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Program Evaluation of the Strong Start Curriculum as a Selected Intervention for Early Elementary Students

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PROGRAM EVALUATION OF THE STRONG START CURRICULUM AS A
SELECTED INTERVENTION FOR EARLY ELEMENTARY STUDENTS

A Dissertation Presented

by

KATHERINE MEYER

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

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May 2014

College of Education

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ABSTRACT

PROGRAM EVALUATION OF THE STRONG START CURRICULUM AS A SELECTED INTERVENTION FOR EARLY ELEMENTARY STUDENTS

MAY 2014

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Consistent with the need for implementation research and prevention programming for students in schools, the current study evaluated the implementation and outcomes of *Strong Start*, a social-emotional learning program, as a supplemental intervention for students in kindergarten through second grade at risk for developing emotional and behavioral problems. This intervention took place during the first year of a county-wide restructuring of mental health supports and was part of a multi-tiered system of supports provided in schools. A mixed method program evaluation was conducted to examine four areas of interest. First, the contextual factors related to program adoption were examined; second, program implementation was evaluated; third, student outcomes were assessed; and finally, the social validity of the *Strong Start* curriculum was evaluated. Results indicate that some contextual factors were related to decisions to adopt and implement *Strong Start*, that implementation integrity varied but was adequate overall, and that the curriculum was viewed positively by multiple stakeholders. However, no significant differences were detected between treatment and comparison

groups in this first year of program implementation. These results are discussed in reference to theoretical implementation models and used to elucidate the process and challenges encountered in the first year implementation of large-scale initiatives across multiple schools. Limitations of this study and directions for future research are discussed.

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CHAPTER 1

INTRODUCTION, BACKGROUND, AND PURPOSE

The prevalence of mental health issues in school aged children, the lack of services available to address such problems, and the goal of schools to produce productive members of society all indicate the need for school-based programs designed to promote resiliency and prevent mental disorders and associated issues. Recent legislation and trends in best practice support the use of a continuum of mental health programs to prevent the development of serious problems through targeted early intervention. Social emotional learning programs incorporate best practices in the prevention of mental health problems and the promotion of social and emotional well-being by targeting malleable risk and protective factors. One such social emotional learning program, *Strong Start*, was designed to promote the social skills and the emotional well-being of children in grades K-2. The majority of the research supporting social emotional learning has focused on assessing child outcomes in order to identify effective interventions. While this is critical, there remains a need for research documenting the processes underlying the development and implementation of such programs in order to bridge the gap between research and practice.

In the national action agenda for children's mental health, the U.S. Surgeon General warned of a public crisis in caring for children and adolescents with behavioral, psychological, and emotional problems (U.S. Public Health Service, 2000). It is estimated that up to 20% of children 18 and under in the United States are in need of mental health services (Greenberg, Domitrovich & Bumbarger, 2001; RAND, 2001). Unfortunately, funding and resources to address and remediate the needs of children with mental health

problems are often lacking. Due to the large number of students in need of services, the lack of infrastructure to detect and treat children with mental health problems, and the cost of providing such services, many children go unidentified and are underserved (Greenberg et al., 2003).

Contributing to such issues, many children are entering school having been exposed to multiple risk factors including poverty, harsh parenting, family dysfunction, marital strife, neglect, and abuse and lack the social and emotional skills necessary to succeed academically and socially (Rimm-Kaufman, Pianta & Cox, 2000). When these early deficits go unaddressed, children are more likely to develop social, emotional and behavior problems. Fortunately, many of these problems are preventable through prevention and early intervention efforts (World Health Organization, 2002).

Rather than waiting to intervene until problems have developed, they may be prevented. Prevention programs decrease the prevalence and severity of a targeted problem within a population by reducing the risk factors associated with the onset or development of problems (Eddy, Reid & Curry, 2002; Muñoz, Mrazek & Haggerty, 1996). Prevention efforts have gained support and become a priority for many federal agencies in terms of policy, practice, and research as a means of improving outcomes for children (Greenberg et al., 2001).

The adoption of the three-tiered model of prevention in the field of education has improved schools' ability to efficiently address children's academic, behavioral, and mental health problems (Merrell & Buchanan, 2006). Under this model, universal supports are provided to all students in the classroom. Targeted interventions are provided to specific groups of children determined to be at risk of developing social or

emotional problems to bolster skill development and protect against the development of emotional or behavior problems. Finally, intensive interventions are provided to the small percentage of students exhibiting symptoms of mental health problems in an effort to strategically intervene with negative trajectories (Greenberg et al., 2001; Mrazek & Haggerty, 1994).

Social Emotional Learning

Social and Emotional Learning (SEL) programs incorporate this three-tiered service delivery framework with best practices for teaching children the skills to recognize and manage emotions, solve interpersonal problems effectively, and develop positive relationships (Payton et al. 2008). Children who are able to understand their own and others' emotions and regulate their emotions often demonstrate prosocial behavior, attentional control, and academic competence in the classroom (Denham et al., 2003; Eisenberg, Sadovsky, & Spinrad, 2005; Schultz, Izard, Ackerman, & Youngstrom, 2001; Trentacosta, Izard, Mostow, & Fine, 2006). For example, Denham et al., (2003) found that preschoolers' emotion knowledge uniquely predicted social competence in kindergarten, indicating that emotional perception contributes to children's ability to navigate social situations and form positive relationships. Furthermore, emotion regulation has been found to uniquely predict kindergarten children's ability to attend to academic tasks in first grade (Trentacosta & Izard, 2007). This suggests that emotional self-control not only plays a role in social competence but may also influence academic performance.

SEL evolved largely out of the research on prevention and resilience and shares the objective of improving general outcomes for all children through a focus on

promoting wellness. The SEL approach to school-based prevention incorporates frameworks for health promotion, positive development, and competence enhancement that seek to reduce risk factors and enhance protective mechanisms through coordinated programming (Greenberg et al., 2003; Mrazek & Haggerty, 1994). Research on effective SEL programming has identified common program components found to generate healthy student outcomes and organized them into the acronym SAFE, which stands for sequenced, active, focused, and explicit. Effective programs use a sequenced training approach, use active forms of learning, focus sufficient time on skill development, and include explicit learning goals (Durlak & Wells, 1997).

Consistent with a prevention model, SEL programs are designed to address a range of student needs. This is accomplished by providing various levels of treatment intensity. SEL programs build resiliency and foster the development of social-emotional competencies, which benefits all children (Collaborative for Academic, Social and Emotional Learning, 2003). They are simultaneously designed to prevent engagement in maladaptive and unhealthy behaviors by targeting common risk and protective factors (Zins & Elias, 2006). In this way, children exposed to risk factors, those beginning to engage in negative behaviors, and those already demonstrating significant problems may benefit from instruction in SEL since a variety of risk factors are common to the development of multiple problem behaviors (Zins & Elias, 2006).

Typical practice in many schools focuses the majority of the available mental health services on the students with the most severe social and emotional problems. This mode of operation tends to result in perpetual crisis intervention in which practitioners scramble to keep up with student need (Merrell & Gueldner, 2010). Such a model of

practice does nothing to promote competencies or reduce the prevalence of social and emotional problems in the population. Rather than focusing on remediating the problematic behaviors of the most severely disordered students who comprise the smallest portion of the total population, SEL practices are prevention-oriented by building the skills of all students. In this way, early investment to promote student well-being and resiliency yields a reduction in the overall prevalence and severity of social, emotional, and behavior problems.

Strong Start

Strong Start (Merrell, Parisi & Whitcomb, 2007) is the early education part of *Strong Kids: A Social and Emotional Learning Curricula* (Merrell, Carrizales, Feuerborn, Gueldner & Tran, 2007) for school-aged children and is designed specifically for children in kindergarten through second grade. *Strong Start* is designed to prevent depression, anxiety, social withdrawal and somatic problems by promoting “social and emotional resiliency and competence” in young children (Merrell et al., 2007, p. 3). The content and structure of the lessons in the curriculum are based on current research in education and psychology.

The *Strong Start* curriculum has a solid foundation in etiological, developmental, and prevention theory (Nation et al., 2003). The curriculum was developed to carefully target known risk factors associated with mental health problems and promote protective factors demonstrated to build resiliency. These include instruction in emotion knowledge, labeling and recognition, emotion management and self-regulation, and decision-making and problem-solving skills.

The *Strong Start* curriculum is unique in that it is tailored to be developmentally appropriate for children in grades K-2. *Strong Start* lessons and activities are explicit and concrete, make use of familiar examples, use repetition and review to achieve skill mastery, include hands-on activities, and require minimal reading since children at this age are just learning to read.

Consistent with its foundation in prevention theory, *Strong Start* is based on a public health prevention model that recognizes differing levels of need depending on the severity of the problem. *Strong Start* may be implemented in the classroom for the benefit of all students or provided in small groups as targeted and intensive instruction to select students who may require a higher level of support.

Program Evaluation

The bulk of the research to date on social emotional learning and *Strong Start* has focused on student outcomes and program effectiveness. Few studies take further steps to systematically examine the implementation and dissemination of such programs (Cappella, Reinke, & Hoagwood, 2011). While the identification of effective social and behavioral interventions is critical, it is equally important to understand how those interventions are developed, implemented and disseminated and the influence context has on that process. Adoption of an evidence-based intervention alone does not guarantee desired outcomes. Effective delivery and implementation are critical for program success. Unfortunately, the implementation process and context is often under- or undocumented in research studies. Program evaluation is intended to describe the context in which interventions are implemented in order to render judgments about the value of the

intervention and the way in which it was implemented (Fitzpatrick, Sanders, & Worthen, 2004).

Recent emphasis has been placed on reducing the gap between research and practice in the area of social and behavioral interventions (National Advisory Mental Health Council's Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment, 2001). This speaks to the need for a scientific base describing *how* to install effective interventions in schools (Cappella et al., 2011; Schaughency & Ervin, 2006). In fact, the issue of balancing process and outcome research on school social and behavioral interventions was the focus of a recent Special Series in *School Psychology Review* in which it was recommended that research on social-emotional programs focus on intervention development, implementation, and dissemination, as well as outcomes (Burns, 2011).

Promoting successful and sustained implementation of evidence-based SEL interventions continues to be challenging in applied settings (Schaughency & Ervin, 2006). It cannot be assumed that effective programming will be successfully adopted and implemented based on demonstrated efficacy alone. The literature documents challenges to implementation and sustainability, including unrealistic expectations of stakeholders, inadequate training, and educational politics (Elias, Bruene-Butler, Blum, & Schuyler, 2000). Consideration of context, implementation, and organizational issues is needed to understand the process involved in bridging the gap between research on effective social-emotional programs and successful, sustainable implementation in schools (Cappella et al., 2011; Ringeisen, Henderson, Hoagwood, 2003; Schaughency & Ervin, 2006).

Current Study

Other studies have researched the effectiveness of *Strong Start* as a universal prevention program (Caldarella, Christensen, Kramer, & Kronmiller, 2009; Kramer, Caldarella, Christenson, & Shatzer, 2010; Whitcomb & Merrell, 2012). The purpose of the current study was to evaluate *Strong Start* as a supplemental intervention for students with elevated emotional and behavioral concerns. As a universal prevention program, *Strong Start* is designed to prevent the development of mental health problems in children (Merrell et al., 2007). This study examines the effectiveness of the program to intervene strategically with a target population.

This program evaluation has four distinct purposes. First, to examine the relationship between contextual factors and participation decisions; second, to evaluate the program's implementation; third, to assess the outcomes of the intervention; and finally, to evaluate the perceived social validity of the *Strong Start: K-2* curriculum.

Contextual data were collected to examine relationships between school-level characteristics and decisions to engage in screening and intervention activities. It was hypothesized that school-level contextual factors were related to decisions to opt to screen students and implement *Strong Start* groups and that schools and districts with high need would be more likely to implement more components of a multi-tiered model. Student population data on percentage of low income, special education, mobility, truancy, class size, and instructional expenditure per student were collected at the school level.

Program implementation data were collected to describe program implementation activities and evaluate the relationship between program delivery and student outcomes.

It was hypothesized that students receiving interventions implemented with high fidelity and at high doses would demonstrate higher scores on outcomes measures. Treatment fidelity was measured as the percent of lesson components implemented. Dosage was measured by the percent of the curriculum covered, average lesson length, and student attendance. It was further hypothesized that implementation integrity and dosage would be positively correlated. Recent research has emphasized the importance of collecting data on program implementation in order to describe dissemination and implementation processes, assess implementation quality, and consider contextual variables (Cappella et al., 2011; Mendel, Meredith, Schoenbaum, Sherbourne, & Wells, 2008; National Advisory Mental Health Council's Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment, 2001).

In addition to evaluating the implementation process, student outcome data were also assessed. The effects of the intervention on kindergarten, first, and second grade students' social-emotional health, emotion knowledge, and academic achievement were examined. *Strong Start* incorporates lessons that directly teach children the way different emotions make us feel and how to recognize these emotions. Research indicates that this kind of emotion knowledge is one of the foundational skills necessary to help young children effectively understand and manage their own feelings, recognize emotions in others, and navigate social situations (Heydenberk & Heydenberk, 2005) and is associated with social competence and adjustment (Denham, 1998; Trentacosta & Fine, 2010). Children's emotion knowledge was directly measured using a performance-based rating scale called the Assessment of Children's Emotion Skills (ACES; Schultz & Izard, 1998).

Strong Start also includes lessons that directly teach children strategies to express and manage emotions appropriately, skills that are necessary for navigating difficult social situations and solving social problems. Research indicates that these coping and problem-solving skills are integral to the interpersonal and emotional adjustment of children and adolescents (Elias & Allen, 1991) and that problem-focused coping strategies are related to positive social and emotional functioning (Endler & Parker, 1990). Children's social and emotional health was measured using the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007), a teacher rating scale.

Academic achievement often serves as a more distal indicator of adjustment, in that social competence fosters healthy peer and adult relationships and more positive attitudes toward school (Schaps, Battistich & Solomon, 2004). Additionally, positive correlations have been found between social competence, school behavior, and school performance (Zins, Bloodworth, Weissberg, & Walberg, 2004) and a recent review of the literature demonstrated that involvement in SEL programming consistently resulted in improved academic performance (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Children's academic achievement in this study was measured by performance on AIMSweb literacy probes.

It was hypothesized that children that participated in *Strong Start* would demonstrate greater improvements on all three outcomes measures compared to children who did not participate in *Strong Start*.

Finally, surveys administered at the end of the program were designed to evaluate *Strong Start's* social validity by assessing the degree to which implementers, students,

teachers and parents perceived the program to be acceptable, valuable, and effective. Previous research has reported high levels of social validity (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012) and it was hypothesized that implementers, students, teachers and parents would view *Strong Start* as socially valid.

CHAPTER 2

LITERATURE REVIEW

Mental Health Needs of Children and Youth

Many children are entering schools without the necessary foundational skills to learn and succeed (Pianta & La Paro, 2003; Rimm-Kauffman et al., 2000). A national survey of over 3,500 kindergarten teachers indicated that one third of kindergarten students had difficulty transitioning to school and about one fifth of students had adjustments marked by serious concerns (Rimm-Kauffman et al., 2000). The concerns reported by teachers were not primarily academic, but related to children's social competence, emotional development, and mental health.

It is estimated that approximately 7.5 million, or one in five, children and adolescents in the United States are afflicted with one or more mental disorders (RAND, 2001). Children with such difficulties are more likely to drop out of school, lack interpersonal skills, experience peer rejection, engage in risky behavior, and develop aggressive, violent and antisocial behaviors (Biglan, Brennan, Foster & Holder, 2004; Brennan, Hall, Bor, Najman & Winters, 2003; Walker & Shinn, 2002).

In addition to the difficulties and poor outcomes experienced by children with emotional or behavioral problems, mental health disorders are also costly to society (Greenberg et al., 2001). The cost of treating children and adolescents with mental health problems in 2001 was \$12 billion (RAND, 2001). These costs were estimated to increase if the problem was not addressed. Research shows that adolescents are more likely than younger children to receive services and therefore, receive the majority of these expenditures, even though they make up only 35% of the population of children aged 1 to

17 (RAND, 2001). Of the \$12 billion per year spent on mental health care for youth, the most common kind of care is outpatient treatment and psychotropic medications (RAND, 2001).

Despite these expenditures, the majority of children and adolescents with social, emotional and behavioral problems do not receive needed services. Research indicates that only approximately 20-50% of children and youth in need of services have sought treatment or gained access to a mental health professional (Greenberg, et al., 2003; Merikangas et al., 2010). Thus, the majority of the money spent on addressing children's mental health needs is spent on intensive methods of treating existing dysfunction in a small percentage of the population. This demonstrates a clear need for prevention efforts to reduce the prevalence of these problems in children and promote the development of social, emotional and mental well-being.

A Preventive Orientation

Mental health can be promoted and the development of problem behaviors can be avoided through effective prevention programming (Durlak & Wells, 1997; Greenberg et al., 2001; Olds et al., 1998; Reddy, Newman, De Thomas, & Chun, 2009). Prevention programs have been found to promote social competence and prevent social withdrawal in preschool students (Domitrovich, Cortes, & Greenberg, 2007), prevent the development of aggressive, violent, oppositional, and antisocial behaviors in children and adolescents (Eddy, Reid, & Fetrow, 2000), reduce the emergence of a range of serious problem behaviors in youths, such as drug and alcohol use, risky sexual behavior, and arrests, through intervention during the first two years of life (Olds et al., 1998), and increase elementary and middle school students' knowledge of healthy social-emotional

behavior while reducing internalizing symptoms (Merrell, Juskelis, Tran, & Buchanan, 2008). Such findings support the use of prevention programming as a means of decreasing the prevalence of mental health and associated problems in the population.

The key to effective prevention programming is the use of a research-based model describing how a particular problem develops and maintains over the lifespan (Eddy et al., 2002). Such a model integrates etiological and developmental theory by identifying factors critical in problem development at each point in the lifespan. Prevention of the initial onset of mental disorders and problem behaviors can be accomplished by targeting factors known to contribute to the appearance of problem behaviors at particular times in the developmental process (Mrazek & Haggerty, 1994). Factors at the individual, family, and community level, as well as interactions between factors at different levels, all contribute to the development of risk and resiliency and, therefore, must be considered when planning prevention programs (Bronfenbrenner, 1979).

Thus, it is important for prevention programs to target malleable risk factors that have been identified in the research as affecting development (Greenberg et al., 2001). Risk factors are causal factors that have a negative influence on development. The more proximal the risk, the greater the negative influence it may exert. Prolonged exposure to risk and cumulative effects of exposure to multiple risk factors has been found to increase the likelihood of negative outcomes (Patterson, Reid, & Dishion, 1992; Rutter, 1979; Sameroff, Seifer, Barocas, Zax & Greenspan, 1987). Exposure to risk factors may be buffered by protective factors, which include those events or influences that positively shape development and reduce the impact of negative influences (Rutter, 1979; Rutter,

1985). The goal of prevention programs is to reduce exposure to risk factors where possible and buffer their influence through bolstering protective factors.

The public health model of prevention provides a conceptual framework for school-based mental health service delivery that minimizes the deleterious effects of risk factors and supports the development of protective factors. This model, which is increasingly applied in the field of education, has its origins in a medical model of disease prevention.

The original public health classification system of disease prevention was proposed in 1957 by the Commission on Chronic Illness. The commission emphasized the necessity of adopting a preventive approach in order to reduce the incidence and severity of chronic disease. Prevention was conceptualized to include any measure interrupting the progression of a disease to disability. The committee recommended three critical steps toward disease prevention: (1) health promotion; (2) avoiding the occurrence of illness; and (3) early detection through mass screening. They also proposed a classification system in which services were provided along a continuum of increasing intensity, labeling these primary, secondary, and tertiary prevention. The purpose of primary prevention is to decrease the incidence, or number of new cases, of an illness. The focus of secondary prevention is to decrease the prevalence, or number of established cases, of a disease. Tertiary prevention efforts are focused on reducing the amount of disability associated with an existing disease.

This model has been adopted and adapted by the field of education. Though the terminology has changed slightly, prevention efforts are still conceptualized in a three-tiered model, where the level of intervention intensity is matched to the level of need

along a continuum (Greenberg et al., 2001; Walker & Shinn, 2002). In this revised model, *universal interventions*, similar to primary prevention efforts, are applied to all individuals in a population, are designed to prevent problems from emerging, and focus on enhancing protective factors. *Selected interventions*, similar to secondary prevention efforts, are applied to select individuals determined to be at-risk for developing a problem, are designed to reverse harm from exposure to known risk factors, and target specific deficits. Finally, *targeted interventions*, similar to tertiary prevention efforts, are applied to students already exhibiting problematic symptoms or behaviors and are designed to reduce the magnitude of existing problems.

Despite nuances between the original classification system proposed by the Commission on Chronic Illness and the model now widely used in the field of education, the idea of providing increasingly intensive services to increasingly specific populations remains intact and the terminology is frequently used interchangeably. From an epidemiological perspective, schools provide an ideal environment for implementing prevention and early intervention programming since they serve the majority of children and youth. Adherence to a public health model of prevention allows schools to efficiently meet the academic and mental health needs of all students. By treating academic and behavior problems along a continuum, the public health model of prevention provides an efficient and effective means of delivering services by reducing the numbers of individuals in need of intensive, individualized support.

Research Supporting SEL Programming

Consistent with a prevention model, SEL programs can be used to provide a continuum of support based on student need. The intent of SEL programming is to build

resiliency by fostering children's development of social-emotional competencies and prevent engagement in unhealthy behaviors (Zins & Elias, 2006). The direct teaching of self-control strategies, emotion recognition and regulation, social problem-solving skills and interpersonal skills paired with activities that provide opportunities for students to practice such skills has been linked to the learning and development of social and emotional competencies (Conduct Problems Prevention Research Group, 2010; Domitrovich et al., 2007; Solomon, Battistich, Watson, Schaps, & Lewis, 2000).

Awareness of and interest in the development of social and emotional skills has increased over the past three decades and produced a formidable body of empirical evidence on how to prevent social-emotional problems and enhance positive behaviors (Greenberg et al., 2003; Zins & Elias, 2006). Evaluations of programs emphasizing social and emotional development have found that students participating in programs that effectively teach social and emotional skills and support positive student development demonstrate gains in academic motivation and engagement, personal and interpersonal skills, and prosocial values and behavior (Greenberg, Kusche, Cook, & Quamma, 1995; Solomon et al., 2000; Walker, Golly, McLane, & Kimmich, 2005; Weissberg et al., 1981).

