own behavior on others, plays by rules, and controls temper); and academic skills is composed of 7 items (functions well even with distractions, self-starting, works/plays well without adult support, works well in a group, pays attention, stays on task, follows teacher's directions). All are calculated as the mean of responses.

Reported high internal consistency for the SCS-T total score (α = .98) and subscale scores (α =.96-.98) indicates significant distinction between normative and control samples (Corrigan, 2003). Good interclass correlation (ICC; α = .91) has also been reported (Farmer et al., 2002). One-year test-retest by teachers of kindergarten and first graders produced stability (α = .84; *r* = .43) and an inverse correlation between prosocial behavior and aggression ratings (*r*s = -.59 to -.66) (Bellanti, Bierman, & CPPRG, 2000). To evaluate internal consistency for this study, pre-test and post-test alpha values for the total scale and all three subscales ranged from .95 to .98. These high values indicate adequate inter-item reliability.

Correlations between DECB and SCS-T

Bivariate correlations of the social competence measures at pre-test are presented in Table 3. The DECB total competence scale and both aggression and withdrawn subscales as well as SCS-T total and subscales were correlated at a significant level ($p < .01$, one-tailed). DECB, total competence negatively correlated with the aggression and withdrawn subscales, *r*s = -.84 and -.66 respectively. The aggression and withdrawn subscales had a moderately low association, *r* = .26. The SCS-T total competence and three subscales were highly and positively correlated, *r*s = .82 to .97. Moderately high positive associations existed between the DECB total competence scale and the SCS-T total scale and subscales, *r*s = .68 to .74. The DECB aggression subscale had a moderate negative correlation with the SCS-T total and subscales, *r*s = -.49 to -.60, while the DECB withdrawn subscale had a relatively low negative relationship with the SCS-T total and subscales, *r*s = -.28 to -.39.

Table 2

Internal Consistency for Social Competence Scales

Scales and Subscales	# Items	Pre-test α	Post-test α
DECB[a]			
Total competence	12	.88	.90
Aggression[b]	4	.93	.94
Withdrawn[c]	3	.73	.79
SCS-T[d]			
Total competence	25	.98	.98
Prosocial skills[e]	8	.95	.96
Emotional regulation[f]	10	.95	.96
Academic skills[g]	7	.95	.96

Note. N = 305. Instruments are in Appendix B. [a] Drexel Early Childhood Behavior Rating Scale (Shure, 2005). [b]DECB items 1, 3, 10, and 12. [c]DECB items 5, 9, and 11. [d]Social Competence Scale - Teacher Version (CPPRG, 1990). [e]SCS-T items 9, 13, 19, 20, 22, 23, 24, and 25. [f]SCS-T items 2, 3, 6, 7, 8, 11, 12, 14, 16, and 18. [g]SCS-T items 1, 4, 5, 10, 15, 17, and 21.

Table 3

Bivariate Correlations of Social Competence Measures at Pre-test

	1	2	3	4	5	6	7
DECB							
1. Total competence	-----	-.841**	-.655**	.734**	.741**	.683**	.683**
2. Aggression		-----	.264**	-.596**	-.633**	-.589**	- .485**
3. Withdrawn			-----	-.345**	-.330**	-.281**	-.391**
SCS-T							
4. Total competence				-----	.950**	.970**	.930**
5. Prosocial skills					------	.902**	.816**
6. Emotional regulation						-----	.848**
7. Academic skills							-----

Note. All DECB scales $n = 305$. SCS-T prosocial skills and academic skills $n = 304$.

SCS-T total competence and emotional regulation $n = 302$.

**$p < .01$, one-tailed.

Data Collection and Recording

Questionnaires were identified by subject number only, rather than names. Teachers and county educators were asked to return their respective documents and forms in sealed envelopes to the principal investigator in order to maintain confidentiality. Paper copies and files of forms/documents were kept on campus in a locked storage/file cabinet in the principal investigator's office. Data were entered and stored using password protection on secure campus computers. Records were accessed and utilized only by authorized program-related staff (principal investigator and assigned graduate research assistants). Information was coded using no individual identifiers. Data were entered according to an identification number assigned to each class, teacher, and child and analyzed using the SPSS 16.0 statistical software package.

Missing Data

Some teachers and students were dropped from analysis due to attrition (e.g., children moving out of the class or school or not in class due to illness) or missing documentation (e.g., teachers did not submit evaluation forms or did not answer questionnaire items). Children for whom either pre-test or post-test data was not received for a particular measure were dropped from the sample for analysis of that measure. Participants with substantial missing values on measures were also dropped from analysis. Altogether, 30 students were omitted, 20 from the intervention group and 10 from the control group. This yielded a final sample of 305 students, 182 in the intervention group and 123 in the control group, with 15 intervention and 15 control classroom teachers.

CHAPTER IV

RESULTS

A summary of program implementation data is presented first. Analyses for two preliminary assumptions are then described followed by the two primary research hypotheses.

Program Delivery and Fidelity

Delivery of ICPS Lessons

The frequencies and manner in which the ICPS lessons were delivered appear in Figures 1-3. According to 11 out of 15 teacher and extension educator pairs who reported, 55% presented all 36 lessons, 27% presented 29-33 (81-92%) of the lessons, and 18% presented 23-24 (64-67%) of the lessons. Nine teachers or county educators estimated the amount of time spent presenting each lesson ranged from 2-20 minutes with 77% spending between 8-15 minutes per lesson. Substantial variation in who presented the lessons was exhibited. As reported by 13 of the 15 pairs, 38.5% of the teachers presented most or all (72-100%) of the lessons, 15% presented some (14-48%) lessons, and 46% presented less than 10% or none of the lessons. Conversely, 54% of the county educators presented most or all (72-100%) of the lessons, 23% presented some (14-38%) lessons, and 23% presented none. Regarding co-presentation of lessons, 38.5% of the teacher and county educator pairs reported doing so for some (11-22%) of the lessons, 31% did so for less than 10% of the lessons, and 31% did not present together at all.

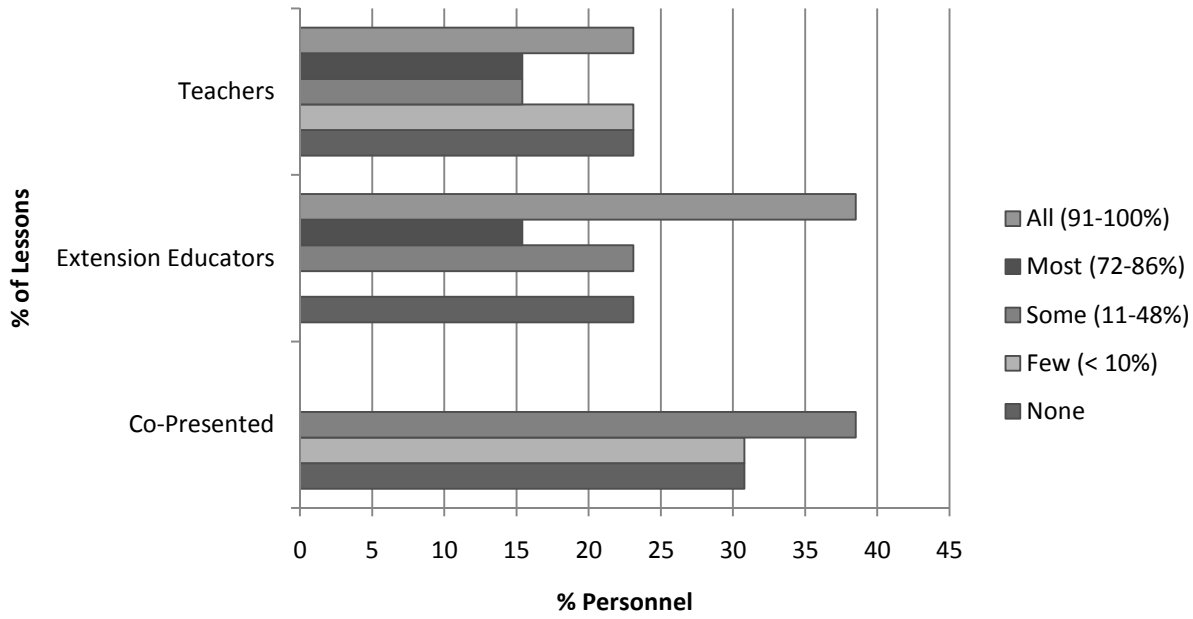


Figure 1. Presentation of ICPS lessons by teachers and county educators (percentages). *n* = 13.

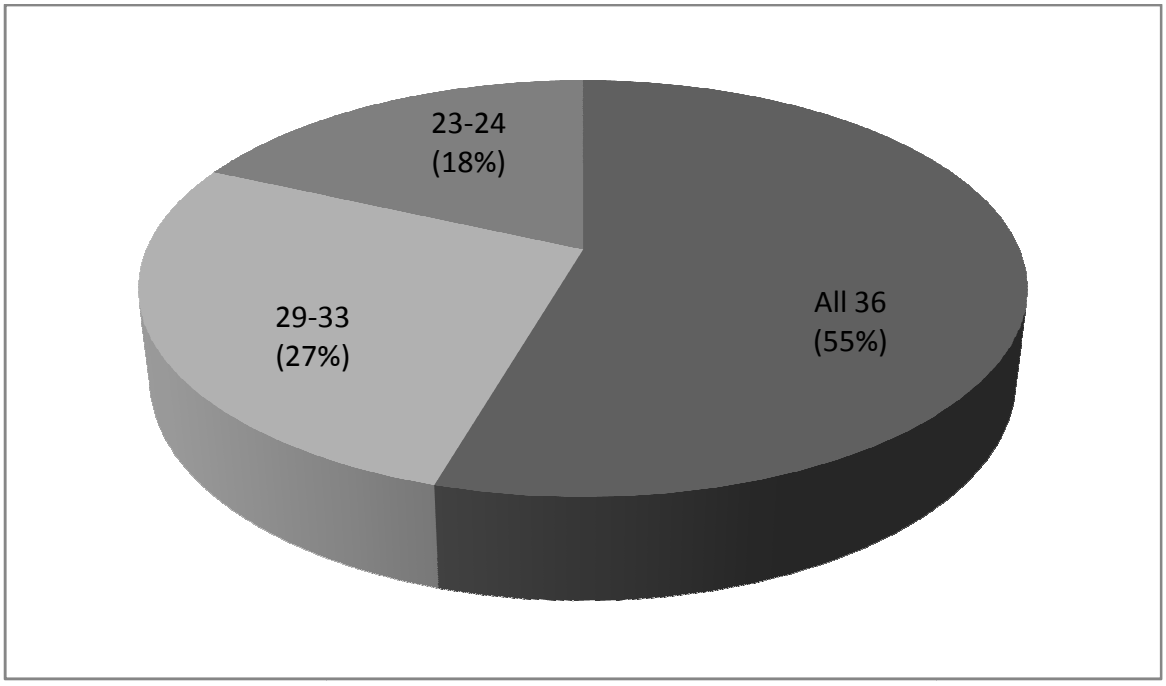


Figure 2. Number of ICPS lessons presented in classrooms (percentage). *n* = 11.

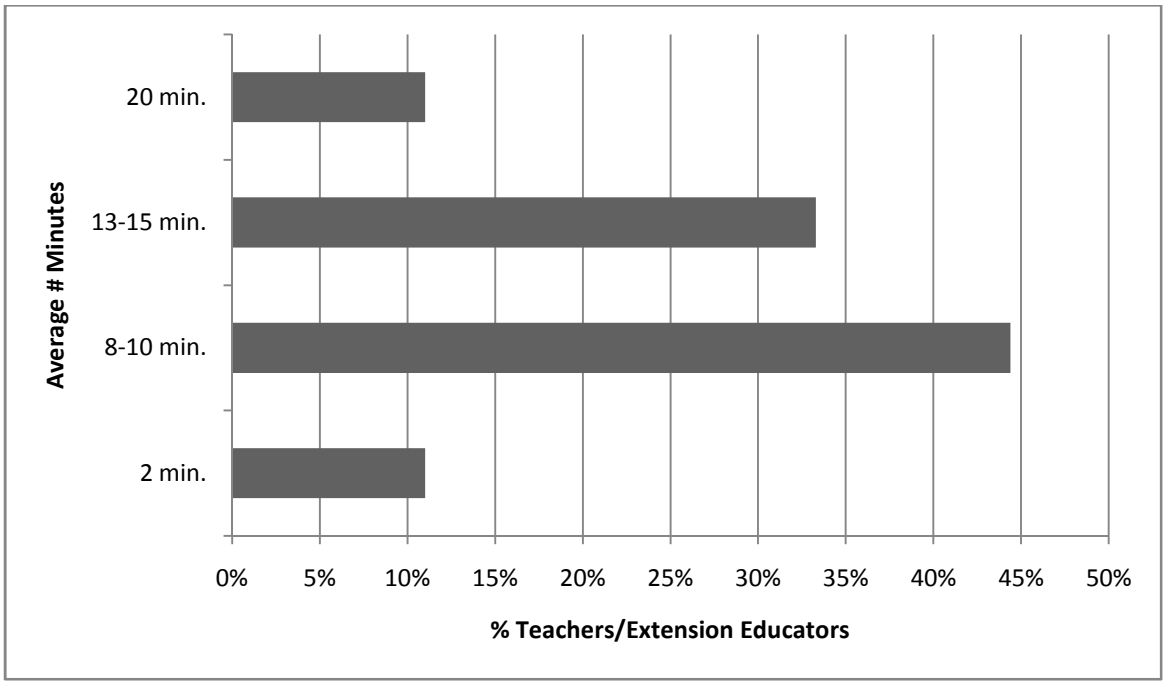


Figure 3. Average minutes per ICPS lesson presented by teachers and county educators (percentage). $n = 9$.

The teachers' self-evaluation of their delivery of the ICPS program is presented in Table A3 (Appendix). About 62-64% of 14 respondents reported "greatly" or "quite a bit" using the curriculum lessons according to the ICPS manual and following the lesson outline per the instructed sequence. The other one-third rated themselves as doing so some, little, or none. Nearly 85% reported they thoroughly completed the lesson content "greatly" or "quite a bit". All except one teacher (92%) rated themselves as "greatly" or "quite a bit" understanding the ICPS content and key concepts and as having delivered lessons of good quality. Most (93%) of teachers reported they engaged the children in the ICPS lessons "greatly" or "quite a bit". The ICPS vocabulary words and use of ICPS dialoguing which are key program components were reported as having been used "greatly" or "quite a bit" by 71% of the teachers with 29% rating they did so "some".

Another key component, generating solutions from the children, was done "greatly" or "quite a bit" as rated by 82% of the teachers and "some" by 14%. To reinforce the ICPS lessons and concepts, ratings indicated 36% of the teachers used teaching tools provided to them such as illustrations and bulletin boards "greatly" or "quite a bit", 21% "some", and 43% did none or "little". ICPS concepts were generalized outside of structured lessons "greatly" or "quite a bit" by 71% of the teachers, and "some" by 29%. Half (50%) of the teachers applied or integrated the ICPS concepts and skills with other classroom curricula or activities "greatly" or "quite a bit", and 43% did so "some". Less than half (46%) reported that they sent ICPS materials home to parents "greatly" or "quite a bit" while 54% did "some", "little", or none.

Training and Mentoring

According to 12 county educators, all except one reported presenting the series of training PowerPoint modules to their partner teachers. From 15 reports, the estimated amount of time the county educators spent providing training and mentoring to teachers ranged from 2.5 to 23 hours. Forty percent provided just 2.5 to 5 hours, 27% offered 6-10 hours, 20% spent 12-15 hours, and 13% provided 20-23 hours. Furthermore, 20% of the county educators met with their partner teachers four times or less, 47% had 6-10 meetings, and 33% met 12-17 times.

Table A4 (Appendix) summarizes 14 teachers' evaluations of the training and mentoring they received from county educators. All reported the educators were "quite a bit" or "very much" supportive and helpful, utilized a collaborative, problem-solving approach, and had positive and productive interaction. Regular communication and contact by the county educators was rated by 93% of the teachers as "quite a bit" or "very

much". The same percentage believed the training and mentoring received was a satisfactory amount and of satisfactory quality. The county educators modeled the ICPS skills and encouraged role plays according to 64% teachers "quite a bit" or "very much" and 36% rated this was done "some." Most (93%) reported the county educators referred to ICPS concepts and skills as well as discussed how to apply them to actual situations. According to 46%, the county educators observed the teachers' presentation of the ICPS lessons in the classroom and co-taught the lessons with the teacher "quite a bit" or "very much", while 31% rated these tasks as having been done "some," and 23% none or little. All of the teachers rated the county educators as "quite a bit" or "very much" prepared for their meetings and 86% similarly rated that they felt comfortable expressing frustrations or mistakes. The county educators were also rated by most (93%) of the teachers as "quite a bit" or "very much" having adequate skills to provide the ICPS program training and mentoring, and that they effectively explained important points.

Preliminary Assumptions

Correlations between Social Cognitive Skills and Competent Behavior

A preliminary assumption for the study was that a significant correlation would exist between children's social-cognitive skills and competent behavior at time 1. To test this assumption, bivariate correlations were calculated between the pre-test means of the DECB and SCS-T total competence scales and subscales (aggression, withdrawal, prosocial skills, emotional regulation, and academic skills) and each of the social cognitive skills components which include (a) the number of alternative solutions (for interview protocols with 3 probes and for initial responses without probes), (b) the relevancy ratio (overall and for initial responses without probes), and (c) the solution

competence percentage (overall as well as initial responses without probes). Correlation coefficients are presented in Table 4.

The number of alternative solutions with 3 probes (N = 71) was not significantly associated with any of the social competence measures. The overall relevancy ratio (N = 282) had non-significant relationships with the DECB total competence, aggression, and withdrawal variables yet significant positive associations with the SCS-T total competence scale, prosocial skills, emotional regulation, and academic skills subscales, rs = .17 to .23, ps < .01 (two-tailed). Significant associations emerged between the overall solution competence percentage (N = 282) and all of the social competence measures except the DECB aggression subscale. This included DECB total competence (r = .12, p < .05), withdrawal (r = -.16, p < .01), SCS-T total competence, emotional regulation, and academic skills (rs = .16 to .18, ps < .01), and prosocial skills (r = .12, p < .05). Signs were in expected directions, positive with social competence scales and subscales and negative with aggression and withdrawal subscales.

For initial responses without probes, the number of alternative solutions, relevancy ratio, and solution competence percentage were not significantly correlated with the DECB total competence scale or the aggression or withdrawal subscales. In regards to the SCS-T scales, both the initial number of alternative solutions and the relevancy ratio were associated to a significant degree with total social competence, prosocial skills, emotional regulation, and academic skills, rs = .13 to .16, ps < .01 and .05. The solution competence percentage was also significantly related to total competence, emotional regulation, and academic skills, rs = .12 to .15, ps < .05, but not prosocial skills. All probability values are two-tailed.

In general, the correlations between the pre-test social cognitive skills measures and the social competence measures produced mixed results yet support for the preliminary assumption. The number of alternative solutions with 3 probes was not associated with any of the social competence scales to a significant .05 probability level whereas significant relationships emerged between all other social cognitive measures and at least some social competence scales. Correlations with the social cognitive skills were stronger for the SCS-T scales than the DECB scales. The DECB total competence scale and withdrawal subscale reached a significant level of association only with the overall solution competence percentage. Furthermore, the aggression subscale did not reach a significant .05 probability level with any of the social cognitive skills measures. Excluding the overall number of alternative solutions with 3 probes, significant relationships were found between the SCS-T total scale and three subscales and the various social cognitive measures. The only exception was prosocial skills and the solution competence percentage for initial responses without probes. These correlations also were run separately for boys and girls with similar results, although significant associations for boys were found only for social cognitive skills after probing, not for initial responses without probes. Due to the mixture of results and the interest in exploring the hypothesized outcomes, all of the social cognitive and social competence measures were retained for further analyses.

