

2014

Assessing social problem solving and frustration tolerance in early elementary students

Catherine G. Wang

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ABSTRACT

ASSESSING SOCIAL PROBLEM SOLVING AND FRUSTRATION TOLERANCE IN EARLY ELEMENTARY STUDENTS

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Due to the current national discourse on the social and emotional well-being of our youth, the examination of student progress and development in the area of social and emotional skills is a critical area of study. To date, limited research on social and emotional skill development in schools has been conducted. In addition, there is little documented research on the direct assessment of student skills in the specific social and emotional learning competencies. With the emergence of a new assessment tool from Rush NeuroBehavioral Center (RNBC), schools are now able to gather performance-based student assessment data in key areas of social emotional skill development. The current study analyzed assessment data collected via direct student assessment in the early elementary years using the new web-based tool developed by RNBC (SELwebTM).

A key component of the study involved two rounds of data collection over the course of one school year utilized to investigate student development in two key areas of social and emotional skill: social problem solving and frustration tolerance. The

deidentified data were collected from approximately 250 students in two grade-centered elementary schools in one Illinois public school district. The purpose of this quasi-experimental quantitative study was to investigate the changes in social and emotional skill development for boys and girls across one academic year. The research conducted in the current study produced only one statistically significant result. However, the potential for future school-based use of this new assessment tool, SELweb, is encouraging.

NORTHERN ILLINOIS UNIVERSITY
DE KALB, ILLINOIS

DECEMBER 2014

ASSESSING SOCIAL PROBLEM SOLVING AND FRUSTRATION
TOLERANCE IN EARLY ELEMENTARY STUDENTS

BY

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A THESIS SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE

DOCTOR OF EDUCATION

DEPARTMENT OF LEADERSHIP, EDUCATIONAL PSYCHOLOGY
AND FOUNDATIONS

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ACKNOWLEDGMENTS

First and foremost, I would like to thank my advisor and chair, Dr. Kelly Summers, who provided encouragement and many words of wisdom throughout my graduate school endeavors. Thank you Dr. Jon Crawford and Dr. Lisa Becker for the thoughtful ideas, insight, and support as members of my dissertation committee. I share a special note of gratitude with Dr. Cathlene Crawford for her unwavering support of my work; she has provided countless opportunities for me to grow and thrive under her leadership. Her thoughtful guidance, mentoring, and expertise have been invaluable in my journey as an educator. To my colleague and friend, David Rongey, I am thankful for our hours of collaboration and learning. I share my deepest gratitude with my family for showing endless patience and support as I pursued this degree.

TABLE OF CONTENTS

	Page
LIST OF TABLES	v
LIST OF FIGURES	vi
 Chapter	
1 OVERVIEW OF THE STUDY	1
Purpose	3
Research Questions.....	5
Delimitations	6
Definitions	6
2 REVIEW OF THE LITERATURE	9
Social and Emotional Learning: A Definition.....	9
Importance of Social and Emotional Learning.....	10
Research Supporting SEL.....	12
No Child Left Behind and the Illinois Perspective.....	20
Social and Emotional Learning Programs	28
SEL Assessment Tools	31
Frameworks for SEL Assessment.....	34
Rush NeuroBehavioral Center - New Assessment Tools.....	36
Social Problem Solving	38
Frustration Tolerance.....	41
Research Questions.....	45

Chapter		Page
3	METHODOLOGY	48
	Research Design	48
	Participants	48
	Instrumentation	49
	The Current Study	52
	Procedure	52
4	RESULTS	55
	Research Question 1	56
	Exploratory Follow-Ups to Research Question 1	57
	Research Question 2	60
	Exploratory Follow-Up to Research Question 2	62
5	DISCUSSION	64
	Findings and Interpretations	65
	Limitations	68
	Implications of Findings	70
	Future Directions for Research	71
	Conclusions	73
	BIBLIOGRAPHY	74
	APPENDIX: SELWEB ASSESSMENT ADMINISTRATION MANUAL	83

LIST OF TABLES

Table	Page
1. Illinois Social and Emotional Learning Goals and Standards	26
2. Descriptive Statistics	54
3. Pearson Correlation Matrix Among Variables	55
4. Univariate ANOVA Examining Gender or Grade-Level Differences in the Change of Social Problem Solving	56
5. Means, Standard Deviations, and Sample Size for Social Problem Solving by Grade and Gender	57
6. Univariate ANOVA Examining Gender or Grade-Level Differences in the Fall Scores of Social Problem Solving	58
7. Means, Standard Deviations, and Sample Size for Fall Scores of Social Problem Solving by Grade and Gender	58
8. Univariate ANOVA Examining Gender or Grade-Level Differences in the Spring Scores of Social Problem Solving	59
9. Means, Standard Deviations, and Sample Size for Spring Scores of Social Problem Solving by Grade and Gender	59
10. Overall Regression Results	61
11. Regression Results for Boys and Girls	61
12. Regression Results for Follow-Up Analyses	63

LIST OF FIGURES

Figure		Page
1.	CASEL's Five Key Areas of Social and Emotional Learning Competency	10
2.	Review of <u>Second Step</u>	30
3.	Review of <u>Connected and Respected</u>	31
4.	Triangle Support Model for use in Schools to Address Social, Emotional, and Behavioral Needs	35

CHAPTER 1

OVERVIEW OF THE STUDY

We must prepare our children for the tests of life, not a life of tests.
Maurice Elias

Our nation's schools have seen a shift in priorities. No longer are public schools only responsible for the direct instruction of skills in the content areas of reading, writing, and mathematics. Our schools have become an all-inclusive home for the education of the whole child. The whole child includes the academic, behavioral, social and emotional domains of development. However, the rapid emergence of assessment mandates in our public schools has not kept pace with learning goals to support the whole child. The increased requirements for standardized testing fall short of including the domains of a child's social and emotional development. Social and emotional learning (SEL) is the process of gaining skills to recognize and manage emotions, develop care for others, effectively problem solve, develop healthy relationships, and handle life's challenges (Collaborative for Academic, Social and Emotional Learning, 2012). SEL is not a program or a packaged curriculum. Rather, it is a framework for organizing and coordinating school programming to support student development in the aforementioned skill areas. Following the passage of the Illinois Children's Mental Health Act in 2003, Illinois took the lead as the first state to develop and require social and emotional learning standards in the public schools (Gordon, Ji, Mulhall, Shaw, & Weissberg, 2011).

It is no longer sufficient for Illinois schools to only provide instruction in the area of social and emotional learning; it is an expectation that each public school in Illinois provides students with modeling and instruction to support SEL skill acquisition. Illinois educators have been charged with the task of educating both the mind and the social and emotional core of each child.

As Illinois schools address the implementation of social and emotional learning standards, a critical gap exists. This gap is the assessment of student progress relating to explicit SEL skill development. How may schools universally screen and assess student skill progression in the key SEL domains? Would such assessment data prove useful to understand a more complete picture of a child as a learner and member of our community?

There is a growing body of research evaluating curriculum resources for SEL implementation. However, there is a paucity of research on the direct assessment of student SEL skill development. Rush NeuroBehavioral Center (RNBC) has developed a computer-based assessment tool which allows schools to gather student assessment data in key areas of social and emotional skill development. Typically, this information is gathered through observation or detailed rating scales completed by a parent or teacher (Denham, 2006). The current study analyzed data collected via direct student assessment in the early elementary years using the new web-based tool developed by RNBC (SELweb™). This assessment tool has the potential for large-scale impact on education. Schools can widen their view of assessment to also include the social and emotional domains of development. Such assessment information may be included in progress

reviews and used to analyze student growth and areas for future development at the individual, classroom and grade levels.

SEL typically includes active learning techniques across settings to ensure the skills of problem solving and decision making can be applied in many situations (Elias, Zins, & Weissberg, 1997). These skills are a priority when it comes to predicting success in school, peer relationships, and social settings, as children often learn about caring through adult modeling and instruction (Elias et al., 1997). A child's social and emotional comprehension, defined as his/her ability to encode, interpret, and reason about social and emotional information and to self-regulate, is an important predictor of social behavior, peer relationships, and how children care for each other. As schools have implemented SEL curriculum, results have shown a lower incidence of problem behaviors and an increase in academic performance (Dickstra, 2008; Greenberg et al., 2003; Zins, Weissberg, Wang, & Walberg, 2004). Research has also shown that success in the labor market is directly connected to competencies considered part of social and emotional learning: responsibility, collaboration, self-esteem, self-management, and integrity (US Department of Labor, 1991).

Purpose

In the current educational climate that stresses data-driven decisions, schools do not have economically feasible options for assessing the social and emotional status for all students. Similar to academic assessments, assessments of young children's social and emotional status, if administered economically and ethically in terms of teacher, parent,

and child time, can be useful in monitoring student skills and evaluating the SEL program implementation for children (Raver, 2003). The use of new tools, such as the one developed by RNBC, in a pre- and postassessment model allows school personnel to directly assess student growth over time in a similar way to how schools measure reading and math skill development during a school year. Such data provide additional information to discuss student progress and the range of experiences needed to support student growth within a school. The current study used a new online assessment tool, created by Rush NeuroBehavioral Center, to provide assessment results to school personnel and the ability for school teams to review data collected at multiple points during the school year.

Using the SELweb assessment modules, the current study included data gathered in the classroom. In addition to peer-connection data, including social connections and peer preference, an understanding of gender differences is useful to analyze within classroom environments. Gender has been documented as a distinguishing factor in emotion recognition ability (Hall & Matsumoto, 2004; Matsumoto et al., 2000). Hall and colleagues examined the responses of male and female adult participants while viewing facial emotion expressions (Hall & Matsumoto). Women were shown to have a greater accuracy in identifying nonverbal emotions. While past research has examined gender differences at specific grade levels, the current study examined gender differences as related to social problem solving skill development at the first- and fourth-grade levels.

For the purposes of the current study, a review of problem solving data and progression of skill for the early elementary grade ranges warranted additional study.

While Keltikangas-Järvinen and Pakaslahti (1999) documented the progression of SEL skills over a 7-year period from fourth grade through high school, the consideration of skills during one academic year had not been reviewed. Additionally, the current study offered the opportunity to explore frustration tolerance and its relationship to social problem solving in first- and fourth-grade students in the general education classroom setting. While there is conflicting research about the developmental progression of frustration tolerance skills, early studies support a link between frustration tolerance and social acceptance (Karalunas & Huang-Pollock, 2011; McKown, Gumbiner, Russo, & Lipton, 2009). The current study used a new assessment tool to provide assessment results to school personnel more quickly and offered the ability to review data collected at two points during the school year. One of the primary goals of the current study was to provide a review of performance-based assessment data collected using the newly developed SELweb tool.

Research Questions

While performance-based assessment in the area of social and emotional learning is a relatively new area of research, there are few, if any, existing measures that allow for computer-based data collection across the two identified skill areas for use in schools.

The research questions presented below guided this exploration.

- **Research Question 1:** How does social and emotional skill development in the area of social problem solving change within one academic year for first- and fourth-grade boys and girls?

- **Research Question 2:** What is the relationship between social problem solving skill and frustration tolerance?

Delimitations

The data from the SELweb assessment tool were analyzed to identify changes in skill development in the area of social problem solving within one school year. In addition, the data were analyzed to identify the relationship between social problem solving and frustration tolerance. The SELweb tool has seven modules designed to serve as a universal screening assessment tool to identify students at risk for either social rejection or exhibiting a low level of social acceptance. The seven modules are Peer Nomination, Non-Verbal Emotion Recognition, Choice Delay Task, Perspective Taking, Social Problem Solving, Delay of Frustration, and Facial Recognition. The current study analyzed data from two modules: Social Problem Solving and Frustration Tolerance. Additional information about these modules is in Chapter 3.

Definitions

CASEL: Collaborative for Academic, Social, and Emotional Learning was founded in 1994 by Daniel Goleman. It is a scientific organization of educators, researchers, and others dedicated to effective schools and supporting the positive development of children.

DeFT: Delay of Frustration Task assessments were developed by Bitsakou, Atrop, Wiersema, and Sonuga-Barke in 2006 as a measure to assess the ability of an individual to refrain from impulsivity when frustrated.

ISBE: The Illinois State Board of Education provides leadership, assistance, resources, and advocacy so every student is prepared to succeed in careers and postsecondary education, and it shares accountability for doing so with local districts and schools.

NCLB: No Child Left Behind is a federal law impacting public education from kindergarten through high school. The act requires schools to rely on scientifically based research for programs and teaching methodology and defines standards for adequate yearly progress.

RNBC: Rush NeuroBehavioral Center is a not-for-profit academic medical center. The mission of RNBC is to empower children, teens, and young adults with social, emotional, and learning challenges to build on their strengths and be successful in life and relationships.

SCANS: Secretary's Commission on Achieving Necessary Skills is a report that focuses on what the workplace requires of students graduating from a 21st-century educational system.

SEL: Social and emotional learning includes the development of social and emotional competencies in children. The foundation of SEL is the understanding that learning evolves when a relationship is supportive, challenging, engaging, and

meaningful. Social and emotional skills are essential to being a good student, citizen, and worker.

SELweb: A computerized performance-based assessment tool developed by Rush NeuroBehavioral Center to gather SEL assessment data across classrooms and grade levels.