A recent meta-analysis of 213 school-based, universal social and emotional learning programs indicated that effective prevention programs had the dual benefit of enhancing competencies and reducing mental health and behavior problems (Durlak et al., 2011). Compared to students in control groups, SEL participants demonstrated enhanced social and emotional skills, self-esteem, self-efficacy, and positive social behaviors following intervention. Participants also demonstrated fewer conduct problems

and lower levels of emotional distress, such as depression, anxiety, and social withdrawal. Although only a small percentage of studies collected follow-up data, effects on SEL skill acquisition, attitudes, positive social behavior, conduct problems, emotional distress and academic performance remained statistically significant for a minimum of 6 months after the intervention, although effect sizes were reduced in magnitude.

A comprehensive review of 317 universal, selected, and after-school SEL programs indicated that SEL programming was effective in a variety of rural, urban and suburban settings, across a variety of student populations, for a racially and ethnically diverse population of children from kindergarten to 12th grade (Payton et al, 2008). Effective SEL programs were able to improve students' social-emotional skills (e.g. Domitrovich et al., 2007; Harlacher & Merrell, 2010), attitudes of self and others (Battistich, Solomon, Watson, Solomon, & Schaps, 1989), school connection (e.g. Solomon et al., 2000; Solomon, Watson, Delucchi, Schaps, & Battistich, 1989), positive social behavior (e.g. Battistich et al., 1989; Harlacher & Merrell, 2010), and academic performance (e.g. Aber, Jones, Brown, Chaudry, & Samples, 1998; Wentzel, 1991). They also reduced conduct problems and emotional distress of students.

For example, an evaluation of the Promoting Alternative Thinking Strategies (PATHS) program was conducted on nearly 3,000 students in first through third grade in schools across the country (Conduct Problems Prevention Research Group, 2010). The PATHS curriculum provides direct instruction in the domains of self-control, emotional awareness and understanding, peer-related social skills, and social problem-solving skills and is designed for delivery to all students in a class by classroom teachers. Results of the study demonstrated that compared to controls, students in schools receiving the

intervention were rated by their teachers as demonstrating fewer oppositional and conduct problem behaviors. Teachers also rated students in the intervention group higher than controls with regards to prosocial behaviors, emotion regulation, and social competence. Peer reports also indicated reduced hyperactive and aggressive behaviors in intervention schools.

In their review of SEL programs, Payton and colleagues (2008) found significant mean effects in SEL skill acquisition, improved attitudes toward self and others, and reduced conduct problems even in studies reporting implementation problems. Many positive effects were maintained over time, although effects were strongest directly following intervention. Additionally, a comparison of these findings obtained from reviews of evidence-based interventions conducted by other researchers suggested that, “SEL programs are among the most successful interventions ever offered to school-aged youth” (Payton et al., 2008, pg. 8).

Investigations into the evidence supporting SEL program development and evaluation, such as the studies described above, have also resulted in analyses of longitudinal data leading to a better understanding of the operation of risk and protective processes as well as improved knowledge of pathways and stages associated with the development of maladaptive behaviors (Greenberg, 2004; Mrazek & Haggerty, 1994; Zins & Elias, 2006). These advances lead to more effective prevention programming that target risk and protective factors identified as affecting the developmental outcomes of children and youth. Factors demonstrated to promote social-emotional competence and foster resiliency include increasing emotion knowledge, promoting self-regulation, and teaching problem-solving skills (CASEL, 2003).

Key Components of Social Emotional Learning Programs

Emotion knowledge

Emotion knowledge typically refers to the ability to recognize and understand emotion in facial expressions, behavioral cues and social contexts and is associated with social competencies (Izard et al., 2001; Raver, 2002; Trentacosta & Fine, 2010). Emotion knowledge and understanding includes recognizing emotions in others as well as being able to identify one's own emotions. Basic features of emotion knowledge develop early in life and increase throughout childhood, leading to the development of emotion understanding and management (National Research Council and Institute of Medicine, 2000). It is hypothesized that children's ability to recognize and label their emotions allows them to talk through rather than act out their feelings of anger, sadness or frustration (Heydenberk & Heydenberk, 2005; Raver, 2002). Similarly, recognition of emotion in other people may foster the development of empathy. Children who have difficulty understanding their own and others' emotions persistently misinterpret social situations, causing them to respond inappropriately, which contributes to interpersonal problems with peers and adults (Raver, 2002). Due to the central role emotion perception and labeling plays in the development of other important social and emotional skills some theorists contend that emotion knowledge provides the foundation for emotion communication and social relationships (Izard et al., 2001; Trentacosta & Fine, 2010).

Since emotion knowledge is one of the foundational skills young children need to help them deal with their own feelings and navigate social situations, intervention and prevention programs that teach emotion knowledge are most effective and appropriate with younger children (Heydenberk & Heydenberk, 2005; National Research Council and

Institute of Medicine, 2000). In a review of the research on children's emotional development and early school readiness, Raver (2002) found that children's emotional adjustment was significantly affected by interventions implemented in the preschool and early school years. Research on children's emotional development indicates that labeling and discussing emotions contributes to the development of emotion knowledge and helps to organize and give meaning to early emotional experiences (National Research Council and Institute of Medicine, 2000; Raver, 2002). For example, parents who discuss emotions more frequently tend to have children with more accurate understandings of emotion (Denham, 1998).

Research on the development of emotion knowledge demonstrates that the ability of young children to recognize and label expressions of emotions is correlated with their social adjustment and academic achievement (Denham, 1998; Izard et al., 2001; National Research Council and Institute of Medicine, 2000). A longitudinal study of preschool children found that emotion knowledge was predictive of long-term positive behavior outcomes even when other known predictors, such as verbal ability and temperament, were controlled for and that it positively correlated with social communication, self-assertion and cooperative behavior (Izard et al., 2001). Emotion knowledge has also been found to negatively correlate with teacher's reports of internalizing behaviors such as depressive symptoms and social withdrawal (Schultz et al., 2001) and children's self-reports of anxiety, hopelessness, and loneliness (Fine, Izard, Schultz, & Ackerman, 2000).

A meta-analytic review of studies evaluating emotion knowledge revealed correlations with social competence, internalizing problems and externalizing problems

(Trentacosta & Fine, 2010). The review reported small to medium effect sizes on the positive correlation between emotion knowledge and social competence. Results also revealed negative correlations between emotion knowledge and internalizing and externalizing problems, indicating that emotion knowledge can serve a protective function in preventing the development of mental health problems.

Taken as a whole, the research evidence on emotion knowledge indicates that children's ability to recognize and understand emotions in themselves and others is a teachable skill (Heydenberk & Heydenberk, 2005; National Research Council and Institute of Medicine, 2000; Raver, 2002). Furthermore, this skill positively correlates with social competence (Trentacosta & Fine, 2010) and adjustment (Denham, 1998), cooperative behavior, and social communication (Izard et al., 2001) and negatively correlates with internalizing and externalizing problems (Trentacosta & Fine, 2010). Therefore, programs that incorporate effective instruction in emotion knowledge are likely to foster healthy student outcomes.

Self-management

Self-management is another important skill that contributes to social and emotional competence. Self-management involves the regulation of emotions and behaviors, the ability to effectively regulate impulses, and effects the behavioral expression of emotions (Eisenberg et al., 2005; Raver, 2002). Children who cannot manage their emotions and behavior have difficulty accurately processing and responding to emotionally upsetting situations. They may act out feelings of anger, frustration, sadness and even elation inappropriately. In this way, emotion management is related to behavioral self-regulation. Children with poor emotion management are more likely to

exhibit externalizing and internalizing problems and demonstrate lower social-emotional competence (Rhoades, Greenberg, & Domitrovich, 2009).

Self-management involves attention and planning processes along with inhibition and activation of behavior (Eisenberg et al., 2005). This involves an array of related skills including impulse control, inhibitory control, and effortful control. All involve the ability to inhibit an initial response. Impulse control refers to the ability to withhold a dominant response and delay gratification and is composed of a cognitive and delay dimension (Rhoades et al., 2009). Inhibitory control is generally considered the cognitive dimension of impulse control and involves the ability to inhibit a dominant response in favor of another response. Effortful control also involves inhibition of a dominant response but includes the ability to focus and shift attention and plan a response (Spinrad et al., 2006).

Research shows that the ability to exercise inhibitory control emerges late in infancy and develops rapidly in the preschool years (National Research Council and Institute of Medicine, 2000; Rhoades et al., 2009). Children exhibiting effortful or inhibitory control in early childhood demonstrate better emotion regulation, more prosocial behaviors, fewer externalizing problems, and greater compliance later on (Rhoades et al., 2009). Similarly, children with poor inhibitory control are at greater risk of developing externalizing problems and antisocial behaviors.

Children's effortful control is directly related to the ability to modulate emotions, especially negative emotions, and is thus predictive of positive social behavior (Spinrad et al., 2006). The ability to control attention and behavior may foster the skills needed to get along with others and engage in socially constructive behaviors with peers. Children who have difficulty controlling their emotions and impulses tend to behave

inappropriately and respond to situations without thinking. This kind of impulsivity is associated with inappropriate social behavior and may lead to peer rejection (Spinrad et al., 2006).

Successful regulation of emotions and behaviors facilitates children's abilities to cope with environmental stressors and solve social problems (Saarni, 1999). Emotional and behavioral management are closely related and have been positively correlated with prosocial behavior and peer social skills and negatively correlated with externalizing problems, social withdrawal, and impulsivity (Rhoades et al., 2009; Spinrad et al., 2006; Wyman et al., 2010). The development of self-management can be supported by programs that teach children strategies to control their impulses and delay gratification (Spinrad et al., 2006). Adult modeling and instruction in emotion and behavior management strategies combined with practice opportunities and reinforcement has been demonstrated to help children in the early elementary grades develop self-regulatory skills (Wyman et al., 2010). Furthermore, the inhibitory and regulatory skills involved in self-management are also critical in problem-solving.

Social problem-solving

Social problem-solving is a critical component of interpersonal competence that involves the ability to solve interpersonal problems by generating a variety of potentially effective strategies for coping with problematic social situations (Elias & Tobias, 1996). In order to successfully solve social problems, children must be able to recognize social problems when they arise, inhibit immediate reactions to social problems, think of alternative strategies to solve social problems as well as the possible consequences of those strategies, anticipate obstacles, and apply a selected strategy effectively to solve

social problems (Alvarez, Cotler & Jason, 1984). Social problem-solving therefore draws upon children's emotion language to identify and discuss emotions as well as their emotion regulation to manage emotional responses (Heydenberk & Heydenberk, 2007; Wentzel, 1991).

Instruction in social problem-solving explicitly teaches children social skills through verbal instruction, modeling, rehearsal, feedback, and reinforcement (Elliott & Gresham, 2008; Gresham, Van & Cook, 2006). Verbal instruction uses concrete and abstract concepts to teach social skills. In modeled instruction, social skills are performed by the teacher so the student learns how to combine and sequence the behavioral components of a specific skill. Rehearsal involves repeated practice of a learned skill. Feedback and reinforcement are used to encourage the performance of a social skill after it has been taught and modeled. These methods of social skill instruction have been empirically supported in the research literature and linked to decreases in problem behaviors such as aggression, opposition, and defiance and improvements in social behaviors including interacting appropriately with peers, controlling temper, and responding appropriately to problematic or upsetting social situations (Gresham et al., 2006; Elliott & Gresham, 1991).

Social problem-solving instruction also provides children with strategies to use in social situations to determine when and how to use those skills. Instruction in social problem-solving teaches children to articulate behaviors that are helpful in resolving conflict and has resulted in decreases in verbal and physical aggression in children as young as 6 and 7 years old (Heydenberk & Heydenberk, 2007). Furthermore, teaching children social problem-solving skills often results in reducing the amount of time

teachers spend addressing conflicts, improving school and classroom climate, and enhancing self-control and self-efficacy among students (Bodine, 1996).

Children and adults with social problem-solving skills are able to negotiate difficult social situations effectively, make compromises, and resolve social conflicts appropriately (Elias & Allen, 1991; Heydenberk & Heydenberk, 2007). Research has demonstrated that social decision-making and problem-solving are integral to the interpersonal and emotional adjustment of children and adolescents (Elias & Allen, 1991). Social problem-solving and decision-making is a lifelong skill that has been found to enhance the self-esteem and self-control of students (Heydenberk & Heydenberk, 2007). Teaching children problem-solving skills helps them control their behavior and empowers them to solve their own problems.

Strong Start: An Exemplar SEL Program

Consistent with best practices in prevention programming, the *Strong Start* curriculum has a solid foundation in etiological, developmental, and prevention theory (Nation et al., 2003). *Strong Start* is based on a public health model of prevention and is designed to be easily adapted to a range of settings. The curriculum can be implemented at the universal level with all students in a school or classroom, or with small groups of students as a targeted intervention. *Strong Start* lessons target known risk factors associated with mental health problems and promote protective factors demonstrated to build resiliency. Lessons teach children to recognize and label basic emotions, practice basic emotion management and self-regulation strategies, and engage in decision-making and problem-solving skills. The lessons and activities are explicit and concrete, make use

of familiar examples, use repetition to achieve skill mastery, and require minimal reading since children at this age are just learning to read.

According to experts in child development, children acquire and refine the ability to understand emotions in themselves and others and learn to effectively regulate their own emotions to motivate adaptive behavior during early childhood (Denham, 1998; Saarni, 1999). At this stage in their emotional development, children experience many emotions and have a general understanding of feelings but have not yet developed the vocabulary to talk about emotions or differentiate the subtle differences between related emotions (Denham, 1998). *Strong Start* lessons build upon children's developing emotion recognition skills, targeting this area in instruction.

Children's emotional competence is closely related to their social competence (Denham et al., 2003; Durlak et al., 2011; Raver, 2002). Due to increased exposure to peers and opportunities to interact with peers, children's social development progresses rapidly upon entering school. Important social skills in the early elementary grades include learning to initiate social interactions with others and develop and maintain friendships (Howes, Hamilton & Philipsen, 1998). Although the friendships children form in the early elementary years may not last throughout their lives, the skills they learn at this age are critical (Bierman, Torres, Domitrovich, Welsh, & Gest, 2009; Howes et al., 1998; National Research Council and Institute of Medicine, 2000).

As discussed previously, children who fail to develop the relational and social skills necessary to make and maintain friendships are at risk for developing a variety of social-emotional problems as they get older including peer rejection, isolation, poor self-esteem, and depression (National Research Council and Institute of Medicine, 2000).

Therefore, it is important that children learn important interpersonal skills, such as how to negotiate and compromise, how to be empathic and listen, how to join groups and initiate conversations, and how to form and maintain friendships (National Research Council and Institute of Medicine, 2000; Saarni, 1999). *Strong Start* lessons employ sound teaching strategies to instruct children in these skills early on.

Previous research on the effectiveness of *Strong Start* has found that participation in the curriculum resulted in gains in students' prosocial behaviors, increases in student knowledge about emotion situations, and significant decreases in students' internalizing behaviors (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012). Teachers and parents of kindergarten students (Kramer et al., 2010) and second grade teachers (Caldarella et al., 2009) reported statistically significant improvements in children's peer related prosocial behavior following the implementation of *Strong Start*. This improvement in kindergarten students' prosocial behaviors was maintained 6 weeks after program implementation (Kramer et al., 2010).

Teachers of kindergarten, first, and second grade students also reported significant decreases in students' internalizing behaviors although no significant changes were detected in externalizing behaviors (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012). Students at greater risk for developing problem behaviors demonstrated the largest improvements in prosocial behavior (Caldarella et al., 2009) and the largest decreases in internalizing behavior problems, indicating that the program appears to have a preventive effect at the universal level when applied to all students as well as an intervention effect at the secondary level with students at risk for developing problems (Kramer et al., 2010; Whitcomb & Merrell, 2012). These demonstrated

improvements in social functioning and internalizing behaviors may be related to increased emotion knowledge. Only one study assessed increases in first grade students' emotion knowledge and found moderate effect sizes (Whitcomb & Merrell, 2012).

Finally, previous research strongly supports the social validity of the *Strong Start* curriculum (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012). In post-implementation questionnaires, teachers reported a high level of satisfaction with the program, supported its goals and outcomes, and endorsed its feasibility. Parents reported finding the program acceptable (Kramer et al., 2010) and noted that the newsletters were informative and helpful (Whitcomb & Merrell, 2012). Some parents reported noticeable changes in their child's behavior at home during and following *Strong Start* implementation, but these results have been mixed (Kramer et al., 2010; Whitcomb & Merrell, 2012). When asked, the majority of first and second graders (74-78%) reported enjoying the program and 68% of first graders said they learned a lot from the curriculum (Caldarella et al., 2009; Whitcomb & Merrell, 2012).

The Importance of Monitoring Implementation

Although research has identified key features of effective SEL programs, transferring effective programs into the contexts of schools is a complicated process requiring long-term commitment (Durlak & DuPre, 2008). Selecting evidence-based interventions is necessary but not sufficient for achieving effective and successful programming in schools (Schaughency & Ervin, 2006). Evidence-based programs are often not as effective as predicted when assessed under real world conditions, as they depend on effective delivery systems for success (Elias, Zins, Graczyk, & Weissberg, 2003).

Just as an intervention must be well defined and carefully evaluated with regard to its effects on those receiving it, implementation of an intervention should be well defined and carefully evaluated with regard to its effects on those systems, organizations and practitioners implementing it (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005). Thus, the effectiveness of evidence-based programs depends on the way in which the program is implemented as well as the quality of the program itself.

The study of implementation is relatively new and the field lacks a common language. For the purposes of this study, Fixsen et al.'s (2005) definition of implementation as “a specified set of activities designed to put into practice an activity or program” will be adopted.

A meta-analysis of 221 school-based prevention programs targeting aggressive behaviors found implementation to be the most important program feature influencing program outcomes (Wilson, Lipsey, & Derzon, 2003). Similarly, Tobler (1986) found that effect sizes were on average 0.34 greater for well-implemented programs compared to poorly implemented programs. In another meta-analysis of over 500 studies examining prevention programs for children and youths, Durlak and DuPre (2008) found that the magnitude of mean effect sizes was at least two to three times higher when programs were well implemented. This thorough review of the literature demonstrates that higher levels of implementation are associated with better outcomes.

Information on program implementation is also critical for assessing the validity of programs. Without recording the implementation process, connections cannot be made between programs and outcomes with confidence (internal validity), programs cannot be replicated in other settings (external validity), and decisions cannot be made about how or

why a program works (construct validity) (Durlak, 1998). The challenges inherent in field studies, such as the impracticality of random assignment and the inability to control sources of variability occurring after assignment, highlight the importance of including information on program implementation and context in order to explain resulting effects (Lipsey & Cordray, 2000). Ignoring information on program implementation can result in the loss of valuable information about what effects the program produced and why, and in some cases, may lead to misguided conclusions.

Yet, implementation data are routinely neglected in prevention and outcome research. Durlak (1997) reported that of the 1200 prevention studies on mental and physical health published by the end of 1995, less than 5% provided any data on program implementation. In another review of 162 outcome studies of school-based prevention programs, only 39 studies (24%) included information on treatment fidelity, and only 13 of these looked at the influence of fidelity on outcomes (Dane & Schneider, 1998). This dearth of information on the processes required to implement, sustain, and scale-up interventions in schools has led to calls for researchers to address this gap between research and practice in social-emotional interventions (Dane & Schneider, 1998; Durlak & DuPre, 2008; Elias et al., 2003; Ringeisen et al., 2003).

Treatment integrity

Treatment integrity, a key component of program implementation, refers to how well a proposed program or intervention is put into practice (Durlak, 1998). Eight aspects of treatment integrity are identified in the literature (Dane & Schneider, 1998; Durlak & DuPre, 2008). Dane & Schneider (1998) describe five of these. (1) Fidelity is the extent to which a program is consistent with the one originally intended. This may also be

referred to as program adherence, treatment integrity, or compliance. (2) Dosage refers to how much of the intended program has been delivered. (3) Quality refers to how well different program components are conducted. Implementation quality is concerned with the degree to which core program elements are delivered clearly and correctly. (4) Participant responsiveness refers to the degree to which the program interests and engages program recipients as well as the degree to which recipients attend to program material. (5) Program differentiation is the extent to which the theory and practices of a program are distinguishable from other programs.

Durlak & DuPre (2008) have identified three additional aspects of integrity. (6) Program reach, or the rate of involvement and representativeness of program participants, such as participation rates. (7) Program adaptation, which refers to modifications and changes made to the original or intended program during the implementation process. And finally, (8) the monitoring of control or comparison conditions, which involves describing the type and amount of any similar or alternative services these groups receive. Monitoring control/comparison conditions is important for maintaining internal validity as it is often incorrectly assumed that control groups do not receive any services (Durlak, 1998), which is rarely the case in school-based studies (Abbott et al., 1998; Elder et al., 1996).

Fidelity and dosage are two of the most frequently monitored aspects of treatment integrity while participant responsiveness and program differentiation are seldom assessed in research, perhaps due to measurement difficulties (Durlak & DuPre, 2008). Treatment integrity is not an all or none phenomenon but exists on a continuum. In fact, perfect integrity is almost never achieved in real-world settings by non-researchers

(Durlak & DuPre, 2008). Categorical designations of “low” or “high” integrity levels are arbitrary and depend largely on locally obtained data.

In their comprehensive review of research on treatment fidelity, Durlak & DuPre (2008) found that fidelity levels around 60% often resulted in positive outcomes and that few studies attained overall levels greater than 80%. Research indicated that implementation fidelity was partly sacrificed for the sake of adapting the program to fit specific contexts. The authors also noted marked variability in implementation across providers within the same study, citing ranges from 20-40 percentage points as common when comparing the lowest and highest fidelity levels. These findings highlight some of the complexities of measuring treatment integrity and indicate the importance of considering a balance between fidelity and program adaptation.

Factors Impacting Successful Program Implementation

A theoretical framework

Considerable coordination and resources are required to support high-quality program implementation. As discussed previously, program implementation involves many aspects, all of which may influence the success of implementation, which in turn influences a program’s effectiveness. Considering the complexities of implementing large-scale social emotional initiatives in schools, it is helpful to refer to a theoretical framework when thinking about implementation. After a comprehensive review of the literature, Fixsen et al. (2005) constructed an implementation framework for developing evidence-based intervention practices within organizations.

This framework includes a source, (the desired practice or program as well as the desired implementation of that program), a destination (the practitioner or organization

that adopts the innovation) a communication link, (which is composed of an individual or group who work to implement the practice or program), and a feedback mechanism, (which provides a regular flow of information about performance). All of these operate within a sphere of influence, which includes social, economic, political, historical and psychological factors that directly or indirectly influence the individuals, organizations and systems involved in implementing or receiving the program.

Core implementation components

In the same review the authors identified several core implementation components based on commonalities among successfully implemented programs and practices in multiple fields including agriculture, business, health, juvenile justice, medicine, mental health, and social services. They found that practitioner selection, pre-service training, ongoing consultation and coaching, staff and program evaluation, facilitative administrative supports, and systems interventions to ensure financial and organizational support were important for successful implementation (Fixsen et al., 2005).

