The ability of adventure education to influence the social skill development of urban middle school students

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THE ABILITY OF ADVENTURE EDUCATION TO INFLUENCE THE SOCIAL
SKILL DEVELOPMENT OF URBAN MIDDLE SCHOOL STUDENTS

BY

PAUL J. SHIRILLA
Bachelor of Arts, Wittenberg University, 1997
Master of Arts, University of Minnesota, 2003

DISSERTATION

Submitted to the University of New Hampshire
in Partial Fulfillment of the Requirement for the Degree of

Doctor of Philosophy

in

Education

September, 2014
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June 23, 2014
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DEDICATION

My grandfather, Michael James Shirilla, was raised in Detroit, Michigan by Czechoslovakian immigrants who originally came to the United States to work in the coal mines of West Virginia. The ninth of 13 children, my grandfather was the only one to graduate from college. He earned his certified public accountant license and eventually started his own accounting firm. He and my grandmother, Leona, raised three boys who went on to earn graduate degrees in medicine and law.

I would like to dedicate this dissertation to my grandfather, who died when I was 10 years old. His courage, discipline, and work ethic laid the foundation for my father to pursue his dream of becoming a doctor. In turn, my parents allowed me the freedom and support to follow my passion for teaching and the outdoors to eventually find my career in higher education. I owe my professional success and personal happiness to my grandparents, parents, and family.

When I left University of New Hampshire after becoming ABD and took my current job at University of Wisconsin- River Falls, my grandmother gave me my grandfather’s nameplate that he kept on his work desk. It simply reads, “Mr. Shirilla.” I have kept that nameplate on my desk facing outward for others to see for two reasons. First, as a daily reminder of the importance of my family and the sacrifices they have made on my behalf. Second, as motivation to complete this dissertation to earn the right to be called “Dr. Shirilla” by my colleagues and students. Now that I have completed my degree, and another Shirilla has become a doctor, I know my grandfather would be proud of our family and me.
ACKNOWLEDGEMENTS

I would like to thank the members of my committee for their support throughout this process. Completing this dissertation has been the most challenging endeavor of my life and I could not have done it without them. I do not deserve their patience and encouragement.

I would like to thank Mike Gass, who gave me the opportunity in my graduate assistantship to work with this research project and make it my dissertation topic. I also wish to thank Mike for his guidance through the proposal process and the many hours he spent revising my work. I know Mike always wants the best for me. He believed in me even in the toughest times. Thank you Mike.

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Jayson Seaman has lived this process with me from the beginning of my doctoral studies. I learned so much from Jayson as his student, teaching assistant, research colleague, and friend. His perspective kept me going and was integral to my success. I hope this dissertation in some way validates the many hours he has spent listening to my ideas and offering advice. Thank you Jayson.
Brent Bell remained a quiet, faithful supporter despite long periods of not hearing from me or knowing the status of my progress. I sincerely appreciate his continued support when it surely would have been tempting to remove himself from my committee to focus on other work. Thank you Brent.

When I left UNH before completing this dissertation, Mike Gass told me that I was embarking on “the most difficult solo experience of my life.” He was 100% correct. I am not sure that I would have completed this journey if it had remained a completely solo experience. My good friend, Craig Solid, helped me in the time when I needed a local companion the most. I am forever grateful for his mentorship in the area of statistics, his unbelievable dedication to reviewing my work on a moment’s notice, and most of all his friendship.

I would also like to thank my parents, Jim and Laura Shirilla, and my in-laws, Les and Carolyn Svendsen, for their love, patience, and many hours of watching our daughters so I could have time to work.

My daughters, Elizabeth and Claire, were the source of my greatest motivation to finish as well as my greatest excuse to delay. The highest priority in my life is to be a good father. I hope I was able to do this while completing this dissertation. As they get older, I hope they can look back on this time and be proud of me.

Finally, my wife Amy has been my source of inspiration and strength throughout this process. I can never repay her for the sacrifices she has made to allow me to finish. She knew when to push me. She knew when to not ask about it. She never complained about all of the extra time she took care of our girls by herself. She loves me and supports me and I owe her everything.
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ABSTRACT

THE ABILITY OF ADVENTURE EDUCATION TO INFLUENCE THE SOCIAL SKILL DEVELOPMENT OF URBAN MIDDLE SCHOOL STUDENTS

by

Paul J. Shirilla

University of New Hampshire, September, 2014

This study investigated the ability of adventure education to impact the social skill development of United States urban middle school students. The Project Adventure Inc. RESPECT adventure education program was delivered to students at three Boston Public middle schools over the course of three academic years. Students at two neighboring Boston Public middle schools were used as a comparison group. The RESPECT program was a comprehensive, whole-school program facilitated by school administrators and teachers trained by Project Adventure staff.

Social skill ability was measured by the Social Skills Rating System (SSRS) Student Form, which was administered at the beginning and end of each academic year for a total of six measurement occasions. Multilevel modeling was used to analyze the longitudinal data to determine the effect of treatment, school, and gender on students’ initial status and estimated rate of change in social skill development.

Results showed no statistically significant difference between experimental and control students’ estimated rates of change. However, the shape of estimated growth trajectories was different between groups. Similar results were found regarding the role of school attended on social skill development. Statistically significant differences were
found between male and female students’ estimated rates of change regardless of treatment status or school. Females began sixth grade with higher social skill ability than males. Males and females declined in a similar fashion until the end of seventh grade, however, males increased more sharply than females from the end of seventh grade to the end of eighth grade.