SES: Socioeconomic status of an individual or family is typically divided into three categories-- high SES, middle SES, and low SES. When placing a family or individual into one of these categories, any or all of three variables (income, education, and occupation) may be assessed.

CHAPTER 2

REVIEW OF THE LITERATURE

A review of the current literature is set forth below. First, the concept of social and emotional learning is introduced. Next, research supporting the benefits of social and emotional learning is examined. Information presented includes outcomes related to social functioning as well as academic learning. Then, the historical background and Illinois perspective is described. The next section includes a brief review of assessment tools historically used to measure social and emotional learning, followed by detailed information about new tools for SEL assessment. Next, theories of social problem solving and frustration tolerance are examined, and research relating to each is presented. Finally, a rationale for the current research is given, followed by research questions and predictions.

Social and Emotional Learning: A Definition

There are multiple definitions of social and emotional learning. However, CASEL's definition is widely cited. CASEL's definition states,

Social and emotional learning (SEL) involves the processes through which children and adults acquire and effectively apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions. (CASEL, 2012)

It is important to note SEL is a framework for organizing and coordinating school structures and curricula to support student development of SEL skills. In addition to forging a broad SEL definition, CASEL has identified five key areas as “core competencies.” These five core competencies and CASEL’s definition of each one are presented in Figure 1.

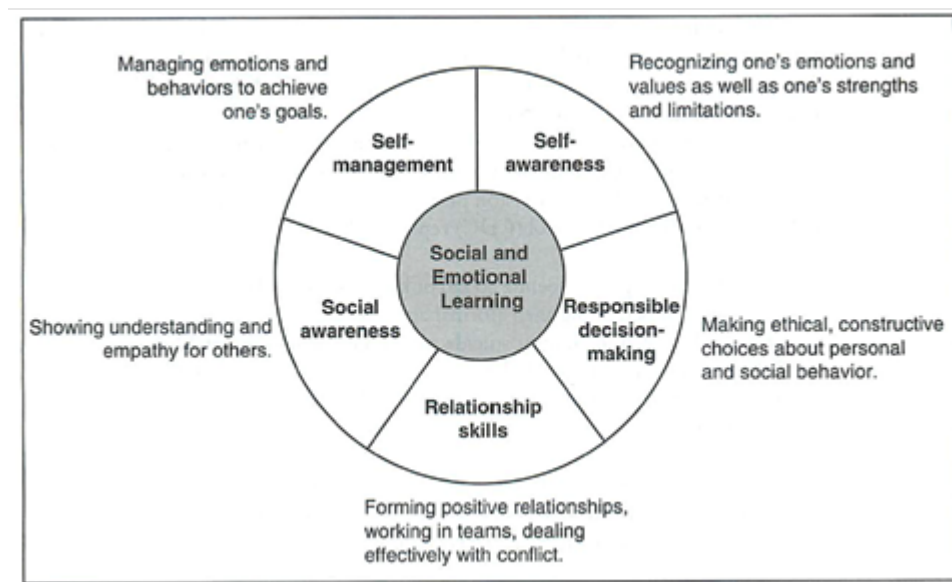


Figure 1: CASEL’s five key areas of social and emotional learning competency (CASEL Implementation Guide, 2006, p. 12).

Importance of Social and Emotional Learning

Research-based programs that focus on a child’s academic, social and emotional growth provide a firm foundation for the development of lifelong skills necessary for students to become responsible, contributing members of a strong and informed workforce (US Department of Labor, 1991). When administrators focus school structures and curricula through a SEL program on the five competencies identified by CASEL, students show improvements in a variety of areas, including their social-emotional skills,

attitudes about self and others, school, and academic performance (Elias et al., 1997).

These benefits are evident for students who are diagnosed with disabilities as well (Adelman & Taylor, 2000; Comer, Ben-Avie, Haynes, & Joyner, 1999; Elias et al., 1997).

Further evidence about the importance of SEL instruction can be found in a national longitudinal study on adolescent health (McNeely, Nonnemaker, & Blum, 2002). The study included survey data from adolescents in Grades 7 – 12, including all high schools in the United States. Results indicated students' belief that they were cared about by adults and peers within the school environment was a determining factor in their individual school success.

These skills are not only important within the school setting. Increasingly, corporations have recognized that employees who know how to manage social and emotional relationships and interactions are better at making positive contributions to the workplace environment and enhancing the organization's performance (Adams & Hamm, 1994). In addition, the Dunedin Multidisciplinary Health and Development Study followed a cohort of 1,037 children from birth to age 32. Results showed the positive correlation of strong self-control skills with future health and wealth and a strong correlation with low levels of adult crime (Moffitt et al., 2011). While the research has shown a correlation between social and emotional competency and future success, the educational emphasis is often narrowly focused upon academic skills as a means to measure the success of our schools (Raver, 2003). Not only are long-term outcomes impacted by SEL skills, but also in the near term, research demonstrates elementary schools that have implemented SEL programs have shown a reduction in problem

behaviors and an accompanying increase in academic performance (Diekstra, 2008; Greenberg et al., 2003; Wilson, Gottfredson, & Najaka, 2001; Zins et al., 2004).

It is not always easy to determine which program or method of SEL instruction should be utilized in any given educational setting. Research conducted by Eccles and Gootman (2002) indicated identifying the social, emotional, and physical influences that impact a school's culture helps to ensure program success. Determining the best matched SEL programming requires background knowledge of the school environment, student population and community influences. Success of a program will be impacted by the current learning environment and routines within each school as well as the level of full program integration across the school and community.

Research Supporting SEL

The 2000 Department of Labor *Workplace Essential Skills* (SCANS 2000) report identifies the key workplace competencies considered to be foundation skills for a successful worker in our labor market (US Department of Labor, 2000). These competencies include resource allocation, evaluation of information, interpersonal skills and technology skills. The foundational skills deemed necessary to achieve interpersonal success in the labor market correspond directly to the competencies defined in social and emotional learning: responsibility, sociability, self-esteem, self-management, and integrity (US Department of Labor, 2000). National research indicates employers are seeking a more broad-based definition of skill as new employees enter the labor market. Employees are expected to have basic knowledge skills. In addition, employers also

anticipate employees will be adaptable and able to cooperate with others in completing tasks in the workplace environment (Elias et al., 1997).

In 1999, the Secretary of Labor issued a report titled *Commission on Achieving Necessary Skills* (US Department of Labor, 2000). This report was the culmination of twelve months of talks and interviews with business owners, operators, assembly-line workers, and public employers. These interviews gathered input and information about which skills are needed in the 21st-century workplace. This report identified the seven top skills found in qualified employees and workers (US Department of Labor, 2000). These skills, identified below, are uniformly found in the description of SEL competencies such as self-awareness, social awareness, and relationship skills (CASEL, 2006).

1. **Learning to learn** is also known as metacognition. Metacognition is an individual's reflection on their personal learning style, which leads to an understanding of their thoughts and processes as they learn new information.
2. **Listening and oral communication** is a two-way process involving receptive and expressive language skills. This communication process encompasses hearing, perceiving, attending, comprehending, remembering, and responding.
3. **Adaptability** is an individual's ability to remain flexible and respond to the feelings and perspectives of others within their school, home, or work environment.
4. **Personal management** is an individual's ability to maintain self-confidence and direction while making responsible decisions and respecting others.

5. **Group effectiveness** is an individual's ability to work cooperatively within a team and ensure progress toward the group-defined goals.
6. **Organizational effectiveness and leadership** relates to one's ability to properly assess goals, evaluate strategies, identify a range of decisions to be made, and identify resources that will be necessary to overcome obstacles.
7. **Competence in reading, writing, and computation** impacts one's ability to access information derived from text and numbers across documents and allows for shared communication in the workplace.

Skill in the seventh area is essential; however, a worker's competence in the basic skills of reading, writing, and math is no longer sufficient for success in the 21st-century workforce (US Department of Labor, 1991).

In a survey conducted in 2006 by the Partnership for 21st-Century Skills, 431 employers in various professions and industries responded to questions regarding the skills workers need to acquire before entering the 21st-century workplace (Casner-Lotto & Barrington, 2006). Respondents were asked to rate the importance of 20 skill areas and knowledge areas related to performance success in the workplace. Respondents included a range of roles such as CEO, president, and human resource specialist. The respondents identified the five skills considered to be most important for high school graduates: professionalism, teamwork, oral communication, ethics, and reading comprehension. There is a strong overlap between these five skills and the seven priority skills described in the SCANS 2000 report referenced above. In each case, the skills set forth as a priority

for those entering the 21st-century workforce included all areas of SEL competency (Casner-Lotto & Barrington, 2006).

Some of the skills listed above are explicitly taught in school. For example, reading comprehension is an academic skill taught in the school environment. Conversely, the skills of collaboration, communication and responsibility are not typically formally taught or assessed in a school's core academic offerings. However, these skills have significant impact on a worker's ability to complete tasks occurring in the workplace (Casner-Lotto & Barrington, 2006). Businesses, large and small, realize the importance SEL skills play in workplace productivity. Workers who are socially competent can impact positive relations with both co-workers and customers. More focus is on problem solving, communication, and collaboration for the majority of jobs in the 21st century (Casner-Lotto & Barrington, 2006).

Research has shown SEL instruction is critical to ensure a child's full development in the social, emotional and academic domains (Zins et al., 2004). The most successful SEL programs include a set of planned activities focused on developing skills through active forms of learning such as role-playing with feedback. Successful programs target specific social and emotional skills with sufficient time devoted to developing these skills. Schools dedicating time to SEL instruction have shown positive gains in maintaining a safe and caring learning environment; staff and student relationships are collaborative and reflect trust (Zins et al., 2004). Researchers at the University of Chicago gathered data from a sample of 550 adolescents between the ages of 14 and 18, all of whom had been in a juvenile detention center for 1 to 3 days. The goal was to

explore the link between a student's perception of teacher connectedness and student participation in high-risk behaviors (e.g., gang membership, alcohol use, drug use; Voisin et al., 2005). Voisin and colleagues examined student perceptions of teacher connectedness among a racially diverse sample of students in a short-term detention center. In an effort to limit the impact of low literacy skills, participants responded to survey questions using audio computer-assisted self-interviewing (A-CASI). Teacher connectedness was assessed using the Student Assessment of Teachers Scale. Participants were asked eight questions on a 5-point Likert scale. Researchers found adolescents who reported low levels of connectedness to their teacher were twice as likely to engage in high-risk behaviors as compared with peers reporting higher levels of teacher connectedness (Voisin et al., 2005). Results of the current study indicate promoting strong levels of teacher connectedness in our schools has positive implications for student health and well-being.

Students who can self-regulate and who have empathy are better equipped, academically and emotionally, to address interpersonal issues. Students who can identify facial expressions, situational clues, and identify another person's perspective are more likely to resolve conflicts and understand opposing viewpoints (Elias et al., 1997). These skills match to the core skills identified as being necessary for success in the 21st-century workplace.

There is a vast body of research examining the impact of what might be considered traditional outcomes of schooling, such as math achievement, reading achievement, and IQ. Increasingly, however, more and more researchers are starting to

recognize schooling as being much more multifaceted and including more than the acquisition of content knowledge and academic skills (Farrington et al., 2012). There have been numerous studies examining the relationship between nontraditional instruction in the school setting and various short- and long-term outcomes. Farrington and colleagues' (2012) comprehensive study examined a body of skills the authors termed noncognitive factors. Noncognitive factors are a set of skills, behaviors, and attitudes that support school achievement. The authors argue development of noncognitive factors in the school setting is just as important, if not more important, than the development of content knowledge and traditional academic skills. Farrington and colleagues have built their work around a body of research that examined long-term outcomes of General Education Development (GED) test recipients versus high school diploma recipients. This research shows those who persevered through high school and received a traditional diploma were more successful later in life than those who completed the GED test. The diploma recipients had fewer broken relationships, better lifetime earnings, greater college attendance, and fewer incarcerations. The researchers posit people who had the ability to stick with a high school program versus dropping out possessed more fully developed noncognitive skills, and it is these factors that enabled them to be more successful in school and in life (Glass, 2012).

So what are the noncognitive behaviors found in this skill set? Farrington et al. (2012) list five distinct constructs that make up noncognitive factors: academic behaviors, academic perseverance, academic mindsets, learning strategies, and social skills. They provide a 100-page discussion of the specific details for each of these constructs. A

review of the entire discussion is beyond the scope of this dissertation; however, there are key points in Farrington et al.'s research specifically applicable to the current study.

Notably, at the heart of these noncognitive factors is social and emotional learning and instruction. Noncognitive factors are important for long-term outcomes and these factors can be taught in school. They can be taught systematically through character and behavior education programs. Ultimately, the authors argue noncognitive factors are just as important as traditional academic skills, and schools would do well to place a heavier emphasis on the development of students' SEL skills.

Payton and colleagues (2008) conducted what is widely considered to be the pre-eminent research on the positive impact of SEL. Their study was a meta-analysis that examined 317 studies related to SEL, which included 324,303 students in grades K-8. The authors categorized each study in their meta-analysis into one of three areas: universal review, indicated review, and after-school review. Studies included in the universal review examined the impact of universal SEL programs appropriate for an entire student population. These core programs are not targeted to specific students or groups of students; rather, they are meant to impact the SEL on a more foundational level. Studies included in the indicated review category focused on SEL interventions designed to target specific groups of students who displayed signs of struggling with SEL. Studies categorized into the after-school review were categorized as such because the SEL interventions in those studies took place after school and did not target students who exhibited identified problems with SEL. Findings from each of the three areas of study are reviewed below.