Pre-service training provides an efficient way to inform practitioners in the background information and theory of an evidence-based program, teach key practices, and provide an opportunity for practitioners to practice new skills in a training environment. Continued consultation and coaching on site during the implementation of a new program solidifies skills introduced in pre-service training by providing feedback on implementation in the setting in which the program is implemented. Staff and program evaluation are designed to assess the use and outcomes of the skills targeted in training and consultation and provide data, which can be used to make decisions about implementation effectiveness and the overall performance of the organization with

respect to the core intervention components. Administrative supports are necessary to provide leadership, assess data to inform decisions about program implementation, keep staff organized, and support the overall implementation process.

Organizations are dynamic and are naturally prone to change over time. Therefore, core components are conceptualized as integrated and compensatory. The relative contribution of each component can be expected to change over time, which is why communication is critical to keeping program implementation on track.

Stages of implementation

When implementing a new program or practice, it is also helpful to have a sense of where you are going, what phase you are in, and where you have been.

Conceptualizing the stages of implementation can help those implementing innovations, the purveyors, organize activities within that stage, recognize and solve common problems, and keep organizations and systems on track. Adelman & Taylor's (1997) Program Diffusion Model applies theories from the fields of community psychology and organizational change to guide successful program adoption and implementation. The model outlines four stages of implementing programmatic change in educational settings.

The first phase focuses on Creating Readiness. Activities during this phase involve obtaining community and stakeholder support and preparing the environment for change. This may include making pragmatic or fundamental changes in the school or district's culture and organizational structure as resources are re-allocated in preparation for program implementation (Schaughency & Ervin, 2006). For example, in Webster-Stratton and colleagues' (2011) study of the Incredible Years Teacher Classroom Management intervention, a range of activities including training, mentoring, and

consultation were employed at this stage to build stakeholder support for the program, which in turn boosted treatment fidelity.

Initial Implementation of the program comprises the second phase of the model. In this phase, the focus is on providing staff with support and guidance as they begin to implement the program. Activities during this phase often include providing technical support as well as developing and refining infrastructure for program dissemination. For example, a PBIS initiative developed a multilevel support system of stakeholders such as teachers, practitioners, researchers and policy makers to coordinate, train, and support schools and districts in the implementation of school-wide PBIS to aid in the initial implementation of the initiative (Domitrovich et al., 2008).

The third phase, Institutionalization, focuses on maintaining systemic changes and addressing problems and glitches in implementation as they arise. In a state-wide scale-up of PBIS in Maryland, Bradshaw and Pas (2011) describe a training infrastructure that was developed to promote the sustainability of PBIS and address potential roadblocks. This involved intermittent professional development throughout the school year to ensure the proper delivery of training and services and facilitate dissemination of evidence-based programs. Providing continuing support and opportunities to formatively evaluate implementation increases the likelihood of successful, effective, and sustaining interventions.

The final phase of Adelman & Taylor's (1997) model involves Ongoing Evolution. This is achieved by integrating new knowledge as programs are maintained and scaled up. The importance of continued development via program evaluation and data-based decision making is emphasized during this phase. This can be accomplished

through continuous monitoring of aspects of implementation quality and fidelity as well as implementation effects, such as student outcomes. The Ongoing Evolution phase is consistent with a response to intervention approach in that continued evaluation of intervention effectiveness through data collection on student outcomes is used to modify programs and evaluate their utility.

The Program Diffusion Model (Adelman & Taylor, 1997) provides a framework for guiding successful program adoption and implementation that can easily be applied to the context of schools. Adhering to the model can assist in the planning and execution of large-scale innovations. However, it is also worth noting that while such a model may be helpful in planning and guiding implementation efforts, the process is not as clear-cut and linear when applied in the field. In their description of the development of systems to support a state-wide PBIS initiative in schools, Bradshaw & Pas (2011) note that there were often times when they revisited earlier stages of the model in order to address emerging concerns. The authors also point out that evaluation activities were ongoing and played a critical role in all phases of the implementation process.

Implementation context

While Adelman & Taylor's (1997) model describes the implementation process, including critical activities involved in building organizational capacity, consideration of implementation context is also important. Contextual factors are equally critical in successful, sustainable implementation of school-wide social-emotional programs. The literature on program implementation stresses the importance of considering the context into which a program is introduced and maintains that interventions must be integrated

within existing contexts if they are to be successful (Durlak & DuPre, 2008; Ringeisen et al., 2003).

Contextual influences on effective program implementation range from community politics and policies to the adaptability of the selected intervention to the self-efficacy and proficiency of the program providers (Durlak & DuPre, 2008). These factors can influence the likelihood a program will be effectively adopted and delivered with integrity.

In an examination of school and district level factors, Bradshaw & Pas (2011) identified characteristics that predicted the adoption and implementation quality of a universal school-wide PBIS model. Regarding training and adoption, the authors found that schools with high numbers of suspensions, high student mobility rates, and low academic performance were much more likely to receive training in and adopt PBIS practices. District level factors, such as a high percentage of active PBIS schools and smaller size also predicted program adoption. Contextual factors predicting implementation quality were all at the school-level and included the number of years schools had consistently received training in PBIS and the percent of qualified teachers at a given school. These results illustrate the influence contextual factors have on the adoption and implementation of school-wide programs.

As is indicated by this review of the literature, program implementation is a long and involved process. It can take years for a program to reach the phase of Institutionalization or Ongoing Evolution described in Adelman and Taylor's (1997) model of program diffusion. The first year of a program's implementation typically involves activities described in the phase of Initial Implementation as support systems are

developed and refined. While activities at this phase of program implementation are critical to successful implementation and program effectiveness, the benefits of proper implementation may not be evident in measured outcomes at this point.

Measurable outcomes may not be apparent until two or three continuous years of proper program implementation. For example, an evaluation of 84 Illinois schools' progress on implementing school-wide social and emotional learning programs after their first year of implementation yielded no significant outcomes even though data on the implementation process demonstrated that programs were well-implemented with regard to fidelity (Ji et al., 2008). Another assessment of program implementation and outcomes of a school violence prevention intervention after the first year of implementation found no statistically significant differences between treatment and control schools on outcome measures even though measures of program dosage, fidelity, and student engagement were high, indicating strong implementation (Silvia et al., 2010). Hence, continued monitoring, data-collection, and evaluation are necessary to assess the effectiveness of programs.

Summary

This review of the literature illustrates the need for prevention efforts in order to reduce the prevalence of emotional and behavioral problems and promote the development of social, emotional and mental well-being in children. Schools are in a unique position to efficiently provide such services through a public health approach to prevention, where implementation intensity is matched to student need. The literature further demonstrates the effectiveness of social-emotional learning programs, such as *Strong Start*, when such programs are carefully implemented. Unfortunately, information

on program implementation is often absent from such studies, contributing to the gap between research on effective programs and practice in real-world settings. The purpose of the current study is to address this gap through an evaluation of the *Strong Start* program in which outcomes and the implementation process are measured and assessed. This evaluation of the first year of implementation of *Strong Start* is conducted in an effort to increase knowledge regarding this initial stage of implementation, enhance an understanding of what it takes to support children in schools, and in doing so, reduce the gap between research and practice.

CHAPTER 3

METHODS

This program evaluation of a school-based social emotional learning curriculum was designed to examine the implementation process, outcomes, and perceived social validity of *Strong Start* as a selected intervention across three elementary schools in a rural county as part of a larger grant. The intervention was delivered to six small groups of students, in kindergarten through second grade, indicated to be at an elevated need for social and emotional support.

Research Design

A mixed method program evaluation was used to evaluate the contextual factors, implementation, outcomes, and social validity of the *Strong Start* curriculum in its first year of implementation. First, contextual factors related to characteristics of the student population were examined. Second, data on program implementation were collected and assessed. Third, the student outcomes resulting from program implementation were evaluated. Finally, the perceived social validity of the program was evaluated by collecting data on the acceptability, feasibility, and satisfaction with the program from multiple stakeholders.

Setting

This research took place in public elementary schools located in a rural county in the Midwest and occurred within the context of a county-wide restructuring of mental health service delivery to children and families through a multi-tiered intervention model. Changes to the current system were implemented to coordinate mental health services between medical providers, the public health department, schools, social service

agencies, and mental health providers. The implementation of *Strong Start* as a supplemental intervention in schools was part of this county-wide restructuring of support services.

The county spans about 1,000 square miles and has a population of about 40,000 with slightly over 50% of the population living in rural areas. Eighty-seven percent of the adult population has a high school degree or higher and 14% has a bachelors degree or higher. The county unemployment rate in 2011 was 8.5%.

According to data from the Illinois Department of Public Health (2009), 12% of babies in the county are born to mothers under the age of 20 and 48% are born to single mothers. An average of 13 reports of child abuse and neglect per 1,000 children are made each year, which is above the state average (DCFS Annual Reports, 2009). The hospitalization rate for alcohol-dependence (IPLAN Data System) and reports of domestic violence are also higher than the state average (Illinois State Police).

Ninety-one percent of the county's student population is White, 5% identify as African American, 3% identify as Hispanic, and 1% identify as Multiracial/Non-Hispanic. In addition, 38% are considered economically disadvantaged as evidenced by eligibility for free or reduced lunch, and 18% of the student population receives special education services.

Recruitment

Administrators and teachers of all elementary schools in the county were invited to attend a day long informational training introducing the county-wide initiative to restructure and streamline mental health service delivery to children, with a particular focus on the development of a multi-tiered system of social-emotional support within the

schools. This training day took place in August 2011, prior to the start of the school year. Principals at each of the 13 elementary schools were approached in September and invited to participate in the school-wide screening and provision of supplemental student supports in the form of small group intervention using the *Strong Start* curriculum.

Participants

One of the objectives of the county-wide initiative was for all schools to provide a continuum of social-emotional supports at three levels of increasing intensity depending on individual student need by the end of the third year. In this first year of implementation, schools determined the degree to which they would implement this three-tiered continuum of supports.

All schools in the county were included in the assessment of the effect of contextual factors on participation decisions. Four of the 13 elementary schools in the county decided not to implement any components of the multi-tiered model in the first year of implementation. Seven schools opted to implement a universal social-emotional curriculum in their classrooms. Classrooms were randomly assigned to either a treatment or control condition to evaluate the effectiveness of the tier 1 curriculum, Positive Action, which was implemented by teachers in the classroom. Seven schools opted to conduct behavior screenings of elementary students, which were used to identify students for inclusion in tier 2 supports using the *Strong Start* curriculum. One of the schools that conducted screening did not have any students with elevated scores in grades K through 2, and therefore did not provide tier 2 supports. Three of the seven schools that screened for behavioral concerns also implemented *Strong Start* groups. The level of support provided at each school is shown in Table 1.

Table 1. *Components Implemented by School in Year One*

Components Implemented				
	Tier 1: Positive Action	Screened	Tier 2: Strong Start	Number of Components Implemented
School 1				0
School 2				0
School 3		X		1
School 4				0
School 5	X	X	X	3
School 6		X		1
School 7	X	X	X	3
School 8	X	X	X	3
School 9				0
School 10	X	X		2
School 11	X			1
School 12	X			1
School 13	X	X		2

In all, a total of 648 students in grades K-2 were screened. Seventy-eight students received an elevated score, indicating need for tier 2 supports. Over the course of the school year, 5 of these 78 students moved. Three second grade students participated in *Strong Kids* groups with students in grades 3-4 and were not included in the outcome evaluation. Therefore, outcome data were collected from 70 students across six schools.

Three of the six schools chose to implement the *Strong Start* program with small groups of students. The 24 students in these schools formed the intervention group. The other three schools chose to wait until the following year to implement *Strong Start* for their supplemental intervention program. The 46 students in these schools formed the comparison group. Two of the schools in the comparison group chose not to conduct the

Assessment of Children’s Emotion Skills (ACES), one of the outcome assessment measures, with students and consent to collect these data was not received for an additional five students in the control condition. Therefore, ACES data were available for only seven of the students from the control condition.

Table 2. *Student Participant Sample by Group*

	Intervention Group	Comparison Group	
	Received Strong Start	Did not Receive Strong Start	Total
Received Positive Action	10	16	26
Did not Receive Positive Action	14	30	44
Total	24	46	70

Measures

Independent variables

This study had two independent variables: time and treatment. Time had two levels: pretest and posttest. Treatment had two levels: the intervention group, which received instruction in *Strong Start*, and the comparison group, which received the school’s de facto social and emotional supports.

Time

The quantitative dependent measures, The Behavioral and Emotional Screening System (BESS), Assessment of Children’s Emotion Skills (ACES), and AIMSweb early literacy data, were collected prior to students’ participation in *Strong Start* (pretest). The same dependent measures were collected again after completing the *Strong Start*

curriculum (posttest). At posttest, additional qualitative data were collected from implementers of the curriculum, classroom teachers, parents, and students who received the curriculum to assess perceptions and attitudes toward the *Strong Start* curriculum.

Treatment

Students in the intervention group participated in small groups that received the *Strong Start* curriculum once a week. Students received instruction for 20-45 minutes a week for at least 10 weeks. Students in the comparison group received schools' de facto social emotional supports, which included individual counseling and/or some exposure to other SEL curricula in the classroom setting, such as Second Step.

Dependent variables

A rating scale and two direct measures of students' skills were used to evaluate the effects of the intervention. Teachers rated students' social and emotional behaviors before and after the *Strong Start* intervention. Students' knowledge of basic emotions and information on students' basic reading skills were also collected at pre- and posttest.

Behavior ratings

The Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007) is a standardized teacher-rating scale available through AIMSweb that is designed to identify students at risk for developing behavioral or emotional problems. The AIMSweb BESS Teacher Form is composed of 27 items. Teachers completed ratings on each student by identifying the frequency of specific behaviors such as, "Pays attention," "Disobeys," and "Has poor self-control," by responding Never, Sometimes, Often or Almost Always. A student's standard score on the AIMSweb BESS indicates how the student compares to a nationally representative sample of same-aged peers. Higher

standard scores indicate a greater possibility for developing behavioral or emotional problems that may interfere with a student's success in school. Scores one standard deviation or more above the mean, above the 85th percentile, are considered elevated. Students in kindergarten, 1st and 2nd grade with elevated scores on the teacher AIMSweb BESS were recruited to participate in the intervention.

The AIMSweb Behavior Manual reports adequate psychometric properties for the BESS. Internal consistency coefficients for the teacher form are .96 for children aged 5-9 years old. Test-retest reliability coefficients, based on a subsample of 175 children retested after about 10 weeks were .91 (Kamphaus & Reynolds, 2007). The technical manual for the AIMSweb BESS describes several ways in which validity has been assessed and supported. Items were selected for the AIMSweb BESS from a pool of hundreds of items and were evaluated through a multistage process to determine how well the items represented prevalent behavioral and emotional domains and applied to a number of different groups. Scores on the AIMSweb BESS have been compared to similar scales, such as the Behavior Assessment System for Children (BASC-2; Reynolds & Kamphaus, 1992), the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Rescorla, 2001), the Children's Depression Inventory (CDI; Kovacs, 2001), and the Vineland Adaptive Behavior Scales (Vineland II; Sparrow, Cicchetti, & Balla, 2006) among others. Correlations with these scales range from .75-.91 and support the construct validity of the BESS.

Emotion knowledge assessment

The Assessment of Children's Emotion Skills (ACES) is a standardized assessment that measures children's accuracy in recognizing basic emotions (Schultz &

Izard, 1998). The ACES contains three subscales: facial expressions, social situations, and social behaviors. For the purposes of this study, the social behaviors and social situations subscales from the ACES were used to measure children's emotion knowledge. These subscales were selected because they most closely assess students' understanding of appropriate emotional reactions in typical social situations by requiring application of emotion knowledge to interpret the situations. Each subscale is composed of 15 two- to three- sentence vignettes describing prototypic behaviors or situations related to happiness, sadness, anger, or fear. An additional three vignettes in each subscale are ambiguous as to which emotion they depict.

The emotion knowledge accuracy score is calculated by determining the number of correct responses to items describing situations that elicit happiness, sadness, anger, and fear within each subscale. The complete 40-item emotion knowledge accuracy scale has moderate internal reliability ($\alpha = .75$) suggesting adequate consistency between items targeting similar emotions. Previous research demonstrated that children's scores on the ACES emotion knowledge accuracy scale were related to their attention regulation ($Z = 2.25, p < .05$; Trentacosta et al., 2006) and social functioning ($\beta = .12, p < .01$; Mostow, Izard, Fine, & Trentacosta, 2002).

Early literacy skills

Students' percentile scores on curriculum-based measures of early literacy skills were used as a proxy for academic achievement in this study since reading is one of the primary academic skills taught at this age. Percentile ranks associated with first and second grade students' benchmark scores in Oral Reading Fluency (ORF) provided a measure of students' academic achievement. ORF is a standardized, individually

administered test of reading speed and accuracy using grade level connected text. Student performance is measured by having students read a passage aloud for one minute. The number of words read correctly from the passage in a minute is the ORF score. ORF provides one of the best measures of reading competence and comprehension for children in first through third grades (Kaminski & Good, 1998).

Percentile rank associated with benchmark scores in Letter Naming Fluency (LNF) was used to measure kindergarteners' early literacy skills. LNF provides a valid and reliable measure of students' letter recognition in a standardized, norm-referenced format. Students are presented a probe with rows of upper and lower case letters in random order and asked to say the name of as many letters as they can. The number of letters provided correctly in one minute is the student's score. Letter recognition is one of the foundational early literacy skills and was selected because it provides a corresponding measure of fluency available at the kindergarten level.

Social validity data

Two types of social validity data were collected from four kinds of stakeholders at posttest. Paper and pencil surveys were conducted with implementers, students, parents, and teachers. In addition, interviews were conducted with implementers.

Implementer survey and interview

Surveys and brief interviews were conducted with school psychologists after completing the *Strong Start* curriculum. Implementers' attitudes toward the curriculum were measured using the *Strong Start Implementer Survey* (Appendix A), a 27-item questionnaire. This questionnaire is similar to previous questionnaires developed for use with the *Strong Kids* curriculum and is based on Wolf's (1978) principles for assessing

social validity. The questionnaire covers five domains: (1) the alignment of goals between implementers and the curriculum, (2) the acceptability of the procedures used to implement the curriculum, (3) implementers' satisfaction with the results of the curriculum, (4) the feasibility and perceived importance of implementing the curriculum and (5) eight open-ended interview questions regarding implementers' general opinions about the program, such as their likes and dislikes. School psychologists were asked to respond to statements about the *Strong Start* curriculum using a 5-point Likert scale. For example, implementers could respond "strongly disagree," "disagree," "neutral," "agree," or "strongly agree" to the statement, "I was satisfied with the knowledge of emotions students demonstrated over the course of the program."

Implementers had the opportunity to share their general opinions about *Strong Start* and the selection and implementation process during a brief interview. The interview qualitatively examined the social importance and acceptability of the treatment goals, procedures, and outcomes. Interviews lasted approximately 30 minutes and covered eight questions (see Appendix B). Qualitative feedback from implementers regarding their experience with the curriculum supplemented quantitative data and is used to address concerns and difficulties for future implementations, providing a more effective and sustainable program.

Student survey

The *Strong Start Student Satisfaction Survey* (Appendix C) is a researcher-designed tool developed for use with the *Strong Start* curriculum. The 10-item survey was designed to evaluate students' satisfaction with the curriculum. Items on the survey include, "*Strong Start* was fun"; "I learned a lot from *Strong Start*"; and "I understand

my feelings better after doing *Strong Start*.” Students were asked to respond to each item by saying “yes,” “no,” or “not sure.” Students were administered the survey individually at posttest. Data gathered from this survey provided qualitative information on students’ perception of the effectiveness of the curriculum, and ways to improve the *Strong Start* curriculum.

Parent and teacher surveys

Parents’ and teachers’ attitudes toward the effectiveness of the curriculum were measured using the *Strong Start Parent Survey* (Appendix D) and the *Strong Start Teacher Survey* (Appendix E). Parents and teachers were asked to respond to seven to eight statements evaluating the outcomes of the curriculum using a 4-point Likert scale. For example, parents and teachers were asked to complete the statement, “I think students’ likelihood to talk about their feelings after participating in *Strong Start*.” by circling numbers corresponding to “declined,” “no change,” “improved,” or “significantly improved.” Qualitative data collected using these surveys provides information on the perceived effectiveness of the program and the degree to which skills taught in the program generalized to other settings, such as the classroom and home. Parents and teachers were asked to complete the surveys at posttest.

Procedures

Interventionist and teacher training

School psychologists and social workers received training on implementing the *Strong Start* program and conducting the ACES from the principal investigator. Training was provided during a two and a half hour meeting, one week prior to teacher screening with the AIMSweb BESS. School psychologists and social workers were trained in the

intervention's conceptual framework, data collection tools and methods, and procedures for effective implementation. The goals of social and emotional learning were addressed and objectives of *Strong Start* as a supplemental intervention were presented within the larger context of the county's mental health initiative.

The *Strong Start* manual, lessons, and implementation checklist were presented. Implementation checklists (Appendix F) included the components of each lesson, the time spent on each component and on the lesson overall, the date of implementation, and student attendance. Materials necessary for each lesson, use and location of children's literature, and the importance of distributing the weekly parent and teacher newsletters were discussed. Administration and scoring of the ACES was presented and demonstrated. Participants received a copy of the power point presentation and a timeline of assessment and intervention phases, along with electronic and hard copies of all materials (ACES and implementation checklists).

Teachers received training from the county's AIMSweb coordinator on how to complete the screening with the BESS. The AIMSweb coordinator provided training at each school with all teachers and administrators, demonstrating how to log on to AIMSweb and complete the BESS. Teachers were provided with handouts including screen shots and instructions on how to complete the AIMSweb BESS online. Individual assistance was provided to teachers from the AIMSweb coordinator and their school psychologist as needed.

Screening and group assignment

Teacher ratings of student behavior using the AIMSweb BESS were used to identify children for inclusion in *Strong Start* as a supplemental social emotional learning

intervention. Elevated scores were defined as those above the 85th percentile (Kamphaus & Reynolds, 2007). Parents of children with elevated scores were contacted following screening to inform them of their child's score, solicit concerns and feedback, and offer their children additional social and emotional support through participation in *Strong Start* groups (treatment schools) or the school's de facto social-emotional supports (comparison schools). Consent letters (Appendix G) were mailed to parents of students with elevated scores to obtain written consent for data collection using the ACES and inclusion in *Strong Start* groups.