Post-hoc Analysis

A post-hoc review of correlations between children's social-cognitive skills and competent behavior at time 2 was conducted. Results are presented in Table A5 in the Appendix. While there were some similarities with time 1 correlations, the significance

Table 4

Correlations Between Social Competence and Social Cognitive Skills at Pre-test

Social Cognitive Skills	Social Competence						
	DECB[a]			SCS-T			
	Total comp.	Aggression	With-drawal	Total comp.	Prosocial skills	Emotion reg.	Academic skills
			Overall				
# Alternative solutions with 3 probes	-.166	.169	.123	-.107	-.148	-.092	-.070
Relevancy ratio	.010	.038	-.018	.211**	.202**	.230**	.166**
Solution competence %	.122*	-.042	-.162**	.163**	.119*	.160**	.184**
			Initial responses without probes				
# Alternative solutions	.084	-.058	-.025	.155**	.128*	.161**	.151**
Relevancy ratio	.085	-.067	-.020	.153*	.127*	.159**	.149*
Solution competence %	.084	-.022	-.097	.127*	.087	.123*	.152*

Note. All $n = 282$ except # alternative solutions with 3 probes $n = 71$. [a]DECB total competence scale negative behavior items were re-coded to positive. Aggression and withdrawal subscales indicate negative behaviors.

*$p < .05$ (two-tailed). **$p < .01$ (two-tailed).

and nature of associations shifted in several instances. As at time 1, the number of alternative solutions with 3 probes (N = 126) did not significantly correlate with any of the social competence measures. The overall relevancy ratio (N = 282) had a significant yet negative association with DECB total competence, r = -.13, p = .03 (two-tailed), and a significant positive association with the aggression subscale, r = .16, p < .008. It was not significant with the withdrawal, prosocial skills emotional regulation, and academic skills subscales or the SCS-T total competence scale. Unlike the predominantly significant findings with social competence measures on the pre-test, the overall solution competence percentage was not significant with any of the social competence scales.

Variations from time 1 were also noted for the time 2 initial responses without probes measures. The number of alternative solutions and relevancy ratio neared significance for positive associations with the aggression subscale, rs = .11, ps = .07, but otherwise did not correlate significantly with other social competence measures. The solution competence percentage for initial responses without probes was the only social cognitive variable that continued to have significant relationships with many of the social competence variables in expected directions. Positive and significant relationships were shown with DECB total competence, r = .16, p = .009, and academic skills, r = .14, p = .02, and neared significance with SCS-T total competence and emotional regulation, rs = .10 to .12, ps = .05 and .08, respectively. Furthermore, the solution competence percentage for initial responses without probes was significantly and negatively correlated with aggression, r = -.12, p < .05, and the withdrawal subscale, r = -.16, p = .008. A significant association was not found with prosocial skills.

Differences between Sexes for Social Cognitive Skills and Competent Behavior

A second preliminary assumption expected three significant differences between boys and girls for social cognitive skills and competent behavior at pre-test. Specifically, it was projected that girls would receive higher ratings of prosocial behavior than boys and, the converse would be true for ratings of aggressive behavior. Also, it was expected that a higher proportion of competent solution types would be generated by girls than boys. For all other social cognitive skills and social competence measures, no significant gender differences were expected.

T-tests (df = 300) were utilized to compare the means of boys and girls. One-tailed tests were performed for the variables with expected directional differences and two-tailed tests were used for all other variables. Findings for the social competence measures appear in Table 5. The SCS-T prosocial skills subscale comparison was significant, t = - 2.03, p = .02 (one-tailed), supporting the prediction that girls (M = 3.59, SD = .83) would have higher ratings of prosocial behavior than boys (M = 3.40, SD = .77). The DECB aggression subscale showed boys (M = 3.76, SD = 2.15) indeed had higher ratings of aggressive behavior than girls (M = 3.35, SD = 2.07) to a significant degree, t = 1.70, p = .05 (one-tailed). Two-tailed tests indicated girls were significantly higher than boys on the DECB total competence scale, t = -1.94, p = .05, the SCS-T total scale, t = -2.96, p = .003, the emotional regulation subscale, t = -3.07, p = .002, and the academic skills subscale, t = -3.25, p = .001. Differences between the sexes were not significant for the DECB withdrawal subscale.

No significant differences emerged between boys and girls for any of the social cognitive skills variables which are presented in Table A6 in the Appendix. Tests on

Table 5

Comparison of Boys' and Girls' Social Competence Ratings at Pre-test

	Boys	Girls		
	M(SD	*M (SD)*	*t*	*p*
	(*n* = 157)	(*n* = 145)		
DECB [a]				
Total competence	6.01 (1.30)	6.30 (1.36)	-1.94	.05
Aggression	3.76 (2.15)	3.35 (2.07)	1.70	.05[b]
Withdrawal	3.38 (1.68)	3.28 (1.58)	.54	.59
SCS-T				
Total competence	3.27 (.77)	3.54 (.85)	-2.96	.003
Prosocial skills	3.40 (.77)	3.59 (.83)	-2.03	.02[b]
Emotional regulation	3.23 (.79)	3.52 (.86)	-3.07	.002
Academic skills	3.16 (.93)	3.52 (.96)	-3.25	.001

Note. *df* = 300. [a]DECB total competence scale negative behavior items were re-coded to positive. Aggression and withdrawal subscales indicate negative behaviors. [b]One-tailed; all other *p* values are two-tailed.

solution competence, both overall and initial responses without probes, did not support the hypothesis that girls would produce a higher percentage of competent solution types than would boys. Thus, sex was not tested as a factor in further analyses of social cognitive skills.

As significant differences between boys and girls were found for the social competence measures, sex of the children was included as a factor in the primary hypothesis regarding social competence. Since the concern with sex differences is that they would interact with the intervention effects and sex did not interact with any of the other factors, sex was dropped from the primary analyses presented later in this chapter (the results with sex as a factor are presented in Table A7, Appendix).

Primary Hypotheses

Social Cognitive Skills

To address the first research question, it was predicted that ICPS-trained children would exhibit a higher proportion of social cognitive skills at time 2 than children in the control group. All of the social cognitive skills measures were assessed including number of alternative solutions with 3 probes, overall relevancy ratio, and overall solution competence percentage, as well as the number of alternative solutions, relevancy ratio, and solution competence percentage for initial responses without probes. To determine whether differences existed between intervention and control groups over time, several 2 (time, repeated) x 2 (group, between) ANOVA mixed design tests were performed. Significant *F* and probability values are described as follows along with associated effect sizes indicated by partial eta squared (η^2_p), estimated means, and standard errors.

Results from analyses including all grade levels of children, preschool through 2nd grade, are presented in Table 6. A significant interaction was found only for the number of alternative solutions with 3 probes, F (1, 58) = 4.91, p = .03, η^2_p = .08. Specifically, the intervention group increased to a greater degree from pre-test (M = 16.20, SD .77) to post-test (M = 19.30, SD .60) compared to the control group's smaller increase between time 1 (M = 17.33, SD .77) and time 2 (M = 18.07, SD .60). The interaction effects for the number of initial response solutions without probes and the response relevancy ratio without probes both approached significance, F (1, 280) = 2.88, p = .09, and F (1, 280) = 3.31, p = .07, respectively. Estimated means indicated greater increases in the intervention group than the control group. The interaction effect for the overall relevancy ratio and the overall and initial without probes solution competence percentage did not reach a significant probability level.

Post-hoc Analysis of Grade Cohorts

Given identified variations in social cognitive skills and differences in school and grade environments for children between the ages of 4-8, the decision was made to remove the preschoolers and examine the ANOVA 2 x 2 with children in kindergarten, first and second grades only. As reported in Table 7, outcomes appeared to strengthen. Once again, the interaction effect for number of alternative solutions with 3 probes was significant, F (1, 44) = 5.85, p = .02, η^2_p = .12. The intervention group increased substantially more from pre-test (M = 16.50, SD .82) to post-test (M = 20.05, SD .65) than the control group from time 1 (M = 17.63, SD .79) to time 2 (M = 18.17, SD .63). Regarding initial responses without probes, interaction effects for both the number of alternative solutions and relevancy ratio reached significance, F (1, 210) = 7.10 and 6.42,

respectively, *p*s = .01, η^2_p = .03. For the initial number of alternative solutions without probes, the intervention group increased from time 1 (*M* = 8.87, *SD* .11) to time 2 (*M* = 9.95, *SD* .07) while the control group stayed nearly level between pre-test (*M* = 9.41, *SD* .13) and post-test (*M* = 9.62, *SD* .09). Similarly the initial responses relevancy ratio without probes increased in the intervention group from time 1 (*M* = .89, *SD* .01) to time 2 (*M* = .96, *SD* .01) while the control group increased to a lesser degree from pre-test (*M* = .94, *SD* .01) to post-test (*M* = .97, *SD* .01). The interaction effect for the overall relevancy ratio approached significance *F* (1, 210) = 2.82, *p* = .10, with the interaction group means staying level between time 1 and time 2 while the control group means decreased. Neither the overall nor initial responses solution competence measures showed significant interactions.

In summary, for the full group of combined grades, the number of alternative solutions with 3 probes was the only social cognitive measure for which a significant interaction was found. However, for the kindergarten through 2nd grade children after removing the preschoolers, the significant interaction effects for the number of alternative solutions with 3 probes was replicated and both the initial number of alternative solutions and relevancy ratio without probes interaction effects were bolstered from approaching significance to reaching significance. Furthermore, the size of effects grew from .08 to .12 for alternative solutions with 3 probes. Significant interaction differences were not found either with or without the preschool cohort for the overall relevancy ratio, or the overall and initial without probes solution competence percentages. Figures 4–7 show comparisons between the intervention and control groups for time 1 and time 2, with and without preschoolers, for all social cognitive skills measures.

Table 6

Social Cognitive Skills Differences for Preschool – 2nd Grades Using ANOVA 2 (Time, Repeated) x 2 (Group, Between)

	Intervention		Control		Time x Group[a]		
	Pre	Post	Pre	Post	*F*	*p*	η^2_p
	(*n* =171)		(*n* = 111)				
	Overall						
# Alternative solutions with 3 probes[b]	16.20 (.77)	19.30 (.60)	17.33 (.77)	18.07 (.60)	4.91	.03	.08
Relevancy ratio	.60 (.02)	.59 (.02)	.59 (.02)	.56 (.02)	.46	.50	
Solution competence %	.60 (.01)	.62 (.01)	.59 (.02)	.59 (.02)	.42	.52	
	Initial responses without probes						
# Alternative solutions	8.75 (.11)	9.40 (.08)	9.11 (.14)	9.47 (.10)	2.88	.09	.01
Relevancy ratio	.88 (.01)	.94 (.01)	.91 (.01)	.95 (.01)	3.31	.07	.01
Solution competence %	.64 (.02)	.68 (.01)	.65 (.02)	.67 (.02)	.55	.46	

Note. Estimated means and standard errors (in parentheses) for each group interaction.

[a] $df = (1, 280)$. [b] Intervention group and control group each $n = 30$, $df = (1, 58)$.

Table 7

Social Cognitive Skills Differences for K - 2nd Grades Using ANOVA 2 (Time, Repeated) x 2 (Group, Between)

	Intervention		Control		Time x Group[a]		
	Pre	Post	Pre	Post	*F*	*p*	η^2_p
	(*n* =126)		(*n* = 86)				
	Overall						
# Alternative solutions with 3 probes[b]	16.50 (.82)	20.05 (.65)	17.63 (.79)	18.17 (.63)	5.85	.02	.12
Relevancy ratio	.62 (.02)	.62 (.02)	.63 (.02)	.57 (.02)	2.82	.10	.01
Solution competence %	.60 (.02)	.63 (.01)	.59 (.02)	.61 (.02)	.70	.40	
	Initial responses without probes						
# Alternative solutions	8.87 (.11)	9.55 (.07)	9.41 (.13)	9.62 (.09)	7.50	.01	.03
Relevancy ratio	.89 (.01)	.96 (.01)	.94 (.01)	.97 (.01)	6.42	.01	.03
Solution competence %	.64 (.02)	.69 (.02)	.64 (.02)	.68 (.02)	.41	.52	

Note. Estimated means and standard errors (in parentheses) for each group interaction.

[a] *df* = (1, 210). [b] Intervention group *n* =22, control group *n* =24, *df* = (1, 44).

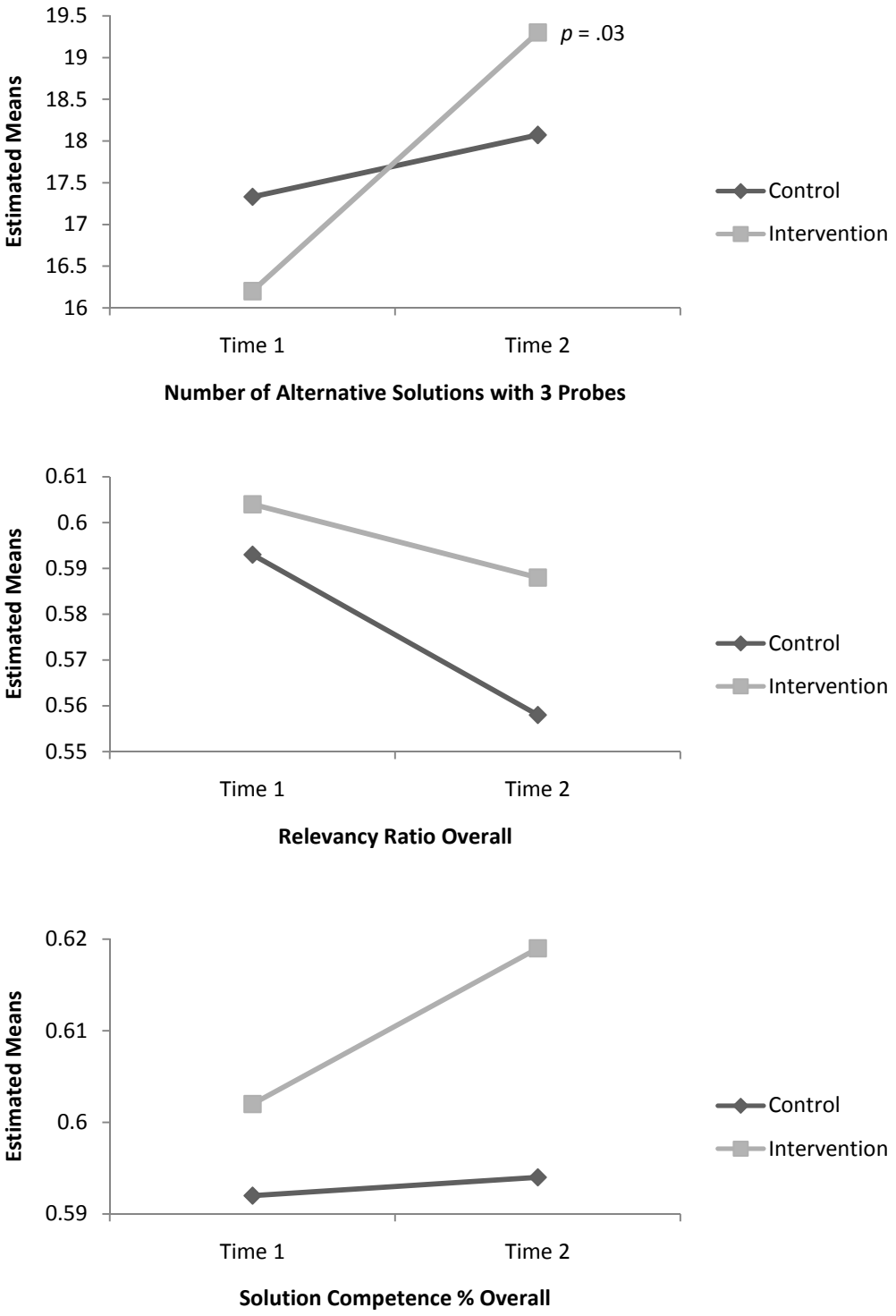


Figure 4. Social cognitive skills after probing for preschool–2nd grades. Estimated means from 2 x 2 mixed design ANOVA. P-value denotes significant interaction effects.

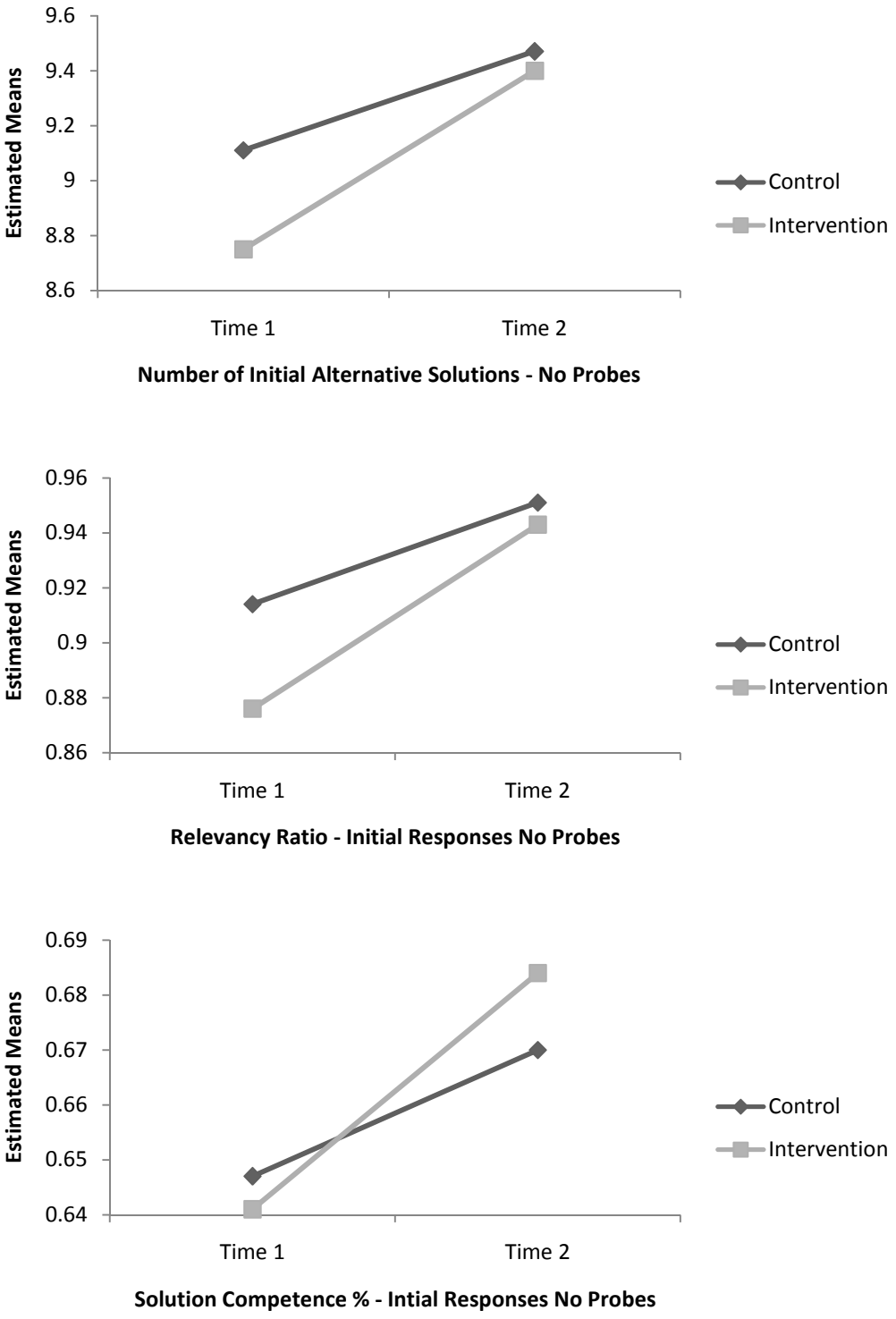
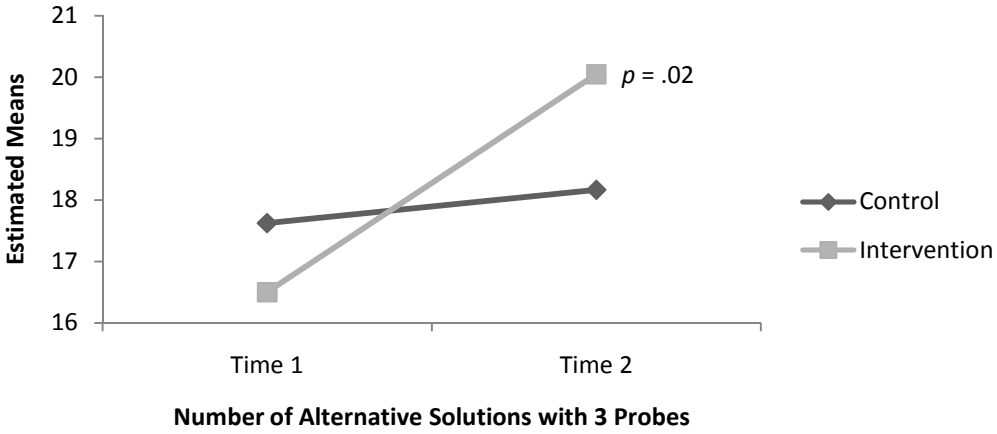
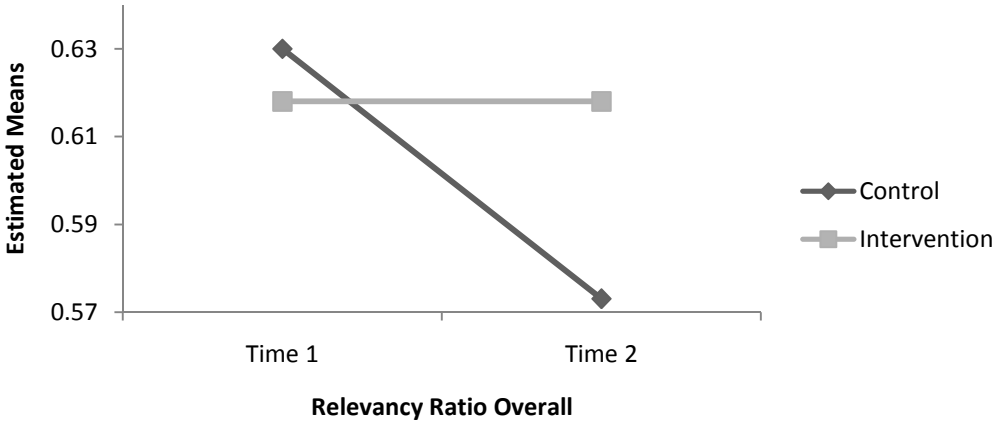