Payton et al. (2008) included 180 school-based studies with a sample size of 277,977 students in their universal review category. Compared to students who did not participate in universal programs, both students who exhibited behavioral problems and those who did not demonstrated significant gains in a variety of areas. Positive effects included “significantly enhanced social-emotional skills, attitudes, and positive behavior, reduced conduct problems and emotional distress, and improved academic performance at post-intervention” (p.12). Programs that were sequenced, active, focused, and explicit (the authors used the acronym SAFE) tended to produce better student outcomes both in the short- and long-term. Payton and colleagues also stressed the importance of fidelity of implementation in ensuring lasting programmatic benefits.

In their indicated review, Payton and colleagues (2008) examined the effects of 80 SEL programs designed to specifically target students who are struggling behaviorally and/or emotionally. Such programs are intended to assist children who exhibit conduct problems, anxiety, depression, and lack of social skills. The authors examined student improvements in several areas. Mean effect sizes and corresponding areas are as follows: SEL skills (.77), attitudes toward self and others (.38), positive social behavior (.50), conduct problems (.47), emotional distress (.50), and academic performance (.43).

There were 55 programs reviewed as part of the after-school category (Payton et al., 2008). Similar to the other two review categories students who participated in after-school SEL programming exhibited increased performance. Specifically, effect sizes were reported in the following areas: attitude toward self and others (.22), positive social

behavior (.22), conduct problems (.17), emotional distress (.91), and academic performance (.08).

When taken as a whole, the findings of Payton et al.'s (2008) work demonstrate that while student academic performance was improving, so too were student feelings about self, others, school, classroom behavior, and emotional problems. This suggests social and emotional instruction can positively influence a child's success in both school and in life. In order to be successful, SEL programs should be based upon both theory and research, teach SEL application, provide a caring environment, be developmentally appropriate, engage families, and provide staff support (Zins et al., 2004).

In 2004, the Illinois State Board of Education (ISBE) made Illinois the first state to recognize the importance of SEL instruction in schools as evidenced by the adoption of the Illinois Social and Emotional Learning standards. The following section details the historical perspective on SEL development within Illinois.

No Child Left Behind and the Illinois Perspective

Education reform has been fueled by political mandates and policies emanating from both federal and state levels. Standards-based reforms were accorded national significance by the enactment of the *No Child Left Behind Act* (NCLB) which was passed by a bipartisan Congress in 2001 (Pub. L. No. 107-110, 115 Stat. 1425 [codified as 20 U.S.C. §§6301-6578, Supp. 2002]). NCLB's premise is to set rigorous and measurable standards for improving teaching and learning in public schools. The Act mandates that states adopt and administer assessments in core academic areas (Pub. L. No. 107-110,

115 Stat. 1425 [codified as 20 U.S.C. §§6301-6578, Supp. 2002]). NCLB also mandates schools use research-based prevention programs to help students achieve at a high level (Pub. L. No. 107-110, 115 Stat. 1425 [codified as 20 U.S.C. §§6301-6578, Supp. 2002]). The Act has been a catalyst for many research projects in the SEL arena (Elias, Zins, Graczyk, & Weissberg, 2003). Social and emotional learning programs have been proven to help reduce the achievement gap between high- and low-achieving students by providing all students the necessary skills to be successful in school and in life (Payton et al., 2008).

Within the policy development arena, issue definition may grow as a result of past or new research. The Illinois social and emotional learning policy grew out of a combination of applied research and integrative research, drawing on an extensive list of studies focused on student progress in schools that implemented social and emotional learning programs (Gordon et al., 2011). An extensive body of research on school-based mental health has shown students who are able to master social and emotional competencies have greater well-being and stronger performance in school (Durlak, Weissberg, & Pachan, 2010). When students are emotionally attached to school and to their teachers and peers, they are more likely to behave in prosocial ways and avoid high-risk behaviors (Hawkins, Catalano, & Miller, 1992). Hawkins and colleagues found these high-risk behaviors are characteristically identified as adolescent problem behaviors such as the use of alcohol and/or drugs, pregnancy, delinquency, and violence in and out of the school environment, including at home and in the community. As previously explained, social and emotional learning instruction can enhance a child's academic engagement,

work ethic, commitment, and ultimate school success (Elias et al., 1997). This policy agenda had broad appeal in the schools involved in the Illinois research. Student progress was an important factor, that supported ongoing commitment by the researchers and school faculty.

Based on evidence gathered to document the benefits of SEL instruction (Durlak et al., 2010; Henderson & Mapp, 2002; Zins et al., 2004), a group of Illinois educators, mental health professionals and child advocates began promoting legislation to require Illinois to add social and emotional learning standards to the Illinois Learning Standards (Gordon et al., 2011). A statewide Children's Mental Health Task Force was formed to move the agenda forward with legislators. This task force was comprised of more than 100 organizations; all were focused on the need for a comprehensive plan to address the mental health and social and emotional well-being of Illinois public school students (Gordon et al., 2011). Alliances were formed, as the parties believed they could do more good together than by operating individually. The broad-based interest in these issues reflected the support of professional groups, educational leaders and the public sector; the SEL agenda in Illinois had strong support to move forward (Gordon et al., 2011).

In April 2003, the Illinois task force issued a report: *Children's Mental Health: An Urgent Priority in Illinois* (VanLandeghem, 2003). The findings documented that 1 in 10 children in Illinois suffered from mental illness that significantly impacted the child's functioning at home and school. This report outlined the need for short- and long-term goals to address the mental health and social and emotional well-being of Illinois children from birth to age 18. According to national estimates, one quarter to one third of children

are perceived to not be ready to succeed in a school environment (Rimm-Kaufman, Pianta, & Cox, 2000). For a significant number of these children, concerns center on social and emotional issues. A 1999 survey of Illinois parents found 42% of child-care programs had to ask a parent to withdraw his/her child from the program because of behavioral issues that could not be handled by the staff (Vitanza, Cohen, & Hall, 1999). The social and emotional development of children must be addressed as a fundamental part of their growth from early childhood through adolescence (VanLandeghem, 2003). According to Rimm-Kaufman, Pianta, and Cox (2000), a child's social and emotional development is a key factor in school readiness and success. Using the 1996 National Center for Early Development and Learning's Transition Practices Survey, 3,595 kindergarten teachers were surveyed, and this survey documented 46% of their kindergarten students exhibited specific problems that reduced the success of the transition from preschool to kindergarten (Rimm-Kaufman, Pianta, & Cox, 2000). The areas of challenge reported by teachers included following directions, working independently, working with a group of students, and communicating with others.

Within the *Children's Mental Health: An Urgent Priority in Illinois* report (VanLandeghem, 2003), the task force made several recommendations to Illinois lawmakers. These recommendations led to the passage of the *Illinois Children's Mental Health Act of 2003* (405 ILCS 49/1 et seq., P.A. 93-495, eff. 8-8-03). Key provisions of this Act are:

1. The Illinois Children's Mental Health Partnership (ICMHP) was created to develop and monitor the implementation of the Children's Mental Health Plan across the state.
2. The Illinois State Board of Education incorporated social emotional learning standards into the Illinois Learning Standards.
3. Local school districts are required to develop policy to incorporate social and emotional learning into their educational programs; these policies must include the teaching and assessment of SEL competencies.

With the passage of the Illinois Children's Mental Health Act in 2003, Illinois took became the first state to develop and require social and emotional learning standards (Gordon et al., 2011). A subcommittee of the Illinois Children's Mental Health Partnership, the School Policy and Standards Committee, was charged with developing the new state standards for SEL (www.icmhp.org/initiatives/selimplementation.html). This committee worked collaboratively with the Illinois State Board of Education and CASEL to develop the standards. The development team included teachers, administrators, student services staff, and parents. The committee also developed a model policy to guide school districts in complying with the Act's regulations (Gordon et al., 2011). This policy was distributed through the Illinois Policy Reference Education Subscription Service (PRESS) and used as the foundation for the final policy adopted by school districts in Illinois.

The Illinois Social and Emotional Learning Standards have three main goals:

1. Develop self-awareness and self-management skills to achieve school and life success.
2. Use social-awareness and interpersonal skills to establish and maintain positive relationships.
3. Demonstrate decision-making skills and responsible behaviors in personal, school, and community contexts (ISBE, 2004).

The Illinois State Board of Education officially adopted these standards in December 2004. (ISBE). The 10 standards were designed to include knowledge and skills required for a student to be successful in the area of social and emotional learning.

Table 1 sets forth the 10 Illinois Social and Emotional Learning Goals and Standards to assist schools in aligning curricula, instruction, and assessments for student growth.

Within Goal 1, there are three learning standards. Each learning standard contains benchmarks for the developmental stages at early elementary, late elementary, middle school, early high school, and late high school. The first learning standard identifies a benchmark for early elementary school students to be able to recognize and accurately label emotions and how they are linked to behavior as well as to demonstrate control of impulsive behavior. The same goal has an advanced benchmark for late elementary school students, requiring that students be able to describe a range of emotions and the situations that cause them. Students should also be able to describe and demonstrate ways to express emotions in a socially acceptable manner. Middle school students are required to analyze factors that create stress or motivate successful performance. High school students are expected to analyze how thoughts and emotions

affect decision making and responsible behavior while generating ways to develop more positive attitudes. At the late high school level, students are expected to evaluate how expressing their emotions in different situations impacts others. Students at the late high school level are also expected to evaluate how expressing more positive attitudes influences other people.

Table 1

Illinois Social and Emotional Learning Goals and Standards

Goal 1: Develop self-awareness and self-management to achieve school and life success.
<ul style="list-style-type: none"> • Standard 1A. Identify and manage one's emotions and behavior. • Standard 1B. Recognize personal qualities and external supports. • Standard 1C. Demonstrate skills related to achieving personal and academic goals.
Goal 2: Use social-awareness and interpersonal skills to establish and maintain positive relationships.
<ul style="list-style-type: none"> • Standard 2A. Recognize the feelings and perspectives of others. • Standard 2B. Recognize individual and group similarities and differences. • Standard 2C. Use communication and social skills to interact effectively with others. • Standard 2D. Demonstrate an ability to present, manage, and resolve interpersonal conflicts in constructive ways.
Goal 3: Demonstrate decision-making skills and responsible behaviors in personal, school, and community contexts.
<ul style="list-style-type: none"> • Standard 3A. Consider ethical, safety, and societal factors in making decisions. • Standard 3B. Apply decision-making skills to deal responsibly with daily academic and social situations.
Standard 3C. Contribute to the well-being of one's school and community.
<i>Note.</i> Retrieved from http://www.isbe.net/ils/social_emotional/standards.htm

Goal 1 of the Illinois Social Emotional Learning Standards also includes benchmarks for students to recognize personal qualities and external supports. In early elementary school grades, students are expected to identify one's likes and dislikes, needs and wants, and strengths and challenges. Students in the early elementary school

grades are also expected to identify family, peer, school, and community strengths. In late elementary school grades, students are required to describe personal skills and interests that they want to develop. In addition, students at the late elementary school grade levels are required to explain how family members, peers, school personnel, and community members can support school success and responsible behavior. Middle school students are asked to analyze how personal qualities influence choices and successes. They are also expected to analyze how making use of school and community supports and opportunities can contribute to school and life success. High school students should be able to demonstrate how to set priorities that build on their strengths while identifying areas for improvement and to analyze how positive adult role models and support systems contribute to school and life success.

Learning Standard 3 requires that students demonstrate skills related to achieving personal and academic goals. Early elementary school students are expected to describe why school is important in helping students to achieve personal goals while being able to identify goals for academic success and classroom behavior. Late elementary school students are asked to describe the steps in setting and working toward goal achievement and to know how to monitor progress on achieving a short-term personal goal. Students in the later grades of high school are expected to set a postsecondary goal with action steps, time frames, and criteria for evaluating their achievement.

While local Illinois boards of education are mandated by Illinois State Board of Education to adopt a policy on student social and emotional development, the steps for implementation vary across school districts in the state. Each school district's

administration and educators define the implementation phase of the SEL policy. As to implementation, the NCLB provides federal guidance requiring schools to use research-based prevention programs to help students develop SEL skills at a high level. Presented below is a description of a reference guide to assist schools in selecting a research-based SEL program to accomplish the goals set forth in NCLB.

Social and Emotional Learning Programs

CASEL has published an updated guide offering school personnel a starting place for selecting a SEL program to implement. The *2013 CASEL Guide: Effective Social and Emotional Learning Programs - Preschool and Elementary School Edition* provides a framework and detailed information for selecting a program. Within the guide, CASEL designates 23 programs as “SElect” based on the following three requirements:

1. A SElect program must be a multiyear, well-designed classroom-based option with systematic instruction to promote the five SEL competencies. Students must be provided opportunities to practice.
2. A SElect program must include high-quality professional development and implementation support materials as well as ongoing support options for the teachers.
3. A SElect program must be evidence-based with documentation of at least one evaluation showing a positive improvement in student academic or social behavior.