Results also indicated that regardless of treatment status, school attended, or gender, urban students had a nonlinear estimated social skill growth trajectory during their three middle school years. Specifically, students demonstrated a decline in social skill ability from the beginning of sixth grade to the end of seventh grade followed by an increase in social skill ability from the end of seventh grade to the beginning of eighth grade. The findings of this study are relevant to both school-based adventure education research and the broader area of adolescent social skill development.
The Role of Middle Schools in the Development of Youth

The role of middle school education in the United States (US) has historically focused on a variety of academic and other developmental outcomes (Vars, 1990). The importance of these specific outcomes has fluctuated with the social, political, cultural, and economic events and influences of the past century. While high schools have primarily focused on academic training in preparation for entrance into the job market or institutions of higher learning, middle schools were founded upon educational philosophies centered on fostering healthy physical, social, and emotional development in students in addition to academic achievement. This total development of children was seen as the most important educational goal, recognizing that successful social and emotional development were necessary contributors for academic success (George, Lawrence, & Bushnell, 1998). Middle schools were established to be “focused on the preadolescent learner, and its programs seek nothing less than the successful transition of these learners through this difficult and unique period of human development” (Wiles & Bondi, 1993, p.2). Researchers in the human development field note that experiences in this life stage can have a profound impact on the future development and success of individuals (Eccles, Midgley, et al., 1993; Eccles et al., 2006; Eccles & Roeser, 2011; Eccles, Wigfield, et al., 1993; Roeser & Eccles, 2000). Based on this belief, original
middle school pedagogy was founded upon a child-centered approach of actively engaging students.

In reaching such objectives, it is critical to understand the interconnectedness between social development and academic success in the organization of middle schools. It is clear that the middle school educational philosophy does not view these two domains as separate entities, but their interconnection as the primary educational goal to promote long-term success (Compton, 1990). While contemporary middle schools operate upon the inherent traditional middle school philosophy, the relationship between social development and academic achievement has become fragmented (Elias, 2009). And in such cases academic achievement is often valued to a larger degree, sometimes neglecting efforts to promote the social development of students.

Indeed, with all the recent focus given to the “academic side” of the report card, we risk losing sight of the “other side”. That is the side that reflects how we live with one another and whether we are inclined toward respect and cooperation or harassment and selfishness and the skills needed to avoid problems of violence and alcohol and substance abuse. (Elias, 2009, p.834)

A growing resistance to this imbalance is mounting within the educational community as scholars argue that in order for academic achievement to improve middle schools must remember the importance of social and emotional development (Osher et al., 2007; Zins, Bloodworth, Weissberg, & Walberg, 2004). This research study hopes to contribute to this discussion by exploring the use of one particular pedagogical approach, adventure education, to foster social skill development in middle school students.
The Construct of Social Development

Individuals are inherently social in nature and live within a variety of social milieus. A person's social development, behavior, and ability is often described in a multitude of ways depending upon the particular social context. As such, a wide variety of theories of social development and behavior exist from which to discuss these constructs. The primary theory used to provide the conceptual basis of this study is Bandura's social cognitive theory (1986). Updated from his previously named social learning theory, Bandura's social cognitive theory asserts that behavior is influenced and learned from both individual action and environmental factors. Bandura (1986) states:

In the social cognitive view people are neither driven by inner forces nor automatically shaped and controlled by external stimuli. Rather, human functioning is explained in terms of a model of triadic reciprocality in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other. (p.18)

An individual's social behavior is guided by previous experiences and expectations of success and failure. "By observing the different outcomes of their actions, they develop hypotheses about which responses are most appropriate in which settings. This acquired information then serves as a guide for future action" (Bandura, 1977, p. 17). Individuals also learn social behaviors by observing the behavior of others around them in similar social situations. Social cognitive theory posits that individuals build upon these personal experiences and vicarious learning situations to behave in ways that provide positive reinforcement (Creer, 1991). In this manner, modeling of behavior is a central learning mechanism within social cognitive theory. Individuals do not have to
learn solely from their own behavior, but can also learn social behavior through the modeling of others. Individuals can also utilize learning derived from modeling in other social contexts. In doing so, individuals experience either positive or negative responses. Through this process, individuals are able to learn social behaviors that provide the response they desire.

Of course, this modeling can result in both positive and negative social behavior. Middle school students certainly observe situations of both appropriate and inappropriate social behavior in the context of established social norms of our society. These observations occur at home, school, and the variety of other social settings where adolescents learn in today's society. As such, schools have a responsibility to model appropriate social behaviors and allow students opportunities to exhibit these behaviors and experience the resulting response. In doing so, students develop a set of social skills that is one aspect of a healthy social development, as well as one of the central goals of the middle school educational philosophy. This set of social skills is one contributing asset toward academic success, and more importantly, to life outside of school and a belief that they can construct a successful future.

Social Competence and the Role of Social Skills

The construct of social development contains a myriad of behavioral, cognitive, emotional, and environmental factors. However, one of the most important components of social development is social competency. Social competency is most commonly described as an individual's ability to obtain positive outcomes from interactions with others (Spence & Donovan, 1998) as well as their ability to adapt to diverse social
The construct of social competency is composed of a multitude of factors such as interpersonal problem solving skills, social perception, self-regulation, processing of social information, social knowledge, and self-monitoring (Spence, 2003). This set of behaviors and capacities are referred to as social skills and are responsible for an individual’s ability to demonstrate social competence. Stated another way, if social competency is the ability to obtain positive outcomes in differing social contexts, social skills are the specific behaviors used to achieve these outcomes (McFall, 1982). The development of social skills is an integral aspect of promoting both social competency and overall social development.

Social Skill Development among Urban Middle School Students

The need to foster positive social skill development among United States youth in both in-school and out-of-school environments has garnered increased attention and importance over the past decade (Elias & Haynes, 2008). Young people who have developed social competencies “often possess sound judgment and the ability to manage circumstances that benefit themselves and others in social situations” (Petersen & Leigh, 1990, p.100). In the youth development literature, social skills have been shown to be a fundamental asset for healthy psychosocial development as well as play a critical role in the educational process of adolescent students (Hanlon, Simon, O'Grady, Carswell, & Callaman, 2009; Scales, Benson, Leffert, & Blyth, 2000). Social skills also serve as a preventative tool for several problematic behaviors such as school and criminal behavior, dropping out of school, antisocial behavior, unhealthy stress, and violent behavior (Mahoney, Stattin, & Magnusson, 2001; Marsh & Kleitman, 2002; Sorlie, Hagen, &
Ogden, 2008). While acting as a deterrent, social skill development has also been shown to be a significant factor in academic functioning and achievement (Eccles, Barber, Stone, & Hunt, 2003; Malecki & Elliot, 2002).