Figure 5. Social cognitive skills, initial responses without probes, for preschool–2nd grades. Estimated means from 2 x 2 mixed design ANOVA.





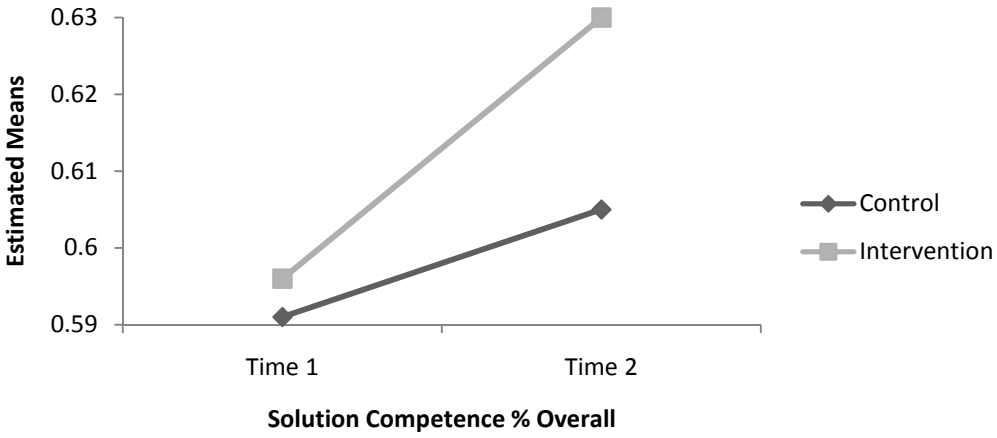
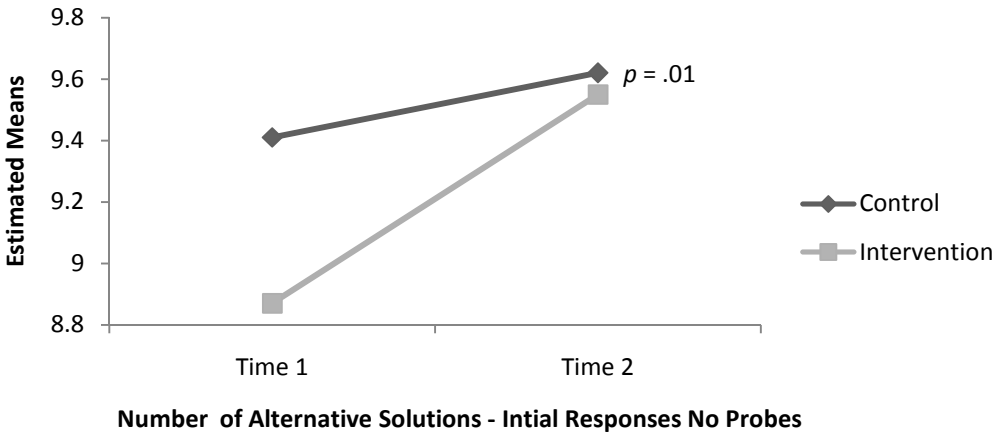
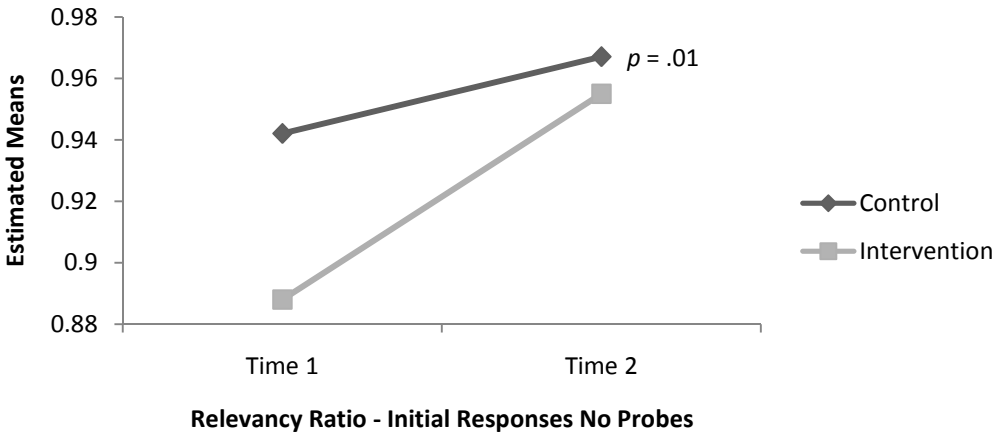


Figure 6. Social cognitive skills after probing for K–2nd grades. Estimated means from 2 x 2 mixed design ANOVA. P-value denotes significant interaction effects.





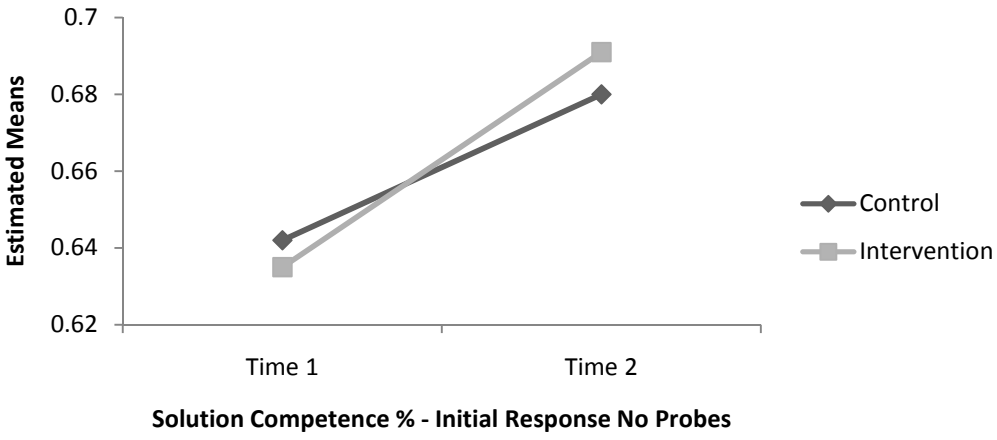


Figure 7. Social cognitive skills, initial responses without probes, for K–2nd grades. Estimated means from 2 x 2 mixed design ANOVA. P-value denotes significant interaction effects.

Post-hoc Analyses of Solution Types

To further explore the impact of the ICPS program on social cognitive skills, several post-hoc analyses were conducted. The six solution types - manipulative, aggressive, assertive, tell-tattle, react positive, and passive - were specifically examined. First, ratios (each solution type total number divide by the total number of relevant solutions) were inspected. Separate 2 (time, repeated) x 2 (group, between) ANOVA mixed design tests performed for each of the six solution type ratios and a multivariate analysis of variance including all six ratios exhibited no significant results for all grade levels combined as well as without preschoolers.

Using only the interview protocols for which 3 probes were conducted, a 2 x 2 ANOVA was performed for the total number of each of the six solution types. Table 8 reports data including all grade levels. Significant interaction effects emerged for manipulative, F (1, 69) = 6.14, p = .02, η^2_p = .08; react positive, F (1, 69) = 10.56, p = .002, η^2_p = .13; and passive F (1, 69) = 5.96, p = .02, η^2_p = .08. Estimated means for manipulative showed the intervention group decreased from pre-test (M = 3.35, SD .36) to post-test (M = 2.41, SD .37) while the control group increased from time 1 (M = 2.87, SD .35) and time 2 (M = 3.27, SD .36). For react positive, the intervention group increased from time 1 (M = 5.38, SD .39) to time 2 (M = 7.68, SD .42) as did the control group to a lesser extent between pre-test (M = 5.62, SD .38) and post-test (M = 6.11, SD .40). With passive, an increase was exhibited in the intervention group between time 1 (M = .32, SD .14) and time 2 (M = .53, SD .10) while a decrease occurred in the control group from pre-test (M = .57, SD .13) to post-test (M = .24, SD .10). Interaction effects for aggression, assertive, and tell-tattle comparisons were not significant.

Given several social-cognitive skills interactions strengthened once the preschool cohort was removed, tests were repeated for K-2nd graders only (presented in Table 9). Manipulative did not show a significant interaction and aggression and assertive still were not significant. The interaction effects for tell-tattle rose to significance however, F (1, 50) = 4.56, p = .04, η^2_p = .08. The intervention group decreased from pre-test (M = 1.96, SD .27) to post-test (M = 1.48, SD .28) while the control group started higher and increased between time 1 (M = 2.41, SD .26) and time 2 (M = 2.70, SD .27). The react positive interaction continued and strengthened in significance and effect size, F (1, 50) = 21.77, p < .001, η^2_p = .30, as did passive F (1, 50) = 16.15, p < .001, η^2_p = .24. React positive increased in the intervention group from pre-test (M = 5.32, SD .47) to post-test (M = 8.08, SD .45) while the control group was nearly level from time 1 (M = 6.15, SD .45) to time 2 (M = 6.26, SD .44). For passive, the intervention group increased between time 1 (M = .20, SD .15) to time 2 (M = .60, SD .10) and a decrease took place in the control group from pre-test (M = .59, SD .14) to post-test (M = .15, SD .10), a similar pattern to that found when preschoolers were included. Figures 8 and 9 compare findings for the six solution types both with and without the preschool cohort.

The same steps were taken to test each of the six solution types from initial responses with no probes. Significant interaction effects were not found either with all grades or without the preschool cohort with one exception: manipulative was significant for the kindergarten through second grade group, F (1, 210) = 5.79 p = .02, η^2_p = .03. The pattern of change was somewhat different, with the intervention group staying nearly level from pre-test (M = 1.44, SD .08) to post-test (M = 1.41, SD .08) while the control group decreased from time 1 (M = 1.88, SD .09) to time 2 (M = 1.51, SD .09).

Table 8

Differences in Solution Types with 3 Probes for Preschool – 2nd Grades Using ANOVA 2 (Time, Repeated) x 2 (Group, Between)

	Intervention		Control		Time x Group[a]		
	Pre	Post	Pre	Post	*F*	*p*	η^2_p
	(n = 34)		(n = 37)				
Manipulative	3.35 (.36)	2.41 (.37)	2.87 (.35)	3.27 (.36)	6.14	.02	.08
Aggression	1.12 (.18)	1.47 (.28)	.76 (.17)	.97 (.27)	.13	.72	
Assertive	4.18 (.28)	4.44 (.27)	4.43 (.27)	4.49 (.26)	.19	.67	
Tell-tattle	1.68 (.25)	1.56 (.25)	2.11 (.24)	2.30 (.24)	.95	.33	
React positive	5.38 (.39)	7.68 (.42)	5.62 (.38)	6.11 (.40)	10.56	.002	.13
Passive	.32 (.14)	.53 (.10)	.57 (.13)	.24 (.10)	5.96	.02	.08

Note. Estimated means and standard errors (in parentheses) for each group interaction. df = (1, 69).

Table 9

Differences in Solution Types with 3 Probes for K - 2nd Grades Using ANOVA 2 (Time, Repeated) x 2 (Group, Between)

	Intervention		Control		Time x Group[a]		
	Pre	Post	Pre	Post	*F*	*p*	η^2_p
	(*n* = 25)		(*n* = 27)				
Manipulative	3.56 (.39)	2.84 (.46)	2.93 (.38)	3.26 (.44)	2.56	.12	
Aggression	1.04 (.20)	1.48 (.33)	.74 (.20)	1.00 (.32)	.17	.68	
Assertive	4.32 (.31)	4.84 (.28)	4.44 (.30)	4.74 (.27)	.16	.69	
Tell-tattle	1.96 (.27)	1.48 (.28)	2.41 (.26)	2.70 (.27)	4.56	.04	.08
React positive	5.32 (.47)	8.08 (.45)	6.15 (.45)	6.26 (.44)	21.77	.001	.30
Passive	.20 (.15)	.60 (.10)	.59 (.14)	.15 (.10)	16.15	.001	.24

Note. Estimated means and standard errors (in parentheses) for each group interaction. *df* = (1, 50).

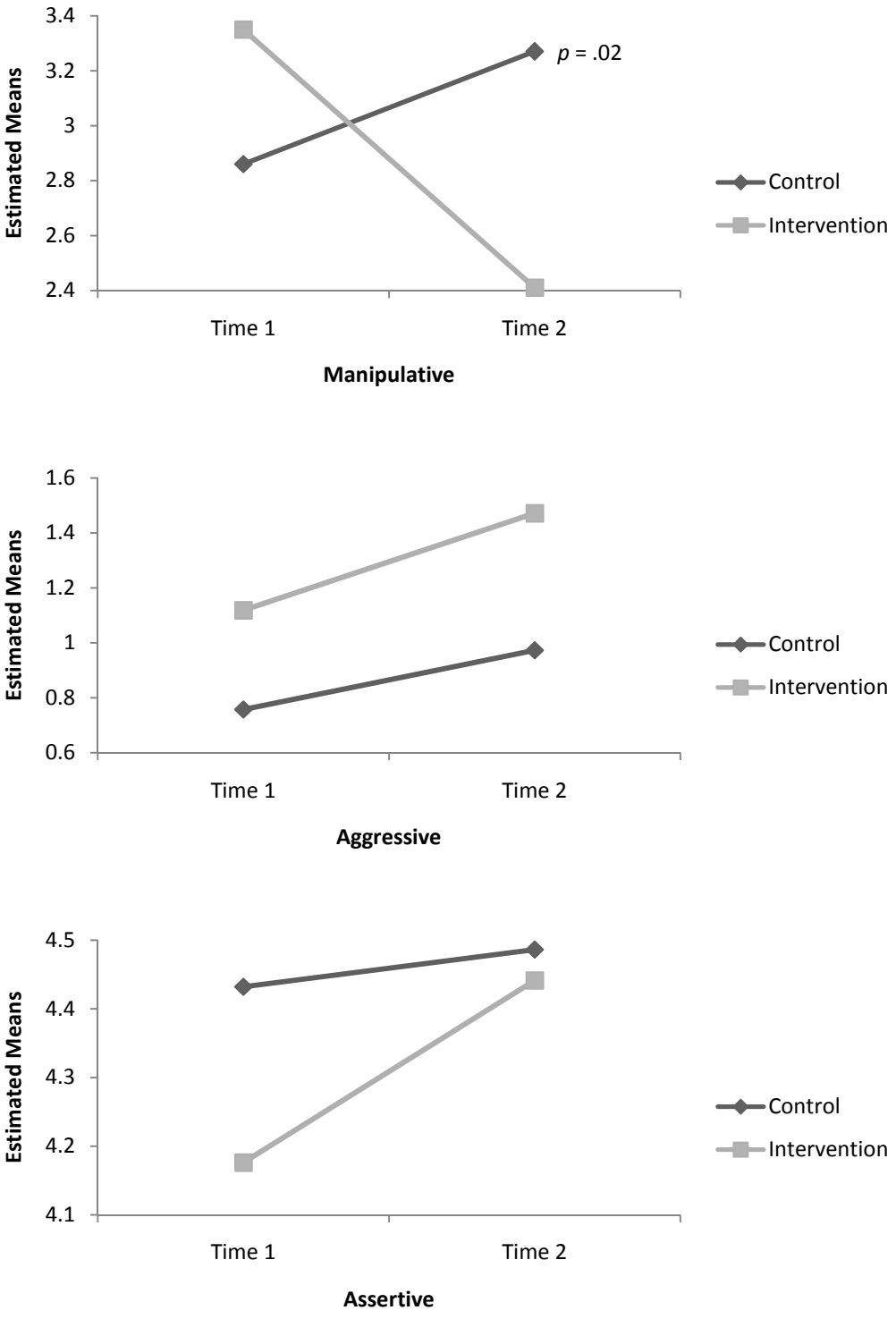
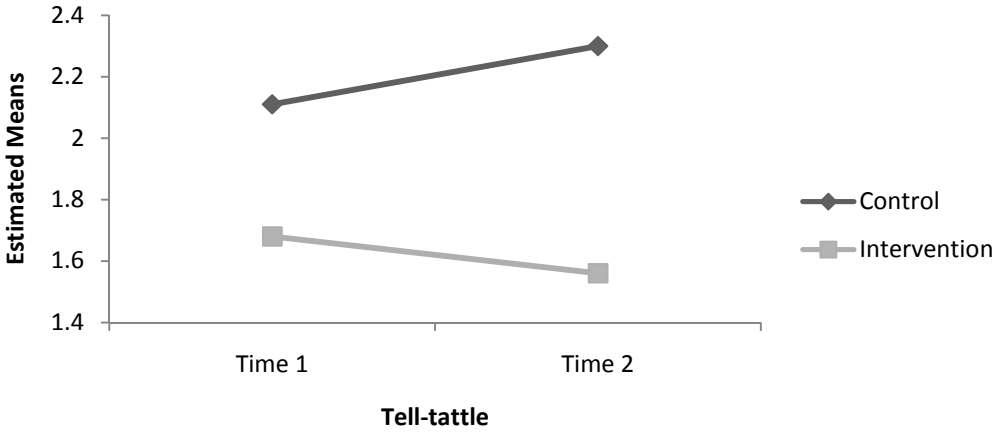
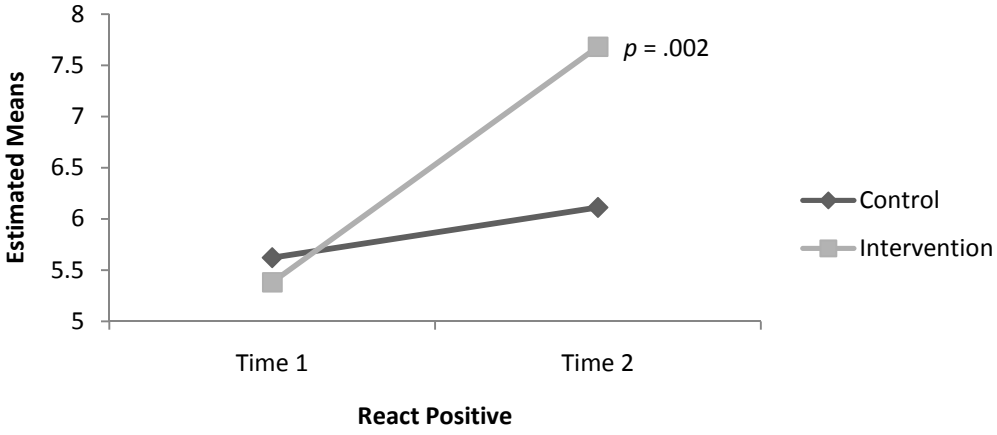


Figure 8. Solution type quantities after 3 probes for preschool-2nd grades. Estimated means from 2 x 2 mixed design ANOVA. P-values denote significant interaction effects.