The 2013 CASEL Guide provides a framework to review programs and offers information on grade range included, average number of sessions per year, and the classroom approach to teaching. A rating of minimal, adequate, or extensive is provided for the following elements: opportunities to practice, classroom-wide content, school-wide content, family content, and community content. In addition, tools for monitoring implementation and tools for measuring student behavior are labeled as being either present or absent. Schools may review programs and consider their impact for the classroom, school, and home connections. For the current study, two SEL instructional programs were used universally by the grade levels included in the sample. Within the first-grade classrooms *Second Step* was implemented; within the fourth-grade classrooms, *Connected and Respected* was implemented. Within the following section, additional information is provided about each program based on the 2013 CASEL Guide.

Committee for Children's *Second Step* curriculum, authored by Kathy Beland, is designated as a SElect program in the 2013 CASEL Guide. *Second Step* is a sequenced curriculum providing teaching materials to address explicit instruction of SEL skills in the classroom (Figure 2). Included in the program are units about learning, empathy, emotion management, friendship skills, and problem solving. The program is grade-based program with a unique curriculum for prekindergarten through eighth grade; each grade includes 22-28 lessons for use in the classroom. The *Second Step* program uses four key learning tools to build skills: brain builder games, weekly theme activities, reinforcing practice lessons, and home letters (www.cfchildren.org/second-step.aspx). *Second Step* was reviewed and evaluated in two randomized control trials and two quasi-experimental

studies; findings across these studies showed increased positive behavior, reduced emotional distress, and improved social and emotional skills (Schick & Cierpka, 2005).

Grade Range Covered	PreK-8	KEY ○ Minimal ◐ Adequate ● Extensive
Grade-by-Grade Sequence	✓	
Average Number of Sessions Per Year	22-28 weekly topics/across 5 days per week	
Classroom Approach to Teaching SEL	Explicit skills instruction	
Opportunities to Practice Social and Emotional Skills	●	
Classroom-Wide Context	●	
School-Wide Context	◐	
Family Context	◐	
Community Context	○	
Tools for Monitoring Implementation	✓	
Tools for Measuring Student Behavior	✓	

Figure 2: Review of Second Step (CASEL, 2006, p. 60).

The *Connected and Respected* curriculum was developed as lessons from the Resolving Conflict Creatively Program (RCCP). *Connected and Respected*, authored by Jan Harrison and Ken Breeding (2007), is designated as a SElect program in the 2013 CASEL Guide. *Connected and Respected* is a sequenced curriculum providing teaching materials to address explicit instruction of SEL skills in the classroom (Figure 3). The program is grade-based program with a unique curriculum for prekindergarten through eighth grade; each grade includes 16 lessons for use in the classroom. Each *Connected and Respected* lesson follows the format of a gathering, an agenda review, an activity and/or discussion, and a closing activity (esrnational.org/professional-services/early-childhood-elementary-and-after-school-services/resolving-conflict-creatively-program/). The program also documents links to core SEL competencies and provides literature connections and extension ideas. The Resolving Conflict Creatively Program was

reviewed in two randomized control studies with a sample size of 11,160 students in New York City. Findings across these studies showed increased positive behavior, improved academic performance, and selection of nonviolent conflict resolution strategies (Aber, Pedersen, Brown, Jones, & Gershoff, 2003).




Grade Range Covered	PreK-8	KEY  Minimal  Adequate  Extensive
Grade-by-Grade Sequence	✓	
Average Number of Sessions Per Year	16 lessons per grade (<i>Connected and Respected</i>)	
Classroom Approach to Teaching SEL	Explicit skills Instruction, Teacher Instructional Practices	
Opportunities to Practice Social and Emotional Skills	●	
Classroom-Wide Context	●	
School-Wide Context	●	
Family Context	●	
Community Context	○	
Tools for Monitoring Implementation	✓	
Tools for Measuring Student Behavior	✓	

Figure 3: Review of Connected and Respected (CASEL, 2006, p. 57).

As schools implement core curriculum to address SEL, the 2013 CASEL Guide offers a large collection of information to review. While state and federal laws are increasingly requiring SEL instruction in public schools, there has been little emphasis on developing tools to assess a child's SEL skill level. A historical review of the research in the area of SEL assessment is presented below.

SEL Assessment Tools

As detailed in the section on research supporting SEL, a child's social and emotional development can be improved with quality instruction and targeted SEL skill development (Durlak et al., 2010; Henderson & Mapp, 2002; Shonkoff & Phillips, 2000;

Zins et al., 2004). In order to identify those children who need more support for social and emotional skill development, practitioners must define a baseline and recognize which children may be in need of targeted instruction.

Screening at the early ages becomes an essential factor in identifying student needs and understanding the areas for intervention. Within the school environment, the screening and assessment process most often involves teacher observation and rating scales. Assessment tools, including rating scales and checklists, measure behavioral and emotional aspects of a child's development. A review of current assessment tools for early elementary school and elementary school children reveals the majority of tools involve feedback and observational ratings by a teacher, parent, or caregiver (Denham, 2006). When a child exhibits more atypical social and emotional skills, a school psychologist or school social worker may complete additional assessment measures, which may include performance-based assessments completed during direct one-to-one interaction with the child. Those may include measuring a child's emotional knowledge with a tool such as the Assessment of the Children's Emotion Skills (ACES; Schultz & Izard, 1998). There are three subscales in ACES: facial expressions, social situations, and social behaviors. The ACES must be administered by a trained professional and involves direct testing with the child. The time involved to complete the three subscales is approximately 2 hours.

Another commonly used tool for assessing young children's overall development is the Ages and Stages Questionnaires: Social Emotional (ASQ-SE; Squires, Bricker, & Twombly, 2002). The ASQ-SE includes social and emotional skills among the areas

assessed, and it is currently recommended for developmental screening by the American Academy of Pediatrics. This tool may be used to assess children age birth to 5 years. It includes the parent or caregiver completing a 30-item questionnaire, noting for each item whether the child can do the skill all the time, sometimes, or not yet. The practitioner compares the child's score to scores of other same-aged children. If a score is below a certain cut-off, additional assessment is recommended.

A more recent assessment tool is the Social Skills Improvement System (SSIS; Gresham & Elliott, 2008), formerly known as the Social Skills Rating System (SSRS; Gresham & Elliott, 1990). This tool is used with children age 3-18. This tool measures social skills and behaviors that are reported by teachers, parents, caregivers, and students. The administration time is 10-25 minutes for each questionnaire. The results are compared to age-based norms to evaluate a child's profile in several areas of skill and behavior.

While observation is one of the simplest and most valuable tools to assess a child's level of SEL competency, additional screening tools can add value in understanding a child's level of skill and areas of need. Such additional information can inform instruction and guide steps for formal intervention. It must be noted that the tools mentioned above are most often used on an as-needed basis and with a small number of students. These are not tools that are used for full grade-level implementation in order to assess all students and develop grade-level norms, as a school would do across academic subjects such as literacy and math. Consideration must be given to the time and staffing requirements of completing such assessments on a large scale.

Frameworks for SEL Assessment

Based on the earlier work of Martin, Hooper and Snow (1986), Whitcomb and Merrell (2013) proposed the need for multimethod, multisource assessments to ensure a more accurate picture of a child's or adolescent's social and emotional development. They recommended including relevant information from direct observation, rating scales, interviews, self-reports and sociometric assessments (Whitcomb & Merrell, 2013). They also recommend that assessment be aligned with the Response to Intervention (RtI) triangle approach to ensure universal screening is applied as a first step to gather baseline information about student performance (US Department of Education, www.ed.gov). Response to Intervention is a data-based method for identifying, defining, and addressing students' academic and/or behavioral difficulties. RtI is a framework for identifying and supporting students who are at risk and for providing appropriate support to maintain success in the school environment. RtI is based on the assumption that high-quality, research-based core classroom instruction is provided for *all* students. RtI consists of periodic screening to determine whether a student requires additional instruction to reach grade-level performance goals. The RtI format and process is commonly illustrated as a three-tiered triangle of increasing intensity from base to peak. At the base, approximately 80% of the students progress with the two supporting factors of the general curriculum and a universal program for SEL. At the middle tier, approximately 15% of the students exhibit needs in the areas of behavior or social skill development; these students benefit from an additional intervention or support with SEL. The uppermost tier comprises approximately 5% of the students at high risk for social development challenges who

require more intensive supports to remain successful in school (Whitcomb & Merrell, 2013). Figure 4 represents the Whitcomb and Merrell RtI support triangle model to consider while assessing students' levels of social and emotional and behavioral functioning. The figure is aligned to the widely used RtI model that schools reference to review academic performance and supports (Fuchs & Fuchs, 2006).

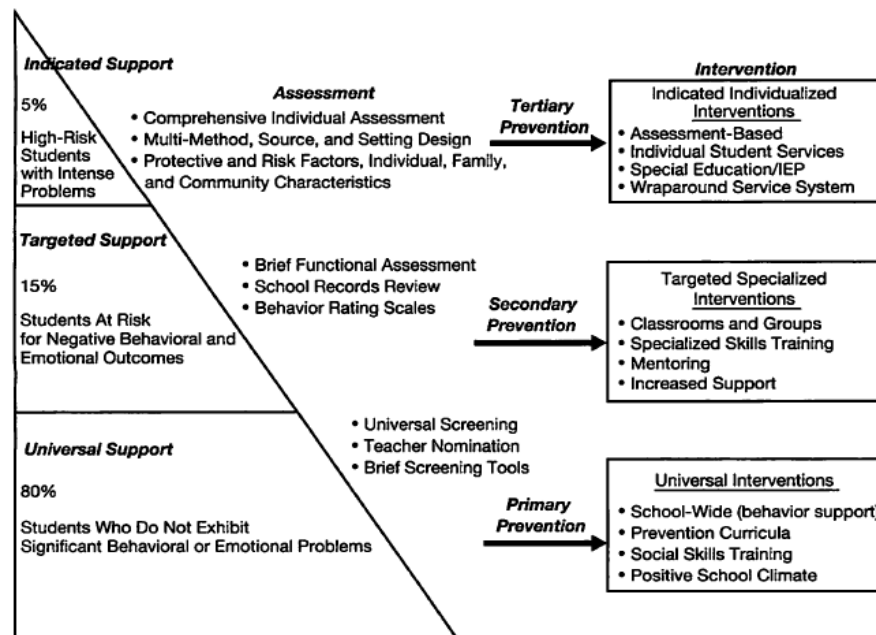


Figure 4: Triangle support model for use in schools to address social, emotional, and behavioral needs (Whitcomb & Merrell, 2013, p. 21).

While the use of performance assessments is common for academic subjects such as literacy or math, performance-based assessments are less common in the realm of social and emotional learning. In core academic subjects, performance-based assessments are recommended to examine a student's application of knowledge on a task and are used in conjunction with teacher observation and summative and formative assessment options

(Wiggins, 1989). Performance assessment is used as a term to describe assessment methods that are based in the real world or that demand a more active role of the learner. The goal of performance-based assessment is to measure the level of competency a student exhibits on a particular task, rather than be a rote multiple-choice exam or observation by a teacher. The most effective performance assessments are authentic tasks that are open ended with multiple correct solution paths (Wiggins, 1989). In the context of SEL, a performance-based assessment would include tasks related to one or more of the five SEL competencies. A detailed description of one such performance-based assessment tool is below.

Rush NeuroBehavioral Center - New Assessment Tools

Similar to academic assessments, assessments of young children's social and emotional status, if administered economically and ethically in terms of teacher, parent, and child time required, can be useful in monitoring the success of SEL instruction and ensure that successful programs occur for children (Raver, 2003; Raver & Zigler, 1997). Use of such tools in a pre- and postassessment model allows schools to directly assess a student's growth over time in a similar way to how schools measure reading or math skill development during a school year. Performance-based tools to measure student SEL skills directly are limited and not readily available to schools. Rush NeuroBehavioral Center developed a computerized performance-based assessment tool to allow schools to gather SEL assessment data in various classrooms and grade levels. The tool is grounded in the research of Malecki and Elliot (2002) and Parker and Asher (1987); it links social

rejection to increased risk for challenges such as underachievement, dropping out, criminal activity, and the need for psychiatric support. RNBC intends the tool will be implemented as a universal screening assessment to identify those students who are at risk for social rejection or exhibiting a low level of social acceptance.

Four SEL skill domains associated with social acceptance (McKown, 2012) are tested by RUSH's new assessment tool:

1. Nonverbal accuracy is the ability to define others' emotions from reading the nonverbal cues.
2. Mindsharing is the ability to infer the intentions of others.
3. Social problem solving is the ability to identify and solve social problems.
4. Self-regulation is the ability to control behavior, attention and emotions in response to a social experience.

Social acceptance is associated with positive outcomes in academics, behavior, and mental health (Demaray, Malecki, Davidson, Hodgson, & Rebus, 2005). Conversely, research conducted by RNBC identified three key factors of a child's behavior that impact social rejection. Children must be able to recognize, understand, and respond to nonverbal social cues. A child who does not exhibit skill with these three skills is more likely to experience social failure. These same students are linked to increased school dropout rates, depression, and increased anxiety (McKown, 2012). Measuring a child's skill level within each domain as defined by RNBC allows for baseline data to inform instruction and intervention. RNBC found the need for scientifically sound and easily accessible tools to allow schools to screen for social skill deficits. RNBC has designed

performance-based assessment modules that measure the skills related to social acceptance, are easily administered across a school system, and can be accessed online. The development of the assessment tool was grounded in research of current reliable and valid assessment tools; the RNBC assessment tool is designed for school use, via computer, which allows for larger scale implementation and more timely score reporting. A detailed description of this assessment tool is provided within the instrumentation section of Chapter 3.