Social skills are not a neutral construct, especially for minority urban youth. It is important to be clear that for the sake of this research, social skills are conceptualized and favorably biased towards the traditional social behaviors of institutionalized schooling. These social behaviors are those that are valued by teachers and school administrators that contribute to social order in the school environment. They are grounded in the belief that such appropriate social behavior is conducive to individual academic learning and contributes to the classroom environment that allows others to learn. It is important to note that alternative conceptualizations of social skills exist, particularly for minority urban youth. One such conceptualization is Kohl’s perspective on the role of assent in learning (1991). He argues that for some minority youth experiencing social, political, and economic oppression in both school and out-of-school environments, the intentional decision to not learn is an appropriate response that is most often viewed as a failure to learn by teachers, parents, and school administrators. However, since these students have made the decision to consciously not learn, this should not be viewed as failure. Instead, educators should recognize this behavior as a response to oppression as opposed to an inability to learn. As Kohl states, “not-learning is a healthy, though frequently dysfunctional, response to racism, sexism, and other forms of bias” (p. 43). Minority youth have no legitimate way to criticize or resist the oppression they experience other than resistance and rebellion to the social and academic norms imposed on them in school.
Students who decide to act as non-learners often exhibit social behavior that intentionally disrupt the classroom/school environment. This behavior can be highly skilled to rebel against the normative social expectations of schools. Students who adopt a non-learning approach often have the social skills to get other students to empathize with them and join them in exhibiting socially disruptive behavior (Kohl, 1991). Such behavior is most certainly social skill ability, though it is counter to the normative conceptualization of social skills of institutionalized schools. This research was conducted with minority students in urban middle schools. These students undoubtedly faced social, political, and economic oppression. As such, some students may have acted as non-learners and also resisted any intervention aimed at promoting the normative social behavior desired by their school. However, this research is not aimed at gaining insight into the effect of oppression on the social behavior of minority urban youth. It is important to divulge that this research utilizes the traditional, normative conceptualization of positive social skill behavior and adopts the belief that promoting the development of these social skills can be beneficial to minority urban youth.

Another important social and geographic issue of this research is the transition from elementary to middle school. Research has shown this transition can be difficult for all students (Peterson, Hamilton, & Russell, 2009), and especially challenging for urban students of minority racial/ethnic backgrounds (Barber & Olsen, 2004; Eccles, Wigfield, et al., 1993; Midgley & Edelin, 1998). Along with the physical, cognitive, and social changes experienced during this life stage, urban minority students often face the additional barriers of poverty, violence, lack of resources, and decreased expectations (Li, Nussbaum, & Richards, 2007). As such, minority populations often lack the social
support and related social skills as they enter the middle school environment (Burchinal, Roberts, Zeisel, & Rowley, 2008; Feng & Cartledge, 1996). Correspondingly, the need to foster social skill development among urban students has garnered increased attention in the realm of middle school intervention efforts (Elias & Haynes, 2008; Sun, Borden, Serido, & Perkins, 2009; Traube et al., 2007; Utley, Greenwood, & Douglas, 2007).

However, schools face a myriad of social, political, and economic obstacles that interfere with providing adequate programming aimed at improving students’ social development (Zins et al., 2004). While administrators look for ways to improve their schools, the current political landscape requires them to find methods that produce increased academic achievement outcomes. The need for such reforms is particularly urgent for urban schools underperforming on US federal academic achievement benchmarks established by the No Child Left Behind Act (NCLB) of 2001. Schools failing to attain adequate yearly progress (AYP) standards face serious consequences (e.g., reorganization, closure). This strict environment of academic accountability in the face of a myriad of challenges has caused concern among administrators, teachers, and parents alike regarding the state of the US educational system.

As stakeholders search for possible solutions to this joint dilemma, a variety of educational initiatives have been introduced in an attempt to provide assistance in resolving both academic and social development issues. This connected relationship is of particular interest in middle school education as it seeks to synthesize these two primary goals of the middle school educational philosophy. Proponents of this approach point to the belief that improving student social competency will result in increased academic success as well as social skill development outside and beyond school (Zins et al., 2004).
While social skill development was the focus of this research project, it was designed with the same belief that social competency is an important component of academic success.

**Adventure Education and Social Skill Development**

Adventure education programs are generally focused on creating physically and emotionally safe communities, supportive relationships, sense of belonging, positive social norms, and opportunities to build individual social skills (Forgan & Jones, 2002). Due to these characteristics it has been argued that such programs are well suited to provide opportunities for social development (Russell, 2003). However, these characteristics are held within the authoritarian, White cultural perspective and may not be valued by other cultures.

Adventure education programs typically begin with the setting of group behavioral norms and intentionally fostering a sense of belonging by stressing the group’s process (Dyson & Brown, 2005). In addition, adventure programs traditionally use activities to focus directly on social skills such as communication, trust, problem solving, conflict resolution, and leadership (Gass, 1993). As such, adventure education programs may have the ability to impact participants’ social development in a meaningful way.

The ability of adventure education to impact social development has been researched in a variety of contexts, which include therapeutic programs, wilderness trips, summer camps, outdoor education centers, and K-12 physical education settings. A comprehensive examination of this research in the following chapter suggests the potential of adventure education to positively influence the social skill development of
youth. However, very little research has been conducted in school settings, urban environments, or involving low-income, minority participants. Existing research in school settings has been largely confined to the physical education setting. Little is known about the ability of adventure education to influence social development when core adventure concepts are integrated throughout all classrooms and within the school culture over multiple school years.