Students in kindergarten through second grade received instruction in *Strong Start* in seven small groups. Groups were taught either by a master's level school psychologist or one of two school psychology pre-doctoral interns. One of the school psychology interns was the principal investigator and had experience implementing the curriculum.

Data collection

Contextual data

School-level characteristics thought to predict the adoption and implementation quality of the *Strong Start* program were identified and collected. The selection of potential contextual predictors was based on empirical and theoretical literature examining the association between school contextual factors and the implementation of school-based programs (Domitrovich et al., 2008). Data reflecting level of need (e.g. attendance, mobility, percent low income, special education rates, average expenditure per student) and school size (e.g. average class size, student to teacher ratio) were obtained on all schools in the county. Data were collected from the Illinois Interactive Report Card, a website managed by Northern Illinois University with support from the

Illinois State Board of Education. It was hypothesized that larger schools and schools with higher need (e.g. higher mobility rate, higher percentage of students on free and reduced lunch, etc) would be more likely to screen students and implement *Strong Start* groups.

Treatment integrity data

Two types of treatment integrity data were collected; program adherence and dosage. Program adherence, often referred to as treatment fidelity, is the extent to which a program is implemented as originally intended (Dane & Schneider, 1998). Program adherence was measured using the *Strong Start Implementation Checklist*. Program implementers completed the *Strong Start Implementation Checklist* after each lesson. The checklist assessed the extent to which core lesson components were implemented as outlined in the *Strong Start* manual as well as the amount of time spent addressing lesson components.

Dosage, the other form of treatment integrity measured, refers to how much of the intended program has been delivered. Information on student attendance, the percent of lessons completed, and total lesson length were also included on implementation checklists and were used to calculate dosage, which was measured as the total minutes of *Strong Start* instruction received by each student.

The purpose of recording such data was to investigate what first year program implementation actually looks like, how much of the curriculum was implemented, and how well it was implemented. It was hypothesized that treatment integrity would be positively correlated with student outcomes.

Outcome data

Pre- and posttest measures, including the teacher BESS, ACES, and student literacy scores, were collected prior to and following implementation of *Strong Start*. Teachers completed the AIMSweb BESS online for each student in their classrooms. School psychologists conducted the ACES with students individually. Winter and spring literacy scores were collected by teachers during the school-wide benchmarking periods. School psychologists who implemented *Strong Start* completed *Implementation Checklists* for each lesson.

Social validity data

The primary investigator collected social validity data through surveys and interviews after completion of the *Strong Start* program. School administrators were contacted to obtain consent to collect social validity data from teachers, students, and parents. Surveys were provided to teachers in their school mailboxes and conducted individually with students by the primary investigator. Parent surveys were mailed to parents along with a prepaid return envelope. Social validity interviews were conducted with program implementers individually by the principal investigator.

Analyses

Process evaluation

Descriptive analyses were used to examine contextual factors that may be related to schools' decisions to implement components of the tiered system of social-emotional supports. These results were used to calculate correlations between schools' perceived level of need, based on contextual data, and the number of supports schools decided to implement using Spearman's rho.

Descriptive analyses were also used to examine the extent to which the core components of the curriculum were delivered, the amount of time spent delivering lessons, and student attendance rates, for each intervention group. Correlations were calculated to examine the relationship between treatment integrity and outcome data.

Outcome evaluation

The *Strong Start* outcome evaluation was quasi-experimental in that participants were not randomly assigned to conditions. This design was used to determine the effects of the *Strong Start* curriculum in comparison to the school's de facto social-emotional support. A comparison of mean gain scores was used to determine the effectiveness of the intervention. Six one sample t-tests were used to determine whether there were significant changes from pretest to posttest within each group. Three independent measures t-tests were conducted to analyze the effects of the intervention on posttest scores.

These outcome data were collected to evaluate the effects of the program on students' emotion knowledge, social and emotional competence, and academic achievement. Based on results of previous research (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012), it was hypothesized that children's emotion knowledge and social-emotional health would improve after participation in *Strong Start*. It was further hypothesized that students in the intervention group would demonstrate greater improvements in CBM reading measures as a distal indicator of improved academic achievement.

A power analysis was conducted using the *G*Power 3* software program (Faul, Erdfelder, Lang, & Buchner, 2007) to determine the number of subjects needed for the

study. Given the use of two independent groups, a power analysis for an independent means t-test was run. With a power of .80, an alpha level of .05, and an expected moderately large effect size, $d=.65$, a total sample size of 78 subjects was needed. A moderately large effect size was anticipated based on previous research that found participation in *Strong Start* resulted in moderate to large effect sizes in improving prosocial behavior and decreasing internalizing problems of second graders who were indicated to be at-risk for developing social and/or emotional problems (Caldarella et al., 2009).

Social validity

The purpose of measuring social validity was to evaluate whether or not the *Strong Start* intervention had a socially significant influence on individuals and to what extent the outcomes measured in research were functionally meaningful (Wolf, 1978). Previous research (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012) has reported high levels of social validity and it was hypothesized that participants would view *Strong Start* as acceptable, valuable, and effective.

Quantitative data from implementer, student, parent, and teacher surveys were analyzed using descriptive statistics. Mean scores and standard deviations were reported by each question for each survey. Qualitative data collected from the interview questions on the *Strong Start* Implementer Survey are presented in descriptive format. Responses from implementers were aggregated into common themes that represent their experiences with implementing the *Strong Start* curriculum.

CHAPTER 4

RESULTS

This program evaluation had four distinct purposes. First, to examine the relationship between contextual factors and participation decisions; second, to evaluate the program's implementation; third, to assess the outcomes of the intervention; and finally, to evaluate the perceived social validity of the *Strong Start: K-2* curriculum.

Descriptive analyses were used to examine the relationship between school-level contextual factors and decisions to implement various levels of interventions and supports. Descriptive analyses were also used to examine treatment integrity data. These results were then used to calculate correlations with outcome data. The outcomes of the intervention were assessed using three t-tests. This procedure was used to test for statistically significant differences in posttest means between the intervention group and the comparison group. Finally, social validity data were evaluated through a combination of descriptive statistics and descriptive reporting methods.

Process Evaluation

Contextual factors

Characteristics related to decisions to adopt a continuum of supports were collected and analyzed at the school-level. It was hypothesized that larger schools and schools serving populations with higher needs would be more likely to implement more components of the multi-tiered system of supports.

School-level factors used to indicate need included the percent of the student population that was low income, the percent enrolled in special education, the mobility

rate, and average expenditure per student. For schools that conducted universal screening, the percent of the student population with elevated scores on the BESS was also included as an indicator of need. Factors used to indicate school size included enrollment, average class size, and student to teacher ratio.

Schools varied in the degree to which they implemented the multi-tiered system of social-emotional interventions and supports. Four schools provided no supports, four schools implemented one component of the multi-tiered model (either a universal classroom intervention or school-wide screening), two schools chose to implement two components (screening and providing classroom supports to all students), and three schools implemented all three components (screening, providing a universal classroom intervention, and implementing *Strong Start* in small groups).

Spearman's rho, a non-parametric procedure to assess the relationship between discrete variables, was calculated to determine if correlations existed between decisions to implement greater or fewer components and school contextual factors. No relationship was observed between the implementation of prevention components and the percentage of the student population with elevated BESS scores ($\rho = -.019$), the percentage of students receiving special education services ($\rho = .043$), or the truancy rate ($\rho = .097$).

Weak positive relationships were observed between the number of prevention components implemented and student mobility rates ($\rho = .265$) and student to teacher ratios ($\rho = .219$). Moderate positive relationships were found between the number of prevention components implemented and the percent of each school's population that received free or reduced lunch ($\rho = .364$). A moderate negative relationship was observed

between instructional expenditures per student and the implementation of prevention components ($\rho = -.380$).

A strong positive and significant relationship was observed between the number of prevention components implemented and a school's average class size ($\rho = .569$, $p = .021$) indicating that schools with larger classes were more likely to implement more components of the multi-tiered model.

Although several school-level characteristics were positively correlated with implementation of prevention components, these moderate relationships were not significant. The only contextual factor that was observed to significantly correlate with the number of prevention components implemented was a school's average class size. These results are summarized in Table 3.

Table 3. *Correlations between School Contextual Factors and Level of Implementation*

	Spearman rho	p-value
% Elevated BESS	-.019	.484
% Low Income	.364	.110
% Special Ed	.043	.445
Mobility Rate	.265	.191
Truancy	.097	.376
Instructional Expenditure	-.380	.100
Class Size	.569*	.021
Student to Teacher Ratio	.219	.236

* Correlation is significant at the 0.05 level (1-tailed).

It was further predicted that schools with higher need would have a higher percentage of students with elevated scores on the teacher rating scale, the BESS. However, no relationship was found ($r = -.064$, $p\text{-value} = .446$) between school-level indicators of need and the percent of the student population with elevated scores on the

BESS. Table 4 presents data on the correlations between school-level contextual factors, including the percent of the student population with elevated scores on the BESS.

Table 4. *Correlations between School Contextual Factors*

	% Elevated BESS	% Low Income	% Special Ed	Mobility rate	Truancy	Class size
% Elevated BESS	-					
% Low Income	-.093	-				
% Special Ed	.084	.468	-			
Mobility rate	-.126	.712**	.670**	-		
Truancy	.005	.686**	.140	.416	-	
Class size	-.064	.214	-.131	.093	.107	-
Total	-.064	.929**	.679**	.886**	.589*	.272

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Treatment integrity

Self-report data on treatment integrity were gathered from school psychologists implementing *Strong Start* using the *Strong Start Implementation Checklist*. The checklist provided information on the extent to which core lesson components were implemented and the amount of time spent addressing lesson components. Information on student attendance, date of implementation, and lesson length was also collected. These data were analyzed to assess the fidelity with which the curriculum was implemented. It was hypothesized that program adherence and dosage would positively correlate with higher scores on outcome measures. Scatterplots depicting the relationship between integrity measures and gain scores are in Appendix H.

Adherence

It was hypothesized that students receiving interventions implemented with high program adherence, as measured by the percent of lesson components implemented, would demonstrate higher scores on outcome measures than students receiving interventions with low program adherence. Adherence integrity ranged from 52 to 89% as shown in Table 5.

Table 5. *Adherence Integrity by Intervention Group*

Group	N	% Lesson Components Implemented
A	4	64%
B	2	75%
C	2	52%
D	4	59%
E	1	66%
F	4	86%
G	7	89%
Total	24	

One-tailed Pearson correlations were calculated using the percent of lesson components implemented and gain scores from each of the three outcome measures. This procedure revealed no relationship ($r = .142, p = .265$) between program adherence and ACES gain scores, no relationship ($r = .196, p = .185$) between program adherence and BESS gain scores, and a significant positive relationship ($r = .508, p = .007$) between program adherence and AIMSweb early literacy gain scores.

Table 6. *Correlations between Program Adherence and Outcomes*

	r	p	N
ACES gain score	.142	.265	22
BESS gain score	.196	.185	23
AIMSweb literacy	.508**	.007	23

** Correlation is significant at the 0.01 level (1-tailed).

Dosage

It was hypothesized that students receiving a higher dosage of the intervention would demonstrate higher scores on outcome measures than students receiving a lower dosage. Dosage was measured by the percent of lessons completed, the average lesson length in minutes per group, and student attendance. Dosage was calculated by multiplying the number of lessons each student received (incorporating attendance with lessons completed) by the average lesson length per group for the total minutes of *Strong Start* instruction received.

Only 11 of the 24 students received instruction in the complete curriculum. Eight students received instruction in the first 8 lessons and five students only received instruction in 50% of the lessons. Furthermore, average lesson length for each group ranged from 24-35 minutes, while the curriculum recommends spending 45 minutes per lesson. If *Strong Start* were taught for 45 minutes per lesson, as recommended in the manual, students would receive 450 minutes (7.5 hours) of SEL instruction. Although seven of the twenty-four students received at least 350 minutes of *Strong Start* instruction, the mean amount of time students were exposed to *Strong Start* was 243 minutes (4 hours), or slightly over half the amount of time recommended.

One-tailed Pearson correlations revealed a moderate positive relationship ($r = .317, p = .08$) between dosage and ACES gain scores, no relationship ($r = .186, p = .20$) between dosage and BESS gain scores, and a strong significant positive relationship ($r = .412, p = .03$) between dosage and AIMSweb early literacy gain scores.

Table 7. *Correlations Between Dosage and Outcomes*

	r	p	N
ACES gain score	.317	.075	22
BESS gain score	.186	.198	23
AIMSweb literacy	.412*	.025	23

* Correlation is significant at the 0.05 level (1-tailed).

Outcome Evaluation

Outcomes resulting from program implementation were evaluated. This evaluation included data from teacher rating scales, to assess student's social and emotional health and problem-solving skills, and performance data collected from individual students, to assess the proximal variable of emotion knowledge. In addition, academic benchmarking data were analyzed to examine distal variables of student academic outcomes as a function of improved social-emotional skills.

Three independent-measures t-tests were used to analyze the effects of the intervention on each of the posttest scores in order to answer the research questions. These analyses made it possible to determine whether the mean difference between intervention and comparison groups was statistically significantly different from zero. Prior to running each t-test, analyses were conducted to ensure that the data met the required assumptions. Descriptive statistics were derived for each outcome measure. Mean gain scores and sample sizes are included in Table 8.

Table 8. *Sample Size and Mean Gain Scores by Group on Dependent Measures (with Standard Deviations)*

	Intervention		Comparison	
	SS ¹ & PA ²	SS	PA	Neither
BESS	N = 9 -4.00 (10.32)	N = 14 -7.71 (7.13)	N = 11 -11.64 (4.63)	N = 22 -3.91 (5.48)
ACES	N = 8 3.00 (13.74)	N = 14 1.29 (14.17)	N = 0	N = 7 5.86 (11.08)
AIMSweb Literacy	N = 9 -4.33 (15.54)	N = 14 -0.57 (19.69)	N = 13 -0.15 (13.02)	N = 29 2.62 (15.12)

¹ *Strong Start* ² *Positive Action*

Student behavior

A t-test was used to evaluate changes in students' behavior and emotional health between groups. It was hypothesized that children in the intervention group would demonstrate greater improvements in behavior and emotional health, demonstrated by a decrease in scores at posttest, than children in the comparison group, as measured by teacher ratings on the BESS.

Data met all assumptions for a t-test. Visual inspection of box plots (Appendix H) indicated no outliers in the data. BESS gain scores were normally distributed, as assessed by the Shapiro-Wilk's test ($p > .05$). There was homogeneity of variance, as assessed by Levene's Test of Homogeneity of Variance ($p = .09$).

One sample t-tests indicated a significant decrease in BESS scores at posttest for both the intervention $t(22) = -3.53, p = .001$ and comparison group $t(32) = -5.89, p =$

.000. Indicating that students' emotional and behavioral health significantly improved in both groups. There was not a statistically significant difference in posttest gain scores on the BESS between the two groups, $M = -0.22$, 95% CI [-4.20, 3.75], $t(54) = -0.113$, $p = .91$. Overall, students in the comparison group ($M = -6.48$, $SD = 6.33$) demonstrated slightly greater decreases in emotional and behavioral problems at posttest than students in the intervention group ($M = -6.26$, $SD = 8.50$).

Emotion knowledge

Another t-test was used to determine the effect of the *Strong Start* program on students' emotion knowledge. It was hypothesized that children in the intervention group would demonstrate greater improvements in emotion knowledge than children in the comparison group, as measured by performance on the ACES.

Visual inspection of box plots (Appendix H) indicated no outliers in the data. Assessment of ACES gain scores using the Shapiro-Wilk's test indicated that scores were normally distributed in the comparison group ($p > .05$) but were not in the intervention group ($p = .046$). Visual analysis of a Q-Q Plot and histogram (Appendix H) indicated a slight negative skew. The independent samples t-test is fairly robust to deviations from normality and so a t-test was run despite this slight violation of normal distribution. There was homogeneity of variance, as assessed by Levene's Test of Homogeneity of Variance ($p = .09$).

There was no significant difference in posttest scores on the ACES in the intervention $t(21) = .65$, $p = .261$ or comparison group $t(6) = 1.40$, $p = .106$ although both groups demonstrated increases in emotion knowledge accuracy scores. There was not a statistically significant difference in ACES gain scores between the two groups at

posttest, $M = 3.95$, 95% CI [-7.78, 15.67], $t(27) = .691$, $p = .496$. Overall, students in the comparison group ($M = 5.86$, $SD = 11.08$) demonstrated greater improvements in emotion knowledge at posttest than students in the intervention group ($M = 1.91$, $SD = 13.71$).

Early literacy skills

A final t-test was run to determine the effect of the *Strong Start* program on students' early literacy skills. It was hypothesized that children in the intervention group would demonstrate greater improvements in academic achievement, as measured by performance on AIMSweb literacy probes, than children in the comparison group.

Visual inspection of box plots (Appendix H) indicated two outliers in the data, one in each group. Since outliers were detected in the data, a Mann-Whitney U test was run to determine if there were differences in gains in early literacy scores between the two groups. The Mann-Whitney U test is less sensitive to the effects of outliers in a data sample. Distributions of AIMSweb gain scores were similar for the intervention and comparison group, as assessed by visual inspection. Early literacy gain scores were not statistically significantly different between the intervention ($Mdn = -4.0$) and comparison ($Mdn = 0.5$) groups, $U = 394.5$, $z = -1.215$, $p = .224$.

The results of the Mann-Whitney U test were compared to the results of the t-test to determine the magnitude of the effect of the outliers on the results. The data met the remaining assumptions of a t-test. ACES gain scores were normally distributed, as assessed by the Shapiro-Wilk's test ($p > .05$). There was homogeneity of variance, as assessed by Levene's Test of Homogeneity of Variance ($p = .45$).

There was not a significant difference in posttest scores on the early literacy probes in the intervention $t(22) = -.55$, $p = .295$ or comparison $t(41) = .79$, $p = .216$

group. Similar to the results produced using the Mann-Whitney U test, there was not a statistically significant difference in AIMSweb early literacy gain scores between the two groups at posttest, $M = 3.81$, 95% CI $[-4.34, 11.95]$, $t(63) = .934$, $p = .354$. Overall, students in the comparison group ($M = 1.76$, $SD = 14.40$) demonstrated greater improvements in early literacy skills at posttest than students in the intervention group ($M = -2.04$, $SD = 17.90$).

Social Validity

Social validity surveys were provided to implementers, students, teachers, and parents at the end of the *Strong Start* intervention. In addition, implementers had the opportunity to share their general opinions about *Strong Start* and the selection and implementation process during a brief structured interview. Response rates varied greatly among the different groups of respondents and are reported in Table 9.

In a meta-analysis on response rate norms, Shih and Fan (2008) found that when surveys are mailed, the average rate of response is 53% with a range from 32-74%. Guidelines from the University of Texas indicate that for face-to-face surveys, a response rate of 80-85% is considered good and anything above 85% is a very good rate of response.

Table 9. *Survey Response Rate and Method by Type of Respondent*

	Response Rate	Survey Method	Qualitative Rating
Implementers	100%	Face-to-face	Very good
Students	100%	Face-to-face	Very good
Parents	12.8%	Mail	Below average
Teachers	38.5%	Mail	Average

Implementer survey and interview

Table 10 provides information regarding the extent to which implementers endorsed (agreed or strongly agreed) items or did not endorse (neutral, disagreed, or strongly disagreed) items on the social validity survey, as well as the mean score for each item.

Implementers endorsed items in the area of satisfaction with objectives of the *Strong Start* curriculum, such as the feasibility and importance of teaching coping skills and the effectiveness of a curriculum in reducing children's social, emotional, and behavioral problems. Endorsement of these items was 100% with the exception of one implementer who responded neutrally to the statement, "It is important that students experience fewer social, emotional, and behavioral problems."

Implementers were more neutral in the areas of satisfaction with *Strong Start* procedures. All three implementers were neutral in response to the statement, "I think the teacher BESS screening measure appropriately identified students in need of extra support in social and emotional development." However, most implementers felt that *Strong Start* addressed the needs of the students identified. Two implementers were neutral in response to the statement "It took an acceptable amount of time to complete the *Strong Start* curriculum." One implementer noted that she did not have time to finish the curriculum but could have if she had started the groups earlier in the school year. Otherwise, implementers generally endorsed the remaining items relating to satisfaction with procedures. All implementers agreed that the curriculum was easy to implement, required minimal preparation time, and liked the scripted lessons.

Implementers' satisfaction with results was generally positive. Two of the three implementers were satisfied with students' knowledge of emotions, although only one implementer responded that students' knowledge in this area increased. All respondents were neutrally satisfied with students' ability to manage emotions and behaviors over the course of the program. One implementer noted that although her students did not get to a "level of independent mastery, they could more easily manage" their emotions and behaviors "with a cue or prompt to recall our *Strong Start* lessons and vocabulary." Two of the three implementers endorsed items related to an improvement in students' problem-solving skills. In the structured interviews, implementers commented that they thought the common language and strategies taught in *Strong Start* "helped students talk about problems and solutions" and were helpful in generalizing strategies outside of the group. One implementer noted that, "kids felt special about being in the group. It helped improve peer relations within the group and kids who were outcasts were more accepted" as a result of being a part of the group.

All implementers responded that it was feasible to implement *Strong Start* in their schools and that it was feasible and important to teach all 10 lessons in the curriculum. Two of the three implementers did not think it was feasible to spend 45 minutes on each lesson and the same two responded neutrally to the importance of spending 45 minutes per lesson. In structured interviews, the implementers elaborated that scheduling conflicts between classrooms made it difficult to get students for the recommended 45-minutes per lesson because groups were composed of students from various classrooms. One implementer noted that identifying a consistent room to implement the lessons in was also a problem.

Implementers shared many ideas for improvement when asked what they would do differently if they were to implement *Strong Start* again. One school psychologist said that she would present the curriculum to the whole class, then extend the lessons in small groups for those who needed extra practice and support. She thought this would improve generalization of language and strategies into the classroom and school. This sentiment was echoed by another implementer who said, “it would be amazing to do a lesson in the classroom to introduce the concepts and then take kids in small groups to discuss further.”

Another implementer said that she would have “a more systematic approach to introducing the rules and establishing control over leading the lessons early on.” All three implementers commented on difficulties they had managing student behaviors in the group and felt that instructional time was lost to managing student behavior. Two of the implementers said that they would plan to start teaching the lessons earlier in the school year in order to have time to implement more components of the curriculum, such as using Henry, reading stories from the book lists, and elaborating on the curriculum with activities such as role plays, making books, writing letters, and creating a physical “toolbox” of *Strong Start* strategies.