While using the RNBC computerized performance-based assessment tool, the current study includes data analysis from two key modules: social problem solving and delay of frustration. There are positive implications for school-based student interventions using the data from these two modules. Following is supporting research about the two module areas.

Social Problem Solving

Social problem solving is defined as the ability to consider social situations, define problems, generate solutions, and select a solution to resolve a challenge (Crick & Dodge, 1994). According to Crick and Dodge, aggressive behavior is attributed to a lack of social and emotional cognitive processing. Studies have also shown children who have nonaggressive problem solving strategies are better able to interact in social situations and are more socially accepted (Lochman & Dodge, 1994; Mize & Cox, 1990; Richard & Dodge, 1982). These children are better at seeking assistance from others, acting friendly to others, and exhibiting negotiation and problem solving skills (Lochman & Dodge, 1994). According to Crick and Dodge, children who demonstrated nonaggressive

problem solving skills also possessed prosocial problem solving skills and strategies.

Crick and Dodge found that a lack of prosocial problem-solving skills resulted in diminished social skills and an increase in aggressive problem solving. The existence of prosocial problem-solving strategies and skills resulted in the child, and consequently the adolescent, being better equipped to handle social situations in a nonaggressive, prosocial problem-solving manner (Crick & Dodge, 1994).

Another key finding was documented by the research of Keltikangas-Järvinen and Pakaslahti (1999). Adolescent aggressive behavior was predictable when, as a child, the subject exhibited aggressive problem solving strategies in social situations (Keltikangas-Järvinen & Pakaslahti, 1999). While conducting research with fourth-grade students, Keltikangas-Järvinen and Pakaslahti documented problem solving strategies by a sample of 47 students and conducted individual interviews focused on situational examples. Students were asked how they would handle the situations. Seven years later, Keltikangas-Järvinen and Pakaslahti gathered updated information from the same 47 subjects through a 120-item questionnaire related to behavioral styles (Keltikangas-Järvinen & Pakaslahti, 1999). With a select sample, Keltikangas-Järvinen and Pakaslahti (1999) found aggressive problem solving responses from the fourth-grade students were consistently identified as problem solving options 7 years later; in these cases, no intervention or alternate problem solving strategy was provided (Keltikangas-Järvinen & Pakaslahti, 1999). However, there was a change in aggressive behavior if the child was given a constructive or submissive problem solving strategy as a way to address an issue without employing aggressive problem solving. Keltikangas-Järvinen and Pakaslahti

found that students who were explicitly exposed to learning a new, more prosocial method of problem solving showed a shift in their response as measured by the data collected 7 years later. The developmental progression of skills, as related to problem solving, was shown to improve as a child developed if the child had been exposed to a new method of nonaggressive problem solving.

For the purposes of the current study, one area that warrants further investigation is the review of problem solving data and skill progression for the early elementary grade ranges. While Keltikangas-Järvinen and Pakaslahti (1999) documented the progression of skills over a 7-year period from fourth grade through high school, the consideration of skills during one academic year has not been reviewed. The current study uses new assessment tools to more quickly provide assessment results to school personnel and offers the ability to review data collected at two times during a school year.

Gender has also been documented as a distinguishing factor in social problem solving (Murphy & Ross, 1987). Murphy and Ross enlisted approximately 207 eleventh-grade students from a southern state as volunteers for their current study. The sample included 93 males and 114 females. The students were given the Means-Ends Problem solving Procedure (MEPS) and the Personal Attributes Questionnaire (PAQ) in order to examine social problem solving skills as a function of gender. The study consisted of two sessions. The subjects were given the PAQ and then the MEPS. A MEPS story situation that included both a female and male protagonist was given to the subjects to problem solve. The story was the same for all of the subjects. This study found females showed better skill than males when it came to social problem solving. Findings showed that

overall, females were superior to males when it came to the social problem solving skills of adolescents. While this research examined gender differences with adolescences in the area of social problem solving, the current study explored social problem solving in first and fourth grades.

Frustration Tolerance

Frustration tolerance is defined as the capacity of an individual to withstand a situation that causes feelings of annoyance or anger (Hybl & Stagner, 1952). What is a child's breaking point? What actions will a child undertake when his/her frustration tolerance limit is reached? While the research is limited about the impact of frustration tolerance in the classroom setting, the implications for impact on social relationships is clear. While managing the social demands and dynamics in school, a student must assess a situation, assess his/her feelings, and select an appropriate behavioral response to either continue or discontinue engagement with a peer or adult. The precursor skills to such social competence include self-regulation skills, emotional recognition, social information processing, and communication skills (Fabes, Gaertner & Popp, 2006). In order to more closely examine the relationship between SEL skill and behavior regulation, McKown et al. (2009) conducted two related studies examining social and behavioral outcomes. The first study examined 158 typically developing children from 5 to 17 years of age. Study 2 examined 126 clinically referred children between 5 and 17 years of age. Both studies examined SEL skills and self-regulation. In both studies, the measures used were an affect recognition task, a social language comprehension subtest of a commonly

administered IQ test, a pragmatic language assessment, a test of critical thinking in context, as well as BASC self, parent, and teacher reports. The authors concluded that these measures were selected because “SEL skill and self-regulation are antecedents and socially competent behavior is the consequence” (McKown et al., 2009, p. 859). Using structural equation modeling, the authors found that the greater the self-regulation skills, the greater the social competence. While there are many dimensions to self-regulation, McKown and colleagues focused on a person’s ability to self-regulate his/her behavior through inhibition. The relationship between self-regulation and social competence was .85 for Study 1 participants and .78 for Study 2 participants. These standardized regression coefficients suggest that as self-regulation skills increase by one standard deviation, social competence increases by .85 and .78, respectively for both studies’ participants. These relationships were present regardless of age and clinical referral status. Overall, these findings suggest a strong relationship between self-regulation and social competence.

Bitsakou, Antrop, Wiersema, and Sonuga-Barke (2006) developed the Delay Frustration Task (DeFT) as a measure of delay intolerance to assess the ability of an individual to refrain from impulsivity when frustrated. The task that the authors developed was based on the theory that an individual with a low level of frustration tolerance would become easily frustrated by unexpected events or delays during completion of a simple task. The DeFT is a computer-based task; participants were told to answer 45 simplistic math problems. The problems were presented with four possible answers. Participants selected the appropriate answer and then selected a button to move

on to the next problem. On some trials the computer was programmed to get stuck and not move forward. The number of times a participant attempted to click on the button to move forward was recorded. During the development trials of the DeFT, Bitsakou and colleagues sampled the tool with 49 young adult participants who had a propensity for attention deficit disorder (ADHD). The participants who showed significance for ADHD also had a lower tolerance for frustration. While repeated across age ranges, compared to typically developing peers, children with ADHD showed a strong preference for smaller, sooner rewards and had a lower tolerance for frustration (McKown et al., 2009).

Karalunas and Huang-Pollock (2011) examined the relationship between executive function and delay of frustration in a sample of 91 children, half of whom were diagnosed with ADHD and half of whom were not. All children were between the ages of 8 and 12. The specific executive functions assessed were working memory, response inhibition, and delay aversion. Working memory was assessed via a digit-span task on a commonly used IQ test. Response inhibition was assessed via reaction time on a stop-task that consisted of students visually tracking a central fixed point consisting of either an X or an O. Using a keyboard, the students indicated whether they saw an X or an O. Delay aversion was assessed via a commonly used method wherein children are given a choice between a small reward after a small amount of time, in this case, 2 seconds, or a larger reward after a longer period of time, in this case, 30 seconds. Consistent with previous research, Karalunas and Huang-Pollock found that children with ADHD performed more poorly on working-memory tasks and response inhibition tasks. Interestingly, the researchers found no differences in the delay-aversion tasks between ADHD and non-

ADHD students. The researchers hypothesized there were no differences between the two groups on the delay-aversion task because the children were older. The researchers argue that as children age, their frustration tolerance increases regardless of their disability status. These findings are contrary to other research suggesting that age makes no difference in frustration tolerance (Bitsakou et al., 2006). While the aforementioned research has examined frustration tolerance in samples with ADHD, the current study explores frustration tolerance and its relationship to social problem solving in first- and fourth-grade students in a general education classroom setting.

As the impact of frustration tolerance is researched within the school context, it is important to consider the interconnected nature of a student's behavior and his/her place in the classroom community and connection to peers. Peers serve as sources of emotional support and friendship during times of stress; peers also provide ongoing feedback on the appropriateness of emotional displays with the classroom setting. Expressions of anger, aggression, and impulsivity are all negatively related to peer status for a child (Eisenberg, Fabes, Murphy, Maszk, Smith, & Karbon, 1995). The current study uses a new assessment tool to gather performance-based data and define a child's level of skill in frustration tolerance. The classroom implication about this information is discussed in Chapter 5.

Research Questions

Research Question 1: How does social and emotional skill development in the area of social problem solving change within one academic year for first- and fourth-grade boys and girls?

Past research indicates that aggressive behavior is attributed to a lack of social and emotional skills (Crick & Dodge, 1994). However, research has also indicated that children who have been taught nonaggressive problem solving strategies interact with their peers in a more socially acceptable manner (Lochman & Dodge, 1994; Mize & Cox, 1990; Richard & Dodge, 1982). Keltikangas-Järvinen and Pakaslahti (1999) found there was a developmental progression related to social problem solving while they investigated the development from age 10 through 17. Extrapolating to the younger grade levels, it is predicted that fourth-grade children will demonstrate a greater growth than first-grade children in one academic year in the area of social problem solving. In addition, previous research indicates adolescent females exhibit stronger social problem-solving skills than same-age male peers (Murphy & Ross, 1987). While past research has examined gender differences with adolescences in the area of social problem solving, the current study predicted girls would consistently show stronger social problem-solving skills than boys at the first and fourth grades.

Research Question 2: What is the relationship between social problem-solving skill and frustration tolerance?

Research conducted by McKown et al. (2009) with children age 5 to 17 found stronger social and emotional skills are associated with socially competent behavior, and more frequent socially competent behavior is associated with higher social preference. Additionally, Karalunas and Huang-Pollock (2011) examined the relationship between executive function and delay of frustration in children between the ages of 8 and 12. While their sample contained a mix of nondisabled peers and those with ADHD, as previously stated, the researchers found no differences in completing delay-aversion tasks between ADHD and non-ADHD students (Karalunas & Huang-Pollock, 2011). While there is conflicting research in the developmental progression of frustration tolerance skills, both studies reveal a link between frustration tolerance and social acceptance. The current study predicted that the stronger frustration tolerance skill a student has, the stronger his/her social problem solving skills will be across gender and over time.

CHAPTER 3

METHODOLOGY

Research Design

The current research study was conducted via a quasi-experimental, nonequivalent group design. Deidentified data were analyzed from first- and fourth-grade classrooms. Within the sample, there was no randomized assignment nor was there a control group in the classroom groupings represented in the first- and fourth-grade samples. Data were analyzed through analysis of variance and regression analyses. The independent variables in the study were gender and grade. The dependent variable varied based upon the research question.

Participants

The current study drew upon a sample of first- and fourth-grade students from a suburban school district located within 25 miles of the city of Chicago. There were a total of approximately 1,300 students within the K-8 school district, which has three buildings. These three buildings utilize a grade-center model such that one building houses K-2 students, one building houses students in grades 3-4, and one building houses students in grades 5-8. The ethnic makeup of the school district in 2012 was 91.8% White, 0.2% Black, 2.1% Hispanic, 3.1% Asian, 0% Native Hawaiian/Pacific Islander, 0.1% American Indian, and 2.7% two or more races. The socioeconomic status (SES) makeup

of the school district was 3.3% low income, 0.6% limited English proficiency and 14.7% students with individualized education plans.

With respect to the specific participant sample in the study, there were approximately 120 first-grade students and 120 fourth-grade students from the two grade-centered elementary schools that participated in the study.

Instrumentation

A computerized performance-based assessment tool developed by Rush NeuroBehavioral Center was used to gather SEL assessment data across classrooms and grade levels. The tool was designed to be implemented as a universal screening assessment for students in kindergarten through fourth grade in order to identify those students who are at risk for social rejection or exhibiting a low level of social acceptance. Although SELweb is a new assessment tool, RNBC conducted a validity study of SELweb with a diverse sample of 1,239 students in kindergarten to third grade (McKown, Allen, Russo-Ponsaran, & Johnson, 2013). Results demonstrated that SELweb exhibits strong reliability. In addition, preliminary results indicated evidence of convergent and discriminant validity. For example, student performance on the computer-based modules is positively related to classroom teacher reports of student social skill levels (McKown et al., 2013).