**Purpose of the Study**

The purpose of this study is to explore the ability of a comprehensive, three-year adventure education program to influence the social skill development of urban middle school students.

**Justification for the Study**

Adventure education programs have been conducted in a variety of settings, with a number of different populations, and for a variety of intended outcomes. Traditionally, adventure education programs involving youth occur in out-of-school settings for a relatively short period (ranging from a few hours to several days). Evaluations of the outcomes of such programs have focused on individual psychological traits such as self-concept and self-esteem (Ewert, 1987; Sibthorp, 2000). However, adventure education programs rely heavily on the group process through the use of cooperative games, problem-solving initiatives, trust activities, and other experiences utilizing interpersonal relationships. As such, adventure education has been described as a potentially useful pedagogical approach to foster the social development of youth (Glass & Shoffner, 2001;
Russell, 2003). Accordingly, researchers in the field have called for a shift in focus to examine the relationship between adventure education programs and group-based outcomes such as social development, group cohesion, and sense of community (Jordan, 1994; Nicholson, Collins, & Holmer, 2004; Russell, Gass, & Young, in submission).

While adventure education programs can occur in a variety of settings, the use of adventure education in school environments is becoming more popular, especially as schools strive to create more socially supportive learning communities. However, adventure education programs often encounter several limitations in their move into school curriculum. Some of these challenges include:

- The relatively short length of time during which programming occurs.
- Programming is often delivered in out-of-school environments to provide a more novel setting.
- Programming is often focused on at-risk student populations or in counseling environments instead of encompassing the entire student population.
- Even when programs occur at the school site, they are facilitated by non-school staff who attempt to transfer learning to the school environment through post-program conversation with students and staff.

This research project was designed to eliminate these common obstacles. The Project Adventure Responsibility, Engagement, Safety, Principles, Empathy, Challenge, and Trust (RESPECT) program is the lens through which the relationship between adventure education and social skill development will be examined. The program was implemented in three schools over a period of three years. Two neighboring schools not receiving the RESPECT Program will be utilized as a comparison group. All program
activities occurred on school grounds during normal school hours and were delivered to all students in participating grades. The program was facilitated entirely by teachers and staff. These steps were taken with the intent to gain a more accurate view of the relationship between adventure education and social skill development.

An additional justification for this research is methodological in nature. Much of the research conducted in adventure education utilizes qualitative methods. While qualitative research is an important method to explore complex theoretical issues, there is a call for a greater use of quantitative research methods in adventure education research (Russell, 2006). Moreover, existing quantitative research in this adventure education field has been criticized for a lack of rigor in both research design and statistical techniques. Specifically, quantitative research in adventure education often (a) utilizes small sample sizes that fail to afford appropriate statistical power to detect real differences, (b) lacks a comparison group, (c) fails to collect longitudinal data to examine change over a significant period of time, and (d) utilizes basic statistical analysis of bivariate data (Ewert, 2005).

The development and growth of multilevel modeling statistical techniques (also commonly called hierarchical linear modeling) over the past two decades affords researchers the ability to more accurately examine change over time utilizing longitudinal data. This technique allows researchers to truly examine individual development in areas such as social skills by using multiple measurement occasions over a long period. Many past research studies, especially in the area of adventure education, claim to examine change in constructs such as social skill development by using pre-post research designs over a much shorter period. Such designs are not able to gain an accurate view of change
over time, and as such, do not provide useful insight into the true nature of development in a given area.

Utilizing multilevel modeling with data structures common to adventure education research settings is the appropriate statistical analysis to investigate change over time. However, researchers in adventure education have largely failed to utilize these contemporary statistical tools and a call has been issued to address this concern. Russell (2004) states, "Regardless of the specific approach, future researchers should consider alternative methods of analysis appropriate for nested data structures common in adventure education and therapy program studies" (p. 187). Despite this recommendation, very little research utilizing multilevel modeling has been conducted in adventure education settings. In fact, no known research study has examined the impact of an adventure program in a US middle school utilizing multilevel modeling of longitudinal data to appropriately examine change over time.

Research Questions

1. What effect did participation in the Project Adventure RESPECT adventure program have on the rate of social skill development as measured by the Social Skills Rating System (SSRS)? Did the rate of change differ significantly between experimental and control students?

2. Did the rate of change in social skill development differ significantly between experimental and control students on any of the four SSRS subscales of Cooperation, Assertion, Empathy, and Self-Control?
3. Controlling for RESPECT program participation and gender, did attendance at one of the five participating schools significantly impact the rate of change in social skill development?

4. Controlling for RESPECT program participation and school attended, did gender significantly impact the rate of change in social skill development?

**Definition of Key Terms**

**Adventure education**- For the purpose of this research, adventure education is considered a form of experiential education. Project Adventure Inc. is widely acknowledged as the leader in developing adventure education programs for school environments. Their definition of adventure education identifies five concepts/conditions that make up an adventure education experience: (a) Active student engagement, (b) Personal challenge, (c) Healthy risk-taking, (d) Physical and emotional safety, and (e) An atmosphere of fun (Panicucci, Falkingham-Hunt, Kohut, Rheingold, & Stratton, 2002). Adventure education programs typically use a variety of cooperative games and problem-solving activities focused on fostering personal growth and group development depending on the goals of each program. Adventure education can also be referred to as adventure programming, adventure-based programming and adventure-based learning. For the sake of this research, these four terms are used interchangeably.

**Adolescence**- For the purpose of this research, adolescence refers to the period of human development between childhood and adulthood that includes the ages of 10-16. For the purposes of this research, the term youth is used interchangeably with adolescence.
Social development- For the purpose of this research, social development is informed by the social cognitive theory of Bandura (1986), which states that social behavior is influenced and learned from both individual action and environmental factors.

Social competence- For the purpose of this research, social competence is defined as an individual’s ability to obtain positive outcomes from interactions with others, as well as their ability to adapt to diverse social contexts and demands (Bierman & Walsh, 2000; Spence & Donovan, 1998).