Table 10. *Social Validity Results across Implementers*

Item	Endorsed	Not Endorsed	Mean
<i>Satisfaction with objectives:</i>			4.5
1. It is important that students experience fewer social, emotional, and behavioral problems.	67%	33%	4.3
2. It is important that students have knowledge of coping skills they can use when encountering difficulties.	100%	0%	5
3. It is feasible to instruct students on these coping skills.	100%	0%	4.7
4. It is effective to teach students coping skills using a structured curriculum such as <i>Strong Start</i> .	100%	0%	4.3
5. Students' social, emotional, and behavioral problems can be reduced using a structured curriculum such as <i>Strong Start</i> .	100%	0%	4
<i>Satisfaction with procedures:</i>			3.8
6. I think the teacher BESS screening measure appropriately identified students in need of extra support in social and emotional development.	0%	100%	3
7. I think the <i>Strong Start</i> curriculum addressed the social and emotional needs of the students identified by the BESS.	67%	33%	3.7
8. I found it helpful to have scripted lessons.	100%	0%	4
9. I found it helpful to have materials, including in-class handouts and parent newsletters, included in the curriculum.	67%	33%	4
10. I thought it took an acceptable amount of time to prepare for each lesson.	100%	0%	4.7
11. I thought it took an acceptable amount of time to implement each lesson.	100%	0%	4
12. I thought it took an acceptable amount of time to complete the curriculum.	33%	67%	3.3
13. I think the students were interested in the lessons.	67%	33%	3.7
<i>Satisfaction with results:</i>			3.5
14. I was satisfied with the knowledge of emotions students demonstrated over the course of the program.	67%	33%	3.7
16. I was satisfied with the ability to manage	0%	100%	3

emotions and behaviors students demonstrated over the course of the program.			
18. I was satisfied with the problem-solving skills students demonstrated over the course of the program.	67%	33%	3.7
<i>Item</i>	<i>Decline</i>	<i>No Change</i>	<i>Increase/ Significant Increase</i>
15. What kind of change did you observe in students' knowledge of emotions?	0%	66%	33%
17. What kind of change did you observe in students' ability to manage emotions and behaviors?	0%	66%	33%
19. What kind of change did you observe in students' problem-solving skills?	0%	33%	66%
<i>Feasibility and Importance</i>	Endorsed	Not Endorsed	3.7
20. I think it is feasible to screen students' social and emotional development three times a year.	67%	33%	3.7
21. I think it is important to screen students' social and emotional development three times a year.	33%	67%	3.7
22. I think it is feasible to implement <i>Strong Start</i> in my school(s).	100%	0%	4
23. I think it is important to implement <i>Strong Start</i> in my school(s).	67%	33%	3.7
24. I think it is feasible to spend 45 minutes teaching each lesson.	33%	67%	2.7
25. I think it is important to spend 45 minutes teaching each lesson.	33%	67%	3.7
26. I think it is feasible to teach all 10 lessons.	100%	0%	4
27. I think it is important to teach all 10 lessons.	100%	0%	4

Student survey

Table 11 provides information regarding the extent to which students endorsed (agreed with) or did not endorse (disagreed with) items on the social validity survey. All of the students that participated in *Strong Start* completed the survey.

The majority of students responded that *Strong Start* was fun (86%) and that they learned a lot from the program (81%). The majority (70-76%) of students reported that they understood their feelings better, could handle anger better, and were better at thinking happy thoughts after doing *Strong Start*. Over 85% of students responded that they understood other people’s feelings better and could be a better friend after doing *Strong Start*. Students did not feel as confident in their abilities to handle worry or solve arguments after doing *Strong Start*. However, the majority of students recognized that they could use the skills they learned both at school and at home.

Table 11. *Social Validity Results across Students*

	Endorsed	Not Endorsed
<i>Strong Start</i> was fun.	86%	14%
I learned a lot from <i>Strong Start</i> .	81%	19%
I understand my feelings better after doing <i>Strong Start</i> .	73%	27%
I feel like I can handle anger better after doing <i>Strong Start</i> .	70%	30%
I’m better at thinking happy thoughts after doing <i>Strong Start</i> .	76%	24%
I feel like I can handle worry better after doing <i>Strong Start</i> .	57%	43%
I can understand other people’s feelings better after doing <i>Strong Start</i> .	86%	14%
I feel like I can be a better friend after doing <i>Strong Start</i> .	89%	11%
I feel like I can solve arguments better after doing <i>Strong Start</i> .	59%	41%
I can use what I learned in <i>Strong Start</i> at school and at home.	78%	22%

Teacher survey

Table 12 provides information regarding the extent to which teachers endorsed (agreed or strongly agreed) items or did not endorse (neutral, disagreed, or strongly disagreed) items on the social validity survey, as well as the mean score for each item.

Thirty-nine percent of teachers who had a student participate in *Strong Start* completed the survey.

The majority of teachers saw improvements in students’ ability to talk about their feelings (80%), manage anger or frustration (60%), manage worry (60%), and use social problem-solving skills (100%) after participating in *Strong Start*. The majority of teachers responding to the survey did not feel that students’ ability to express anger (40%) or worry (20%) improved after participating in the program. Unlike the implementers, the majority (80%) of teachers responded that the AIMSweb BESS screening measure appropriately identified students in need of extra support in social and emotional development. A similar majority (80%) felt that the time needed to implement the curriculum was “just right.”

Table 12. *Social Validity Results across Teachers*

	Endorsed	Not Endorsed	Mean
1. Students’ likelihood to talk about their feelings after participating in <i>Strong Start</i> improved.	80%	20%	2.8
2. Students’ ability to express anger or frustration appropriately after participating in <i>Strong Start</i> improved.	40%	60%	2.4
3. Students’ ability to express worry or anxiety appropriately after participating in <i>Strong Start</i> improved.	20%	80%	2.2
4. Students’ ability to manage anger or frustration after participating in <i>Strong Start</i> improved.	60%	40%	2.6
5. Students’ ability to manage worry or anxiety after participating in <i>Strong Start</i> improved.	60%	40%	2.6
6. Students’ social problem-solving skills after participating in <i>Strong Start</i> improved.	100%	0%	3
7. I think the AIMSweb BESS screening measure appropriately identified students in need of extra support in social and emotional development.	80%	20%	4
8. The amount of time it took to implement the <i>Strong Start</i> curriculum was just right.	80%	20%	—

Parent survey

Table 13 provides information regarding the extent to which parents endorsed (agreed or strongly agreed) items or did not endorse (neutral, disagreed, or strongly disagreed) items on the social validity survey, as well as the mean score for each item. Thirteen percent of parents whose child participated in *Strong Start* returned the survey.

In general, parents endorsed *Strong Start* and felt that their child’s skills improved after participation. All parents responded that their child was more likely to talk about his/her feelings after participating in *Strong Start* and that their child’s problem-solving skills improved. These two areas were widely endorsed by all adults surveyed (implementers, teachers and parents) while only 59% of students felt that they could “solve arguments better after doing *Strong Start*.” The majority of parents reported improvements in children’s ability to express and manage anger and frustration appropriately (80%) and express and manage worry appropriately (60%), after participating in *Strong Start*. Only 40% of parents reported that they found the *Strong Start* bulletins useful. The remaining 60% reported that they never received the *Strong Start* bulletins.

Table 13. *Social Validity Results across Parents*

	Endorsed	Not Endorsed	Mean
1. I think my child’s likelihood to talk about his/her feelings after participating in <i>Strong Start</i> improved.	100%	0%	3.2
2. I think my child’s ability to express anger or frustration appropriately after participating in <i>Strong Start</i> improved.	80%	20%	2.8
3. I think my child’s ability to express worry or anxiety appropriately after participating in <i>Strong Start</i> improved.	60%	40%	2.6
4. I think my child’s ability to manage anger or frustration after participating in <i>Strong Start</i>	80%	20%	3

improved.			
5. I think my child's ability to manage worry or anxiety after participating in <i>Strong Start</i> improved.	60%	40%	2.6
6. I think my child's social problem-solving skills after participating in <i>Strong Start</i> improved.	100%	0%	3.4
7. I found the <i>Strong Start</i> Bulletins my child brought home helpful.	40%	60%	2.2

CHAPTER 5

DISCUSSION

Summary of Results

Consistent with the need for implementation research and prevention programming for students in schools, the current study evaluated the implementation and outcomes of *Strong Start* as part of a multi-tiered system of support for students at risk for developing emotional and behavioral problems.

The study took place within the context of a county-wide restructuring of mental health service delivery to children and families. This was the first year in which changes to the previous system were implemented in an effort to coordinate mental health services between multiple stakeholders. One of the objectives of the initiative involved the provision of mental health services to children in schools following a multi-tiered model of service delivery. As an assessment of this first year of implementation, this study examined contextual factors related to decisions to implement supports, implementation integrity, outcomes, and the perceived validity of the intervention.

Contextual factors summary

In this first year of implementation, decisions regarding the extent to which schools implemented components of a multi-tiered model were made at the school level. One of the primary purposes of the study was to determine which contextual factors were associated with program adoption and implementation. Levels of support ranged from continuing with the status quo to implementing up to three new processes in schools; providing universal supports in the classroom, screening students, and providing *Strong Start* to small groups of students.

When it came to the decision to implement more components of the new multi-tiered model, the only school-level characteristic that was strongly and significantly positively correlated with that decision was average class size. Schools with larger classes were more likely to implement more prevention components. Schools that served student populations with higher needs, as indicated by lower instructional expenditure, higher percent low income, higher mobility rate, and higher student: teacher ratios, demonstrated weak to moderate relationships with the number of prevention components implemented; however, these relationships were not found to be statistically significant. Furthermore, schools with a greater percentage of students with elevated scores on the screening measure were not more likely to implement more components as was hypothesized.

Treatment integrity summary

Another main purpose of the study was to evaluate the integrity with which the intervention was implemented and the effect of treatment integrity on student outcomes. Specifically, what aspects of the curriculum were implemented consistent with its design, what aspects were not implemented or partially implemented, and what effect did treatment integrity have on student outcomes? Two forms of treatment integrity data, program adherence and dosage, were gathered from school psychologists implementing *Strong Start* to assess how well the curriculum was implemented and how much of the curriculum students received.

Treatment integrity, in terms of both program adherence and student dosage, varied by implementer. The curriculum was taught either by a masters-level school psychologist or one of two school psychology pre-doctoral interns. The school

psychology intern with experience implementing the curriculum had higher levels of treatment integrity compared to the other two implementers'. She had the highest levels of program adherence, the longest average lesson length, and was the only one to teach all 10 lessons of the curriculum. The masters-level school psychologist had the lowest levels of overall treatment integrity. She was delayed in beginning implementation of the curriculum and was unable to teach lessons on a regular basis due to other duties and responsibilities. For these reasons, she did not meet with her groups consistently and completed 50-80% of the 10 lessons. The other school psychology intern met with her groups on a regular basis and completed 80% of the lessons but had the lowest levels of program adherence (52-59%), as she tended to substitute supplemental material from other sources into the lessons. Law and Shek (2011) found similar variation in implementation fidelity and program adherence. The reasons for this variation were also similar; program adherence frequently suffered because programs were adapted to the specific needs of populations and because practitioners did not have the time to implement programs fully.

Program adherence ranged from 52% to 89% of lesson components implemented as intended per group. Groups that were started earlier in the school year had better program adherence than groups that were started later in the school year. Some trends were apparent regarding the most frequently omitted lesson components. Two of the interventionists frequently omitted reading the books that complement each lesson because these required extra preparation and planning to obtain. Another interventionist most frequently omitted review and closure components at the end of each lesson because she ran out of time. Additionally, interventionists occasionally omitted parts of activities

related to practicing targeted skills and showing the visuals of children displaying each emotion. Program adherence was not positively correlated with increases in emotion knowledge or social-emotional health but was strongly correlated with early literacy gains.

Dosage was measured as the total minutes of *Strong Start* instruction received by each student. The majority of students received a lower than ideal dosage of *Strong Start*. Only 11 of the 24 students received instruction in the complete curriculum and on average students were exposed to *Strong Start* slightly over half the amount of time recommended.

Program adherence and dosage were related in that the groups with the lowest treatment fidelity also had the shortest average lesson length. Surprisingly, neither measure of treatment integrity demonstrated a statistically significant relationship to gains in emotion knowledge or social-emotional health. Both program adherence and dosage were significantly positively correlated with gains in early literacy skills.

Outcomes summary

Another primary purpose of this study was to determine how *Strong Start* influenced students' emotion knowledge, social-emotional health, and academic achievement. A nonequivalent control group quasi-experimental design was used and t-tests were run to analyze the effect of the intervention on student outcome scores. Students in both the intervention and the comparison group demonstrated significant improvements in social-emotional health at posttest as measured by the BESS. None of the analyses detected statistically significant differences between the two groups at posttest.

Social validity summary

Finally, this study was designed to determine to what degree implementers, students, teachers, and parents perceived *Strong Start* to be acceptable, valuable, and effective. According to social validity measures, all stakeholders found *Strong Start* to be an acceptable intervention overall. Implementers were satisfied with the objectives of *Strong Start*, felt that the curriculum was easy to use and addressed the needs of students. Although only one implementer taught all the lessons in the curriculum, all implementers felt it was feasible and important to implement all 10 lessons. However, two of the three implementers did not feel it was necessary to spend 45 minutes teaching each lesson. All implementers reported that their students made gains in at least one area and used the skills learned through *Strong Start*.

The majority of parents and students, and about 50% of teachers, reported increases in children's knowledge of emotions, ability to express feelings appropriately, and ability to understand their own and others' feelings. The majority of parents, teachers, and children also reported improvements in children's ability to manage emotions. All parents and teachers, and two of three implementers reported gains in children's problem-solving skills. Interestingly, only 59% of children thought they were able to solve arguments better after participating in *Strong Start*. However, this is only one area requiring problem-solving skills. Adults may have noted problem-solving gains in additional prosocial areas, as 89% of students reported that they learned how to be a better friend, a skill that involves problem-solving skills such as compromising. Few parents reported receiving *Strong Start Bulletins* because two of the three implementers

did not send them home. Those parents who did receive bulletins reported that they were helpful.

Conclusions and Implications

Contextual factors

The selection of contextual factors predicted to effect initial implementation was based upon empirical and theoretical literature on the association between school contextual factors and the implementation of school-based programs (Bradshaw & Pas, 2011; Domitrovich et al., 2008). Previous research on the adoption of PBIS indicated that schools with greater needs (e.g. higher rates of mobility and lower academic achievement) were more likely to receive training in and adopt school-wide support systems (Bradshaw & Pas, 2011).

The only school level factor associated with adoption of supports in this study was average class size. Other factors indicating need may not have predicted schools' likelihood to implement more components as hypothesized, due to their current stage in the implementation process. The schools with the highest need were often smaller, more rural schools with fewer resources. These schools were less likely to have built the necessary infrastructure to be ready for initial implementation in the first year.

The unevenness of implementation across schools and among implementers noted in this study is characteristic of the initial implementation stage (Bradshaw & Pas, 2011; Fixsen et al., 2005). Implementation requires changes in human behavior and does not occur simultaneously or evenly across an organization. During the initial stage of implementation, those implementing the new program commonly struggle with “fear of change, inertia, and investment in the status quo” in addition to the logistical difficulties

of implementing something new (Fixsen et al., 2005; p. 16). This may explain why many schools chose to maintain the status quo during the first year programs were rolled out.

Program implementation

When considered with respect to the Program Diffusion Model (Adelman & Taylor, 1997; Fixsen et al., 2005), this first year of county-wide restructuring fit somewhere between the creating readiness and initial implementation stages. During the creating readiness stage, focus is on building the infrastructure and resources necessary to support a new program or practice. In the context of the current study, this involved setting up a new office, adopting and training staff in new technology, restructuring staff, coordinating with community resources, and developing and training staff in the use of new forms and procedures. While some of these changes occurred prior to the start of the school year, many changes to structural supports continued to occur throughout the school year, in addition to activities related to the initial implementation of the new model of mental health service delivery.

School psychologists and social workers serving students in the comparison group were experienced and comfortable with the interventions and methods they used to address students' social and emotional health, while the school psychologists serving the students in the intervention group were unpracticed with the *Strong Start* intervention and the other new procedures and practices being introduced in their school. This discrepancy in familiarity and expertise may have contributed to the lack of statistically significant differences between the two groups at posttest.

Weaknesses in core implementation components may have affected program implementation. A review of commonalities among successfully implemented practices

and programs identified several core implementation components (Fixsen et al., 2005). These are practitioner selection and training, ongoing consultation and coaching, program evaluation and feedback, facilitative administrative supports, and systems interventions to ensure financial and organizational support. The current project had weaknesses in the areas of consultation and coaching, staff and program evaluation, and an organized administrative system to provide leadership and support.

Practitioners were well qualified to carry out implementation and received initial training in new procedures and practices. This training provided practitioners with knowledge of background information, review of key practices, and modeled new procedures in a training environment. However, this may not have been adequate to ensure proper implementation. Training and coaching are the principle ways in which behavior change is brought about in the beginning stages of implementation (Fixsen et al., 2005). Practitioners would likely have benefited from the assistance of a consultant or coach to reinforce these skills in the applied setting.

Another potential weakness in the core implementation components was program evaluation and feedback. The only forms of staff and program evaluation and feedback that existed were those designed and provided by the principal investigator in the form of the *Strong Start Integrity Checklist* and student outcome data. The checklist provided a small degree of performance feedback but may not have been sufficient as a means of assessing the application and effectiveness of the new program. Stakeholders and administrators reviewed student outcome data at the end of the first year of implementation. A formative assessment process is recommended in future to better inform the program evaluation process.

Finally, the administrative support system was identified as another potential weakness. Successfully implemented programs have facilitative administrative supports that provide leadership, use data to make decisions, support the overall process, and keep staff organized and focused on the desired clinical outcome (Fixsen et al., 2005). One person provided this support in the current study and that person was primarily employed off-site. This level and availability of administrative support may not have been adequate for the new programs and procedures to be implemented with quality.

The initial implementation of multi-component prevention and intervention programs is a complex process. As this was the first year that any of the new procedures and interventions had been implemented it is not surprising that unanticipated barriers were encountered. The existing infrastructure may at times have been insufficient to fully support implementation of the new programs and procedures. This underestimation of resources, management, and organizational requirements is a commonly cited barrier to implementing and sustaining SEL programs (Elias et al., 2003).

Treatment integrity

Similar to program implementation, variations in treatment integrity are also common in real-world settings. The levels of program adherence reported in the current study (52-89%) are within the range of commonly reported fidelity levels, which are reported to vary by 20-40 percentage points across practitioners (Durlak & DuPre, 2008). There was a difference of 37 percentage points in this study between the group with the highest program adherence and that with the lowest.

A comprehensive review of research literature on treatment fidelity found that even fidelity levels around 60% often resulted in positive outcomes and few studies

attained overall levels greater than 80% (Durlak & DuPre, 2008). By this metric, five of the seven groups received adequate program adherence and two of those groups received the program with considerably higher fidelity than average. When this metric is applied to dosage, 20 students (83%) received instruction in 60% or more of the lessons, but only nine students (37%) received at least 60% of the recommended dosage of the curriculum.

Eight aspects of treatment integrity have been discussed in the literature (Dane & Schneider, 1998; Durlak & DuPre, 2008); however, only two of these were documented in the current study. Information on quality of program implementation, program adaptation, and monitoring comparison conditions could have provided useful insights into the relationship between treatment integrity and student outcomes in the current study.

Information on implementation quality may have been useful considering that all three implementers had relatively low levels of experience using the curriculum and the research literature indicates that implementation quality increases with the qualifications and experience of those implementing the programs (Bradshaw & Pas, 2011; Domitrovich et al., 2008). The fact that the only implementer with prior experience with *Strong Start* had higher program adherence is consistent with this finding.

Two of the three implementers indicated in social validity interviews that they had modified and adapted aspects of the *Strong Start* program, pulling in additional activities and spending more time on some concepts, at the cost of skipping others, based on perceived student need. These adaptations and modifications are only anecdotal, as no data were collected on specific adaptations made. This makes it impossible to replicate the intervention and determine whether adaptations were effective.

Finally, specific information on programs or interventions received by students in the comparison group, including the type and amount of any similar or alternative services these students received, would allow more accurate comparisons to be made between groups. Data were collected on which students received Positive Action, the universal social-emotional intervention, but data were not collected on the specifics of which additional interventions or services students in the comparison group received due to logistical difficulties. This makes it difficult to compare the outcomes of the two groups, as the treatment received by the comparison group was poorly monitored, making it difficult to maintain internal validity (Durlak, 1998).

Program outcomes and social validity

Previous research on the effectiveness of *Strong Start* has found that participation in the curriculum resulted in gains in students' prosocial behaviors, increases in students' emotion knowledge, and significant decreases in students' internalizing behaviors (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012). The majority of parents, teachers, and children reported perceived gains in students' prosocial behaviors and problem-solving skills on social validity surveys. Although no statistically significant gains in social-emotional health were detected when students who participated in *Strong Start* were compared to those who did not students in both conditions improved on the ACES and the BESS. Furthermore, since students in the comparison group received the de facto supports provided at the school, results indicate that Strong Start may be as effective as de facto social emotional supports in promoting social-emotional health, emotion knowledge, and supporting academic achievement.

It is also interesting to note that while previous research has found *Strong Start* to be particularly effective in addressing internalizing concerns (Caldarella et al., 2009; Kramer et al., 2010; Whitcomb & Merrell, 2012), more parents, teachers, and children reported improvements in students' ability to express and handle anger, which is typically externalized, than worry, which is typically internalized. Furthermore, although there was no specific measure of students' social problem-solving, all parents and teachers reported student growth in this area, which is considered a critical component of social competence (Elias & Tobias, 1996).

Although the hypotheses of the study were generally not supported, the results are consistent with research on treatment fidelity and outcomes in the initial implementation stage. The theoretical and empirical literature suggest that programs often require multiple years of implementation to achieve their intended goals (Adelman & Taylor, 1997; Bradshaw & Pas, 2011; Fixsen et al., 2005). For example, an evaluation of 84 schools' progress on implementing school-wide SEL programs found no significant outcomes after the first year of implementation, even though data on the implementation process demonstrated adequate fidelity (Ji et al., 2008). Similarly, an assessment of an evidence-based school violence prevention program did not find significant differences between the treatment and control schools on outcome measures after the first year despite measures indicating high levels of fidelity, student engagement, and dosage (Silvia et al., 2010).

The current study took place in the first year of implementation, during the initial implementation phase, when infrastructure was still being developed to support the new service delivery system. Therefore, it may be premature to expect statistically significant

differences in student outcomes at this early phase of program implementation. Finally, design issues, including inadequate sample size and power, may also have contributed to the lack of statistical evidence found and will be discussed in full along with other threats to validity.