The SELweb assessment tool includes seven modules; each is designed to measure a dimension of SEL. A host, termed the professor, guides each module, and verbal instructions are given to limit any bias based on reading ability. The length of time

to complete a single module varies from 5 to 15 minutes based on the tasks. The time to complete all seven modules varies from 45 to 60 minutes as documented by numerous classrooms. Based on age and attention span, RNBC recommends that the assessment be completed in two sittings to ensure students are fully engaged in the tasks (McKown, 2012). The results are reported by individual, class, and grade level. This information may be used to develop age-based norms and to consider the child's profile in several areas of skill and behavior. Each of these modules is described in detail below.

The first module within SELweb is Peer Nomination. Within the Peer Nomination module, a student views the names of each child in his or her classroom. The student is asked to "click on the names of the children you like to spend time with," and his/her responses are recorded to generate a peer preference score and a social map.

The second module within SELweb is Non-Verbal Emotion Recognition. Within the Non-Verbal Emotion Recognition module, faces of children appear individually, and the student identifies each face as being happy, sad, scared or just okay. Each emotion is presented to the student with varying levels of intensity of emotion on the face shown. The faces are male and female, and the student identifies approximately 45 faces in this module.

The third module within SELweb is Choice Delay Task and is designed to measure self-regulation. Within the Choice Delay Task module, a student has 10 opportunities to earn points while sending a rocket ship into space. Before beginning the task, a student is directed to "gain as many points as possible." Rocket 1 is fast but only

generates one point for the student; selecting Rocket 2 is medium speed with a two-point gain. The selection of Rocket 3 is the slowest with a three-point gain.

The fourth module within SELweb is Perspective Taking and is designed to measure a student's ability to infer the intention of another person. Within the Perspective Taking module, the student is told 12 stories using both auditory and visual representation. At the end of each story, the student is asked to answer questions related to the story and the context of the scenario. The student is asked to infer a person's intention and feelings within the 12 stories.

The fifth module within SELweb is Choice Delay Questionnaire and is designed to measure a student's ability to self-regulate. Two dogs, Comet and Bear, guide the students as several statements are made. Comet would say, "I like waiting in line," whereas Bear would say, "I hate waiting in line." The student is asked to select which dog that he/she is most like. The student completes 10 items about Comet and Bear.

The sixth module within SELweb is Social Problem Solving and is designed to measure a student's ability to think through complex social situations. Within the Social Problem Solving module, the student listens to six social scenarios, including subtle social challenges such as a peer attempting to enter a group and a peer getting bumped on the playground. The student is asked several questions pertaining to each social exchange (e.g., "How would you feel?" or "Do you think what happened occurred by accident or on purpose?"). The student is asked how he/she would respond if he/she were in a similar situation.

The seventh module within SELweb is Delay of Frustration and is designed to measure a student's ability to tolerate frustration while doing a task. It may also be described as a matching task, as the student is presented with two images on a screen and asked to press yes if they are the same and press no if they are different. The student is told to go as fast as possible and to get as many correct as possible. Within this task, the button is preprogrammed to get "stuck." The system records the student's clicks on the mouse to gather information about student actions while the yes/no button is stuck. Students are given 3 minutes to complete this activity.

The Current Study

While SELweb contains seven modules to gather assessment data, for the purposes of answering the research questions in the current study, two modules were utilized: Social Problem Solving and Delay of Frustration.

Procedure

The current study utilized an existing data set. SELweb was administered as part of the participating district's yearly assessment plan. Institutional Review Board (IRB) approval to use existing data was sought from Northern Illinois University. The NIU IRB determined that the current study was exempt from the requirements of IRB approval, as deidentified data would be used for the analysis. Although existing data were used in the current study, information was obtained regarding how and when the assessments were administered. That information is presented below.

The full SELweb assessment was administered to all students in first through fourth grades at two times in the school year: November 2012 and May 2013, which corresponded to the school district's fall and spring assessment periods. If a student was absent during a scheduled class assessment period, a make-up session facilitated by the school psychologist was scheduled when the student returned to school.

In preparation for the administration of SELweb, student rosters for both first and fourth grades as well as first-grade student photographs were provided to RNBC. The student photographs were uploaded only for the first-grade students to assist the children as they identified their peers; the fourth-grade students identified peers by the student names. All assessments were administered in a computer lab group setting ranging from 18 to 22 students per group. Computers were prepared for the administration of SELweb, and the secure SELweb website was loaded onto all machines. Each computer had a pair of headphones attached to allow students to hear the auditory directions that were part of each module. Classroom teachers signed up for a computer lab space for a 45-minute period to complete the SELweb administration in the fall and spring terms.

Prior to the first administration of SELweb, a team from RNBC conducted an onsite training to review the assessment and the modules. A sample assessment was completed to allow the teachers to preview it and understand the expectations relative to the students. A handout with reminders for each module was created and distributed to all classroom teachers (Appendix). Within this handout, potential student questions and teacher responses were documented to provide model responses to the teachers as they monitored the lab during SELweb's administration. During each administration of

SELweb, a school psychologist and school administrator gave the initial directions and reminders for the session. A consistent team member was present at all testing administration sessions.

When students entered the lab for each SELweb administration, they were gathered to receive initial instructions; these instructions were consistent in all administration sessions. Students were asked to take a seat at a computer station, and an administrator selected the appropriate class and student name from the SELweb administration website. This step ensured that each student was matched to the correct class code. All SELweb administration sessions occurred in a quiet environment, free from external distractions. Students were directed to raise their hands should they require assistance with any portion of the SELweb assessment. During each SELweb assessment session, the classroom teachers also remained as a source of support within the lab setting. Classroom teachers, the school psychologist, and the school administrator were available to provide assistance to students at all sessions.

CHAPTER 4

RESULTS

In order to examine the relationship among the primary study variables, descriptive statistics were conducted. Table 2 contains sample size, means, and standard deviations for primary study variables. Table 3 contains correlations among the primary study variables.

Table 2. Descriptive Statistics

	N	Min	Max	Mean	SD
Peer Preference – Fall	235	63.26	143.06	100.00	14.68
Peer Preference – Spring	235	59.67	145.07	100.01	14.74
Emotion Recognition. – Fall	235	48.11	136.14	100.00	14.97
Emotion Recognition – Spring	234	28.85	159.84	104.27	18.12
Delay of Frustration – Fall	233	28.64	122.45	100.00	14.97
Delay of Frustration – Spring	233	50.00	122.52	104.58	12.64
Problem Identification – Fall	234	64.55	124.69	100.00	14.97
Problem Identification – Spring	233	47.55	126.67	99.25	16.47
Social Problem Solving – Fall	234	60.62	126.80	100.00	14.97
Social Problem Solving – Spring	233	50.00	129.23	103.10	17.35
Peer Connection Change	235	40.94	56.58	.01	16.65
Emotion Recognition Change	234	71.74	69.55	4.16	21.04
Social Problem Solving Change	232	67.87	56.37	3.28	20.23

Table 3

Pearson Correlation Matrix Among Variables

		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Peer Pref. Fall	.36**	.08	-.10	.07	-.03	.29**	.16*	.18**	.01	.16*	.18**	-.03	.05	-.09	.07
2	Peer Pref. Spring		.12	.10	.16*	.05	.08	.20**	.04	.17**	.12	.28**	.08	.04	-.01	.24**
3	Emotion Rec. Fall			.20**	.21**	.15*	.17**	.19**	.01	-.04	.11	.09	.05	.02	-.10	.21**
4	Emotion Rec. Spring				.07	.20**	-.01	.19**	-.12	.05	.05	.20**	.03	.04	.01	.21**
5	Pos. Solut. Fall					.22**	.13*	.07	-.03	-.08	.15*	.12	.03	.05	-.07	.21**
6	Pos. Solut. Spring						.05	.13*	-.04	.05	.12	.18**	.13*	-.01	-.07	.46**
7	Pers.-Taking Fall							.32**	.21**	.07	.29**	.10	.09	.09	-.12	.03
8	Pers.-Taking Spring								.07	.27**	.21**	.24**	.00	.16*	-.17*	.24**
9	Delay of Grat. Fall									.27**	.12	-.05	.09	.16*	-.03	.04
10	Delay of Grat. Spring										.03	.21**	.03	.08	.05	.14*
11	Frustration Tol. Fall											.14*	.07	.07	-.18**	.11
12	Frustr. Tol. Spring												-.01	.09	-.09	.19**
13	Problem Id. Fall													.19**	-.18**	.07
14	Problem Id. Spring														-.14*	.00
15	Social Goal Fall															-.03

**Correlation is significant at the .01 level (2-tailed).

*Correlation is significant at the .05 level (2-tailed).

Research Question 1

How does social and emotional skill development in the area of social problem solving change within one academic year for first- and fourth-grade boys and girls?

Prediction 1: It was predicted fourth-grade girls would show the largest growth in social problem-solving skills in one academic year. (Not Supported)

In order to examine Research Question 1 and the corresponding predictions, a 2 (gender) X 2 (grade) ANOVA was conducted. The independent variables were gender (boys, girls) and grade (1st, 4th), whereas the dependent variable was change over time on social problem solving (spring score, fall score). Results of the analysis indicate the gender X grade interaction term did not yield significant results, $F = 2.38 (1, 235), p = 0.12$. Similarly, there were no significant main effects for gender, $F = 0.68 (1, 235), p = 0.41$, indicating that the mean change score for boys ($M = 2.27, SD = 22.02$) did not differ significantly from the mean change score for girls ($M = 4.53, SD = 17.80$). Also, the main effect of grade was not significant, $F = 0.01 (1, 235), p = 0.93$, indicating that the mean change score for first graders ($M = 3.31, SD = 18.77$) did not differ significantly from the mean change score for fourth graders ($M = 3.26, SD = 21.65$).

Tables 4 and 5 contain the details of these results.

Table 4
Univariate ANOVA Examining Gender or Grade-Level Differences in the Change of Social Problem Solving

Source	<i>Df</i>	Mean Square	<i>F</i>	<i>Partial η²</i>	<i>P</i>
Gender	1	277.39	0.68	0.00	0.41
Grade	1	3.15	0.01	0.00	0.93
Gender x Grade	1	974.82	2.38	0.01	0.12

Table 5
Means, Standard Deviations, and Sample Size for Social Problem Solving by Grade and Gender

	Girls		Boys		Total	
	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>
First Grade	6.47 (17.54)	58	0.10 (19.58)	57	3.31 (18.77)	115
Fourth Grade	2.08 (18.02)	46	4.02 (23.80)	71	3.26 (21.65)	117
Total	4.53 (17.80)	104	2.27 (22.02)	128	3.28 (20.23)	232

Exploratory Follow-Ups to Research Question 1

Were there grade-level or gender differences in the fall or spring social problem-solving scores?

In order to examine the exploratory follow-up question, two 2 (gender) X 2 (grade level) ANOVAs were conducted. The dependent variable for the first ANOVA was the fall social problem-solving score and the dependent variable for the second ANOVA was the spring social problem-solving score. Results of the first ANOVA examining fall social problem-solving scores determined that there was a nonsignificant gender X grade interaction term, $F = 0.87 (1, 235), p = 0.35$. Similarly, the main effect for grade yielded nonsignificant results, $F = 0.07 (1, 235), p = 0.79$, indicating the fall social problem-solving mean score for first grade ($M = 100.00, SD = 15.00$) did not differ significantly from the fall social problem-solving mean score for fourth grade ($M = 100.00, SD = 15.00$). The main effect for gender was also nonsignificant, $F = 2.24 (1, 235), p = 0.14$, indicating the mean scores for boys ($M = 98.71, SD = 15.19$) were not significantly different from the mean scores for girls ($M = 101.61, SD = 14.60$) on the fall social problem-solving score. Tables 6 and 7 contain the details of these results.

Table 6
Univariate ANOVA Examining Gender or Grade-Level Differences in the Fall Scores of Social Problem Solving

Source	<i>Df</i>	Mean Square	<i>F</i>	<i>Partial</i> η^2	<i>p</i>
Gender	1	501.26	2.24	0.01	0.14
Grade	1	16.03	0.07	0.00	0.79
Gender x Grade	1	194.74	0.87	0.00	0.35

Table 7
Means, Standard Deviations, and Sample Size for Fall Scores of Social Problem Solving by Grade and Gender

	Girls		Boys		Total	
	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>
First Grade	100.56 (14.96)	58	99.44 (15.15)	58	100.00 (15.00)	116
Fourth Grade	102.94 (14.18)	46	98.12 (15.31)	72	100.00 (15.00)	118
Total	101.61 (14.60)	104	98.71 (15.19)	130	100.00 (14.97)	234

The same ANOVA analysis was conducted using the spring social problem-solving score as the dependent variable. Results indicated there was nonsignificant gender X grade interaction term, $F = 0.90 (1, 235)$, $p = 0.34$. Similarly, the main effect for grade yielded non-significant results, $F = 0.01 (1, 235)$, $p = 0.94$, indicating the spring social problem-solving mean scores for first grade ($M = 103.22$, $SD = 19.44$) did not differ significantly from the spring social problem-solving mean scores for fourth grade ($M = 102.99$, $SD = 15.90$). Conversely, the main effect for gender was significant, $F = 5.80 (1, 233)$, $p = 0.02$. An examination of mean scores reveals that mean scores for girls ($M = 106.14$, $SD = 14.13$) were significantly higher than mean scores for boys ($M = 100.66$, $SD = 19.27$) on the spring social problem-solving score. Tables 8 and 9 contain the details of these results.