Social skills- For the purpose of this research, social skills are defined as a person’s ability to perform those behaviors that are important in enabling a person to achieve social competence (McFall, 1982).

Assumptions

1. Humans are social beings and have an innate need for social interaction and belonging (Weiss, 1974).

2. Schools are social places and learning is an inherently social process (Zins et al., 2004)

3. All participants agreed to willingly participate in the research without coercion.

4. All participants represented their perceptions and abilities accurately when answering survey questions.

5. The survey instrument used is valid and reliable.

Limitations
1. This study is limited to the five Boston public middle schools that participated in this research project.

2. The results of this study are limited to the populations involved and cannot be generalized to other populations or groups.

3. This study is limited by numerous variables not controlled by this study, which could have interacted and influenced the results. Each of the five schools involved in this study is unique and as such, has its own impact on teachers, students, and this research.

4. The RESPECT program was utilized and implemented with some degree of variability by each school, administrator, and teacher. As such, the results of this study are the most informed inquiry into the influence of the program, given this inherent component of any social science research.

5. The results of this study cannot imply causation but can merely infer relationships.

6. This study should be viewed as an exploration into the use of adventure education programs as a method to assist in the social skill development of youth. No universal claims will be made about the use of adventure education programs in other contexts and settings.

**Summary**

The need for US middle schools to provide opportunities for the social development of students is a central educational aim of middle school institutions. The emerging relationship between social skill development and academic achievement (Elias
Haynes, 2008; Zins et al., 2004) provides further motivation for schools to consider initiatives that are specifically designed to enhance students’ social skill development. This is especially true for US urban middle schools that may be struggling to meet the academic achievement standards of NCLB and are invested in working to narrow the achievement gap by implementing social skill programs. The use of adventure education program interventions may be an effective method to improve students’ social skill development. The Project Adventure RESPECT program - the locus of the proposed research - was designed with these aims in mind. Because of the dual nature of middle school education, it is helpful to conceptualize the larger logic in which this project is embedded: First, what may be called the “near outcome relationship” is the connection between adventure education and social skill development. The “far outcome relationship” is the connection between adventure education and academic achievement, mediated by social skill development. To be clear, the scope of this research is limited to the near outcome relationship between adventure program interventions and social skill development. By focusing on this level of detail, this study hopes to provide insight that may be useful in future research efforts exploring the use of adventure education programs to foster both social skill development and academic achievement.
CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to provide a comprehensive review of the literature pertinent to the research of this study. It begins with the broad view of middle school development literature and progresses to the salient areas of social skill development and adventure education. The chapter also includes a presentation of the conceptual framework utilized in this study, articulating the theoretical mechanism of change used to explain how the process of adventure education may foster adolescent social skill development within a middle school context.

Middle Schools as Developmental Contexts

It can be argued that development during early adolescence is the most important stage in an individual’s life span. During this time, adolescents develop physically, cognitively, socially, and emotionally in a more intense manner than in any other life stage outside of infancy (Lerner, Boyd, & Du, 2001). These powerful developmental changes coincide with the evolution of personal relationships with parents, siblings, and peers during the transition from the elementary to middle school environment. As Roeser, Eccles, and Sameroff (2000) state:

The ability of adolescents to effectively organize their developing biological and psychological capacities in conjunction with the evolving social, cultural, and
historical circumstances of their lives is one essential factor in determining whether they stay engaged and perform well in school, develop positive peer relationships, and feel positive about themselves and their future (Eccles & Midgley, 1989; Erikson, 1950; Masten & Coatsworth, 1998). (p. 443)

During this complex period of development, students spend a significant portion of their daily lives in the school environment. Whether intentionally or by default, schools play a vital role as a context for the healthy development of adolescents. While student development is certainly influenced by the variety of contexts that exist outside of school, the school environment is “the place where they are exposed to their culture’s font of knowledge, hang out with their friends, engage in extracurricular activities that can shape their identities, and prepare for their future” (Eccles & Roeser, 2011, p. 225). As such, students’ experiences and interactions at school have a profound impact on their academic capacity, personal relationships, and social-emotional well-being (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006).

Eccles and Roeser (2011) provide a brief synopsis the summary of research findings over the past decade, identifying three levels influencing adolescent development during the middle school years. Beginning at the microlevel, they recognize the influence of teachers, curriculum, and classroom environments on the development of students. The four most researched aspects of this context are: (a) teacher qualifications, (b) curriculum and academic work, (c) teacher beliefs, and (d) teacher-student relationships and classroom emotional climate. In this final aspect Niemiec (2009) argued that schools and classrooms should “(1) provide the students with a voice in how the classroom is run and what kinds of assignments are made, (2) allow all students to be
successful at the required academic and social tasks, and (3) provide emotional support to all students” (Eccles & Roeser, 2011, p. 229). These recommendations come from research utilizing both longitudinal and randomized trial research designs (Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006).

The second level of influence articulated by Eccles and Roeser in their review of research is the broader school-wide characteristics impacting student development. This level is further categorized into: (a) school culture, (b) school safety, (c) and school student body and peer influences. Research in these areas has demonstrated the ability of intervention programs focused on academic engagement and peer social support to positively influence academic achievement (Hattie, 2009; Stewart, 2008).

The final level of adolescent development research in middle school settings reviewed by Eccles and Roeser is the district-wide policies impacting the school context. These can be further defined as: (a) grade configurations and school transitions, (b) school size, (c) school start and end time, (d) school tracking policies, and (e) extracurricular activities and service learning. While research in these areas demonstrates the impact such policies have on the healthy intellectual and social-emotional development of adolescents, the research conducted in this study is less applicable in this domain. The five middle schools involved in this research were contained within the same school district. Though there were inevitably slight differences between schools in these areas, the schools operated under the same district policies and can be viewed as being closely similar from the perspective of the district-level context. As opposed to inter-district differences, this research project focused on inter-student differences in
social skill development as a result of participation in a three-year, whole-school adventure education program.