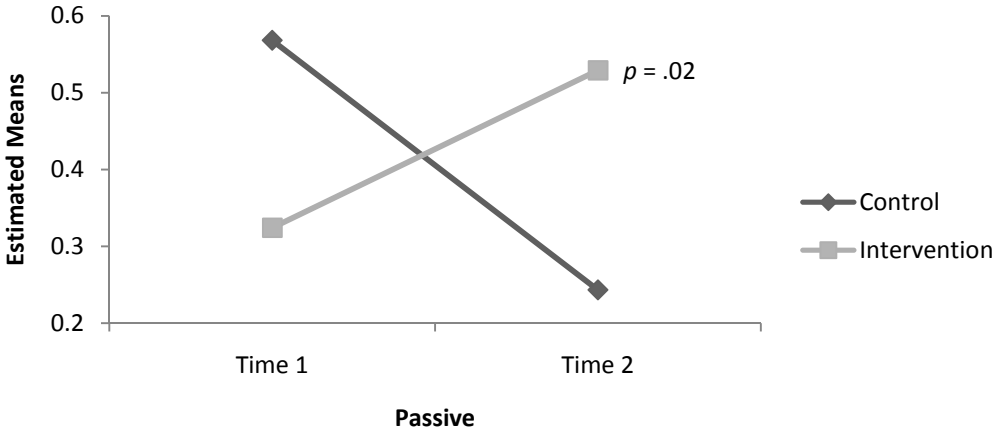


Figure 8 (continued).

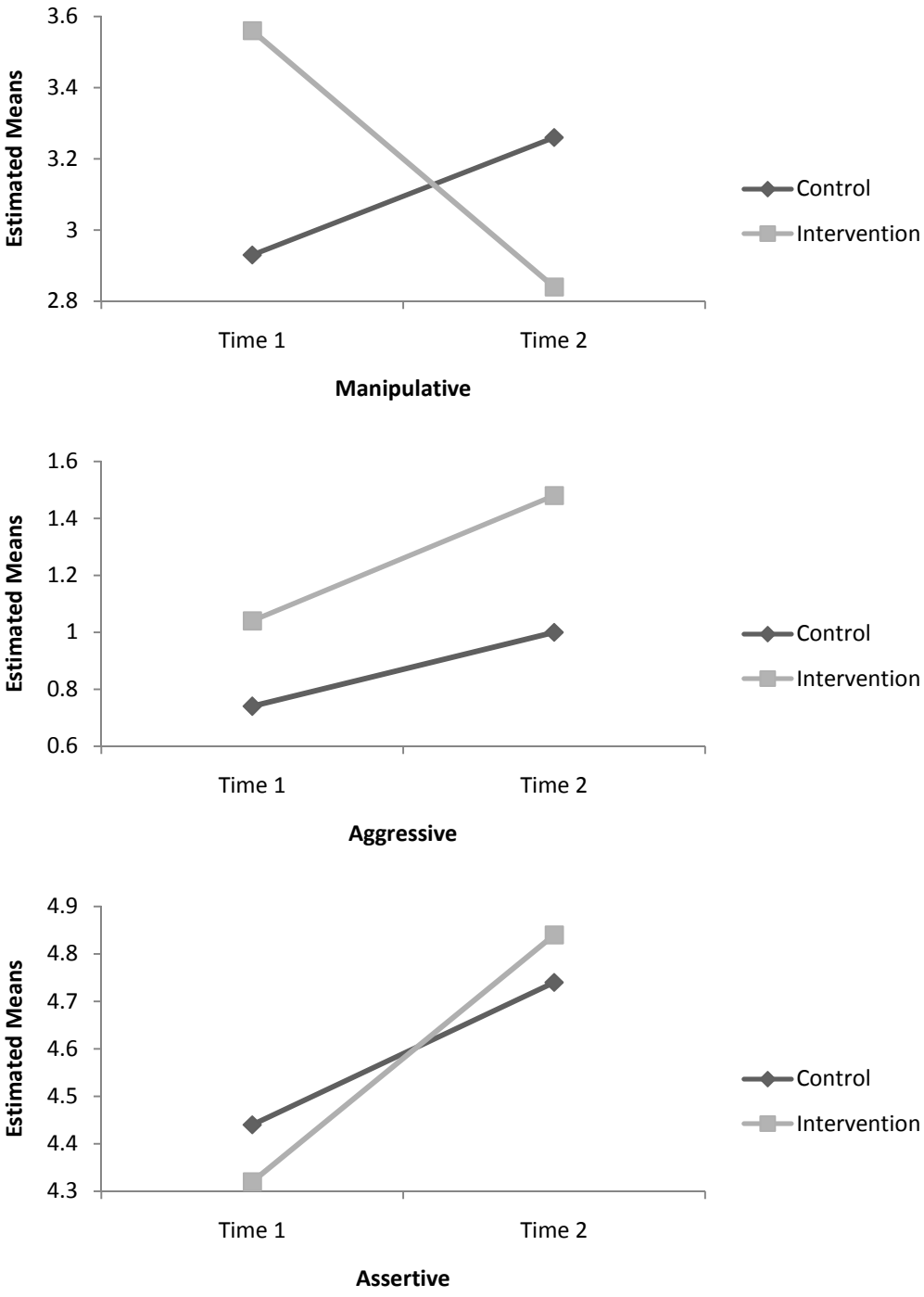
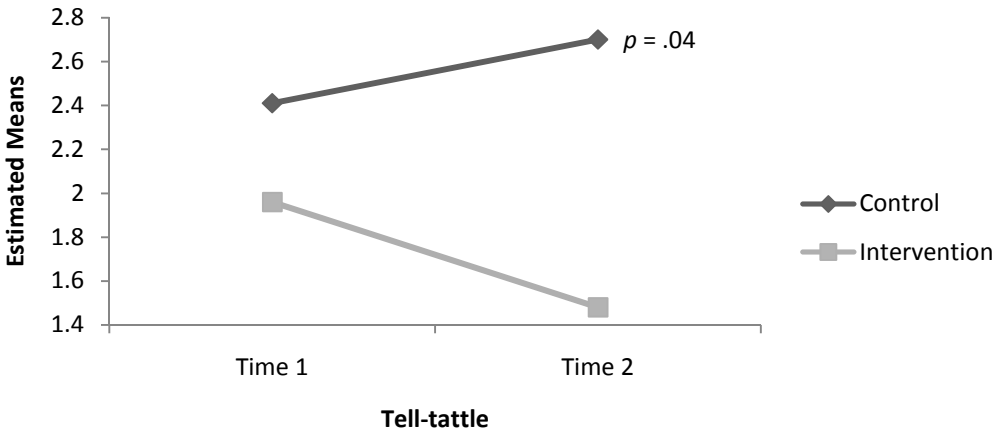
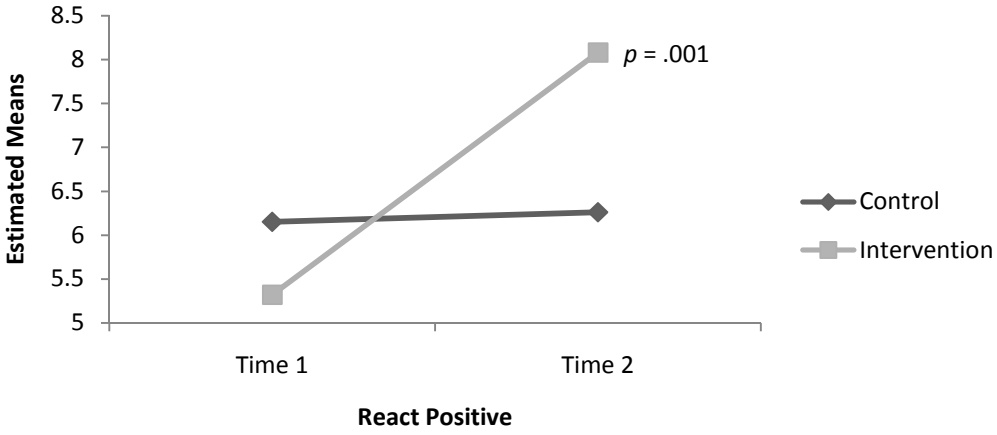


Figure 9. Solution type quantities after 3 probes for K-2nd grades. Estimated means from 2 x 2 mixed design ANOVA. P-values denote significant interaction effects.





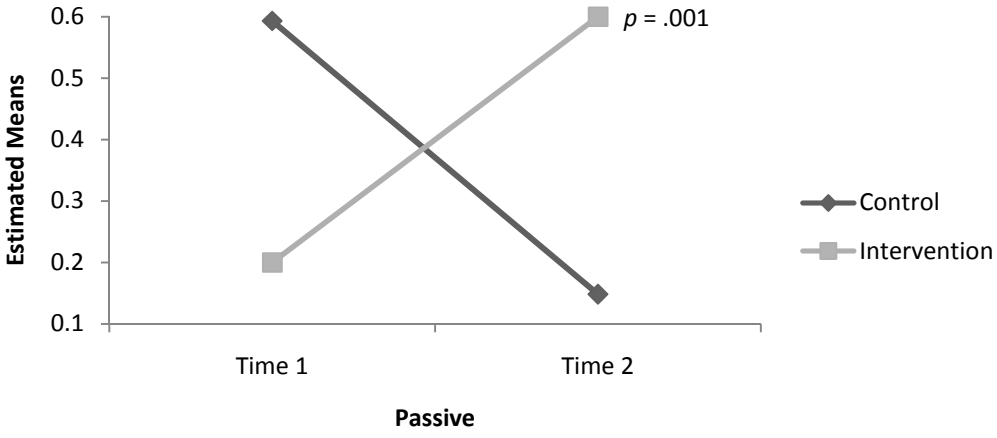


Figure 9 (continued).

Social Competence

To address the second research question, it was hypothesized that teachers' ratings for children receiving the ICPS program would indicate significantly greater competent behavior at time 2 than the control group. The mean scores of the DECB total scale, the SCS-T total scale, and aggression, withdrawal, prosocial skills, emotional regulation, and academic skills subscales were analyzed for differences between the intervention and control groups over time using 2 (time, repeated) x 2 (group, between) ANOVA mixed design tests. Results for all grades are shown in Table 10 and Figure 10.

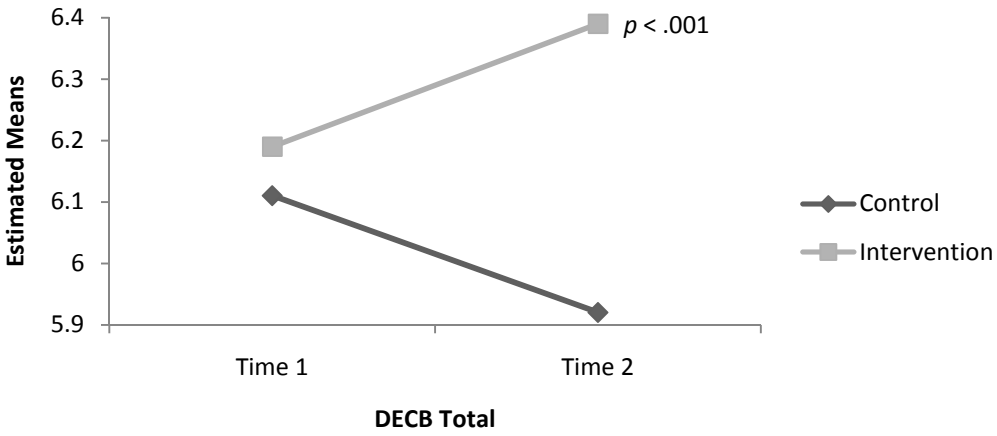
All social competence measures showed that children in ICPS classrooms had significant positive changes in their behavior ratings from pre-test to post-test when compared to peers in non-ICPS classrooms. Withdrawn behavior was an exception yet the interaction effects neared significance, $F = 3.27$, $p = .07$. The interaction effects for the DECB and SCS-T total competence scales and the aggression, prosocial skills, emotional regulation, and academic skills subscales all reached probability levels of $< .001$. F values (1, 303) for DECB total competence and the aggression subscale were, respectively, 19.83 and 15.35, with $\eta^2_p = .06$ and .05. For the SCS-T total competence scale, F (1, 296) = 34.54, $\eta^2_p = .10$, prosocial skills F (1, 299) = 21.41, $\eta^2_p = .08$, emotional regulation F (1, 298) = 39.70, $\eta^2_p = .12$, and academic skills F (1, 299) = 21.02, $\eta^2_p = .07$. Estimated means for the intervention group showed increases from pre-test to post-test on both the DECB and SCS-T total scales and on the prosocial skills, emotional regulation, and academic skills subscales while the control group decreased or stayed nearly level. On the aggression subscale, the intervention group decreased from pre-test to post-test and the control group increased.

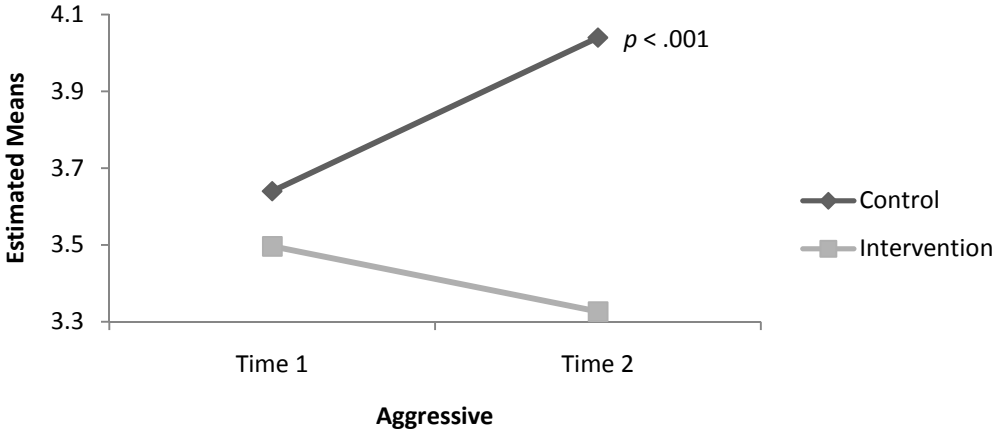
Table 10

Social Competence Differences for Preschool – 2nd Grades Using ANOVA 2 (Time, Repeated) x 2 (Group, Between)

	Intervention		Control		Time x Group[a]		Effect Size
	Pre	Post	Pre	Post	*F*	*p* <	η_p^2
DECB[b]	(*n* =182)		(*n* = 123)				
Total competence	6.19 (.10)	6.39 (.10)	6.11 (.12)	5.92 (.12)	19.83	.001	.06
Aggression	3.50 (.15)	3.33 (.16)	3.64 (.19)	4.04 (.18)	15.35	.001	.05
Withdrawal	3.23 (.12)	3.07 (.12)	3.46 (.15)	3.52 (.15)	3.27	.07	.01
SCS-T	(*n* =181)		(*n* = 120)				
Total competence	3.41(.06)	3.70 (.06)	3.37 (.08)	3.30 (.08)	34.54	.001	.10
Prosocial skills	3.52 (.06)	3.78 (.06)	3.43 (.07)	3.35 (.08)	27.41	.001	.08
Emotional regulation	3.38 (.06)	3.68 (.06)	3.37 (.08)	3.26 (.08)	39.70	.001	.12
Academic skills	3.33 (.07)	3.63 (.07)	3.34 (.09)	3.33 (.09)	21.02	.001	.07

Note. Estimated means and standard errors (in parentheses) are presented for each group interaction. [a]*df* = (1, 296) to (1, 303). [b]DECB total competence scale negative behavior items were re-coded to positive. Aggression and withdrawal subscales indicate negative behaviors.