Limitations

Design

The current study was designed to measure changes between groups. Given that the study occurred within the broader context of a county-wide reorganization of mental health services, there are some limitations to the design as it was implemented. A nonequivalent control group quasi-experimental design was employed since random assignment was not possible. Quasi-experimental designs are often used in schools and are appropriate when participants cannot be randomly assigned to condition (Heppner, Wampold & Kivlighan, 2008). However, quasi-experimental designs are inherently less rigorous and afford less control over variability since groups are self-selecting.

Since neither children nor schools were randomly assigned to condition, treatment and control groups are likely to be different by nature of the selection process. In this study, designation of students to treatment or control condition depended on individual schools' readiness to implement the curriculum as well as school psychologists' and social workers' capacity to service students identified. Furthermore, some students in each group received instruction in Positive Action, a character development program that the county adopted as a universal preventive program. Although the students that received Positive Action were fairly equally distributed between the intervention and

comparison groups, exposure to the curriculum introduces another variable to the study that was not controlled for.

It is also important to consider that this study did not have a true control group of students who did not receive any social-emotional supports. Instead, the comparison condition was defined as “business as usual” and included exposure to other SEL curricula, such as Second Step, in some cases and/or individual counseling.

A selection by threat interaction may also exist in the current design, in which an event may affect participants in only one group, or may affect them differently from participants in the other group. As participants in intervention and comparison groups were largely nested within different schools, this threat merits consideration. Although one school had students in both conditions, most schools could be categorized as falling into either the intervention or comparison condition. Therefore, the differences between groups in academic achievement, for example, may have had more to do with confounding factors at the school or district level, such as the reading curriculum or how well the school implemented the RTI model, than involvement with *Strong Start*.

Statistical regression

Some degree of statistical regression to the mean on the screening measure, which was also used to measure post-intervention differences in children’s social and emotional health, is to be expected since participants were selected based on a higher than average score on the BESS. Therefore, it would be predicted that both groups would have lower mean scores at posttest due in part to regression to the mean. In fact, both groups did demonstrate mean decreases in BESS scores. However, since both groups would be expected to regress to the mean and since gain scores were compared between groups,

regression to the mean is not likely to threaten the validity of comparisons between groups.

Measurement

Several limitations to the current study involve issues of measurement. For one, data on treatment integrity, specifically program adherence, was gathered using a self-report measure. Implementers were asked to complete the *Strong Start Implementation Checklist* at the end of each lesson. This method was chosen because it was less resource intensive and inherently provided some performance feedback to implementers, which has been associated with increased treatment fidelity (Mortenson & Witt, 1998). The drawback to this method of data collection is that people may over-estimate implementation adherence. Thus, program adherence data may be inflated. Ideally, some combination of direct observation and self-report would be used to measure program adherence. This would involve a dispassionate observer and would provide a means of checking the accuracy of the self-report measure. Due to the long distances between schools and limited resources, this was not feasible for the current study.

Another limitation related to measurement involves the screening procedure used in the study. Despite efforts to coordinate screening, different schools, and teachers within schools, completed the screening measure at different times over a period of 5 weeks in the fall. Considering the relatively rapid development of children in the early elementary grades, the behaviors and social-emotional development of children screened in late October may not be comparable to those screened in late November. Both groups contained a similar distribution of children screened at earlier and later dates.

Power and sample size

An a priori power analysis indicated that 78 participants were needed in order to have sufficient power to detect between-group differences using an independent means t-test. Although exactly 78 students received elevated scores on the screening measure, actual sample sizes at posttest were lower due to attrition and missing data. Total sample sizes at posttest were 65 for the AIMSweb literacy probes, 56 for the BESS, and 29 for the ACES. Therefore, the sample size may have been insufficient to detect statistically significant differences between groups.

Recommendations for Future Research and Practice

It is recommended that core implementation components be more fully developed prior to initial implementation. Although the theoretical literature notes that implementation components are compensatory, it is recommended that a process be in place to identify and address areas of weakness (Fixsen et al., 2005). Consideration of theoretical implementation models (Durlak & DuPre, 2008; Fixsen et al., 2005) is recommended for providing a conceptual framework, especially during early planning and initial implementation stages. These frameworks provide guidance for planning the components and processes necessary to adopt and support new programs and keep staff and stakeholders focused on desired outcomes.

In particular, continuous data collection, coaching, and performance evaluation are recommended in order to continually inform and improve the implementation process. One-time training is not enough to sustain the changes necessary for new program implementation over time (Fixsen, et al., 2005). Nor is training combined with periodic review at meetings. Periodic on-site coaching, data collection, and evaluation are

recommended to ensure new programs and processes are implemented as intended, to provide performance feedback and immediate correction to implementers, and to inform any necessary adaptations or modifications to the program or implementation process in a deliberate and purposeful way.

Longitudinal research investigating the relationship between program implementation and student outcomes over multiple years is recommended. Efforts were made in this study to document the implementation process in the first year of program implementation; however, longitudinal research could illuminate the effect progression in the implementation process has on outcomes, as well as how data on outcomes informs the implementation process. Research that specifically documents the implementation process over multiple years is also needed in order to improve practice and better understand the key factors involved in implementation (Fixsen et al., 2005).

With these goals in mind, future research investigating long-term implementation and outcomes of *Strong Start* as a secondary social emotional intervention is recommended. Such research could shed light on *Strong Start*'s key intervention components and core implementation components. Understanding *Strong Start*'s core intervention components would allow the curriculum to be efficiently implemented and adapted to various sites while maintaining program effectiveness.

Previous research supported the effectiveness of *Strong Start* as a universal prevention program (Caldarella et al, 2009; Kramer et al, 2010; Whitcomb & Merrell, 2012) and indicated a possible intervention effect for children already displaying some problem behaviors (Whitcomb & Merrell, 2012). Although those results were not replicated in this study, it is recommended that future research continue to investigate the

use of *Strong Start* with targeted populations. One challenge to using any program with a subset of the population is generalization.

Implementers recommended various ways to facilitate generalization of skills and language to the classroom and home environments. These included introducing concepts in the classroom and then discussing them in more depth with students at elevated risk in a small group, teaching the curriculum in rotating small groups that include positive peer role models, developing a teacher newsletter, utilizing the parent newsletter, and presenting language and strategies to parents at an open house. Further examination into generalization strategies and their effectiveness on student outcomes over time would be helpful in understanding how *Strong Start* could be successfully applied to a wider range of student populations.

Two indicators of treatment integrity were measured and evaluated in this study. Investigating additional aspects of treatment integrity, particularly the influence of systematic program adaptation and the monitoring of comparison conditions, would contribute to a better understanding of the influence of fidelity on program implementation and outcomes. Examining the dosage and adherence integrity of comparison conditions and comparing to intervention programming could help identify more efficient interventions.

Finally, the current study included several design and measurement challenges that should be addressed in future research. It is recommended that adequate sample sizes be attained and maintained to ensure power for detecting statistically significant effects. It is further recommended that a variety of direct and indirect measures be used to evaluate student outcomes after participating in *Strong Start* in order to better identify

specific behavioral changes that may result from participation in the curriculum. Few measures have been developed to directly assess young children's emotion knowledge, self-management, and social problem-solving skills. This study used the ACES to directly evaluate children's emotion knowledge, but relied on teacher ratings of students' behavior to assess self-management and social problem-solving. While social validity measures indicated support for *Strong Start* and anecdotal improvements in students' behavior and understanding of emotions, these results were not supported by teacher ratings of student behavior. Using a variety of direct and indirect measures of key components of social-emotional learning programs, including emotion knowledge, self-management, and problem-solving would provide valuable information regarding behavior change and could target specific behaviors.

In sum, the current study contributes to the research literature by elucidating the process and challenges of implementing a social-emotional learning program across multiple schools. Challenges such as inconsistent implementation across sites, variability in treatment integrity, resistance to change, and lack of significant outcomes, are consistent with those described in the literature during the initial stage of implementation. Although statistically significant evidence was lacking supporting *Strong Start* as a supplemental intervention for K-2 students at risk of developing emotional or behavioral problems, the program was found to be feasible to implement, acceptable, and effective by implementers, students, parents, and teachers. Future research should work toward further identifying critical program and implementation components that support the further use of *Strong Start* within varied contexts and with a variety of populations.

I found it helpful to have scripted lessons.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I found it helpful to have materials, including in-class handouts and parent newsletters, included in the curriculum.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I thought it took an acceptable amount of time to prepare for each lesson.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I thought it took an acceptable amount of time to implement each lesson.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I thought it took an acceptable amount of time to complete the curriculum.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think the students were interested in the lessons.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

Satisfaction with results:

I was satisfied with the knowledge of emotions students demonstrated over the course of the program.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

What kind of change did you observe in students' knowledge of emotions?

<u>Decline</u>	<u>No Change</u>	<u>Increase</u>	<u>Significant Increase</u>
1	2	3	4

I was satisfied with the ability to manage emotions and behaviors students demonstrated over the course of the program.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

What kind of change did you observe in students' ability to manage emotions and behaviors?

<u>Decline</u>	<u>No Change</u>	<u>Increase</u>	<u>Significant Increase</u>
1	2	3	4

I was satisfied with the problem-solving skills students demonstrated over the course of the program.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

What kind of change did you observe in students' problem-solving skills?

<u>Decline</u>	<u>No Change</u>	<u>Increase</u>	<u>Significant Increase</u>
1	2	3	4

Feasibility and importance:

I think it is feasible to screen students' social and emotional development three times a year.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think it is important to screen students' social and emotional development three times a year.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think it is feasible to implement *Strong Start* in my school(s).

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think it is important to implement *Strong Start* in my school(s).

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think it is feasible to spend 45 minutes teaching each lesson.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think it is important to spend 45 minutes teaching each lesson.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think it is feasible to teach all 10 lessons.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

I think it is important to teach all 10 lessons.

<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
1	2	3	4	5

APPENDIX B

SOCIAL VALIDITY INTERVIEW

Name _____

Date _____

Based on your experience with the curriculum, what would you say you liked the *most* about *Strong Start*?

What did you like *least* about the curriculum?

How easy or difficult was it for you to implement *Strong Start*?

What was the hardest or most challenging aspect of implementing the curriculum?

What was the easiest part of implementing the curriculum?

What do you think was the most useful thing your students received from participating in *Strong Start*?

What student behavior or behaviors do you think have changed the most since implementing *Strong Start*?

What, if anything, would you do differently if you were to implement *Strong Start* again?

APPENDIX C

***STRONG START* STUDENT SATISFACTION SURVEY**

Please tell me how you feel about the *Strong Start* program. I'll read a statement and I want you to tell me if you agree by saying "yes" or disagree by saying "no". If you don't know how to respond, you can say "not sure."

Strong Start was fun.

YES NO NOT SURE

I learned a lot from *Strong Start*.

YES NO NOT SURE

I understand my feelings better after doing *Strong Start*.

YES NO NOT SURE

I feel like I can handle anger better after doing *Strong Start*.

YES NO NOT SURE

I'm better at thinking happy thoughts after doing *Strong Start*.

YES NO NOT SURE

I feel like I can handle worry better after doing *Strong Start*.

YES NO NOT SURE

I can understand other people's feelings better after doing *Strong Start*.

YES NO NOT SURE

I feel like I can be a better friend after doing *Strong Start*.

YES NO NOT SURE

I feel like I can solve arguments better after doing *Strong Start*.

YES NO NOT SURE

I can use what I learned in *Strong Start* at school and at home.

YES

NO

NOT SURE

APPENDIX D

***STRONG START* PARENT SURVEY**

Over the past three months, your child has received social and emotional supports at school through a small skill-building group called *Strong Start*. We would like your feedback on how helpful you think the group has been and whether you've noticed any changes in your child's behavior in the last 3 months. Please complete this brief survey and return to your child's teacher or school. Thank you!

For each question, please circle the number that best describes how you feel.

I think my child's likelihood to talk about his/her feelings after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think my child's ability to *express* anger or frustration appropriately after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think my child's ability to *express* worry or anxiety appropriately after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think my child's ability to *manage* anger or frustration after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think my child's ability to *manage* worry or anxiety after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think my child's social problem-solving skills after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I found the *Strong Start* Bulletins my child brought home helpful.

I didn't receive any Bulletins Disagree Neutral Agree
1 2 3 4

APPENDIX E

STRONG START TEACHER SURVEY

Name _____ Grade _____
Date _____

For each question, please circle the number that best describes how you feel.

I think the AIMSweb AIMSweb BESS screening measure appropriately identified students in need of extra support in social and emotional development.

Strongly Disagree Disagree Neutral Agree Strongly Agree
1 2 3 4 5

I think students' likelihood to talk about their feelings after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think students' ability to *express* anger or frustration appropriately after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think students' ability to *express* worry or anxiety appropriately after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think students' ability to *manage* anger or frustration after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think students' ability to *manage* worry or anxiety after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think students' social problem-solving skills after participating in *Strong Start*:

Declined No Change Improved Significantly Improved
1 2 3 4

I think the amount of time it took to implement the *Strong Start* curriculum was:

Too Long Too Short Just Right

APPENDIX F

IMPLEMENTATION CHECKLISTS Lesson 1: The Feelings Exercise Group

Start Time _____

I. Introduction

Minutes: _____

- Explains to students that new curriculum will be started.
- Gives examples of what will be taught and importance to social and emotional health.
- Introduction to “Henry.”

II. Defining Behavior Expectations

Minutes: _____

- Lists three rules for the group.
- Discusses importance of each expectation.

III. Discussion of Confidentiality

Minutes: _____

- Shares that students can choose to share personal stories or not.
- Teaches students to tell stories without naming names.

IV. Introduction to the Topics Covered

Minutes: _____

- Supplement 1.1 is used to introduce topics.
- Teacher orally reviews topics.

V. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Characters’ feelings and behaviors identified.
- Questions used to guide discussion.

VI. Closure

Minutes: _____

- Teacher reviews with students that they will be learning about life skills.
- Teacher reminds students about class rules.

Finish Time _____

Implementation Checklist
Lesson 2: Understanding Your Feelings, Part I

Start time: _____

I. Review

Minutes: _____

- Refers to previous lesson describing the Feelings Exercise Group.
- Questions students regarding what has been learned.

II. Introduction

Minutes: _____

- Communicates that students will talk about naming feelings.
- Communicates that there are feelings that make us feel **good** or **not good** on the inside.

III. Feelings Identification

Minutes: _____

- Communicates that we all have feelings wherever we go.
- Generates a list of feelings.
- Identifies feelings as those that make us feel **good** and **not good**.
- Engages children in practice activity (thumbs up/thumbs down).
- Describes that it is hard to determine whether some feelings make us feel **good** or **not good** on the inside.
- Encourages students to pay attention to feelings in their bodies, expressions on their faces, and thoughts in their minds that help them name feelings.
- Leads students in singing *If You're Happy and You Know It*.

IV. How do you feel?

Minutes: _____

- Brainstorms times/situations when we might have certain feelings.
- Engages students in Think/Pair/Share activity.

V. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Characters' feelings and behaviors identified.
- Uses relevant questions to guide discussion.

VI. Closure

Minutes: _____

- Teacher reviews with students that naming feelings is important.
- Teacher reminds students that we have feelings everywhere we go.
- Teacher reviews that some feelings make us feel **good** and others make us feel **not good**.

Finish time: _____

Implementation Checklist
Lesson 3: Understanding Your Feelings, Part II

Start time: _____

I. Review

Minutes: _____

- Reviews previous topics/main ideas. Prompts students to remember six basic feelings.

II. Introduction

Minutes: _____

- Communicates that students will talk more about naming feelings.

III. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Characters' feelings and behaviors identified.
- Uses relevant questions to guide discussion.

IV. Identify Actions that Follow Feelings

Minutes: _____

- Conveys that everyone has feelings and they are different at different times.
- Communicates that we can have more than one feeling at the same time.
- There are different ways to show feelings and other people may not feel the same way.

IV. Having Multiple Feelings at Once

Minutes: _____

- Uses example situations to demonstrate having multiple feelings at same time.

V. Review Emotions/Ways of Showing Feelings

- Uses Supplement 3.1 to review basic emotions.
- Prompts students to provide examples.
- Describes difference between **okay** and **not okay** ways of showing feelings, gives examples.

VI. Identifying Okay vs. Not Okay Ways of Showing Feeling

Minutes: _____

- Provides examples that reflect the situations children may share.
- Reads examples provided in Supplement 3.2
- Students stand up if **okay**, stay seated if **not okay**.

VII. Closure

Minutes: _____

- Teacher reviews that there are different ways to show our feelings, **okay** and **not okay**.
- Teacher reminds that other people may not feel the same way as they do.

Finish time: _____

Implementation Checklist
Lesson 4: When You're Angry

Start time: _____

I. Review

Minutes: _____

- Refers to previous lesson **Understanding Your Feelings**.
- Refers to feelings that make us feel **good** and **not good** on the inside.
- Refers to **Ok** and **Not Ok** ways of showing feelings.

II. Introduction

Minutes: _____

- Communicates that students will talk about anger.
- Communicates that students will learn about what anger looks like and feels like.
- Communicates that students will learn about when anger might occur and how they can deal with their anger.

III. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Characters' feelings and behaviors identified.
- Uses relevant questions to guide discussion about anger.

IV. Show and Define Anger

Minutes: _____

- Shows pictures or gives examples of what angry faces look like.
- Encourages students to share what their bodies feel like when they are angry.
- Encourages children to share times when they experienced anger.
- Brainstorms synonyms for anger.

IV. Ways of Handling Anger

Minutes: _____

- Introduces **Ways that Help** and **Ways that Hurt** in handling anger.
- Uses an overhead or visual of Supplement 4.2 to show the **Stop, Count, In, Out** strategy.
- Provides multiple examples (**Ways that Help**) and non-examples (**Ways that Hurt**) for handling anger.

V. Activity

Minutes: _____

- Introduces hands-on activity that children will complete showing **Ways that Help**.

V. Closure

Minutes: _____

- Teacher reviews with students that everyone feels angry sometimes.
- Teacher reminds students to use **Ways that Help** in handling anger.

Finish time: _____

Implementation Checklist
Lesson 5: When You're Happy

Start time: _____

I. Review

Minutes: _____

- Refers to previous lesson **Feeling Angry**.
- Reviews **Ways that Help** and **Ways that Hurt** in dealing with anger.
- Refers to steps of Stop, Count, In, Out strategy.

II. Introduction

Minutes: _____

- Communicates that students will talk about feeling happy.
- Communicates that students will learn what their minds and bodies feel like when happy.
- Communicates that students will learn how to make themselves feel happy when mad or sad.

III. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Characters' feelings and behaviors identified.
- Uses relevant questions to guide discussion about feeling happy.

IV. Show and Define Happiness

Minutes: _____

- Shows pictures (Supplement 5.1) or gives examples of what happy faces look like.
- Encourages students to share what their bodies feel like when they are happy.
- Encourages children to share times when they felt happy.
- Have students generate list of words that make them think of happiness.

IV. Positive/Happy Thinking

Minutes: _____

- Introduces concept of *positive thinking*, explains term as *happy thinking* if needed.
- Explains to students that positive thinking can make them feel better when they experience not good feelings. Provides examples
- Introduces ABCs of Positive Thinking.
- Uses examples to assess children's understanding of concepts.

V. Activity

Minutes: _____

- Introduces hands-on activity (draw experience/color badge) showing positive thinking.

V. Closure

Minutes: _____

- Teacher reviews with students that everyone feels happy sometimes.
- Teacher reminds students to use **Positive Thinking** when they are having not good feelings.

Finish time: _____

Implementation Checklist
Lesson 6: When You're Worried

Start time: _____

I. Review

Minutes: _____

- Refers to previous lesson **When You're Happy**.
- Reviews **positive (happy) thinking**.

II. Introduction

Minutes: _____

- Communicates that students will talk about feeling worried.
- Communicates that students will learn about how to deal with worries.

III. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Identifies characters' feelings and behaviors.
- Uses relevant questions to guide discussion about feeling worried.

IV. Show and Define Worry

Minutes: _____

- Shows pictures or gives examples of what worried faces look like.
- Encourages students to share what their bodies feel like when they are worried.
- Encourages children to share times when they experienced worry.
- Brainstorms synonyms for worry.

V. Letting Go of Worries

Minutes: _____

- Uses the **ABC's of Positive Thinking** and **Stop, Count, In, Out** strategies to explain how to let go of worries.
- Provides multiple examples and non-examples for **Letting Go of Worries**.
- Engages students in problem-solving how to let go of worries when non-examples are provided.
- Engages in relaxation exercise or explains that students will engage in one in the near future.

VI. Closure

Minutes: _____

- Teacher reviews with students that everyone feels worried sometimes.
- Teacher reminds students to use **ABC's of Positive Thinking** and **Stop, Count, In, Out** strategies to let go of worries.

Finish time: _____

Implementation Checklist
Lesson 7: Understanding Other People's Feelings

Start time: _____

I. Review

Minutes: _____

- Refers to previous lesson **When You're Worried**.
- Reviews ABCs of Positive Thinking, and the Stop, Count, In, Out strategy.

II. Introduction

Minutes: _____

- Communicates that students will talk about understanding how other people feel.
- Communicates that students will learn to notice what other people's bodies and faces look like when they are feeling different ways.

III. Name and Define Skill / Modeling / Charades

Minutes: _____

- Explains how to tell other's feelings by looking for visual cues of face and body.
- Shows faces from supplement 7.1, identifies visual cues.
- Models body clues for various emotions.
- Has students act out feelings for each other.
- Points out how understanding others' feelings helps us get along better.

IV. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Identifies characters' feelings and behaviors.
- Notes how different characters have different feelings in same situation.
- Uses relevant questions to guide discussion.

V. Real World Examples

Minutes: _____

- Reviews how same experience can lead to different feelings in different people.
- Provides examples of when this might occur.

VI. Closure

Minutes: _____

- Reviews ways to tell how others are feeling.
- Explains how to look for visual cues.
- Reminds students that others may have different feelings and understanding them helps to be good friends.

Finish time: _____

Implementation Checklist
Lesson 8: Being a Good Friend

Start time: _____

I. Review

Minutes: _____

- Refers to previous lesson **Understanding Other People's Feelings.**
- Reviews body clues that tell us how others are feeling

II. Introduction

Minutes: _____

- Communicates that students will talk about being good friends.
- Communicates that students will learn about how to use words, eyes, ears and bodies to help make friends.

III. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Identifies characters' feelings and behaviors.
- Uses relevant questions to guide discussion about being a good friend.

IV. Talking and Listening

Minutes: _____

- Encourages students to use a nice voice (soft and gentle) when talking to friends.
- Encourages students to use their eyes, ears, and bodies to show that they are listening to friends.
- Models examples of using a nice voice and being a good listener.

V. Approaching Others

Minutes: _____

- Explains how to begin a friendship or activity with friends.
- Brainstorms list of ways to show others you want to be a friend.