When examining the recent research at this broadest level of middle schools as contexts for adolescent development, it is clear that the middle school environment is a complex milieu of micro to macro level factors that have a profound impact on students. It is also apparent that this study is appropriately situated within contemporary inquiry with the potential to inform relevant areas of adolescent development.

**Transition to Middle School and Adolescent Development**

The transition to middle school can be a significant challenge for students in their adolescent years (Peterson et al., 2009), especially for urban African American students (Burchinal et al., 2008; Li et al., 2007). The complexity of this transition is well-articulated by Jacobson, Williford, and Pianta (2011) who state:

This school transition requires significant cognitive and behavioral adjustment as it often involves not only physical change of location, but changes in school perspective and instructional formats, increases in the number of teachers, decreases in perceived teacher support, increases in class size, changes in peer networks, and increased expectations for individual responsibility, and often increased exposure to the potential for delinquent behavior (Akos, Queen, & Lineberry, 2005; Eccles, 2004; Rudolph, Lambert, Clark, & Kurlakowsky, 2001; Simmons & Blyth, 1897; Steinberg, 2005). (p. 256)

On a broad level, research examining the effects of these factors at the time of transition to middle school shows a drop in self-esteem (Fredricks & Eccles, 2002), declines in
competency and perceived self-efficacy (Schunk & Pajares, 2002), and increased risk-taking behaviors (Bullis, Walker, & Sprague, 2001a). In a hierarchical linear modeling (HLM) longitudinal study investigating 761 children’s’ perceived self-competency between grades 1 through 12, Jacobs, Lanza, Osgood, Eccles, and Wigfield (2002) found that, on average, students felt less competent each successive year of school.

While there is a sizeable body of research examining the transition to middle school, it is worthwhile to highlight a select number of studies utilizing rigorous research designs and sophisticated analytic methods that are pertinent to this research project. Burchinal, Roberts, Zeisel, and Rowley (2008) utilized HLM to longitudinally examine the role of social risk and protective factors in predicting African American students’ academic achievement during the transition to middle school. They utilized the SSRS in their measurement of social skill ability as affected by exposure to social risk. The key finding from this study was that African American students who were exposed to higher levels of social risk demonstrated lower standardized test scores in math and reading, lower social skill ability, and exhibited higher levels of problem behavior. Social skill decline appeared to be linear in nature and there were no significant differences in the rate of decline between males and females.

Peterson, Hamilton, and Russell (2009) utilized a randomized control trial to investigate the effect of a coping skills intervention program for 119 (72 male, 47 female) students transitioning from 5th to 6th grade. Geographic location and race/ethnicity characteristics of participants were not reported. The coping skill intervention program utilized a group intervention approach employing “vicarious learning, interpersonal skill building, imitative behavior, and information dissemination” (p. 287). A repeated
measures analysis of variance (ANOVA) showed experimental students significantly improved in social skills, functional communication, and adaptive skills. Effect size reports showed these gains to be moderate to large (social skills, $d = .45$, functional communication, $d = .27$, and adaptive skills, $d = .76$). Based on these findings, the authors support the use of group-based programs to improve the social and behavioral functioning of students transitioning to middle school.

Barber and Olsen (2004) also used a longitudinal study analyzing four transitions between 5th and 9th grades among the same population of students. The sample ($n = 993$) consisted of an equal number of male and female students of predominantly White, middle class backgrounds. Their research focused on students’ perceptions of school environmental factors and their relationship to academic, personal, interpersonal functioning. The relationship between student functioning (self-report) and perceived school environment was tested at each grade transition using repeated measures ANOVA. However, the authors recommended future research to utilize growth curve analysis or HLM to gain a more nuanced view of this relationship. In the transition from elementary (5th grade) to middle (6th) school, change occurred in 8 of the 24 variables, with five of the eight changes being positive. Students reported higher levels of teacher support, time spent on homework, and self-esteem while reporting lower depression and loneliness. Negative changes were reported in perceived need for improved school organization (rules to prevent deviant behavior) along with declines in grades and relationships with their fathers. This finding is noteworthy since it contradicts previous research indicating this transition is a profoundly negative experience for students. Changes in the latter three grade transitions were, however, negative across the majority of the 24 variables. The
most negative transition occurred between the 6th and 7th grades. However, researchers hypothesized this may have been attributed to the transition from a small, family-pod classroom structure utilized in this particular school district to a more traditional classroom environment in 7th grade. Similarly, the lack of expected negative declines reported by students after the transition from 5th to 6th grade may have been mediated by this unique classroom structure that more closely resembled the elementary school environment. Regardless, outcomes of this study support previous findings of general declines in academic, personal, and interpersonal functioning throughout students’ middle school years. However, since longitudinal data was not utilized, the trajectory of change cannot be inferred from this study.

Taken collectively, this research suggests the need for middle school administrators, teachers, and staff to be aware of the potential challenges students face upon entering this demanding new setting. School districts with a high proportion of students at-risk for deficiencies highlighted in the aforementioned research should also anticipate such challenges and implement proactive measures to provide students with the support and skills necessary to adjust to the academic, social, and emotional requirements of middle school life. This research also provides evidence to suggest that declines in developmental and academic areas may be more pronounced during the 6th grade year when students are first transitioning to the demands of the middle school environment. None of the articles cited in this section provided information about the trajectories of change and no studies indicated the presence of nonlinear change over time.

Social Skill Development in Middle School
A myriad of approaches exist for schools interested in supporting students in their transition to, and sustained success within, the middle school environment. One approach is to focus on the effective development of social competence, and requisite social skills, that allow students to positively interact with their peers and teachers. Students who develop the necessary skills to cooperate with others, assert themselves appropriately, control their emotions, and respect others' feelings are more likely to successfully develop intellectually, socially, and emotionally during their middle schools years (Elias, 2009). The purpose of this section is to present the relevant research examining social skill interventions in the school context, with particular focus on the middle school level.