Table 8
Univariate ANOVA Examining Gender or Grade-Level Differences in the Spring Scores of Social Problem Solving

Source	<i>Df</i>	Mean Square	<i>F</i>	<i>Partial</i> η^2	<i>p</i>
Gender	1	1719.33	5.80	0.02	0.02
Grade	1	1.56	0.01	0.00	0.94
Gender x Grade	1	268.01	0.90	0.00	0.34

Table 9
Means, Standard Deviations, and Sample Size for Spring Scores of Social Problem Solving by Grade and Gender

	Girls		Boys		Total	
	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>
First Grade	107.02 (15.88)	58	99.35 (21.96)	57	103.22 (19.44)	115
Fourth Grade	105.02 (11.64)	46	101.69 (16.94)	72	102.99 (15.13)	118
Total	106.14 (14.13)	104	100.66 (19.27)	129	103.10 (17.35)	233

Levene's test was significant for the dependent variable of spring social problem-solving, $F = 5.19 (3, 229)$, $p < .01$, indicating that the assumption of homogeneity of variance was not met. As a result, the Kruskal-Wallis test was conducted in order to verify the results of the ANOVA given the violation of homogeneity of variance. With respect to the main effect of grade, the Kruskal-Wallis test yielded non-significant results, $H(1) = 1.34$, $p = .247$. The examination of gender via the Kruskal-Wallis test also yielded non-significant results, $H(1) = 2.88$, $p = .08$. Because the Kruskal-Wallis test is a more stringent test when applied to data where assumptions of homogeneity of variance have been violated, for the purposes of this follow-up research question, it has been determined that there are no significant gender differences with respect to the spring social problem-solving score.

Research Question 2

What is the relationship between social problem-solving skills and frustration tolerance for all students as well as for boys and girls separately?

Prediction 1: It was predicted that the better a student's frustration tolerance, the better his/her social problem-solving skills would be across gender and over time. (Partially Supported)

In order to answer Research Question 2, a series of regression analyses were conducted for the total sample and then for boys and girls separately. The delay of frustration score (for fall and then spring) was used as the independent variable and the social problem-solving score (for fall, then spring) served as the dependent variable in the first set of analyses. Then the data set was split to analyze males and females separately. Regression analyses were rerun on each group separately. Each regression analysis is discussed below.

The first analysis examined fall delay of frustration scores predicting fall social problem-solving scores for the total sample of 233 students, $F(1,231) = 5.52, p < .05$. The delay of frustration score accounted for a significant amount of variance ($R^2 = .02, p < .05$.) in social problem-solving scores. An examination of the regression model indicates that as delay of frustration scores increased, so did social problem-solving scores, $\beta = .153, p < .05$. Results of the second analysis examined the same scores but for the spring administration. Similar to the fall score findings, the spring delay of frustration score accounted for a significant amount of variance in the spring social problem-solving score, $F(1,231) = 7.68, p < .01; R^2 = .032, p < .01$. An examination of the regression

model indicates that as delay of frustration scores increased so did social problem solving scores, $\beta = .179$, $p < .01$. Table 10 contains the regression results.

Table 10. Overall Regression Results

Dependent Variable	Independent Variable	<i>b</i>	<i>SE B</i>	β	R^2	<i>b</i>	<i>SE B</i>	β	R^2
Fall					Spring				
Social Problem Solving	Delay of Frustration	.153	.065	.153	.023*	.246	.089	.179	.032**

Note. * $p < .05$, ** $p < .01$.

Table 11. Regression Results for Boys and Girls

Dependent Variable	Independent Variable	<i>b</i>	<i>SE B</i>	β	R^2	<i>b</i>	<i>SE B</i>	β	R^2
Boys					Girls				
Fall Social Problem Solving	Fall Delay of Frustration	.062	.085	.064	.004	.283	.100	.271	.073**
Spring Social Problem Solving	Spring Delay of Frustration	.267	.131	.178	.032*	.208	.111	.183	.024

Note. * $p < .05$, ** $p < .01$.

Additional regression analyses were conducted to examine delay of frustration as a predictor of social problem solving for males and females separately. Results of those analyses indicate that in the fall, delay of frustration predicts social problem solving for girls, $F(1,102) = 8.06$, $p < .01$, but not for boys, $F(1,127) = .524$, $p = .470$. In the spring, the opposite pattern was true. Delay of frustration predicts social problem solving for boys, $F(1,127) = 4.17$, $p < .05$, but not for girls, $F(1,102) = 3.53$, $p = .06$. Table 11 contains gender-specific regression results.

Exploratory Follow-Up to Research Question 2

In order to gain a clearer understanding of the predictors of peer relationships for boys and girls, a series of follow-up regression analyses were conducted. The analyses were conducted separately for males and females both in the fall and spring. For all analyses, the dependent variable was peer preference scores and the independent variables were delay of frustration, emotion recognition, and social problem solving.

Results of the analyses for females indicate a significant relationship between the dependent variable and the independent variables in both the fall, $F(3, 100) = 2.95, p < .05$ and spring, $F(3, 100) = 3.58, p < .05$. In the fall, no unique predictors emerged, whereas in the spring, delay of frustration, $\beta = .253, p < .01$, was a unique predictor of peer preference. Results of analyses for the males indicate no relationship between the dependent variable and the independent variables in the fall, $F(3, 125) = 1.69, p = .186$, but in the spring, a significant relationship existed, $F(3, 125) = 3.44, p < .05$, and delay of frustration, $\beta = .276, p < .01$, emerged as a unique predictor of peer preference.

Table 12 contains specific regression results.

Table 12. Regression Results for Follow-Up Analyses

Dependent Variable	Independent Variable	<i>b</i>	<i>SE B</i>	β	R^2	<i>b</i>	<i>SE B</i>	β	R^2
		Boys				Girls			
Fall Peer Preference	Fall Delay of Frustration	.164	.079	.182	.038	.111	.104	.107	.082*
	Fall Emotion Recognition	.022	.081	.024		.100	.104	.097	
	Fall Social Problem Solving	-.068	.083	-.073		.189	.102	.190	
Spring Peer Preference	Fall Delay of Frustration	.294*	.094	.276	.076*	.325*	.129	.253	.097*
	Fall Emotion Recognition	.009	.064	.012		.105	.094	.111	
	Fall Social Problem Solving	-.007	.064	-.010		.038	.109	.03	

Note. * $p < .05$, ** $p < .01$

CHAPTER 5

DISCUSSION

The current research study was conducted via a quasi-experimental, non-equivalent group design. This quantitative study used a computerized tool (SELweb) to gather performance-based assessment that measured student social and emotional learning skills. Specifically, the current study focused upon the skill development during an academic year of a first- and fourth-grade cohort. After careful review of the literature surrounding social and emotional skill development, two skill areas were selected for inclusion in the study: social problem solving and frustration tolerance. The current study was designed to determine the changes during one academic year for boys and girls in the selected cohorts. The current study conducted statistical analysis in the form of analysis of variance in order to measure the changes during one academic year in problem-solving skills. In addition, regression analysis was used to measure the relationship between the two areas of skill.

Overall findings about the social and emotional skills assessed are discussed in more detail in the next section. Limitations of the overall study are also described in this chapter. The chapter concludes with implications and future directions with respect to research, policy, and educational practice.

Findings and Interpretations

The purpose of this quasiexperimental quantitative study was to investigate the changes in social and emotional skill development for boys and girls during one academic year. The study was designed to answer two research questions. Findings of each are reviewed within the context of the statistical analysis.

The first main prediction of the current study examined the changes in social and emotional skill development in the area of social problem solving within one academic year for first- and fourth-grade boys and girls. It was predicted that fourth-grade girls would show the largest growth in social problem-solving skills in one academic year. This prediction was not supported. In addition to the main prediction, an exploratory follow-up analysis was completed to investigate the gender or grade-level differences in fall or spring social problem-solving scores. Results showed no significant differences for grade-level social problem-solving scores in fall or spring; additionally, no significant differences existed for boys or girls in the fall or spring.

Earlier social problem-solving research conducted by Keltikangas-Järvinen and Pakaslahti (1999) determined that social problem-solving skills improve as a child is exposed to an SEL curriculum. Unlike the findings of Keltikangas-Järvinen and Pakaslahti (1999), the current study found no significant differences between first and fourth graders' social problem-solving skills. In addition, gender has been documented in previous research as a distinguishing factor in adolescent social problem-solving skills (Murphy & Ross, 1987). The current study sought to document this same finding at the first- and fourth-grade levels, however, no significant differences were found between

boys' and girls' social problem-solving skills at the first- and fourth-grade levels. It is important to note that past research used data gathered over a 7-year period; student assessment data was collected at approximately age 10 and then again 7 years later (Keltikangas-Järvinen & Pakaslahti, 1999). While the current research focused on first and fourth graders, there may not have been a wide enough age gap to detect any gender difference in skill level for social problem solving.

While past research has found considerable gender gaps related to academic abilities (Parker et al., 2012), the current study did not find any such disparity with regard to SEL skills. In addition, past research has found that higher SES is a large predictor of greater academic achievement (Parker et al., 2012). Taking a closer look at the sample set for the current study, possible explanations for a lack of gender differences lie in the homogeneity of the student population within the two schools. The study included approximately 120 first-grade students and 120 fourth-grade students from two grade-centered elementary schools in one Illinois public school district. The ethnic make-up of the school district in 2012 was 91.8% White, 0.2% Black, 2.1% Hispanic, 3.1% Asian, 0% Native Hawaiian/Pacific Islander, 0.1% American Indian, and 2.7% two or more races. The school district was 96.7% high SES with only 3.3% low income and 0.6% limited English proficiency. Research conducted by Hart and Risley (1995) documents the marked differences of student achievement based on the SES and home influence on student growth. The deidentified data used in the current study were not coded for SES. Further research and review within a more diverse sample set is warranted in order to more closely examine gender differences in relation to SEL skill development and SES.

The second main prediction of the current study examined the relationship between a child's social problem-solving skill and his/her frustration tolerance. It was predicted that the stronger frustration tolerance skill a student has, the stronger his/her social problem-solving skills will be across gender and over time. This prediction was partially supported. Using the full sample set of first and fourth graders combined, it was found that as delay of frustration skills increase, so do a child's social problem-solving skills. Upon closer examination by gender, this result held true for girls in the fall and boys in the spring. In addition to the main prediction, an exploratory follow-up analysis was completed to investigate the predictors of peer relationships for boys and girls. Results showed a significant relationship between girls' frustration tolerance and their level of peer connections during both time periods; additionally, a significant relationship between boys' frustration tolerance and their level of peer connections was found in the spring.

Earlier research conducted by McKown et al. (2009) found stronger social and emotional skill is associated with socially competent behavior, and more frequent socially competent behavior is associated with higher social preference (McKown et al., 2009). The results of the current study are consistent with this research while considering a child's social problem-solving skills and frustration tolerance. In addition, there is a direct relationship between a child's frustration tolerance and his/her number of positive peer connections. The important implications for this finding within the classroom setting is discussed in a later section.

Another important factor for consideration is the new tool used in the research, SELweb. As documented in Chapter 3, this is a newly developed assessment tool without widespread implementation or use in U.S. schools. There is not a large collection of documented use and data from the implementation of this performance-based assessment tool in Illinois schools. A comparative analysis across school settings and student populations is warranted in order to establish a baseline for grade-level and gender performance. Such information would inform a future review of gender differences in SEL skill development as measured by SELweb across a larger sample set and a more diverse student population.

Limitations

There are several limitations within the current study that are worthy of note. One of the most obvious limitations is the sample set. First, only 235 students were assessed, and although this is an adequate number, a larger sample would have provided larger cell sizes for the group comparisons. The assessment data collected represents students in two grade-centered elementary schools within the same school district in Illinois. While this sample may be significant for this population, the sample size is not large enough nor is it inclusive enough to extrapolate the current study's trends to the general population. In addition, the sample was predominantly White, non-Hispanic. The lack of diversity in the sample creates a lack of generalizability to other schools in other settings; the lack of diversity also made it virtually impossible to conduct an analysis of racial or ethnic differences in student social skill development. The participants in the current study came

from an upper socioeconomic community in the suburbs of Chicago. Again, the results cannot be extrapolated to other communities or socioeconomic levels.

A second issue with the current study's sampling is the differences in curriculum implementation between the two schools participating in the study. The sample of first-grade students were exposed to the *Second Step* SEL curriculum during the assessment phase of the study. Students from the fourth-grade sample were exposed to the *Connected and Respected* SEL curriculum during the assessment phase of the study. While both curricula included explicit lessons and practice in social and emotional skill development, there were inherent inconsistencies in implementation between the schools and between the classrooms within each school. Within the study, there was no control or monitoring of the implementation routines of the SEL instruction within the first- and fourth-grade classrooms while students experienced the lessons of each curriculum. While the SEL program implementation was not the focus of the current study, differences in curriculum and implementation may have impacted the skill development scores in an unknown manner.

The data collection modality of all modules being presented via a networked computer may have been a limiting factor while considering student performance. No baseline information was collected to evaluate individual student skill level with the use of technology. All data collected were gathered from students and reflected their scores while completing the SELweb modules while using the computer. Differences in student skill level in using the computer may have influenced their performance on the SELweb modules.