VI. Sharing and working together/Activity

Minutes: _____

- Explains that good friends share and work together.
- Encourages students to think of a time when they have shared or worked together.
- Engages students in making a class book based on Supplement 8.1 or explains this as an activity that will be completed later.

VII. Closure

Minutes: _____

- Reviews concepts related to being a good friend (e.g. using nice voices, listening ears, kind words.)
- Reviews that being a good friend makes it easier to work together and share.

Finish time: _____

Implementation Checklist
Lesson 9: Solving People Problems

Start time: _____

I. Review

Minutes: _____

- Refers to previous lesson **Being a Good Friend**.
- Questions students on how to be a friend.

II. Introduction

Minutes: _____

- Communicates that everyone has problems.
- Communicates that when we disagree we may feel mad or sad.
- Explains that we will learn to solve problems and make ourselves feel happy.

III. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Identifies characters' feelings and behaviors.
- Uses relevant questions to guide discussion about how to solve problems.

IV. Define types of People Problems

Minutes: _____

- Explains idea of disagreement, uses examples.
- Encourages students to share times they have encountered people problems.

V. Comforting Yourself / Solving Problems

Minutes: _____

- Reviews the **ABC's of Positive Thinking** and **Stop, Count, In, Out** strategies to help us feel better when we have a problem.
- Communicates importance of being a friend when brainstorming solutions.
- Uses examples to deepen understanding of problem solving.
- Has children role-play problem solving strategies.

VI. Closure

Minutes: _____

- Teacher reviews with students that everyone has problems sometimes

- Teacher reminds students to use **ABC's of Positive Thinking** and **Stop, Count, In, Out** strategies to solve problems

Finish time: _____

Implementation Checklist
Lesson 10: Finishing UP!

Start time: _____

I. Introduction

Minutes: _____

- Explains that this is the final lesson and will be a review of previous lessons.
- Points out that skills learned are vital to social emotional health (healthy on the inside.)
- Questions students on what has been learned.
- Uses supplement 10.1 picture cues to review topics.

II. Read a Book from Literature List

Minutes: _____

Book Title/Author: _____

- Identifies characters' feelings and behaviors.
- Uses relevant questions to guide discussion.

III. Closure

Minutes: _____

- Quick overview of what has been learned.
- Encourages students to work hard to remember skills/lessons learned.

Finish time: _____

APPENDIX G

PARENT/GUARDIAN CONSENT FORM

Dear Parent/Guardian:

In 2004, the Illinois State Board of Education adopted learning standards for children’s social and emotional development to go along with the academic standards that already exist for each grade. All schools in Illinois are now charged with the responsibility of teaching children how to manage their emotions, get along with others, and make good decisions.

We have been working on learning more about the academic and social emotional development of children in our county. One way to get an idea of what areas we need to focus on is to screen all students for these skills. Teachers recently completed rating scales to see what kinds of supports would be helpful and who might benefit from extra instruction in the areas of social emotional development. We would like to gather more information from you and your child and, if warranted, we’d like to invite your child into a small skill-building group. Similar to academic intervention, these supports will involve additional instruction to build your child’s skills and more individualized attention from school personnel. The school district will be evaluating the effectiveness of the social-emotional supports. The results may be presented or published, but no names or identifying information will be included.

If you have any questions or concerns about this process, please don’t hesitate to contact me. We are excited about this opportunity to provide a warm and safe environment within which your child can do his or her best learning!

Sincerely,

Name of School Psychologist

815-844-7115

You may keep the top portion for your records.

For EACH item below, please circle yes or no.

YES NO I am willing to complete a parent screener form to provide school personnel with my perspective on my child’s functioning.

YES NO I am willing to allow school personnel to gather information from my child on his or her feelings, behaviors, and social knowledge to better understand his/her skills.

YES NO I give permission for my child to receive social-emotional supports.

Child's Name

Child's School

Child's Teacher

Child's Grade

Signature of parent or legal guardian

Date

APPENDIX H

FIGURES

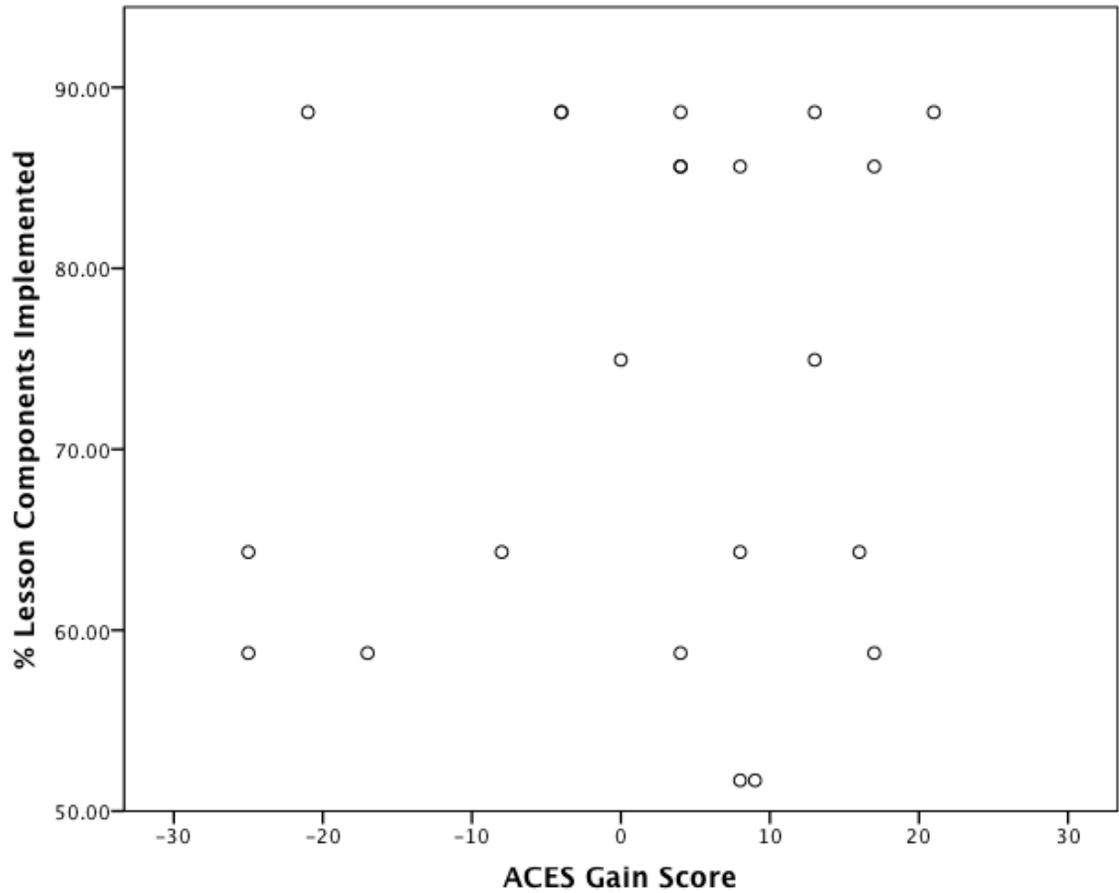


Figure 1. Scatter plot of the relationship between the percent of *Strong Start* lesson components students received and gain scores on the ACES.

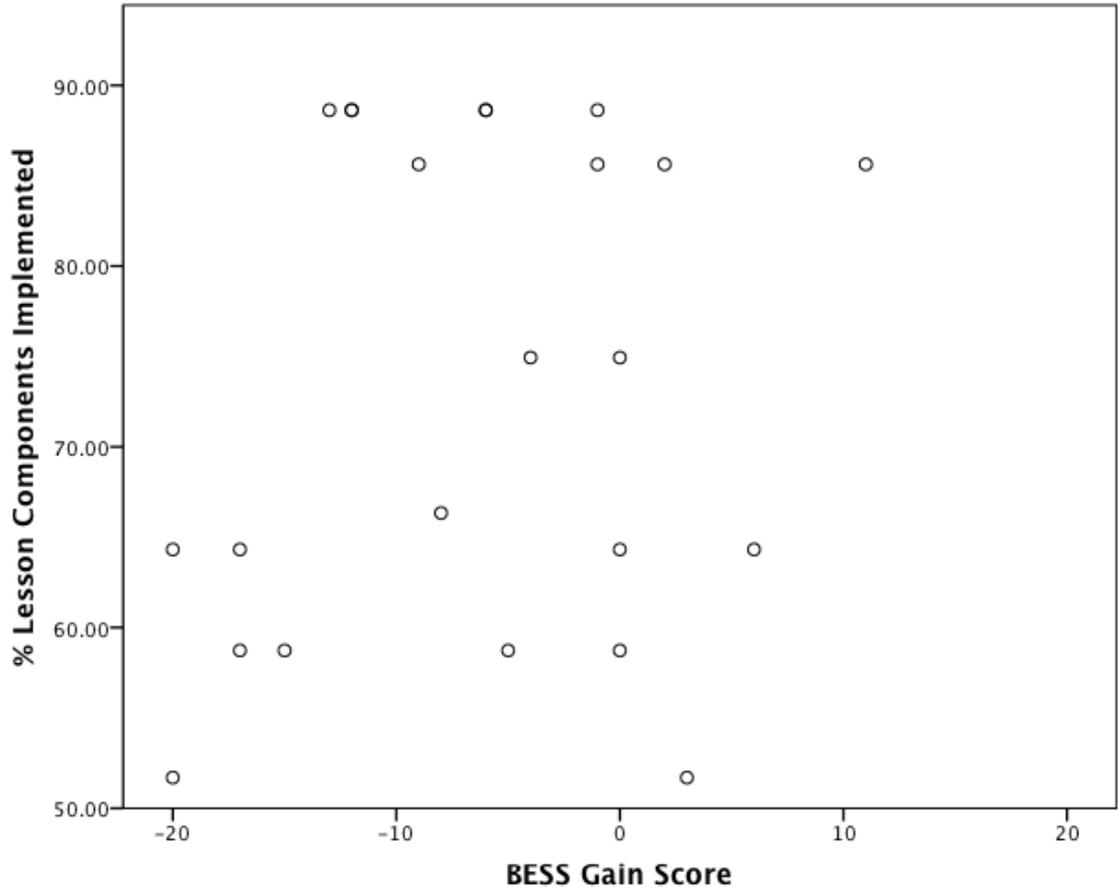


Figure 2. Scatter plot of the relationship between the percent of *Strong Start* lesson components students received and gain scores on the BESS.

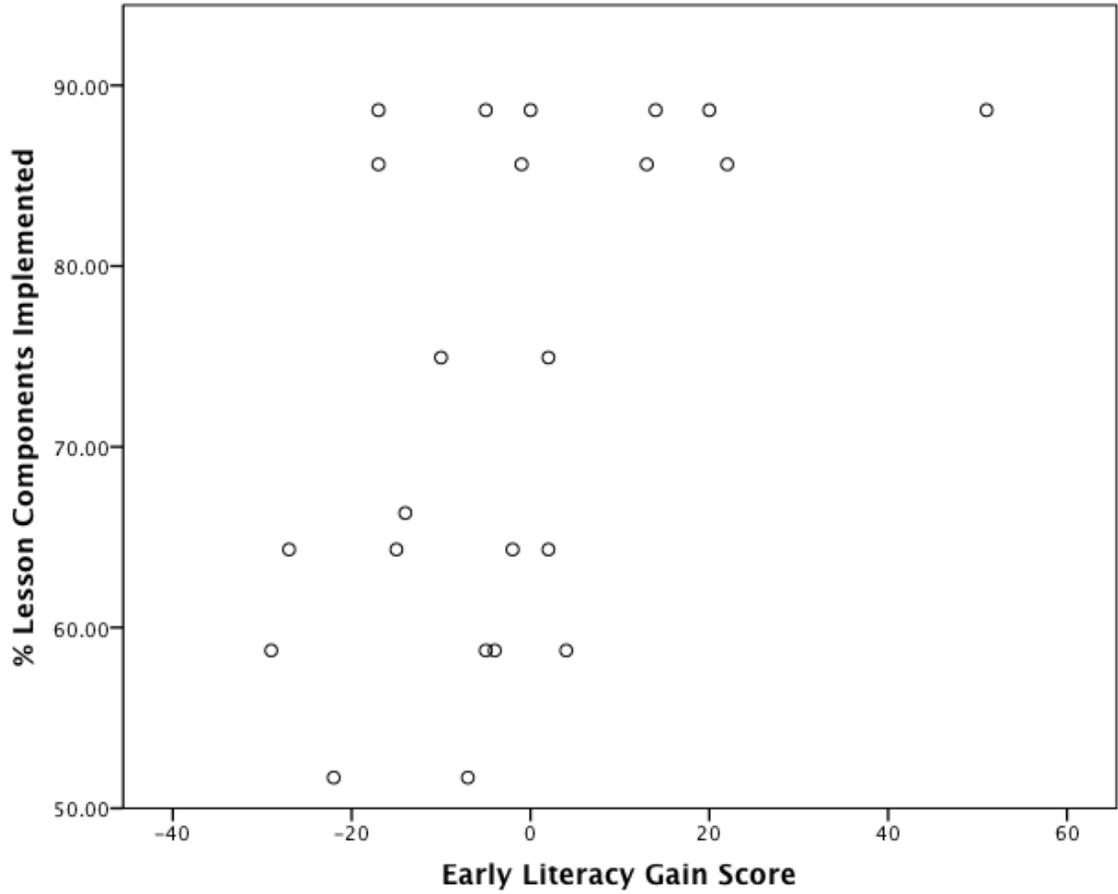


Figure 3. Scatter plot of the relationship between the percent of *Strong Start* lesson components students received and gain scores on AIMSweb early literacy probes.

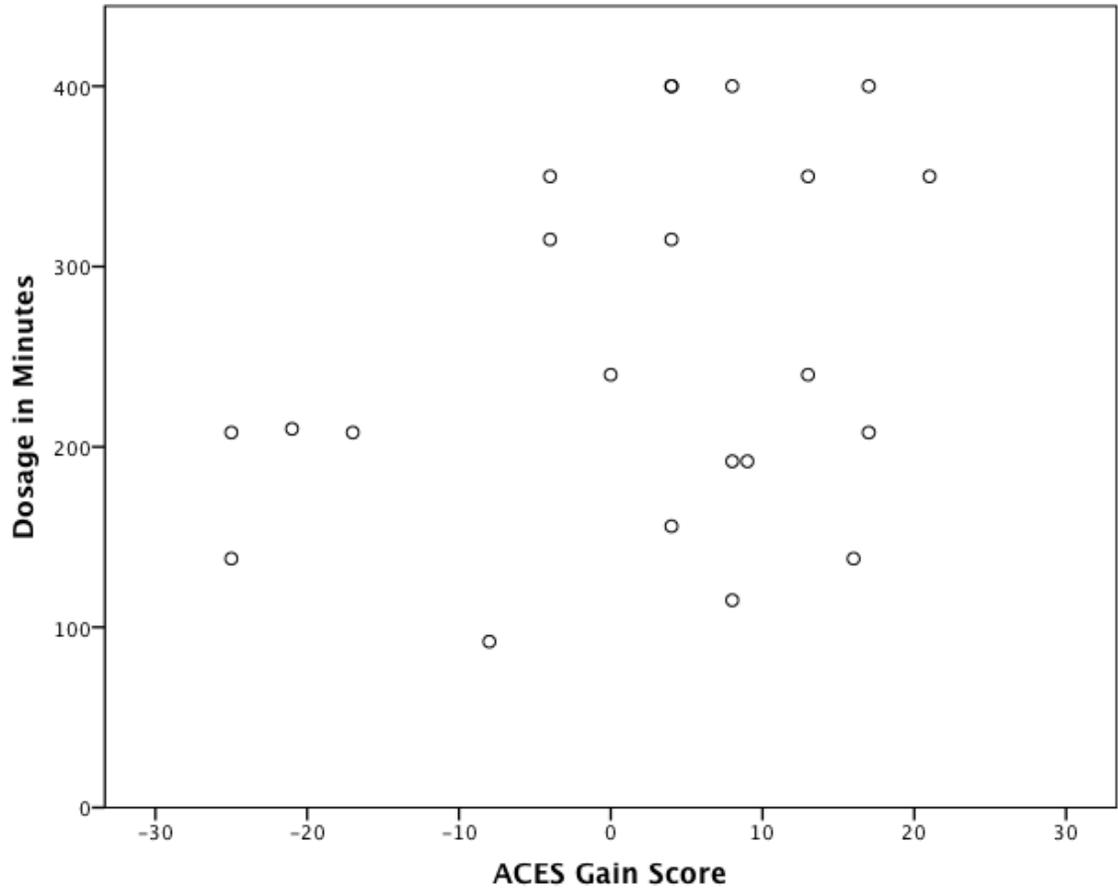


Figure 4. Scatter plot of *Strong Start* dosage in minutes per student and gain scores on the ACES.

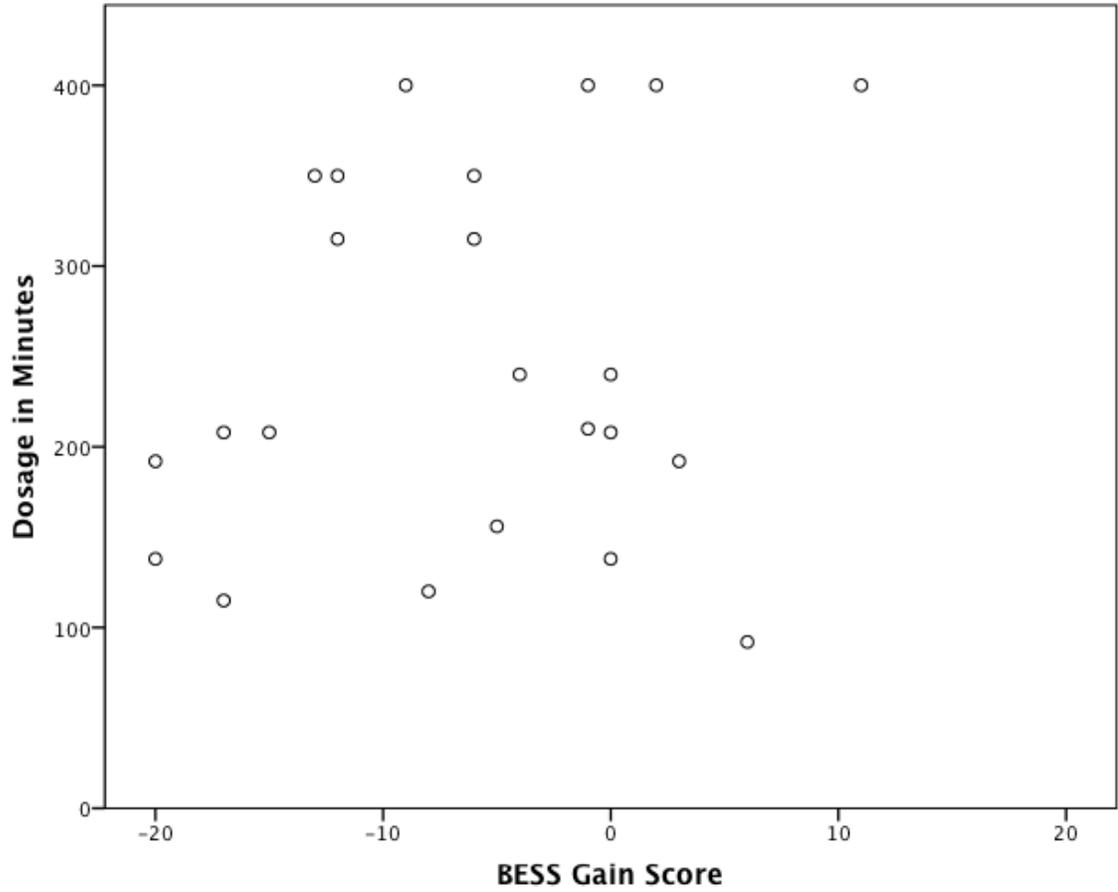


Figure 5. Scatter plot of *Strong Start* dosage in minutes per student and gain scores on the BESS.

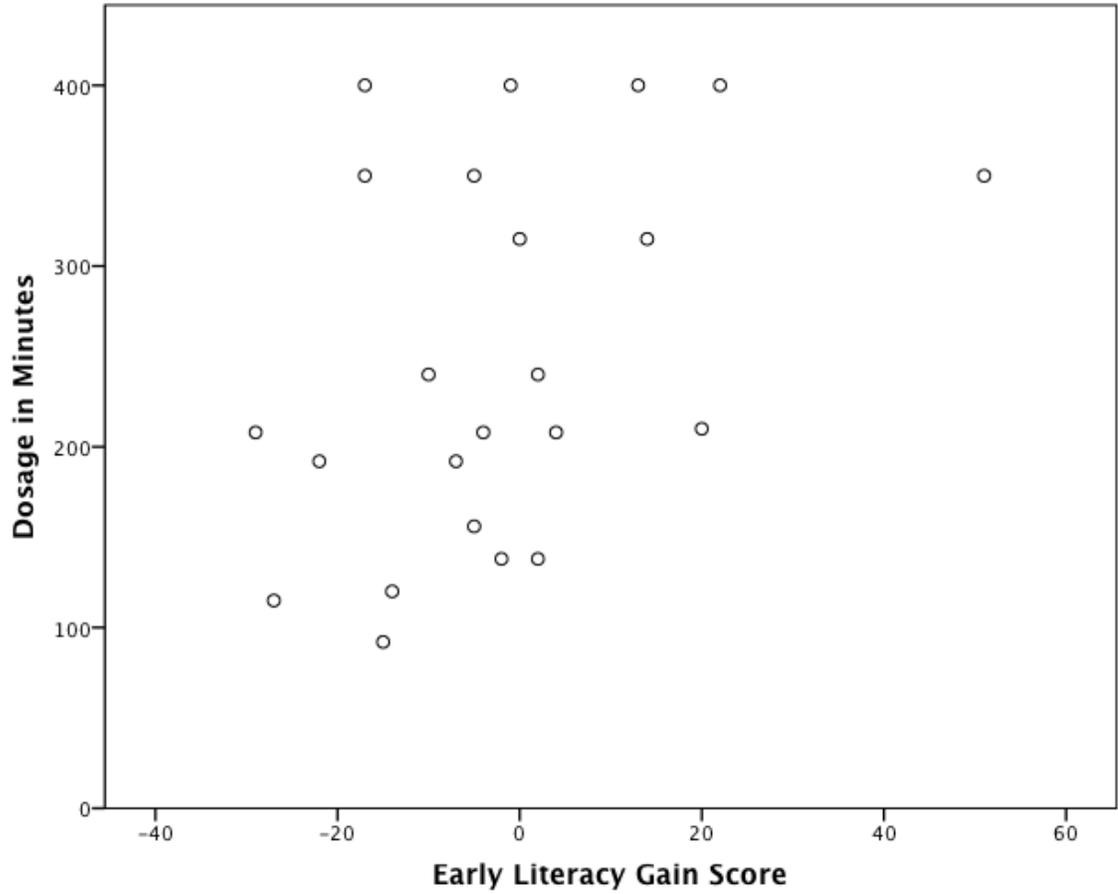


Figure 6. Scatter plot of *Strong Start* dosage in minutes per student and gain scores on AIMSweb early literacy probes.