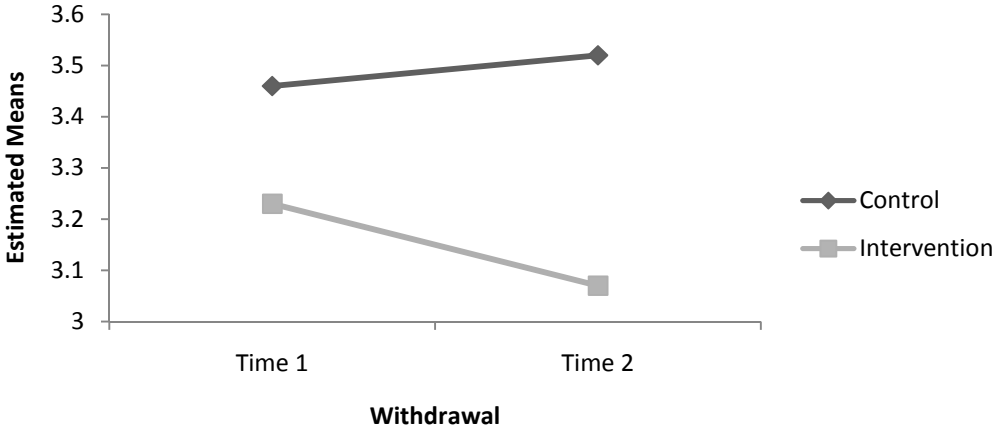
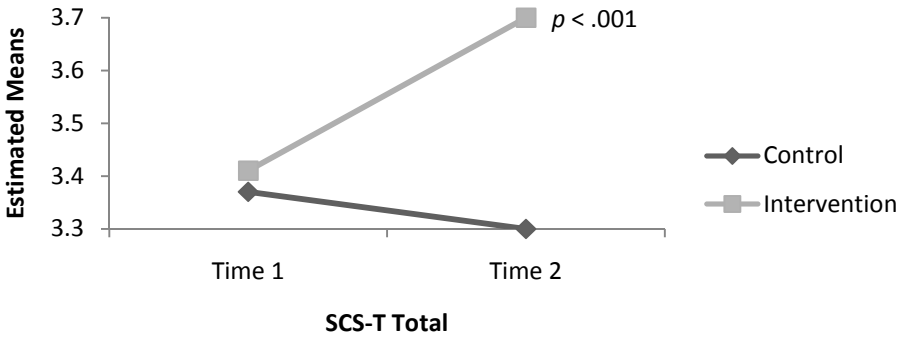
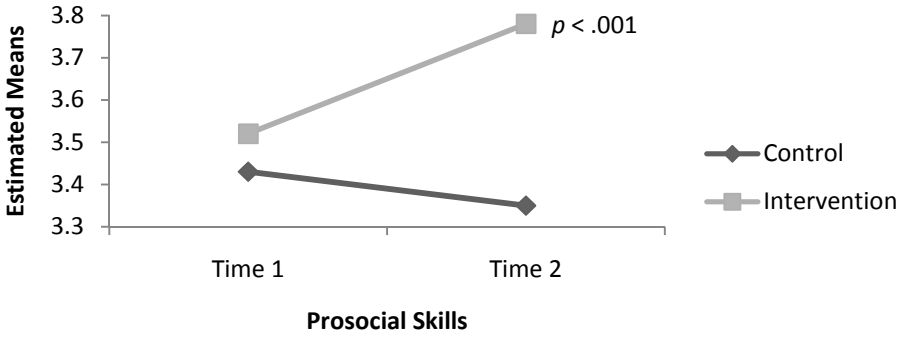
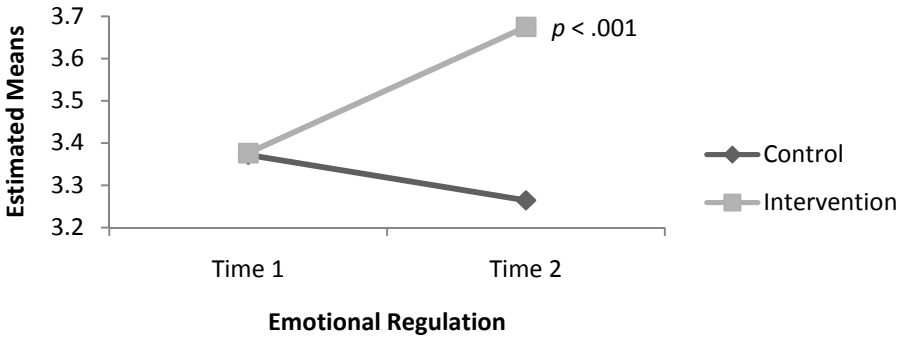


Figure 10. Social competence measures for preschool-2nd grades. Estimated means from 2 x 2 mixed design ANOVA. P-values denote significant interaction effects.







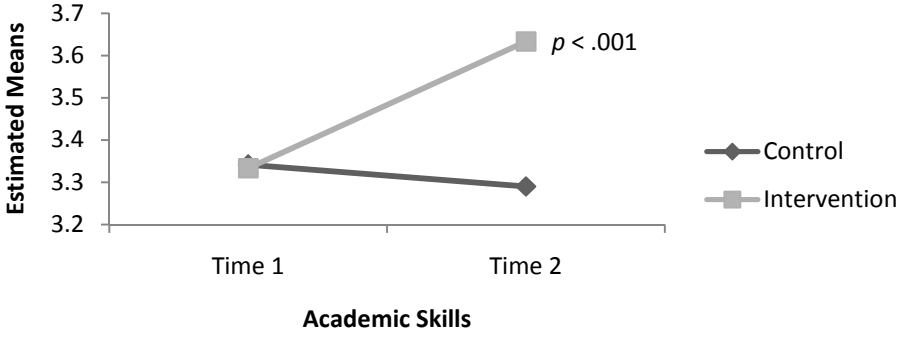


Figure 10 (continued).

CHAPTER V

DISCUSSION AND CONCLUSIONS

Based on the theoretical foundations of social information processing (SIP), social learning, and diffusion of innovation, this study examined the initial implementation of the *I Can Problem Solve* (Shure, 2000) program by the Cooperative Extension Service system in partnership with teachers of preschool and early elementary school-age children. Both summative and formative forms of evaluation were included to investigate child outcomes and the implementation process. Analyses focused on two research questions surrounding the impact of the ICPS program intervention on children's social-cognitive skills, measured using hypothetical problem situation interviews, and socially competent behavior, measured by teachers' ratings, as compared to a control group. In addition, data on the implementation process was inspected.

Program Delivery and Fidelity

In order to verify internal validity of an intervention that will support conclusions regarding the program's role in outcomes, and to substantiate external validity for program replication to other audiences and locations, it is crucial to examine implementation process and quality (Domitrovich & Greenberg, 2000; Durlak, 1998; Durlak & DuPre, 2008; Spoth, et al., 2002). The project protocol was for county educators to provide training and mentoring on the ICPS program to classroom teachers who were, in turn, to put the various ICPS components into practice and actually present the lessons to the children. The training and mentoring could include the county educators co-teaching some lessons until the teachers were familiar and confident with

the curriculum and concepts. Thirty-six lessons selected from the ICPS manuals were to be utilized with children in the intervention classrooms.

The amount of time county educators spent training the teachers widely varied. Teachers reflected a high level of satisfaction with the training and mentoring they received and interaction with the county educators. Of teachers and county educators reporting, just over half presented the entire schedule of lessons. Time spent per lesson also substantially varied. A particular deviation from instructions regarded the roles of the county educator and teachers. Less than 40% of the teachers presented most or all of the lessons while over half of the county educators did. The majority of reporting teachers reflected that they understood and used the various ICPS key components, yet there was variation in the level of practice. This is not unlike the findings of Rohrbach et al. (1993) who reported teachers considerably varied in their adoption and implementation of a substance abuse prevention program.

Some deviation was expected in regards to adherence to the program procedures for many reasons. It was the initial implementation of the ICPS program for the entire team of participating county educators. There was a gap of nine months or more between when the county educators received formal ICPS training and when they actually initiated the implementation procedures, although brief in-person and web-based follow-up meetings provided refreshers. Resources and geographic distance did not permit on-site monitoring. A wide range of school sites, communities, and age differences were included to encourage the “buy in”, local needs and networks of the county educators. The implementation procedures and ICPS manual were designed to permit some flexibility. Furthermore, the culture and conventional practice of extension educators and

teachers was likely influential. As indicated on submitted evaluation instruments and informal feedback to the principal investigator, a number of the participating county educators and teachers made modifications to the program implementation and/or evaluation protocol according to their personal experience or style. The instructed protocol was a different "model" of delivery than programs previously used by the county educators in which they are provided then present a structured curriculum to a group or class. The county educators' training and mentoring role to teachers and developing the use of key skill components beyond a structured curriculum lesson (e.g., dialoguing, integration with other classroom activities) was unfamiliar and perhaps uncomfortable for some in both parties. Realities of the classroom context such as time constraints, academic requirements, and other competing demands, also were cited as challenges to implementation.

A vital question is what influence these changes and adaptations had on the examined outcomes. In addition to stronger program outcomes in the statistical sense, quality implementation can enhance benefits for those served by the program. However, required levels of implementation to achieve optimal impact and what constitutes feasible levels in different situations are not known. It has been suggested that positive outcomes for some programs result by achieving a particular level of implementation while increasingly positive outcomes for some programs are associated as levels of implementation incrementally increase (Durlak, 1998).

Child Outcomes

This evaluation of the ICPS program produced several interesting findings providing support for the two hypotheses. Children who received the ICPS intervention

appear to have been positively impacted in some aspects of social cognitive skills and competent behavior more so than children who did not receive the program.

Summary of Findings

With regards to the first primary hypothesis, children who received the ICPS program were expected to demonstrate a higher level of post-test social cognitive skills than the control group. Indeed, for the intervention group, the quantity of alternative solutions generated after 3 probes significantly improved and both the quantity and ratio of initial relevant solution responses without probes did to a smaller extent. Effects further improved when preschool children were removed from the K-2nd graders. There were no apparent interaction differences on the overall relevancy ratio or the overall and initial without probes solution competence percentages. Yet, more specifically, significant improvements in manipulative, react positive, and passive solutions were found for the ICPS-trained children in the combined grade levels. After removal of preschoolers, react positive and passive solutions showed greater improvement and effects. Manipulative solutions were no longer significant but the K-2nd graders trained in ICPS showed significant decreases in tell-tattle solutions. No significant differences emerged for aggressive or assertive solution types.

The second primary hypothesis predicted that at time 2 the ICPS-trained children would receive significantly higher competent behavior ratings from their teachers than the control group. The behavior ratings for children in the ICPS intervention classrooms demonstrated significantly higher improvements on overall competence, aggression, prosocial skills, emotional regulation, and academic skills compared to little or no improvement in the non-ICPS children. There were very small effects on withdrawal.

However, the correlations between social cognitive skills and socially competent behavior ratings, tested as a preliminary assumption, were varied and the nature of the relationships shifted between time points. At time 1, significant albeit small associations appeared between social competence and the quality and quantity of generated solutions. The number of initial solutions with no probes showed such a connection but the number of alternative solutions after probing 3 times did not. The ratio of relevant solutions and the percentage of competent solutions, both overall with probing and for only initial responses without probes, showed positive associations as well. In addition, the solution competence percentage was negatively associated with withdrawal, the only such link for that behavior. Notable is that no social cognitive measures were significantly related to the aggression subscale at time 1. However, the time 2 post-hoc analysis reflected some different patterns. Significant positive relationships for aggression and negative associations for the DECB total competence scale emerged with the number of initial solutions with no probes and the relevancy ratios for both overall and initial responses without probes. The solution competence percentage for initial responses without probes indicated some stability and strengthening between time 1 and time 2 showing significant, positive associations with the total competence scales, emotional regulation, academic skills, a trend with prosocial skills, as well as significant negative correlations with aggression and withdrawal. The number of alternative solutions after probing 3 times still was not significantly associated with any of the social competence measures.

Three significant differences between boys and girls at pre-test were expected as another preliminary assumption. Expectations were that girls would be rated more highly than boys on prosocial behavior, boys would be rated as behaving more aggressively than

girls, and girls' generation of solution types would be more competent than boys. The social cognitive skills variables, including competent solution types, revealed no significant differences between boys and girls. Conversely, both predictions regarding social competence were supported. Boys received significantly higher aggression ratings than girls and girls received significantly higher ratings on overall competence, prosocial skills, emotional regulation, and academic skills than did boys. Yet, further tests of social competence outcomes with sex as a factor produced no significant differences.

Appraisal of Findings

The results seem to mirror variations in findings reported in prior research on social problem solving skills and programs such as ICPS. For example, Youngstrom et al. (2000) reported a lack of correlation between the overall PIPS score and teacher or caregiver reports of behavior problems, however, specific prosocial and force ratios showed more significant associations. Substantial evidence indicates that socially competent children generate a greater variety of strategies and more frequently suggest prosocial strategies in response to hypothetical interpersonal problems than their less socially competent peers (Battistich et al., 1989; Shure et al., 1971; Spivack et al., 1976; Youngstrom et al., 2000). The present findings indicate the ICPS-trained children generated a higher quantity of relevant solutions although this may not necessarily mean that they are more positive in quality. Both quantitative and qualitative indicators may be essential in the linkage between children's social cognitive processes and behavioral adjustment (Fischler & Kendall, 1988; Rubin et al., 1991; Youngstrom et al., 2000). Kumpfer and colleagues (2002) suggested that the impacts of interventions such as ICPS influence specific behaviors rather than a broad array of behaviors.

Closer inspection of the number of solution types offered a better understanding of how the quality of solutions may have been impacted by the ICPS program. Compared to the control group children, the ICPS-trained children showed significant increases in positive solutions, passive solutions, and decreases in manipulative solutions and tell-tattle solutions, all of which suggest improvements in prosocial strategies. Although passive solutions were originally conceptualized to be an indicator of withdrawal with the expectation that the ICPS-trained children would decrease in comparison to the control group, the opposite was found. Perhaps the intervention group's significant increase and control group's decrease in passive solutions suggests that stepping back from a situation, especially a conflict, is a positive strategy and one that evolves from ICPS training. On the contrary, there were no significant impacts on aggressive or assertive solution types. As the aggressive type was composed of physical, verbal, and relational forms of aggression, and the assertive type included asking, borrowing, sharing, verbal assertion, and commands, these combinations may have been too broad to provide appropriate assessments.

The variation of findings in this study regarding number of probes and generated responses utilized with hypothetical problem stories also reflects those reported by other researchers. Some evidence has suggested that aggressive children may only be able to generate one competent solution response to a situation while nonaggressive children can generate a higher percentage of competent second responses (Dodge, 1986; Evans & Short, 1991; Guerra & Slaby, 1989; Richard & Dodge, 1982). It has been further suggested that the quality of children's initial responses may better reflect their actual behavior than the quantity of generated solutions (Mize & Cox, 1990; Mize & Ladd,

1988). The pre-test correlations from the current study indicated significant positive associations between the number of initial relevant solutions with no probes and competent behavior, but the number of alternative solutions after probing 3 times was not significant.

Mixed differences between boys and girls found in this study are similar to reports of previous studies. Given teachers' ratings of children's behavior were utilized in the present study, it is uncertain to what extent the significant results for social competence truly reflect actual behavior or the teachers' possible gender biases. Although some researchers have reported finding sex differences in young children's social problem-solving skills (Musun-Miller, 1993; Walker et al., 2002), the lack of significant differences in competent solutions produced by boys and girls is in keeping with other studies (Shure et al., 1971, 1980; Youngstrom et al., 2000).

In the present study, some effects on social cognitive skills were less apparent when preschoolers were combined with children in K-2nd grades, namely the number of initial solutions and relevancy ratio with no probes, and react positive, passive, and tell-tattle solutions. Conversely, manipulative solutions were somewhat greater when the preschool cohort was included. As explained in the literature review, prior research has shown that children as young as four years of age have the cognitive capability of generating various solutions for problem-solving and can realize positive outcomes from ICPS or similar problem-solving programs. Yet, children's social cognitive skills as well as their experience with peers, including problem-solving competence and the ability to produce alternative solutions to social problems vary greatly between ages of three to eight years. Alternative-solution thinking may differentiate behavioral adjustment in early

childhood whereas older children generate a greater quantity as well as a more competent quality of alternative solution strategies (Dodge, 1986; Dodge & Price, 1994; Feldman & Dodge, 1987; Kendall & Fischler, 1984; Mayeux & Cillessen). Younger children tend to be more direct, simple, and reactive in response to situations in comparison to school-age children who may have developed more indirect and sophisticated approaches (Crick et al., 2004; Walker et al., 2002). Moreover, preschool and early school-age children need more time to complete different types of cognitive problems and to practice learning new social-cognitive concepts and skills in contrast to older school-agers (Boxer et al., 2005). Another possible explanation for the variations in the present study is the diversity of the participating preschool locations. Rather than public elementary school environments for kindergarten through 2nd grades, the preschool participants were in several types of Head Start, child development, early childhood, pre-K, and day care environments with teachers that perhaps represented a wider range of educational backgrounds and skills. Also, several three year-old children in the classrooms were included in the study which may have skewed the results.

Effect Sizes

In addition to statistical significance indicating the likelihood that findings are due to chance, it is important to describe the practical significance of the estimated strength of association also known as the size of treatment effects (Sink & Stroh, 2006; Vacha-Haase & Thompson, 2004). For ANOVA repeated measures designs in SPSS, partial eta squared (η^2_p) is calculated as the ratio of the effect variance and error variance that can be accounted for by the effect, in this instance the impact of the ICPS program on child outcomes of social cognitive skills and social competence.

Value ranges suggested by Cohen (1988) are often cited to assess the size of partial eta squared: .01 represents a small effect, .06 medium, and .14 large. However, others have cautioned that these effect size values should not be interpreted rigidly and, in order to assess meaning of the values, stress that partial eta squared should be compared to those found in similar studies (Sink & Stroh, 2006; Vacha-Haase & Thompson, 2004). For mixed designs ANOVA with measured factors between-subjects, partial eta squared is considered to be an uncorrected, biased estimate, however larger sample sizes ($N \geq 50$) improve effect size stability (Sink & Stroh; Vacha-Haase & Thompson).

The effect sizes for the social cognitive skills found to have significant interactions for the intervention group compared to the control group were small to medium. For the number of alternative solutions with 3 probes for all grade levels, $\eta^2_p = .08$ and increased to .12 without the preschool cohort. For both the initial number of solutions and relevancy ratio without probes, $\eta^2_p = .03$ for K-2nd grades. The significant solution type quantities for all grades were in the medium range: both manipulative and passive $\eta^2_p = .08$, and react positive $\eta^2_p = .13$. Removing the preschool cohort resulted in substantial changes in effect size for K-2nd grades so that tell-tattle $\eta^2_p = .08$ and react positive and passive η^2_p enlarged to .30 and .24, respectively. Social competence measures for preschoolers through 2nd grades produced small to medium effect sizes. The total competence scales and aggression, prosocial, emotional regulation, and academic skills subscales η^2_p values ranged from .05 to .12.

Few effect size estimates, particularly partial eta squared, have been published in regards to children's problem-solving skills. Given the available data at the time, the meta-analysis by Denham and Almeida (1987) indicated the magnitude of program

training effects were not consistently large particularly for behavioral ratings or for ICPS as a mediator on behavior change. Yet, a moderate to large magnitude of difference was found for trained children's significantly higher post-test ICPS skills scores versus the untrained children, and a moderate effect size for a positive association between increased ICPS skills and behavioral adjustment ratings. More recently, Webster-Stratton et al. (2008) reported small effects ($Eta^2 = .04$) for the number of different positive strategies generated using the WALLY. Kumpfer and colleagues (2002) reported a small to moderate effect size for the significant impact of ICPS program on children's self-regulation ratings. Compared to these findings, the current study's results indicate possibly higher effects in positive response strategies and somewhat lower effects on emotion regulation. However, variation in how the variables were defined, measured, and analyzed in each study makes it difficult to fully contrast their meanings.

Strengths, Limitations, and Implications

Strengths

This study is a unique opportunity to investigate and understand the applied pilot implementation of a prevention program in diverse community settings much like may occur with any number of intervention programs that agencies and schools attempt to put into operation. The collection and inclusion of process data regarding program delivery and fidelity provide a useful framework for interpreting results of the program outcomes. The use of a quasi-experimental control group design appropriately fit the nature of the study given the elements that could and could not be controlled. Selecting comparable naturally occurring classrooms in the same or nearby school sites as control groups and the assessment of each pair of intervention and control classrooms over a similar time

period at two time points with standard procedures helped reduce threats to validity. The universal application of the program with classrooms in multiple diverse communities, school sites, and grade levels, especially in rural areas, allowed the opportunity to test the diffusion of ICPS with a broader general population. Furthermore, it allowed pooling participants together across multiple sites to achieve a large sample size.

Limitations

The quasi-experimental design is not as strong in controlling for threats to the internal and external validity as the true controlled experimental design. It was necessary to employ convenience sampling and random assignment to groups was not feasible. While efforts were made to select comparable classrooms in the same or nearby school site as control groups, it was not possible to match participants across groups. Therefore, it cannot be assumed that the populations being compared were equivalent on all factors prior to the intervention which may threaten internal validity. The classrooms of children may have been created by other similarities or dissimilarities that, in turn, may have caused the differences in outcomes. Thus, it is not possible to determine causality regarding the outcomes or generalize the findings to populations beyond the participants. No information was collected or included in analyses about other local characteristics or programs that might have extraneous or additional effects on outcomes.