A final limitation of the current study is the time frame for the data collection. The research was based on SELweb data collected in late November and May of the 2012-2013 school year. It is possible that using a broader timeline for data collection, September and June for example, would have been a more representative time frame in which to measure social and emotional skill development during a full school year. In addition, the time frame of only one school year may have limited the conclusions that can be drawn from the analysis of the data. To accurately identify a trend in any population, a longitudinal study may be warranted.

Implications of Findings

Overall, the research conducted in the current study produced only one statistically significant result; however, the implications for school-based use of the new assessment tool, SELweb, are broad. Although further use and refinement of this tool are needed, SELweb provides timely and pertinent performance-based assessment data for SEL skills. Once refined, SELweb may be able to be utilized to examine SEL skill development for early elementary school students. While the tool is an excellent new option to gather classroom and school-based SEL data, there is not enough known about the use of this tool to measure SEL skill and growth over time. Further research must be conducted prior to identifying any large-scale implementation and market for such a tool.

The true power of SELweb is in the use of this tool to measure growth over time in specific SEL skills for individual students, classrooms, and grade-level cohorts. The data collected may be used to identify students who are struggling in a particular skill

area; school problem solving teams may work together to identify these students and determine a plan of action for intervention. The use of SELweb at multiple points during a school year may provide ongoing progress-monitoring data and allow school teams to reflect upon the efficacy of an intervention.

In addition, results of the current study showed a direct relationship between a child's frustration tolerance and his/her social problem-solving skills. If SELweb data were to show students exhibiting lower frustration tolerance skills, targeted interventions to increase their skill in this area would be warranted. As a result of such intervention, if offered consistently and in addition to the core SEL curriculum, one would hope to also see gains in social problem-solving skills and increased peer connections. In addition, a targeted intervention could have impact on other domains of skill and social connection.

As SELweb is refined and made available to a broader range of schools, there is a need for additional SEL intervention tools to address student skill deficits. While there are many core curricular resources that are widely available for schools to purchase to address explicit SEL skill instruction for all students, the data from SELweb will allow schools to identify specific skill areas for further instruction. There is the potential of a growing need for curricular resources available to schools for targeted SEL skill interventions.

Future Directions for Research

Future research should expand the study of social and emotional learning to include multiple variables of skill development across a more varied social context. The

inclusion of a more varied sample would allow for representation across multiple grade levels and school environments. Participants other than first and fourth graders in a high-SES community warrant further examination. Additional research, using SELweb as the assessment tool, is warranted to gain a broader base of student data in order to develop local and national norms for specific social skill areas. Just as schools review student progress in the areas of literacy and math, the inclusion of SEL data into student growth conversations is an essential next step in our schools. A closer examination of the learning profile and social skill development of students falling below average on SELweb is required. The impact of the SEL skill deficits can go beyond students' social domain to also impact their academic success and future well-being. Illinois stepped forward as the first state to require social and emotional learning standards; however, no requirement has been put forth regarding the assessment of such skills. Tools such as SELweb are important options for Illinois to consider because SEL skill development is an essential factor in student success.

There is a dearth of intervention resources targeted to improve weaknesses in specific SEL domains. As more schools make use of SELweb for student assessment, there is a need for future investigation into student and classroom-level interventions to promote targeted skill development in social and emotional learning. Such research would be beneficial to guide curriculum decisions and classroom interventions across schools.

Conclusions

The purpose of the current study was to gather performance-based social and emotional skill development data for early elementary-level students and to consider the growth during a school year. The results of the current study demonstrate that performance-based assessment can be used to gather individual, classroom, and grade-level social skill data. While documenting that the new assessment tool (SELweb) could be used to examine specific skills in the SEL domain, the true value of this tool comes with the action steps taken after the assessment data is reviewed at the school level. The performance-based data collected via SELweb should be considered at the individual student level and reviewed by teachers and school administrators in the context of growth during a school year. Teachers should consider a student's SELweb profile and plan for targeted social skill interventions based on the areas of low performance. Similar to the RtI model used for academic learning, a teacher may also use the SELweb tool to monitor progress and assess whether growth has been made in the specific SEL skill area. Future research should focus on the development of student interventions based on the student-specific responses within the SELweb assessment. The positive impact of individual student and whole-class SELweb data will only be seen when this information is reviewed by school teams and used to determine interventions that can be implemented to impact growth. In order to meet the needs of the 21st century and educate the mind and social and emotional core of each child in our schools, we must be willing to assess in the area of SEL and reflect thoughtfully upon the results.

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APPENDIX

SELweb™ ASSESSMENT ADMINISTRATION MANUAL

SELweb™

Social Emotional Learning Assessment

(Amended to include the two modules used in the current research)

Assessment Overview

1. *Peer Nomination*: Select which classmates you like to spend time with
 2. *Facial Recognition*: Is this student happy, sad, angry, scared, just okay?
 3. *Rocket Task*: Send 10 rockets to space
 4. *Perspective Taking*: Listen to 12 stories and answer questions
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5. *Comet and Bear*: Respond to 10 questions from two dogs
6. *Social Problem Solving*: Listen to 6 stories and respond to questions
7. *Matching Activity*: Get as many completed until the time runs out**

NOTES:

**The *Matching Activity* is truly measuring *Delay of Frustration*. One button is purposely stuck. If a student raises his/her hand to ask for help, slowly walk over and say “Just do your best” or “Just keep trying.”

Never inform the students that the button is programmed to be stuck! When you get back to the room, you may tell the students you will let the test makers know about the button.



When the headphones are flashing on the screen, the child can adjust the volume. When the volume is properly adjusted and the child has clicked the arrow key, the first assessment module will begin.

General Questions

<i>Here are questions, regardless of module...</i>	<i>Here's how to answer...</i>
- Can I go back and change my answer?	- No, once you press the arrow to move on, you can't change your answer. Do the best you can.
- I didn't mean to press that!	-That's okay. Just do the best you can for the rest of the test.

Social Problem Solving Module

The Social Problem solving assessment module is designed to measure children's ability to think through important aspects of commonplace, challenging social situations, including ambiguous provocation (i.e., getting bumped into) and peer entry (i.e., joining a group). The child will hear several short stories and be asked to pretend it is him/her in the story. The stories present difficult social situations. After each story, the child is asked a series of questions.

Total Number of Scenarios: 6

Estimated Time to Complete: 12 minutes

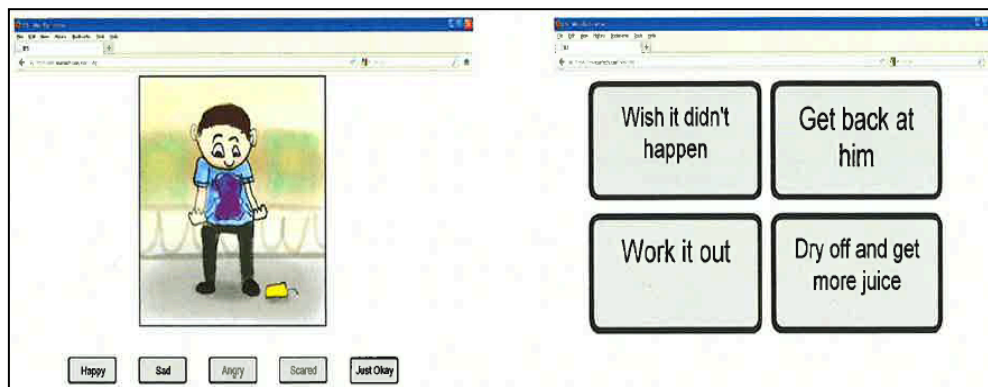
Here's what the child will hear in the scenario...

1. "How do you feel?" "Happy?"; "Sad?"; "Angry?"; "Scared?" or "Just Okay?" (Emotion audio will only be read aloud during the first story.)
2. "What is the problem?" (Answer choices will vary depending on the scenario)
3. Next, the child will be asked if he/she think that what happened in the story occurred *by accident or on purpose*.

Here's what the child will hear in the scenario...

4. "How do you want it to turn out?" (Answer choices will vary depending on the scenario.) [For questions 1-4, if the child has not clicked "next" after 4 seconds, the following audio will be read aloud "To go on to the next item press the arrow button. You may change your answer by clicking a different answer."]
5. "Now, we're going to say some things you could do. Click on all the ones you think are a good idea" [Child makes first selection and then after a 1-second pause, the following audio is read aloud] "Okay great, click on any others that are a good idea." [slight pause] "When you're done, click the arrow button."
6. "Now click on the one you would do" [If the child has not clicked "next" after 4 seconds, the following audio will be read aloud] "To go on to the next item press the arrow button. You may change your answer by clicking a different answer."

Here are some examples of what the child will see...



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<i>Here's what the child may say/ask...</i>	<i>Here's how to answer...</i>
<ul style="list-style-type: none"> - Can I change my answer? - I did not hear/ do not remember/ do not understand the directions. - How do I feel about what? - Can I hear the story again? - What if I think there's more than one that I would do? 	<ul style="list-style-type: none"> - For questions 1-4 & 6: Yes, click on a different answer -For question 5: Yes, you can click on a different answer and/or unclick an answer you have already selected by clicking it again -Repeat instructions above -How would you feel if that happened to you? -No, we cannot show the story again, do your very best to try and remember what happened - Select the one that is the most true for you.

Delay of Frustration Module

The Delay of Frustration assessment module is designed to measure an important dimension of **self-regulation**, a child's ability to tolerate frustration without acting on it.

This activity includes practice items. For the practice items, the child is presented with pictures of pairs of animals and instructed that if they are the same, the child is to press the green yes button, and if the animals are different, the child is to press the red no button. These practice items are included to ensure the child can correctly use the yes/no buttons and understands the nature of the task.

Next, the child will view two shape-matching instruction items. The child will see two shapes and will be instructed that if the shapes are the same, he/she is to press the green yes button and if the shapes are different, he/she is to press the red no button.

After these two items, the child is told to get as many right as he/she can, as fast as he/she can. A timer will appear on the screen. A series of shape pairs will then appear. For the first several items, as soon as the child selects his or her response, the next pair of shapes will appear.

In this task, certain items are pre-programmed to become "stuck." This means that no matter how many times or how long the child presses the button, it will not move on to

the next item. The number of times each child presses a button on the “stuck” items, and the total duration of button depression are recorded and taken as an index of their expressed frustration.

Estimated Time to Complete: 3 minutes

Here’s what the child will hear...

“You will see two animals on the screen, if the animals are the same kind of animal press the yes button; if the two animals are not the same kind of animal press the no button. Go ahead and give it a try”

“Alright, now we’re going to do the same thing but with shapes this time. You will see two shapes. If the two shapes are the same, press the yes button. If the shapes are not the same, press the no button”

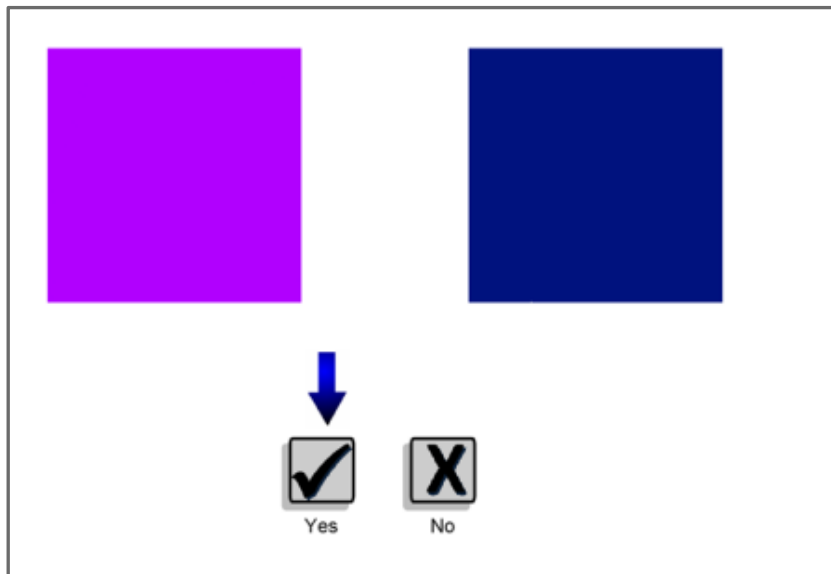
“These two shapes are different colors but the same shape; since they are the same shape, press the yes button”

“These two shapes are the same color but different shapes; since they are not the same shape, press the no button”

“Get as many right answers before your time runs out”

“Remember, get as many right, and go as fast as you can”

Here's what the child will see...



<i>Here's what the child may say/ask...</i>	<i>Here's how to answer...</i>
<ul style="list-style-type: none"> - I did not hear/ do not remember/ do not understand the directions. -I think the computer is broken. - Why isn't this working? - How do I make this work? -Can you fix this for me? 	<ul style="list-style-type: none"> -Repeat instructions: "You will see two shapes. If the two shapes are the same, press the yes button. If the shapes are not the same, press the no button. Remember, get as many right, and go as fast as you can." -Just keep working. <i>Never inform the child that the computer is programmed to become "stuck"</i> -Just keep working. <i>Never inform the child that the computer is programmed to become "stuck"</i> -You're doing it right, keep working - No. Just do the best you can.