Before discussing the research, it is helpful to present the historic landscape of research on social skill development and the nature of such interventions. Research on social skill development rose to prominence in the late 1970s. Since then, a significant amount of research has been conducted to examine the effect of social skills training interventions to improve psychological disorders, behavioral difficulties, and prosocial behaviors of youth (Spence, 2003). Social skill training interventions have four general objectives: (a) promoting social skill acquisitions, (b) enhancing social skill performance, (c) reducing or removing interfering problem behaviors, and (d) facilitating the generalization and maintenance of social skills (Elliot & Gresham, 1991). Though a variety of methods can be utilized to teach social skills, Ladd and Mize (1983) identified four training variables that underlie all social skill interventions: (a) instruction, (b) rehearsal, (c) reinforcement or feedback, and (d) reductive processes.

In general, interventions conducted during the 1970s and 80s were rooted in the behaviorist tradition and utilized a deficit-based, therapeutic approach to correct
problematic social issues to allow adolescents to effectively function in school and society. Such interventions were generally didactic in nature, more centrally focused on individual instruction, and most often conducted with students pulled out of the normal classroom environment. Contemporary social skill interventions utilize a more holistic approach, recognizing that social skill development programs must be multimodal, integrated efforts that involve parents, teachers, and peers over a significant period (Spence, 2003). Such interventions utilize a variety of instructional methods such as interpersonal problem solving, peer feedback and reinforcement, role-play, self-monitoring and reinforcement, and positive adult modeling. Regardless of method, Elliott, Malecki, and Demaray (2001) assert the following regarding social skill instruction within the school environment:

...teaching social skills involves many of the same methods as teaching academic concepts. Effective teachers of both academic and social skills model correct or appropriate behavior, elicit imitative responses, provide corrective feedback, and arrange for opportunities to practice the new skill. A large number of intervention procedures have been identified for teaching social skills to children and adolescents. These procedures are based on the assumption that children learn social skills through observational and instrumental learning. (p. 27)

This assertion is consistent with the assumptions of the intervention program examined in this study as classroom teachers provided social skill instruction to all students within the school/classroom environment.

To examine the effectiveness of previous social skill interventions within the school environment, several meta-analyses have been conducted that provide a historical
perspective and current state of knowledge. McIntosh, Vaughn, and Zaragoza (1991) reviewed 22 empirical studies conducted between 1980 and 1991. Consistent with the application of social skill training during this time (deficit-based), all interventions focused on social skill training for students identified as learning disabled. Nearly all interventions utilized individual and small group instructional sessions occurring outside of the normal classroom environment. More than half (14) of the studies reported significant positive outcomes. One of the most important predictors of intervention effectiveness was the length of intervention. “Studies reporting intervention effects provided nearly three times as much intervention time for training than those interventions that did not yield significant results” (p. 455). Studies reporting positive effects were 12 to 25 weeks in length while studies no intervention effects ranged from one to 14 weeks.

However, methodological limitations exist for in this review. First, positive outcomes were indicated by basic statistical significance testing between pre- and post-test measurements with only six studies including a follow-up measurement to test the longevity of positive effects. Positive claims based on measurement between two time points can often be attributed to measurement error as opposed to true change (Rogosa, Brandt, & Zimowski, 1982). Of the six studies utilizing a third measurement time point, only three reported that positive gains seen at post-test were maintained over time. Second, samples sizes of the 22 studies ranged from 2 to 92. However, the mean sample size was 26 and the median sample size was 20.5. Studies with such small sample sizes lack appropriate statistical power and are susceptible to Type II error (failing to reject the null hypothesis when it is false). Third, effect sizes were not reported for any of the
interventions claiming positive results. Therefore, the magnitude of any positive change in social skills is unknown.

The meta-analysis by McIntosh et al. (1991) provides a historical perspective on the outcomes and limitations of earlier social skills research. A related meta-analysis published in the same year by Zaragoza, Vaughn, and McIntosh (1991) found similar effects (and contained similar limitations) in their examination of 27 social skill intervention studies with children with behavioral disorders.

Several other meta-analyses were conducted between 1992 and 1999. Schneider (1992) reviewed 79 controlled studies of children’s social skill training, though not all studies occurred in the school environment. A significant improvement of this review was the reporting of effect sizes. The mean effect size of the 79 studies was $r = .40$, which is a moderate effect. In more practical terms, an effect size of this magnitude predicts that 70% of students receiving social skills training would improve compared to only 30% of students not receiving the intervention. The ability to report a moderate mean effect size allows this review to validate the use of social skill training interventions as a viable method to improve students’ social skill ability.

Beelmann, Pfingsten, and Losel (1994) reviewed 49 studies examining the effectiveness of social competence training for students between the ages of 3 and 15. All studies were conducted in the school environment. Similar to Schneider (1992), the mean effect size was $d = .47$. While the moderate effect size provides further support for school-based interventions, additional findings of this study are relevant to the intervention program examined in this study. First, studies that utilized a multimodal intervention strategy showed higher effect sizes than monomodal interventions. This
supports the current paradigm that social skill development is a complex, multi-faceted construct. Just as students exist in a dynamic, complicated social environment, interventions to increase social skills should be similarly designed and implemented. Second, no significant differences were seen between males and females in terms of the effectiveness of the intervention on social competence. Third, effect sizes were significantly higher for social cognitive skills than related outcome variables such as social interaction and social adjustment. Social cognitive theory is the theoretical model utilized in the intervention examined in this study.