Teachers and county educators were not blind to the research design and in fact conducted the intervention as well as the evaluation procedures. County educators independently recruited participating schools and teachers, some of which were new associations while others had pre-existing working or personal relationships. Thus, the threat of selection bias must be considered in interpreting the study findings. Moreover,

there were a number of inconsistencies and adaptations in the program delivery procedures and evaluation protocols. The county educators were provided training on the procedures via a web-based online seminar and received detailed written instructions with some phone consultation. It was not feasible to conduct in-person group or individual training or monitoring on the evaluation and implementation procedures given the time pressures to put the program into operation, the number and geographic dispersion of the participating county educators, limited travel budgets, and limited state level project personnel.

It is possible that teachers and county educators might have felt inclined to reflect positive results in both the program delivery process and student outcomes. Yet the sample size and assurances to protect anonymity may have helped balance such potential bias. Program providers may be less able to provide accurate performance reports without bias (Dane & Schneider, 1998; Durlak, 1998). However, teacher reports have been shown to be valid and reliable (Boxer et al., 2006; Gagnon et al., 1995; Lillehoj, Griffin, & Spoth, 2004).

To fit the project design and items of conceptual interest, the interview protocol and coding scheme were composed of concepts, categories, and procedures from several sources rather than one standardized tool. Specifically, relational aggression and manipulation are fairly recent constructs that have rarely been included in hypothetical problem situation assessments. Limited time and financial resources did not permit the interview coding to be further reviewed or refined. The low kappa coefficients testing inter-coder reliability for the six solution types need further exploration. Inconsistent procedures were particularly apparent in the county educators' execution of the

hypothetical problem situation interviews. Minimal or erratic use of probing for further solution ideas with the children limited the data analysis of social cognitive skills.

This was a pilot program and county educators and teachers were becoming familiar with the ICPS program and evaluation procedures for the first time. Differences may likely occur with further experience and program refinements. A considerable amount of data were not submitted and data were missing for numerous measures. Therefore, it was necessary to exclude some data from analysis which may have further influenced the results.

Implications for Research

The validity and reliability of the DECB teacher rating instrument needs further testing as well as do the two subscales composed for this study, aggression and withdrawal. Additional examination of the hypothetical problem situation protocol, conceptual categories, and coding utilized in this study as well as intercoder reliability is warranted (see also Youngstrom et al., 2000). In particular, it would be useful to deconstruct the solution types to examine more in-depth for example, relational aggression separate from verbal and physical forms of aggression. A further step is to explore the question of whether the social cognitive skills mediated the relation between the ICPS intervention and effects on competent behavior.

It is important to replicate this model of delivering the ICPS program in other locations particularly over a longer period of time with more in-depth monitoring of the procedures. As well, follow-up on the progress of students, teachers, and county educators who participated in the pilot project would be quite informative. Further

analysis of age, grade, racial/ethnic, school, and community factors also would be beneficial.

The program fidelity and delivery measures developed and utilized in this study need further exploration for validity and reliability. Moreover, the process data should be analyzed for differential impact on the program outcomes. Possible questions to address include whether the training and mentoring delivered by the county educators resulted in the teachers' effective presentation of the ICPS program, and if the classroom presenter of the ICPS program (teacher, extension educator, or combination) or the fidelity (e.g., adherence, dosage, quality) of implementation are associated with the children's social-cognitive skill or behaviors. Assessing adaptations made by the teachers and county educators would be valuable. Distinguishing whether results may be attributed to the program concepts or to the delivery of services, and to what extent, is challenging if implementation fidelity is not assessed; however implementation factors are rarely examined in prevention studies (Dane & Schneider, 1998; Domitrovich and Greenberg, 2000).

Implications for Practice

Children in classrooms using the ICPS program showed significant positive changes in certain social problem-solving skills and competent behaviors from pre-test to post-test when compared to peers in classrooms not receiving ICPS. Given the prior research evidence on the ICPS program, the current findings suggest that the ICPS program may be beneficial for a diverse general population of children in different school and community settings. Furthermore, the Cooperative Extension Service may provide a viable system for the diffusion and implementation of ICPS. However, the noted

limitations must be considered including the lower degree of impact on preschoolers' social cognitive skills.

Similar program implementation and evaluation challenges as experienced in this study have been reported for other Cooperative Extension partnerships with communities and schools (see also Lillehoj et al., 2002; Myers-Walls, 2000; St. Pierre and Kaltreider, 2004). Implementation data can be a monitoring and feedback tool for ongoing quality improvement, to identify and correct problems in program application, and to expand understanding of practices that will enhance the effective diffusion, implementation, and sustainability of programs (Domitrovich & Greenberg, 2000; Durlak & DuPre, 2008). Given the challenge of achieving and maintaining consistent delivery and effectiveness of prevention programs in varied school locations and natural daily conditions, monitoring is necessary (Greenberg et al., 2005). There is some evidence that modifications may indeed improve outcomes although the research is not clear as to specifically what alterations and situations contribute to increases or decreases in program effectiveness (Dusenbury et al., 2003). Some argue that programs may be implemented more effectively if providers, organizations, and communities can adapt them to correspond with their local needs, priorities, and practices (Durlak & DuPre). Therefore, it appears that much more than the decision to adopt an innovation and taking steps to initiate a prevention program is required to achieve successful use (Rohrbach et al., 1993).

Summary

This is the pilot implementation and first evaluation of the *I Can Problem Solve* program by Cooperative Extension Service county educators in partnership with early childhood and early elementary school teachers. This research study contributes to

knowledge regarding the impact and applications of the program in rural, diverse school locations, a model for diffusion through the CES system, and the process of implementing an evidence-based program in community school settings.

Findings suggest support for the hypotheses. Children who received the ICPS intervention appear to have been positively impacted aspects of social cognitive skills and competent behavior significantly more so than children who did not receive the program. Variation in the delivery of the program was considerable. It is uncertain whether other mixed or non-significant findings on child outcomes may be due to the variation of program delivery or fidelity, the degree to which problem-solving abilities can be used to mediate social behaviors, the assessment or measurement procedures, or the appropriateness for different groups of children. In general, the present results in concert with prior research shows promise that delivery of the ICPS program by the CES and preschool and elementary schools can be effective. Therefore, CES may provide a viable system for the diffusion and implementation of ICPS in school settings which often have limited resources for research-based prevention programs. However, further attention to fidelity and monitoring of implementation is required to assure effective delivery.

It is essential to study whether empirically validated programs are effective when implemented in the “real world”, when done so by different providers and populations, and to better understand various effects on quality (Biglan et al., 2003; Domitrovich & Greenberg, 2000; Mrazek & Haggerty, 1994; Spoth et al., 2002). Interventions that show significant impacts across diverse communities will be most useful (Biglan et al., 2000).

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APPENDICES

APPENDIX A

Table A1

Characteristics of Classrooms and School Settings by Grade

	Children with Consent		School		Community
School Type (grades)	Intervention # (% class) *n* = 212	Control # (% class) *n* = 156	Free/reduced lunch [a] or low income[b] %	Enrolled Total[a, b]	Population[c]
		Preschool			
Head Start	12 (63.2)	5(25.0)	73	79	2,731
Child Development Ctr.	14 (93.3)	12 (100)	100	71	24,710
Head Start	14 (100)	8 (50.0)	90	89	3,997
Pre-K, Elementary (EC-5th)	13 (50.0)		52	296	2,733
& Head Start [d]		8 (50.0)	100	19	
Child Development Ctr.	3 (25.0)		50	18	28,692
& Day Care Ctr. [d]		7 (87.5)	30	40	
Pre-K, Elementary (EC-8th)	5 (62.5)	5 (26.3)	88	333	7,989
n/M %	61 (65.7)	45 (56.5)	72.9	118	
		Kindergarten			
Elementary (PK-2nd)	9 (52.9)	10 (50.0)	60	417	6,472
Elementary (EC-8th)	6 (50.0)	8 (57.0)	93	99	452
Elementary (EC-5th)	13 (59.0)	10 (50.0)	67	629	537,734
Elementary (EC-8th)	20 (100)	9 (40.9)	83	343	15,691
n/M%	48 (65.5)	37 (49.5)	75.8	372	

	Children with Consent		School		Community
School Type (grades)	Intervention # (% class) *n* = 212	Control # (% class) *n* = 156	Free/reduced lunch [a] or low income[b] %	Enrolled Total[a, b]	Population[c]
			First		
Elementary (EC-5th)	19 (82.6)	10 (43.5)	62	348	4,114
Elementary (EC-8th)	13 (86.7)	7 (46.7)	83	343	15,691
Elementary (PK-2nd)	8 (44.4)	10 (50.0)	71	295	2,552
Elementary (EC-5th)	19 (86.4)	14 (77.8)	82	491	4,637
n/M%	59 (75.0)	41 (54.5)	74.5	370	
			Second		
Elementary (EC-4th)	17 (94.4)	14 (66.7)	68	495	2,086
Elementary (EC-5th)	14 (93.3)	8 (53.3)	67	453	771
Elementary (EC-4th)	13 (59.0)	11 (55.0)	61	390	2,610
n/M%	44 (82.3)	33 (58.3)	65.3	446	

Note. N = 368. EC and PK indicate schools with early childhood or pre-kindergarten programs. [a]2006 and 2007 data from Oklahoma Education Oversight Board, Office of Accountability. [b]Data for Head Start, child development, and day care centers provided by the centers. [c]2000 U. S. Census. [d]Two different centers were used for intervention and control classes.

Table A2

Chi-square Tests of Intervention Group and Control Group Child Characteristics

Characteristic	*df*	*N*	χ^2	*p*
Age	6	327	5.98	.43
Grade	3	335	.33	.96
Sex	1	335	.01	.91
Race/ethnicity	5	327	4.79	.44

Table A3

Teachers' Self-assessment of ICPS Program Delivery

Practices	None/Little	Some	Quite a Bit	Greatly
Used curriculum lessons as in manual	1 (7.1)	4 (28.6)	4 (28.6)	5 (35.7)
Followed lesson outline sequentially[a]	1 (7.7)	4 (30.8)	3 (23.1)	5 (38.5)
Thoroughly completed lesson content[a]	1 (7.7)	1 (7.7)	6 (46.2)	5 (38.5)
Understood content and key concepts[a]		1 (7.7)	2 (15.4)	10 (76.9)
Delivered lessons of good quality[a]		1 (7.7)	6 (46.2)	6 (46.2)
Engaged children in lessons	1 (7.1)		7 (50.0)	6 (42.9)
Used ICPS vocabulary words		4 (28.6)	3 (21.4)	7 (50.0)
Used ICPS dialoguing		4 (28.6)	5 (35.7)	5 (35.7)
Generated solutions from children		2 (14.3)	5 (35.7)	7 (46.7)
Used teaching tools (illustrations, bulletin boards)	6 (42.9)	3 (21.4)	2 (14.3)	3 (21.4)
Generalized ICPS outside of lessons		4 (28.6)	8 (57.1)	2 (14.3)
Applied/integrated with classroom curricula or activities	1 (7.1)	6 (42.9)	4 (28.6)	3 (21.4)
Sent ICPS materials home to parents[a]	5 (38.5)	2 (15.4)	1 (7.7)	5 (38.5)

Note. n =14. [a]n = 13.

Table A4

Teachers' Assessment of ICPS Training and Mentoring by Extension Educators

Practices	None/Little	Some	Quite a Bit	Very much
Supportive and helpful			4 (28.6)	10 (71.4)
Regular communication/contact		1 (7.1)	4 (28.6)	9 (64.3)
Satisfactory amount		1 (7.1)	8 (57.1)	5 (35.7)
Satisfactory quality		1 (7.1)	6 (42.9)	7 (50.0)
Collaborative, problem-solving approach			8 (57.1)	6 (42.9)
Modeled and encouraged role plays		5 (35.7)	5 (35.7)	4 (28.6)
Allowed you to feel comfortable		2 (14.3)	5 (35.7)	7 (50.0)
Referred to ICPS concepts and skills		1 (7.1)	10 (71.4)	3 (21.4)
Discussed actual situations		1 (7.1)	8 (57.1)	5 (35.7)
Was prepared			4 (28.6)	10 (71.4)
Reviewed ICPS concepts and lessons[a]			8 (61.5)	5 (38.5)
Observed your presentation[a]	3 (23.1)	4 (30.8)	4 (30.8)	2 (15.4)
Co-taught ICPS lessons with you[a]	3 (23.1)	4 (30.8)	3 (23.1)	3 (23.1)
Adequate skills		1 (7.1)	2 (14.3)	11 (78.6)
Effectively explained important points		1 (7.1)	4 (28.6)	9 (64.3)
Positive and productive interaction			1 (7.1)	13 (92.9)

Note. n =14. [a]n = 13.

Table A5

Correlations between Social Competence and Social Cognitive Skills at Post-test

	Social Competence						
	DECB[a]			SCS-T			
Social Cognitive Skills	Total comp.	Aggression	With-drawal	Total comp.	Prosocial skills	Emotion reg.	Academic skills
Overall							
# Alternative solutions with 3 probes	-.090	.083	.067	-.051	-.080	-.050	-.017
Relevancy ratio	-.134*	.157**	.051	-.052	-.095	-.036	-.013
Solution competence %	.081	-.063	-.097	.054	.045	.052	.064
Initial responses without probes							
# Alternative solutions	-.079	.107[b]	.033	-.033	-.069	-.035	.015
Relevancy ratio	-.074	.109[b]	.017	-.046	-.084	-.049	.009
Solution competence %	.156**	-.118*	-.158**	.116[b]	.096	.103[b]	.137*

Note. All n = 278-282 except # alternative solutions with 3 probes n = 126. [a]DECB total competence scale negative behavior items were re-coded to positive. Aggression and withdrawal subscales indicate negative behaviors. [b]$p < .10$.

*$p < .05$ (two-tailed). **$p < .01$ (two-tailed).

Table A6

Comparison of Boys' and Girls' Social Cognitive Skills at Pre-test

	Boys	Girls		
	M(SD)	*M (SD)*	*t*	*p*
	(*n* = 144)	(*n* = 138)		
	Overall			
# Alternative solutions with 3 probes[a]	16.69 (4.03)	15.59 (4.62)	1.07	.29
Relevancy ratio	.62 (.21)	.62 (.21)	1.57	.12
Solution competence %	.59 (.19)	.61 (.16)	-1.01	.16[b]
	Initial responses without probes			
# Alternative solutions	8.96 (1.40)	8.82 (1.56)	.79	.43
Relevancy ratio	.90 (.14)	.88 (.15)	.86	.39
Solution competence %	.64 (.21)	.65 (.17)	.56	.29[b]

Note. $df = 280$. [a]$n = 71$, $df = 69$. [b]One-tailed; all other *p* values are two-tailed.

Table A7

ANOVA 2 x 2 x 2 (Time x Group x Sex) Differences for Social Competence

		Intervention		Control		Time x Group x Sex[a]	
		Pre	Post	Pre	Post	*F*	*p*
DECB		(n =182)		(n = 123)			
Total competence[b]	Boys	6.05 (.14)	6.17 (.14)	5.95 (.17)	5.65 (.16)	.19	.67
	Girls	6.33 (.14)	6.61 (.14)	6.30 (.18)	6.23 (.17)		
Aggression	Boys	3.73 (.22)	3.63 (.21)	3.80 (.26)	4.40 (.25)	.91	.34
	Girls	3.26 (.22)	3.01 (.21)	3.46 (.28)	3.64 (.26)		
Withdrawn	Boys	3.27 (.17)	3.26 (.17)	3.53 (.20)	3.70 (.20)	.14	.71
	Girls	3.19 (.17)	2.90 (.17)	3.37 (.21)	3.32 (.21)		

Table A7 (continued).

		Intervention		Control		Time x Group x Sex[a]	
		Pre	Post	Pre	Post	*F*	*p*
SCS-T		(*n* =178)		(*n* = 120)			
Total competence	Boys	3.32 (.09)	3.57 (.09)	3.20 (.10)	3.07 (.10)	.30	.59
	Girls	3.50 (.09)	3.82 (.09)	3.58 (.11)	3.58 (.11)		
Prosocial skills	Boys	3.48 (.08)	3.67 (.09)	3.30 (.10)	3.18 (.10)	.05	.83
	Girls	3.57 (.09)	3.88 (.09)	3.59 (.11)	3.56 (.11)		
Emotional regulation	Boys	3.27 (.09)	3.56 (.09)	3.20 (.10)	3.02 (.11)	1.31	.25
	Girls	3.49 (.09)	3.79 (.09)	3.58 (.11)	3.55 (.11)		
Academic skills	Boys	3.23 (.10)	3.48 (.10)	3.09 (.12)	3.02 (.12)	.09	.76
	Girls	3.44 (.10)	3.79 (.10)	3.63 (.13)	3.69 (.13)		

Note. Estimated means and standard errors (in parentheses) are presented for each group x time x sex interaction.

[a]*df* = (1, 294) to (1, 301). [b]DECB total competence scale negative behavior items were re-coded to positive.

APPENDIX B

APPENDIX B1

I Can Problem Solve (ICPS)
4-5 Year Olds
Lesson Schedule

The following is a guide for implementation of the ICPS program lessons from the *Preschool Manual.*

- This list includes 36 lessons. We request that you present these as a minimum.
- The schedule reflects 10 weeks with 3 or 4 lessons per week. You may modify this slightly if preferred or necessary – such as moving the start date back another week, condensing lessons into 9 weeks or stretching to 11 or 12 weeks. The week of November 19 has been omitted to account for Thanksgiving break which you can adjust based on your school schedule.
- There are a total of 59 lessons in the manual. Feel free to conduct more lessons if you would like.
- ICPS Training and Practice numbers 1 to 7 refer to PowerPoint guides provided for Extension Educators to coach classroom teachers on the ICPS key concepts and upcoming lessons.
- Allow about two weeks prior to lesson implementation for obtaining consent and pre-program evaluation. The Extension Educator will conduct interviews with students while classroom teachers will complete the questionnaires (Teacher Ratings of Child Behavior). You will also need to allow one to two weeks at the end of all lessons for post-program evaluation.

Before implementing ICPS lessons:

- Teacher orientation and initial training - *ICPS Training & Practice PowerPoints #1 & 2* and Manual Introduction pages 1-12.
- Obtain signed consent forms from principal/center director, teachers & parents of students
- Obtain child assent before interviews
- Educators conduct Child Interviews; Teachers complete Ratings of Child Behavior
- ICPS Lesson Preparation

Week 1	
Lesson 1: Is	Teacher Script: pages 15-16
Lesson 2: Some-All	Interaction in the Classroom: pages 43-46
Lesson 3: Not	Parent Page: pages 57-60
Week 2	
Lesson 4: Or	Interaction in the Classroom: page 43-46
Lesson 5: And	Curriculum Ideas: pages 47-55
Lesson 6: Same-Different	Parent Page: page 61
Lesson10: More Review of ICPS Words	*ICPS Training & Practice #3*
Week 3	
Lesson 11: Happy	Interaction in the Classroom: pages 95-96
Lesson 12: Sad	
Lesson 14: More How Can We Tell	
Week 4	
Lesson 15: How Can We Tell: Asking	Curriculum Ideas: pages 97-98
Lesson 17: Angry	*ICPS Training & Practice #4*
Lesson 18: Let's Pretend	
Lesson 21: Remembering Choices	
Week 5	
Lesson 23: Why-Because, Might-Maybe	Curriculum Ideas: pages 101-102
Lesson 24: Feelings Have Causes	Parent Page: pages 121-122
Lesson 26: What Do You Choose? A Different Because	
Week 6	
Lesson 30: Allie the Alligator, Part I	Interaction in the Classroom: pages 143-145, 151
Lesson 31: Allie the Alligator, Part II	Dialoguing Reminders: pages 299-303
Lesson 32: Is That Fair?	*ICPS Training & Practice #5*
Lesson 33: More About Fair	

Week 7	
Lesson 34: What's The Problem?	Alternative Solutions: pages 155-156
Lesson 35: What Else Can He Do?	Interaction in the Classroom: pages 177-178
Lesson 38: Solve Another Problem	Curriculum Ideas: pages 179-180
	Parent Page: pages 181-183
Week 8	
Lesson 39: Mystery Sequence, Part I	Consequences: pages 185-186
Lesson 40: A Story	Curriculum Ideas: page 211
Lesson 41: Mystery Sequence, Part II	Dialoguing Reminders: pages 299-303
Lesson 42: More ICPS Words: If-Then	*ICPS Training & Practice #6*
Week 9	
Lesson 44: A Good Idea?	Interaction in the Classroom: pages 217-220, 229
Lesson 45: What Can I Do While I Wait?	Curriculum Ideas: page 221-22
Lesson 46: What Might Happen Next? Part I	Parent Page: pages 223 & 231
Lesson 47: What Might Happen Next? Part II	
Week 10	
Lesson 49: What Might Happen Next? Part III	Interaction in the Classroom: pages 251-253
Lesson 50: What Might Happen Next? Part IV	Solution-consequence Pairs: page 265
Lesson 52: What Else Might Happen If I Do That? Part I	Curriculum Ideas: page 279
	Parent Page: pages 255-264
Lesson 57: What's Your Problem? Part I	Guidelines for Cont'd ICPS Teaching: pages 295-296
	ICPS Training & Practice #7
Conduct post-program evaluation and collect final data from teachers and children.	