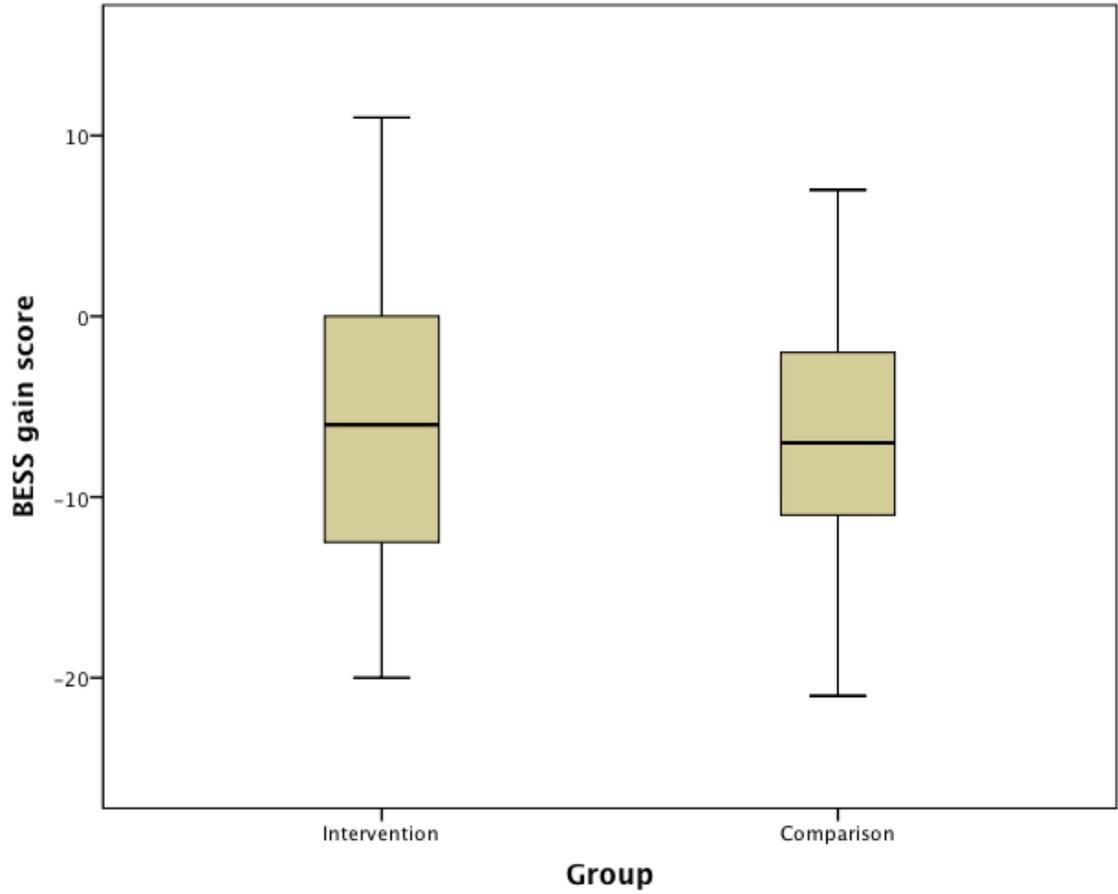


Figure 7. Box plots of gain scores on the BESS for intervention and comparison groups.

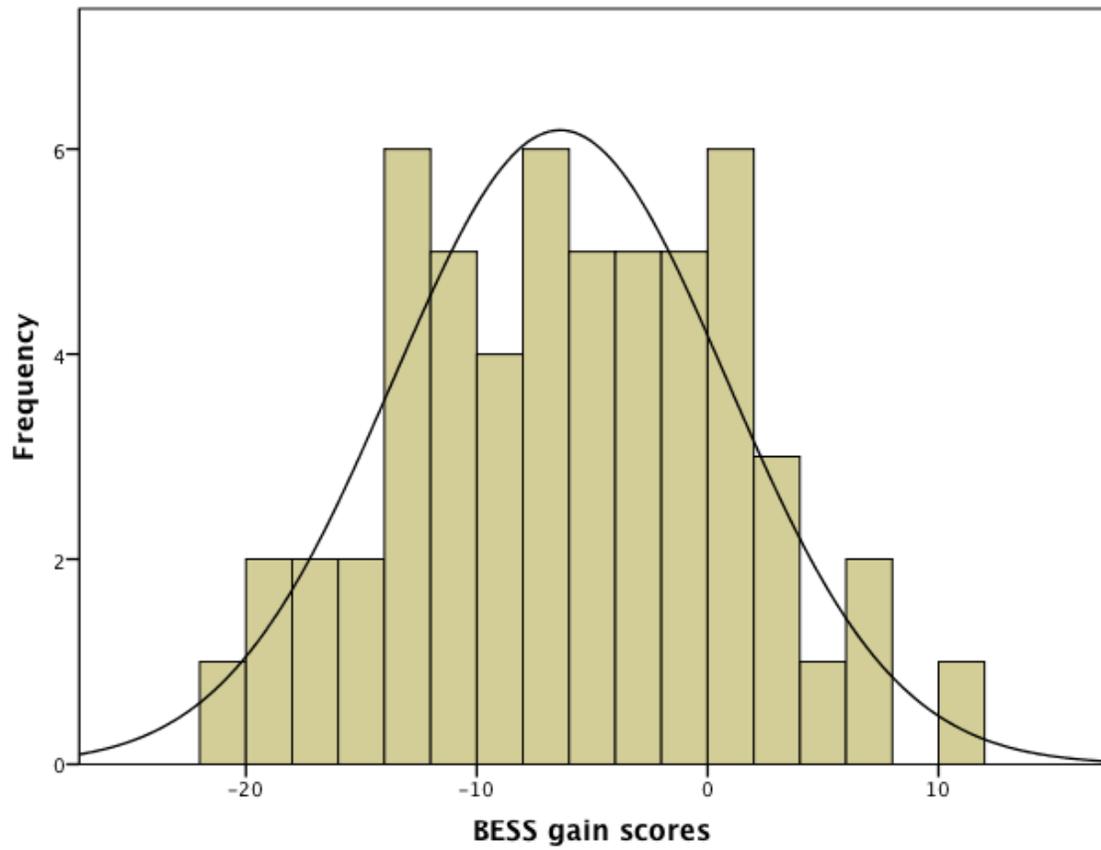


Figure 8. Distribution of gain scores on the BESS across all students with pre- and posttest data. The sample size was 56 students, with a mean of -6.39 and standard deviation of 7.23.

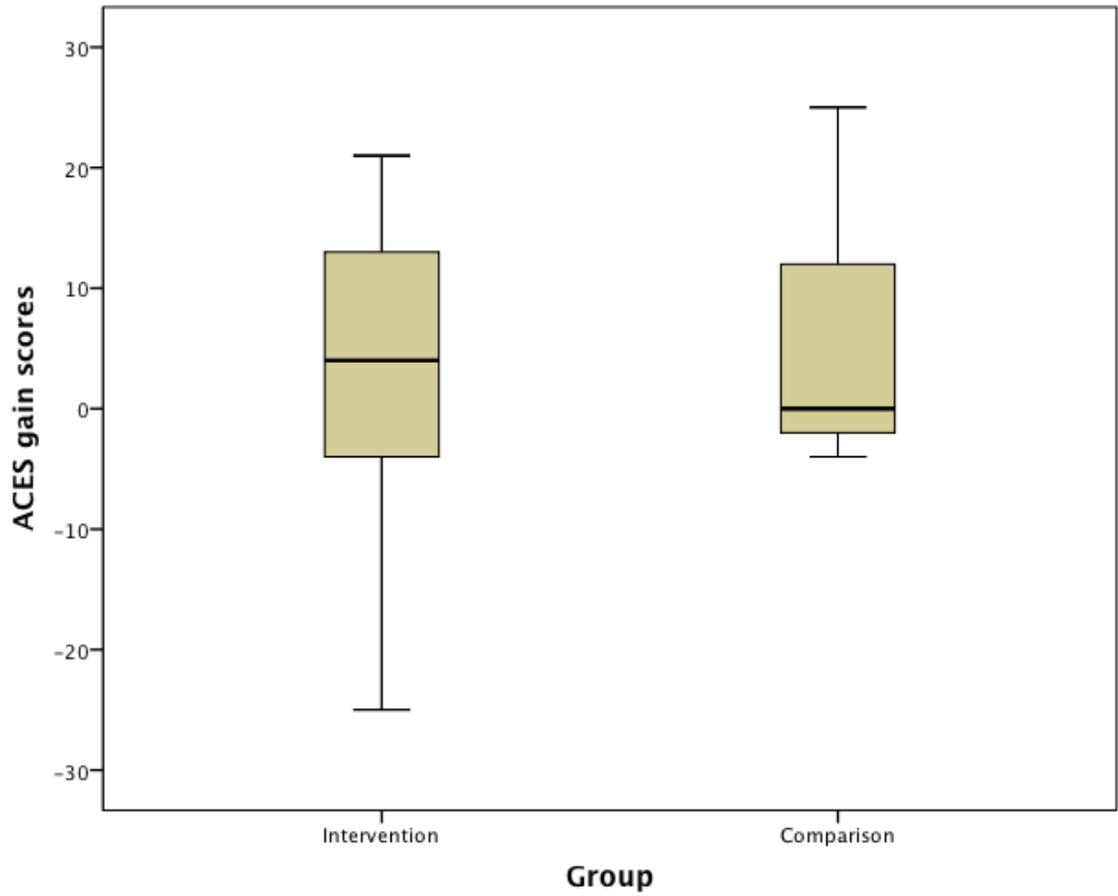


Figure 9. Box plots of gain scores on the ACES for intervention and comparison groups.

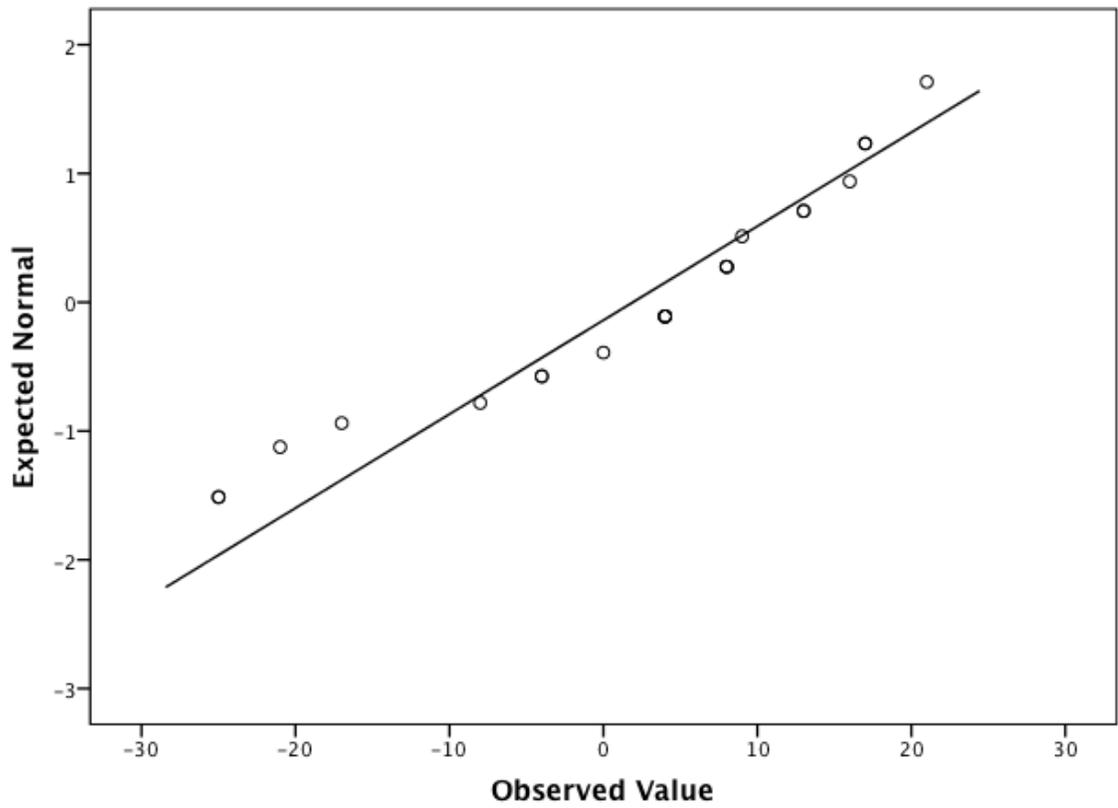


Figure 10. Normal Q-Q Plot of gain scores on the ACES for students in the intervention group.

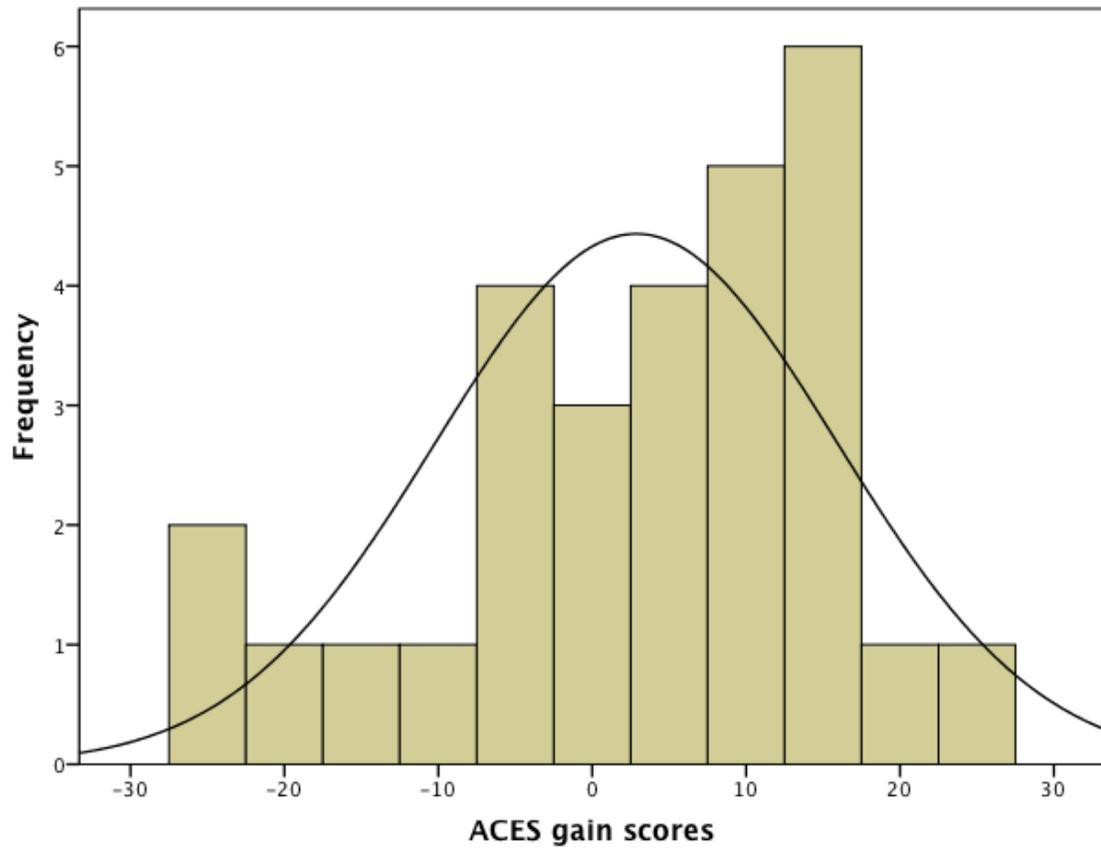


Figure 11. Distribution of gain scores on the ACES across all students with pre- and posttest data. The sample size was 29 students, with a mean of 2.86 and standard deviation of 13.05.

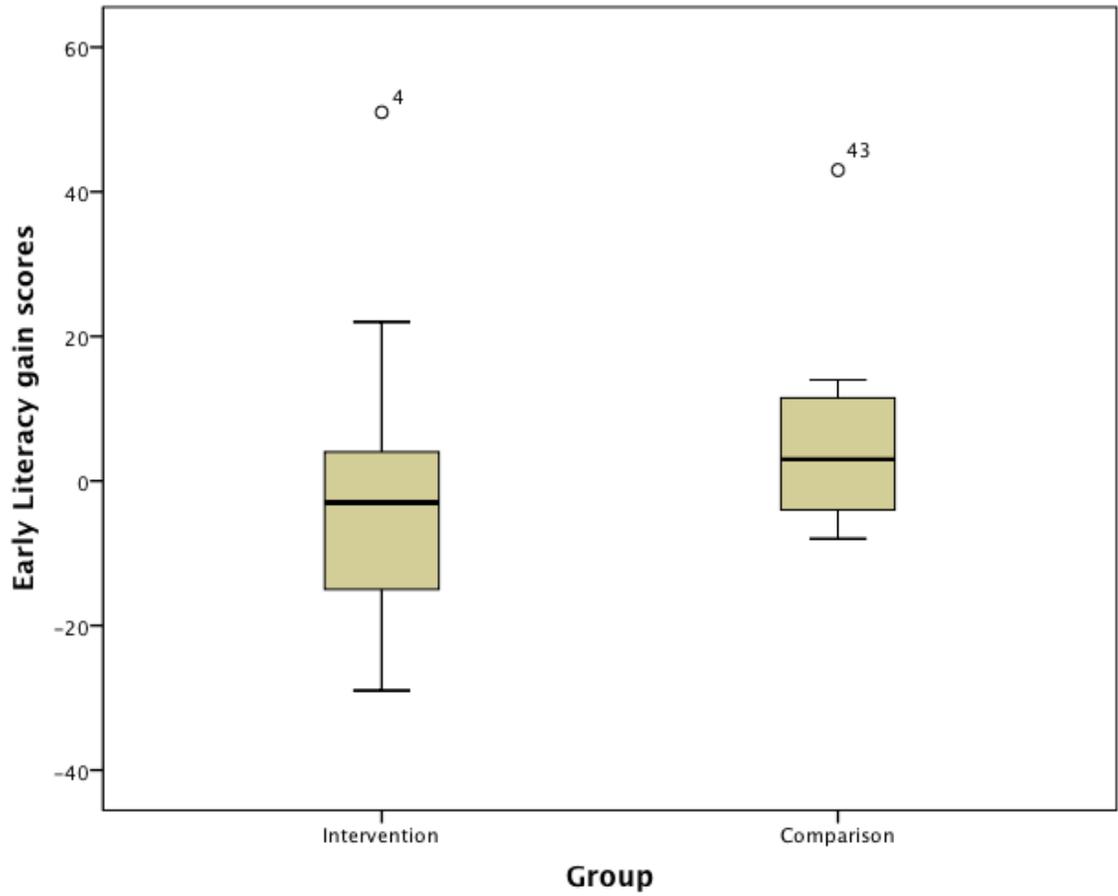


Figure 12. Box plots of gain scores on AIMSweb early literacy probes for intervention and comparison groups.

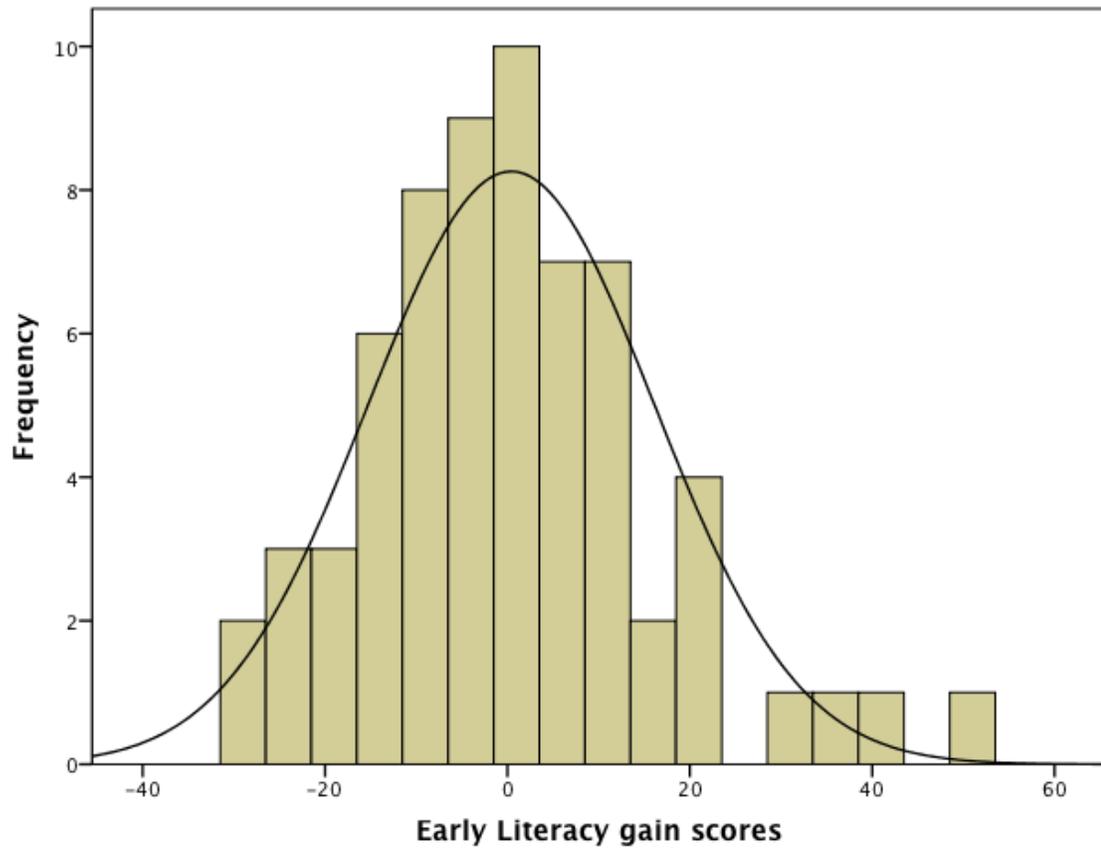


Figure 13. Distribution of gain scores on AIMSweb early literacy probes across all students with pre- and posttest data. The sample size was 65 students, with a mean of 0.42 and standard deviation of 15.70.

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