I Can Problem Solve (ICPS)
Kindergarten, 1st, & 2nd Grade
Lesson Schedule

The following is a guide for implementation of the ICPS program lessons from the *Kindergarten & Primary Grades Manual.*

- This list includes 36 lessons. We request that you present these as a minimum.
- The schedule reflects 10 weeks with 3 or 4 lessons per week. You may modify this slightly if preferred or necessary – such as moving the start date back another week, condensing lessons into 9 weeks or stretching to 11 or 12 weeks. The week of November 19 has been omitted to account for Thanksgiving break which you can adjust based on your school schedule.
- There are a total of 83 lessons in the manual. Feel free to conduct more lessons if you would like.
- ICPS Training and Practice numbers 1 to 7 refer to PowerPoint guides provided for Extension Educators to coach classroom teachers on the ICPS key concepts and upcoming lessons.
- Allow about two weeks prior to lesson implementation for obtaining consent and pre-program evaluation. The Extension Educator will conduct interviews with students while classroom teachers will complete questionnaires (Teacher Ratings of Child Behavior). You will also need to allow one to two weeks at the end of all lessons for post-program evaluation.

Before implementing ICPS lessons:

- Teacher orientation and initial training - *ICPS Training & Practice PowerPoints #1 & 2* and Manual Introduction pages 1-12.
- Obtain signed consent forms from principal/center director, teachers, & parents of students
- Obtain child assent before interviews
- Educators conduct Child Interviews; Teachers complete Ratings of Child Behavior
- ICPS Lesson Preparation

Week 1	
Lesson 1: Is-Not	Teacher Script: pages 15-16
Lesson 2: Or-And	Interaction in the Classroom: pages 19-20 & 25
Lesson 3: Do-Do Not	Integration in the Curriculum: pages 21-22 & 27-28

Week 2	
Lesson 6: Some-All	Interaction in the Classroom: pages 41, 47, 57-58
Lesson 8: If-Then	Integration in Curriculum: pages 43-44, 49, 59-61
Lesson 10: More Same-Different	*ICPS Training & Practice #3*
Lesson 11: Two Things at the Same Time	

Week 3	
Lesson 12: Before-After	Interaction in Classroom:pages 67-68, 75-77, 129-31
Lesson 17: Happy-Sad: More How Can You Tell?	Integration in Curriculum: pages 69-71, 79-86, 133-4
Lesson 20: Are You Listening to Me?	
Lesson 25: Do You Remember? Part II	

Week 4	
Lesson 26: More Might-Maybe, Why-Because	Interaction in the Classroom: pages 159-160 & 165-6
Lesson 30: My ICPS Book, Part I	*ICPS Training & Practice #4*
Lesson 33: Proud	
Lesson 34: Frustrated	

Week 5	
Lesson 35: A Good Time or Not a Good Time, Part I	Interaction in the Classroom: pages 173, 189, & 199
Lesson 40: Is that Fair?	Integration in the Curriculum: pages 191-192
Lesson 43: Impatient	Dialoguing Reminders: pages 393-397
Lesson 45: What Can I Do While I Wait?	

Week 6	
Lesson 48: What Else Can He Do? Part I	Alternative Solutions: pages 225-226
Lesson 49: What Else Can He Do? Pt II	Interaction in the Classroom: pages 245-247
Lesson 50: What's the Problem? Part I	Integration in the Curriculum: page 221
Lesson 52: My ICPS Book, Part III	*ICPS Training & Practice #5*
Week 7	
Lesson 55: Guess the Problem	Interaction in the Classroom: page 267
Lesson 56: Puppet Story: Preferences and Solutions	Dialoguing Reminders: pages 393-397
Lesson 58: A Story	
Lesson 60: Poppy and Dilly, Part I	
Week 8	
Lesson 61: Mystery Sequence	Consequences: pages 269-270
Lesson 65: Uh-Oh, They're Fighting	Interaction in the Classroom: page 301, 311-312
Lesson 67: Is That A Good Idea?	*ICPS Training & Practice #6*
Week 9	
Lesson 68: What Might Happen Next? Part I	Interaction in the Classroom: pages 341-343
Lesson 70: Poppy and Dilly, Part II	Integration in the Curriculum: page 345
Lesson 71: How Can This Be?	Dialoguing Reminders: pages 393-397
Week 10	
Lesson 73: What Might Happen Next? Part III	Solution-Consequence Pairs: page 347
Lesson 75: What Might Happen If I Do That? Part I	Interaction in the Classroom: page 371
Lesson 80: What Else Can I Do?	Guidelines for Continued ICPS Teaching: pages 389-90
	ICPS Training & Practice #7
Conduct post-program evaluation and collect final data from teachers and children.	

APPENDIX B2

ICPS Program Delivery - Teacher Questionnaire

(Complete at mid-point and after conclusion of curriculum implementation.)

Teacher ID # _____ Date _____

Check the appropriate box: ☐ Mid-Point ☐ Conclusion

Please answer as honestly as possible. Your individual responses will not be shared with your principal/director or Extension Educator. This will help us improve our programs and services.

Using the 5-point scale, rate the items below based on your perceptions and experiences of how you have used and implemented the ICPS program. If unknown, mark 0.

1	2	3	4	5
None/Not at all	Little	Some/Somewhat	Quite a bit	Greatly/Fully

With the ICPS program, I...

_____ 1. Used the curriculum lessons as in the ICPS manual

_____ 2. Followed the lesson outline sequentially.

_____ 3. Thoroughly completed lesson content.

_____ 4. Understood the content and key concepts.

_____ 5. Delivered lessons of good quality.

_____ 6. Engaged children in lessons – interaction, role plays, activities.

_____ 7. Used ICPS vocabulary words with children.

_____ 8. Used ICPS dialoguing with children.

_____ 9. Generated solution responses from children (i.e. what is another idea?).

_____ 10. Used ICPS teaching tools in classroom (illustrations, bulletin boards, etc.).

_____ 11. Generalized the use of ICPS to situations outside of lessons.

_____ 12. Applied and integrated ICPS with other classroom curricula or activities.

_____ 13. Sent ICPS materials home to parents.

Using the 5-point scale, please evaluate the quality of training and mentoring you have received from your county Extension Educator for the implementation of the ICPS program.

1	2	3	4	5
Not at all	Very little	Somewhat	Quite a bit	Very Much

For the implementation of the ICPS program, the county Extension Educator...

_____ 14. Was supportive and helpful to you.

_____ 15. Had regular communication/contact with you (phone, e-mail, in-person).

_____ 16. Provided you a satisfactory ***amount*** of training/mentoring.

_____ 17. Provided you a satisfactory ***quality*** of training/mentoring.

_____ 18. Used a collaborative and problem-solving approach.

_____ 19. Modeled and encouraged role plays with you.

_____ 20. Allowed you to feel comfortable acknowledging frustrations, mistakes, or failures.

_____ 21. Referred to ICPS concepts and skills that children learned or that you used.

_____ 22. Discussed actual situations you or children experienced and/or gave personal examples.

_____ 23. Was prepared for your meetings.

_____ 24. Reviewed ICPS concepts and upcoming lessons in your meetings.

_____ 25. Observed your presentation of ICPS lessons in the classroom.

_____ 26. Co-taught ICPS lessons with you.

_____ 27. Has adequate skills to provide training/mentoring on the ICPS program.

_____ 28. Effectively explained and summarized important points.

_____ 29. Interacted in a positive and productive manner.

30. How many times have you met with your County Extension Educator in person for training and consultation regarding the ICPS program? _____

31. Approximately how much total time have you spent meeting in person with your Extension Educator for this purpose? _____ hours

32. a. What training resources or other materials have you found most useful or effective?

b. Least useful or effective?

33. What barriers did you encounter during the training/mentoring process?

34. What successes did you experience?

35. What was most helpful about the training/mentoring you have received?

36. Recommendations for improvement:

37. Other comments or suggestions:

Thank you for taking the time to complete this form. Your comments are greatly appreciated!

Adapted from: Incredible Years Consultation Evaluation form and Evaluation of Quality of Supervision or Mentoring (Webster-Stratton)

APPENDIX B3

ICPS Lesson Checklist – Preschool Teacher ID # _____

Please complete and submit with your "ICPS Program Delivery – Teacher Questionnaire" at mid-point and conclusion of implementation.

Total # of children in your classroom that received ICPS lessons (with and w/out consent forms): _____

	Date(s) Presented - Leave blank if skipped	Time spent # minutes	Who presented? (T) Teacher (EE)Ext. Educator (Co)Co-presented	Children with parental consent who were absent – list ID #'s
Lesson 1: Is				
Lesson 2: Some-All				
Lesson 3: Not				
Lesson 4: Or				
Lesson 5: And				
Lesson 6: Same-Different				
Lesson 10: More Review of ICPS words				
Lesson 11: Happy				
Lesson 12: Sad				
Lesson 14:More How Can We Tell				
Lesson 15: How Can We Tell: Asking				
Lesson 17: Angry				
Lesson 18: Let's Pretend				
Lesson 21:Remembering Choices				
Lesson 23: Why-Because, Might-Maybe				
Lesson 24: Feelings Have Causes				
Lesson 26: What Do You Choose? A Different Because				
Lesson 30: Allie the Alligator, I				
Lesson 31: Allie the Alligator, II				
Lesson 32: Is That Fair?				
Lesson 33: More About Fair				
Lesson 34: What's The Problem?				

Lesson 35: What Else Can He Do?				
Lesson 38:Solve Another Problem				
Lesson 39: Mystery Sequence I				
Lesson 40: A Story				
Lesson 41: Mystery Sequence II				
Lesson 42: More ICPS Words: If-Then				
Lesson 44: A Good Idea?				
Lesson 45: What Can I Do While I Wait?				
Lesson 46: What Might Happen Next? Part I				
Lesson 47: What Might Happen Next? Part II				
Lesson 49: What Might Happen Next? Part III				
Lesson 50: What Might Happen Next? Part IV				
Lesson 52: What Else Might Happen If I Do That? I				
Lesson 57:What's Your Problem?I				

Additional lessons presented from ICPS Manual - List lesson #'s	**Date(s) Presented**	**Time spent # minutes**	**Who presented? (T) Teacher (EE)Ext. Educator (Co)Co-presented**	**Children with parental consent who were absent – list ID #'s**

(38) If some listed lessons or activities were not covered, what were the reasons?

(39) Did you add other content, resources, or activities? If so, please list and briefly describe:

APPENDIX B4

ICPS Training & Consultation Log – Extension Educator

Teacher ID # _____ Date _____

Please complete and submit with your "ICPS Program Delivery – Extension Educator" Questionnaire" at mid-point and conclusion.

	Date(s) presented - Leave blank if skipped	Time spent with teacher # minutes	Other notes/comments
Training & Practice PowerPoints # 1			
# 2			
# 3			
# 4			
# 5			
# 6			
# 7			
Other training or consultation with teacher (in-person) - Please list topic/purpose			

	Date(s) presented - Leave blank if skipped	Time spent with teacher # minutes	Other notes/comments
Observations of teacher in classroom/with children - list topic/lesson/dialoguing			
Other calls/emails/contacts with teacher for training or consultation purposes			

ICPS Lessons you Presented/co-presented in the classroom - List lesson #'s	Date(s) Presented	(Co)Co-presented or (EE) on your own	Other notes/comments

APPENDIX B5

Summary of Child Interview Procedures & Documentation

A series of ten scenarios and questions were compiled and adapted from the *Preschool Interpersonal Problem Solving Test* (Shure, 1992), *Social Problem Solving Scale* (Conduct Problems Prevention Research Group, 1991), and *Wally Social Problem-solving Test* (Webster-Stratton, 1990). Two items address child-child interaction problems, four items address teacher-child interaction problems, two items address peer provocations, and two items address peer group entry.

Extension Educators interviewed the children. The interviewer was to read each story or scenario to the child one at a time. After each scenario, the interviewer asked the child to tell what he/she thought the child in the story could do to solve the problem. Related illustrations were shown to help tell the story and give the child a visual reference.

Four solution responses per story were sought and allowed

- The child's initial relevant solution counted as their first response. Then the interviewer was to probe for up to 3 additional responses such as: "That is one way, now what would be another idea?", "What else could he/she do?", etc. If the child provided more than one initial response, the interviewer only needed to probe to get up to 4 responses.
- Any response not offering a new, relevant solution to the problem was to be probed.
- If the child did not give a new relevant solution after the initial question plus 3 probes, they were to move on to the next story.

Documentation on the Child Interview Form

- Spaces for the initial response and 3 additional probes/responses followed each question.
- The interviewer was instructed to record all responses, whether they were new solutions, repetitions, enumerations, no-solution responses, or "I don't know".
- When possible, they were to write what the child said verbatim and/or use quotes for key words and phrases to indicate exactly what the child stated. They were to record as many words as necessary to identify the meaning of the solution.
- Each separate response was to begin on a new line.
- When a child gave more than one different solution in the same response without a probe in between, they were to be written on the same line as one response.
- If a probe was used, "PR" was to be circled or written. If there is no "PR" noted before a response, it is assumed that the child offered the total verbalization on his/her own initiative.
- If the child did not respond, offering no verbalization whatsoever, a dash (-----) could be documented so that it was clear that the question was asked and not merely omitted.
- The initials "IDK" could be used for "I don't know".
- "R" could be recorded for an exact repetition, or the entire repetition phrase could be written again.

Child Interview Form - BOYS

Child ID # _____

Interviewer_____ Date _____

☐ Pre-Implementation ☐ Post-Implementation

1. **Here is Matthew and this is Andy. Matthew is playing with this truck and has been playing with it for a long time. Now Andy wants a chance to play with this truck but Matthew keeps on playing with it. What can Andy do so he can have a chance to play with the truck?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

2. **Here is Ricky and this is Daniel. Ricky is playing with this boat. Daniel wants a chance to play with this boat but Ricky keeps on playing with it. What can Daniel do so he can play with the boat?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

3. **One day Michael tore some pages in a book and he was afraid his teacher might be mad. What can Michael do so his teacher won't be mad at him?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

4. **Benjamin was playing with a ball in the classroom. The ball hit a glass bowl and it broke. Benjamin was afraid the teacher might be mad. What can he do?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

5. **What if your teacher is mad that you did not come in from (*choose appropriate option for their school setting:* recess, outside, the playground) on time? What would you do?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

6. **Let's make believe that you broke your teacher's flower pot in the classroom. What would you do?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

7. **This is you, and this is Joey. You got a good spot near the front of the line to go outside and Joey pushes you out of line and takes your place. What could you say or do so that you could get your place back in line?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

8. **This is you and this is Jacob. You and Jacob are playing outside and he starts calling you names and making fun of you. What could you say or do to get Jacob to stop teasing you?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

9. **This is you and this is Alex. You and Alex are in the same class and you would like to be friends with him, but Alex doesn't say anything to you. What could you say or do so that you could get to be friends with Alex?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

10. **This is you and this is Jack. Jack and some other kids are playing tag. You would really like to play with Jack and the other kids, but they haven't asked you. What could you say or do to get to play with Jack and the other kids?**

Initial Response _____

PR/Response 2 _____

PR/Response 3 _____

PR/Response 4 _____

Interviewer Comments:
(This may include your observations of the child's responsiveness, ability to stay on task, if child and interviewer are familiar with each other, etc.)

CODING/SCORING

Adapted from the *Preschool Interpersonal Problem Solving Test* (Shure, 1992), *Social Problem Solving Scale* (Conduct Problems Prevention Research Group, 1991), and *Wally Social Problem-solving Test* (Webster-Stratton, 1990).

Child Interview Form - GIRLS

Child ID # _____

Interviewer _____ Date _____

☐ Pre-Implementation ☐ Post-Implementation

1. **Here is Kayla and this is Ally. Kayla is playing with this doll and has been playing with it for a long time. Now Ally wants a chance to play with this doll but Kayla keeps on playing with it. What can Ally do so he/she can have a chance to play with the doll?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

2. **Here is Nina and this is Hannah. Nina is playing with this boat. Hannah wants a chance to play with this boat but Nina keeps on playing with it. What can Hannah do so she can play with the boat?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

3. **One day Maggie tore some pages in a book and she was afraid her teacher might be mad. What can Maggie do so her teacher won't be mad at her?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

4. **Brittany was playing with a ball in the classroom. The ball hit a glass bowl and it broke. Brittany was afraid the teacher might be mad. What can she do?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

5. **What if your teacher is mad that you did not come in from (*choose appropriate option for their school setting:* recess, outside, the playground) on time? What would you do?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

6. **Let's make believe that you broke your teacher's flower pot in the classroom. What would you do?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

7. **This is you and this is Anna. You got a good spot near the front of the line to go outside and Erika pushes you out of line and takes your place. What could you say or do so that you could get your place back in line?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

8. **This is you and this is Emily. You and Emily are playing outside and she starts calling you names and making fun of you. What could you say or do to get Emily to stop teasing you?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4 _____

9. **This is you and this is Bailey. You and Bailey are in the same class and you would like to be friends with her, but Bailey doesn't say anything to you. What could you say or do so that you could get to be friends with Bailey?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4_____

10. **This is you and this is Emma. Emma and some other kids are playing tag. You would really like to play with Emma and the other kids, but they haven't asked you. What could you say or do to get to play with Emma and the other kids?**

Initial Response _____

Probe/Response 2 _____

Probe/Response 3 _____

Probe/Response 4_____

Interviewer Comments:
(This may include your observations of the child's responsiveness, ability to stay on task, if child and interviewer are familiar with each other, etc.)

CODING/SCORING

Adapted from the *Preschool Interpersonal Problem Solving Test* (Shure, 1992), *Social Problem Solving Scale* (Conduct Problems Prevention Research Group, 1991), and *Wally Social Problem-solving Test* (Webster-Stratton, 1990).

APPENDIX B6

Child Interview Coding and Scoring Instructions

The coder will read the responses to each of the ten situations and assign codes designating a category for each relevant solution. There are **21** possible category codes for solution responses to be used with all problem situations. Some will be more relevant to the peer problems while others may be relevant to the teacher problems. The Problem Categories and Codes chart contains examples of the intent – the response on the original interview document does not have to have used the same exact words.

The main issue in coding is to identify solutions that are relevant and different, not enumerations (different examples of the same solution) or repetitions (same words, same meaning) of solutions given in an earlier response, and not irrelevant. An irrelevant response neither solves nor attempts to solve the problem as stated. A relevant solution is when the child focuses on what the *child* can or will do, not what the teacher or another person will do. Sometimes a solution contains the same words as another, but certain key words change the entire thought and, therefore, its categorization. A sense for the thought behind any solution a child may give is important for categorization.

Only one code per solution can be documented, and each category group can be documented only once per situation. A child may have offered more than one solution to a situation question without an intervening probe. Code each solution if they represent distinct ideas (categories), not simply an enumeration of the other. Enumerations of the same solution or variations, such as those responses listed in the same category, are repetitions, and the same code should not be listed again for that situation item. Instead, code it as a repetition (16).

Coding Score Form

First, go through the original interview response forms, both pre- and post-tests, and write category code numbers directly next to each response on the original forms according to the above instructions.

Use one Child Interview Coding Form per child. At the top of the form, write the same child ID # as on the interview sheet, your name or initials, and the current date. Also mark whether boy or girl form was used. Transfer the codes noted on the original interview forms to the Coding Score Form. The score form is designed for a maximum of 4 codes per story situation. Insert both pre-test and post-test codes on the same form.

At the bottom of the form, circle the number of probes used by the interviewer for both pre and post interviews.

There is also a section for comments. It is not necessary to write comments, however note anything that may influence the data analysis or results. These may include comments the interviewer wrote or any other important issues the coder found.

If code # 19 (a relevant solution that did not fit in any other category) was documented, circle it and write the child's unique solution at the bottom of the form.

PROBLEM CATEGORIES & CODES

Code #	Category
(1)	**Ask/Borrow/Share** *(Child verbally indicates they want the toy or play; directly asks for, requests, or suggests that the other person do something.)* Can/may I hold it? — Can I have it? Can I play (too)? — Can I play longer? I want to play. — I want it/I would really like it. Can I have my place back in line? — Can I borrow it? Tell her/him I want to play with it. — I'll give it back. He can get one (object) and he can get one. — Let's share/they can share. They can take turns. — Can I have a turn? They can both play with it. — He can play with it with him. You've had lots of chances, now I want a chance. — Will you stop? You have had it for a long time and now I want a turn. Can I have it/hold it/play with it when you are done? Why don't you play with something else (i.e. another toy) while I play with this? Please?
(2)	**Relational Manipulation** *(Non-aggressive, not intentionally harmful, use of relationships, feelings of acceptance, friendships, or group inclusion.)* Hello/Hi — My name is _____ What is your name? How old are you? — Write a letter or note Says nice things or compliments — Can I help you? Hug the teacher/other child. — Say "I love you teacher". Ask her what she likes and get it for her. — Give her flowers. Join in and start playing with him/her. — Would you like to play? You can have more fun if you play with me. — You can ride bikes with me. I'll invite you to my birthday party. — You can come to my house. I will or would like to be your friend/for you to be my friend. I'll take you to (somewhere, i.e. the circus, a trip, etc.) I'll give you this/You can play with this *(Offer something; different than #12 Trade/Bribe).*
(3)	**Passive-Inactive** *(Abandons goal of toy or playing; gives up, withdraws; not really solving the problem in an active manner.)* Hide — Do nothing Ignore (other children, teacher, object) — Be alone Walk/run away/Just leave — Sit and be quiet. Go to room (or someplace) and lock the door. — Let him do it/take my turn.
(4)	**Verbal Assertion** *(States the problem, states their feelings, or makes a moralizing statement in a firm but non-aggressive manner.)* You took my turn. — You took my place in line. You're teasing me. — You're not letting me play. I don't like that. Tell her/him to 'treat others the way you want to be treated'.

(5)	**<u>Telling/Tattling</u>** *(Getting an adult authority to intervene in a manner that will make another child do something or get the other child into trouble; it does not matter who. Includes threatening to tell someone. Different from getting help to clean up or fix as in #13 Replace/Repair.)* Go to get the teacher. Tell his teacher, mother, etc. His teacher, mom, etc. will beat (punish) him/her. His teacher, mom, etc. will take the toy away.
(6)	**<u>Trick/Finagle</u>** *(To distract attention; avoid getting in trouble; trick someone into doing something.)* I won't let anyone else play with it. Trick him/her. Put his/her name on it and say it is his/hers. Sneak around. Say someone/something else did it. Say he/she didn't do it. Tell the boy/girl his mother/father/teacher is calling. Dress up like a policeman and say, "Let me have that dumb toy". Distract with something else (another activity or object). Pretend she/he is asleep so teacher won't be mad. Hide it *(Different than a form of cleaning up as in #13 Replace/Repair)* Put it in a drawer so teacher won't see it. Put (something) over it. Say "teacher, don't go in that room". Get another one just like it and teacher won't know it broke.
(7)	**<u>Command</u>** *(Verbal order or exclamation; different from asking as in #1.)* Give it to me Gimme That's mine I want it now Let me have that You have to let me! Stop Tell him to stop!
(8)	**<u>Force-Grab</u>** *(Child takes an object, forces themselves on others, or is non-compliant but does not indicate intentional physical harm.)* Take it/snatch it/grab it Reach over and get it. Intrude on other person's space. Take back my place/my turn. Steal it Go over and play anyway *(Different from non-forceful in #2 Relationship Manip.)* Defiance/"I'll do it anyway" *(i.e. disobeys requests or rules)*
(9)	**<u>Attack/Physical Aggression</u>** *(Physical force or harm to be actually used, not just threatened.)* Hit, punch, kick, bite, scratch him/her Push him If you don't give me the toy, I will hurt you. Beat up him/her Get his dog after him. Get cat to scratch her. Smash/break it Splash water on him so he can't play. Knock over Throw sand in her face so she can't see, and then take the toy. Tickle him from behind and he'll run away.

(10)	**<u>Verbal Aggression/Negative Gestures/Threats</u>** *(Any negative gesture or verbal response, without physical harm, including threats.)* I will rip your clothes/picture I am going to tear down your house. Name calling, i.e. 'You are ugly' I might hit you if you don't move. Get mad. Tease him/her. Stick tongue out. She will curse her. She'll get mean. She will look mad. Scare him/her away (i.e. scream real loud and he'll go away) You can't do that very good. You don't know how to play with that thing.
(11)	**<u>Relational Aggression</u>** *(Non-physical yet hurtful by damaging or threatening to damage relationship with peers/social group; exclusion, retaliation, withdraw friendship, hurt reputation.)* I won't like you if you won't give it to me. I won't talk to you if you don't give it to me. I'll be friends with someone else. You can't come to my birthday party. I'll tell (others) not to like you or be your friend. I won't play with you anymore. I won't be your friend. Only we can play. No one else. You can't come to my house. I don't like you anyway. Tell her/his friends not to play with her/him any more. I'd ignore her when she came to play with me and my friends. Do something to humiliate/embarrass with social group. I'll tell everyone you peed in your pants *(Different from name calling or teasing in #10 since it would be to tell peers/group).*
(12)	**<u>Trade-Bribe</u>** *(Involves giving a tangible object; Different from taking turns or sharing; not including friendship or other activities as in #2.)* Give him/her candy, money, a snack, etc. You can play with my toy. You can't play with my toy. I will clean your room, etc. Buy her a (object).
(13)	**<u>Replace/Repair</u>** *(Repairing a damaged object; different from #6 Trick/Finagle.)* Get her a new one. Pay for it. Give mom/dad money to buy another one. Glue it/tape it. Clean it up. Borrow another one. Get money and buy another one. Fix it. Sweep it up. Pick it up. Throw it away; put it in the trash. Get an adult or other person to help or fix it. *(Different from #5 Telling/Tattling)*
(14)	**<u>Apology/Truth</u>** *(Admission or statement of wrongdoing.)* I'm sorry. (I'm sorry I broke it.) I won't do it again. (I should never have done it.) I made a mistake (It was an accident, I didn't mean it.) I did it. Any form of describing act, e.g."I broke/dropped our flower pot"

(15)	**<u>Manipulate Affect</u>** *(To influence feelings, emotions of other child or teacher; i.e. inducing guilt, sadness, happiness.)* Cry so he'll feel bad. Say 'don't be mad'. Look real sad so he/she will/won't _____. Please don't spank me. Say "I don't have any toys to play with." I don't want to get in trouble. Do (something) for her so she'll feel _____. Whining Any statement of ways to be good/"I will be good". Tell teacher a funny joke so she'll laugh and forget she is mad. I really like/don't like that toy anyway/I don't want that old toy. It's not fair that I don't get a chance. I always let you play.
(16)	**Repetition or enumeration** of previous relevant response.
(17)	**No response or "I don't know"** (This can still be followed with another response.)
(18)	**No relevant solution**; responses that are irrelevant to the problem or situation; out of context; Tangential talk; unrelated to any solution categories; child lacks understanding.
(19)	**Any other relevant, unique response** that just doesn't fit given category groups. *Keep a list of responses coded 19 along with corresponding child ID#.*
(20)*	When a question is not presented to a child **(skipped or missed).**
(21)	**<u>Positive Alternatives</u>** *(Maintains goal of playing yet actively chooses to do or substitute something different in a positive manner; distinguish from #3 Passive-Inactive.)* Play with something else. Find someone else to play with. Do another activity. Look for something else to do. Play by myself. Wait until he's finished. Do what teacher says/Obey Hurry up/Get back/Go in Don't do it (anymore)/Stop doing it (i.e. playing ball inside, after recess ends) Other appropriate action/strategy.

*20 replaced with 99 for missing data.

Coding Classifications

A (1) – Manipulative: Relational Manipulation, Trick/Finagle, Trade-Bribe, Manipulate Affect
B (2)– Aggressive: Force-Grab, Attack/Physical Aggression, Verbal Aggression/Negative Gestures/Threats, Relational Aggression
C (3) – Assertive: Ask/Borrow/Share, Verbal Assertion, Command
D (4) – Tell/Tattle: Telling/Tattling
E (5)– Reactive positive: Replace/Repair, Apology-Truth, Positive Alternatives
F (6) – Passive: Passive-Inactive

Social Competence = C + E - B

Code	Category Group	Classifications (Recoded)
1	Ask/Borrow/Share	C (3)
2	Relational Manipulation	A (1)
3	Passive-Inactive	F (6)
4	Verbal Assertion	C (3)
5	Telling/Tattling	D (4)
6	Trick/Finagle	A (1)
7	Command	C (3)
8	Force-Grab	B (2)
9	Attack/Physical Aggression	B (2)
10	Verbal Aggression/Negative Gestures/Threats	B (2)
11	Relational Aggression	B (2)
12	Trade-Bribe	A (1)
13	Replace/Repair	E (5)
14	Apology-Truth	E (5)
15	Manipulate Affect	A (1)
21	Positive Alternatives	E (5)

CHILD INTERVIEW CODING FORM

Subject ID No._____ Coder Initials _____ Data Entered _____

Boy _____ Girl_____ Coding Date_____ Entry Date _____

Indicate category code # for each solution response.

	Pre-Test Interview				Post-Test Interview			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
1. playing with toy #1	_____	_____	_____	_____	_____	_____	_____	_____
2. playing with toy #2	_____	_____	_____	_____	_____	_____	_____	_____
3. tore pages in book	_____	_____	_____	_____	_____	_____	_____	_____
4. ball broke glass bowl	_____	_____	_____	_____	_____	_____	_____	_____
5. late from recess	_____	_____	_____	_____	_____	_____	_____	_____
6. broke flower pot	_____	_____	_____	_____	_____	_____	_____	_____
7. pushed in line	_____	_____	_____	_____	_____	_____	_____	_____
8. called names	_____	_____	_____	_____	_____	_____	_____	_____
9. making friends	_____	_____	_____	_____	_____	_____	_____	_____
10. playing tag	_____	_____	_____	_____	_____	_____	_____	_____

Interviewer use of probes:	**Pre-Test Interview**	**Post-Test Interview**
(Circle one for both pre & post)	1. Probed consistently (3 x)	1. Probed consistently (3 x)
	2. Probed inconsistently (1-2 x)	2. Probed inconsistently (1-2 x)
	3. No probes after 1st response	3. No probes after 1st response

COMMENTS: _____ _____

(Issues that may influence results) _____ _____

_____ _____

_____ _____

APPENDIX B7

Teacher Ratings of Child Behavior

Child ID #_____ Teacher ID # _____

Date _____

Please rate the student on each of the following items. Using the nine-point scale below, please indicate the extent to which the child compares to the average child his/her same age and sex. Consider each item separately.

Very little or none		Less than average		Same as most his/her age		More than average		Much more than average
1	2	3	4	5	6	7	8	9

_____ 1. **Is physically aggressive**: For example, hits, pushes, ruins others' things (e.g. art/block projects, toys); or in other ways hurts or attacks others.

_____ 2. **Is liked by peers**: For example, peers seek out this child for play/other activities.

_____ 3. **Makes others feel bad**: For example, puts others down by calling them names, insulting or teasing them; gives mean looks.

_____ 4. **Shows concern for others**: For example, offers or seeks help for a child in distress; shows interest in others' feelings.

_____ 5. **Is isolated**: For example, child is rejected when initiates play with others.

_____ 6. **Has good learning skills**: For example, is actively and effectively engaged in learning; pays attention in class.

_____ 7. **Has poor emotional control**: For example, is easily angered or upset by peers or adults; over-reacts to stress, flies off the handle when things don't go his/her way.

_____ 8. **Displays positive behaviors**: For example, says or does nice things for other kids; is helpful to others; shares and takes turns; doesn't grab toys; able to wait his/her turn.

_____ 9. **Is shy/withdrawn**: For example, child withdraws, is timid, shy, avoids jumping into play with others; is afraid to ask for what he/she wants; gives up too easily.

_____ 10. **Is relationally aggressive**:* For example, when angry at peers, keeps them out of play group, whispers mean things about a child behind his/her back, tells others not to play with, or be the child's friend.

_____ 11. **Is victimized**: For example, is teased, picked on, threatened, or otherwise bullied.

_____ 12. **Is verbally aggressive**: For example, *verbally* threatens to hit, push, ruin others' things or in other ways threatens to hurt or attack peer.

Please turn over for page 2 →

Using the five-point scale, please rate each of the listed behaviors according to how well it describes this child.

Not at all	A little	Moderately Well	Well	Very well
1	2	3	4	5

_____ 13. Functions well even with distractions.

_____ 14. Can accept things not going his/her way.

_____ 15. Copes well with failure.

_____ 16. Is a self-starter.

_____ 17. Works/plays well without adult support.

_____ 18. Accepts legitimate imposed limits.

_____ 19. Expresses needs and feelings appropriately.

_____ 20. Thinks before acting.

_____ 21. Resolves peer problems on his/her own.

_____ 22. Stays on task.

_____ 23. Can calm down when excited or all wound up.

_____ 24. Can wait in line patiently when necessary.

_____ 25. Very good at understanding other people's feelings.

_____ 26. Is aware of the effect of his/her behavior on others.

_____ 27. Works well in a group.

_____ 28. Plays by the rules of the game.

_____ 29. Pays attention.

_____ 30. Controls temper when there is a disagreement.

_____ 31. Shares materials with others.

_____ 32. Cooperates with peers without prompting.

_____ 33. Follows teacher's verbal directions.

_____ 34. Is helpful to others.

_____ 35. Listens to others' points of view.

_____ 36. Can give suggestions and opinions without being bossy.

_____ 37. Acts friendly toward others.

References: Items 1-12 from Drexel Early Childhood Behavior (DECB) Rating Scale (Shure, 2005); *Item 10 adapted from Preschool Social Behavior Scale-Teacher (Crick, Casas, & Mosher, 1997); Items 13-37 from Social Competence Scale-Teacher Version (Fast Track Project, Conduct Problems Prevention Research Group, 1990).

APPENDIX C

Oklahoma State University Institutional Review Board

Date:	Thursday, September 04, 2008
IRB Application No	HE0844
Proposal Title:	Evaluation of an Interpersonal Problem-Solving Skills Program for Preschool and Elementary Children
Reviewed and Processed as:	Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 9/3/2009

Principal Investigator(s):

Deborah Richardson
233 HES
Stillwater, OK 74078

Amanda W Harrist
323 HES
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Sheila Kennison, Chair
Institutional Review Board

VITA

Deborah L. Richardson

Candidate for the Degree of

Doctor of Philosophy

Dissertation: EVALUATION OF INTERPERSONAL PROBLEM-SOLVING SKILLS PROGRAM FOR PRESCHOOL AND ELEMENTARY CHILDREN

Major Field: Human Environmental Sciences with emphasis in Human Development and Family Science

Biographical:

Personal Data: Born in Tulsa, OK

Education: Received Bachelor of Science in Psychology with Honors in December, 1982, and Master of Science in Applied Behavioral Studies in Education in May, 1984, both from Oklahoma State University, Stillwater, Oklahoma. Completed the requirements for the Doctor of Philosophy degree at Oklahoma State University, Stillwater, Oklahoma in May, 2009.

Experience: Served as Parenting/Child Development Assistant Extension Specialist, Human Development and Family Science Department, at Oklahoma State University, Stillwater, OK, from 2001 to the present. Previous positions include Senior Planner, Office of Planning and Coordination, at the Oklahoma Commission on Children and Youth in Oklahoma City from 1999 to 2001, and as the Executive Director of the Oklahoma Committee to Prevent Child Abuse, Oklahoma City, from 1990 to 1999. Other positions between 1984 and 1990 included serving as a counselor and program coordinator with community-based organizations in Oklahoma County.

Professional Memberships: National Council on Family Relations
Society for Research in Child Development

Name: Deborah L. Richardson Date of Degree: May, 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: EVALUATION OF INTERPERSONAL PROBLEM-SOLVING SKILLS PROGRAM FOR PRESCHOOL AND ELEMENTARY CHILDREN

Pages in Study: 211 Candidate for the Degree of Doctor of Philosophy

Major Field: Human Environmental Sciences

Scope and Method of Study: The effects of the *I Can Problem Solve* (ICPS; Shure, 2000) program utilizing the Cooperative Extension Service (CES) system in partnership with teachers of children in preschool through second grades are examined. Convenience sampling and a quasi-experimental control group design were employed. From primarily rural elementary schools, Head Start, and child development centers, 368 children and 34 teachers serve as participants for the present study, 212 students and 17 teachers in the intervention group, and 156 students and 17 teachers in the control group. Evaluation measures included child interviews, teacher ratings of child behavior, and teacher and extension educator assessments of program delivery. Analyses focused on research questions and hypotheses surrounding the impact of the ICPS program on children's social-cognitive skills and social competence. The ICPS program has not been adapted or broadly utilized in a statewide initiative or through the CES. Literature appears to lack evaluation of the program in rural communities and examination of implementation factors. This study contributes to this knowledge.

Findings and Conclusions: Results indicate partial support for the hypotheses. Children in ICPS intervention classrooms showed significant positive changes in some social problem-solving skills and competent behaviors from pre-test to post-test when compared to control peers. The quantity of alternative solutions improved and the quantity and ratio of initial relevant solution responses did to a lesser, albeit still significant, extent. Improvements also emerged in the number of non-aggressive manipulative, react positive, passive, and tell-tattle solutions. Effects improved for some indicators when preschool children were removed from analyses. ICPS-trained children also demonstrated significantly greater behavior improvements on overall social competence, aggression, prosocial skills, emotional regulation, and academic skills. Findings suggest that the ICPS program may be beneficial for a diverse general population of children in primarily rural school and community settings. Furthermore, the CES may provide a viable system for the diffusion and implementation of ICPS in school settings which often have limited resources for research-based prevention programs. However, a number of limitations must be considered including the lesser degree of impact on preschoolers' social cognitive skills and considerable variation in the delivery of the program.

ADVISER'S APPROVAL: Amanda W. Harrist