A more pessimistic meta-analysis conducted by Quinn, Kavale, Mathur, Rutherford, and Forness (1999) reviewed 35 social skill interventions for students with emotional or behavioral disorders (EBD). Published studies until 1994 were included in this review. Their analysis revealed a small mean effect size of $d = .199$. An effect size of this magnitude does not provide compelling evidence to warrant the use of social skill training for students with EBD. However, the authors state:

The results of this meta-analysis suggest that social skill interventions, when used alone in small group settings, are not effective in increasing the social competence of students with EBD. As Walker et al. (1995) suggested, social skill training may be more effective if integrated across the school curriculum. (p. 62)

This meta-analysis provides a corrective perspective to the previous review by Zaragoza, et al. (1991) focusing on students with EBD, which reported overall positive effects but did not include effect sizes. It also symbolizes the shift away from short, isolated training methods with small groups of students toward longer, classroom and school-wide interventions.
At the beginning of the 21st century, the limitations of prior social skill research became evident and a new direction was forged. In their article titled “A Promise Unfulfilled: Social Skills Training with At-Risk and Antisocial Children and Youth,” Bullis, Walker, and Sprague (2001b) convincingly argued for the end of social skill interventions targeted solely for those students identified as deserving special attention. Utilizing data from the meta-analyses mentioned previously in this section, they concluded, “...to be effective, social skill training should be offered over a longer period than is typical and as part of a comprehensive intervention approach” (p. 82). They strongly advocated for the use of social skill instruction as part of comprehensive interventions at the middle school level. This assertion was based on: (a) the acceleration of high-risk behavior during this age period (Loeber & Farrington, 1998), (b) decreased parental monitoring and involvement during this time period (U.S. Centers for Disease Control and Prevention, 1999), and (c) the increasing pressure of academic achievement placed on middle school students as they progress towards high school. “In this context, middle school students need support and training to stay off the path to delinquency and other adjustment problems. Social skill instruction is necessary, but not sufficient in and of itself, to address the rapidly increasing risks during this developmental period” (p. 77).

School and classroom-wide interventions incorporating a social skill component became more prevalent during the first decade of the 21st century. However, the first review of this new paradigm of research did not occur until 2011 when January, Casey, and Paulson (2011) analyzed 28 peer-reviewed articles published between 1981 and 2007. Only studies that were delivered at the classroom level were included. Interventions of this kind are labeled as Tier 1, or universal prevention, which aim to
enhance protective factors and reduce risk factors for an entire school population (Gordon, 1983). Previous meta-analyses focused on research that was at the Tier 3 level, which describes interventions aimed at reversing existing social skill deficits and is targeted at identified students and administered outside the classroom. However, Dishion, McCord, and Poulin (1999) provide evidence that labeling students with problem behavior and pulling them out of the classroom environment for group-based remediation can cause more harm than good. First, non-identified students quickly judge the labeled students as needing special attention that can foster a negative social stigma. Identified students can react to this stigma by fulfilling the expectation of problem behavior as a means of defiance and social acceptance through attention-seeking problem behavior. Second, students with identified problem behavior often reinforce negative behavior with each other through verbal and non-verbal means while working together in isolated groups outside of the larger classroom. As such, Tier 1 interventions utilizing a prevention approach are now advocated over remedial Tier 3 interventions.

In their review of Tier 1 social skill interventions, January et al. (2011) calculated an overall effect size of $d = .15$, which is small but significantly different from zero. While an effect size of this magnitude represents a “modest benefit to the average student” (p. 249), the overall effect size was not homogenous. The authors identified several moderating variables that had the potential to influence the effectiveness of particular social skill interventions. First, grade level was a statistically significant moderating variable. Consistent with past research (Schneider, 1992), interventions at the preschool and primary (K-5) level were more effective than those at the middle and high school levels. However, the researchers identified the transition to middle school as an
important developmental time in students’ lives that could be an important time for social skill instruction.

It is possible that early adolescence can provide a second smaller window of opportunity to intervene. The social skills needs for adolescence are different than the skills used in childhood. Friendships and social relationships become more complex during this period, demanding that children acquire a new set of skills (Bigelow & LaGaipa, 1980; Youniss & Smollar, 1985). (p. 251)

While the middle school years could provide a context for necessary social skill interventions, the authors noted that very few classroom-wide programs have been researched at this grade level.

In addition to grade level, length of intervention was also a moderating variable. Supported by both logic and previous research, longer programs yield more positive results. Studies included in this review ranged from 3.3 hours to 90 hours of exposure. Program length was a significant predictor of effect size with longer exposure equally greater social skill development.

A final moderating variable identified in this review was intervention modality. Interestingly, the authors found that interventions with active instructional methods had significantly greater effect sizes than programs that used passive methods. The authors asserted that children “learn concepts and ideas best through activity, and social skills are no exception. The school interventions that include a majority of experiential approaches, such as role playing and activities, are more effective than programs that do not” (p. 252). This finding is unique to this review and pertinent to the program examined in this
research as it almost exclusively utilized active, experiential methods within an adventure education social skill curriculum.

The outcomes and limitations of these historical and recent meta-analyses of social skill research show the evolution of school-based interventions and current state of knowledge in this domain. Specifically, prior research supports the need for additional multi-year, classroom-wide, universal prevention-style social skill interventions at the middle school level. While recent research has been conducted on the role of social skills specific to issues/populations such as (a) bullying (Spinelli-Casale, 2009; Ward, 2008), (b) students with autism spectrum disorders (Ogilvie, 2009; Slavin, 2011), (c) students with ADHD (Evans, Axelrod, & Langberg, 2004), and (d) students with emotional/behavioral disorders (Hill & Coufal, 2005), the remainder of this section will focus on contemporary research that is more salient to the topics of this research.

The role of social skills in academic achievement. As mentioned previously, the focus of this study is to examine the effectiveness of adventure education to promote social skill development among urban middle school students. The comprehensive, multimodal, school-wide Project Adventure RESPECT Program is the lens through which this relationship is examined. While the relationship between adventure education and social skill development is the near-term outcome of interest, it is important to acknowledge the far-term relationship between social skill development and academic achievement. While social skill development during adolescence is critical in its own right to promote present and future success in school and out-of-school environments, emerging research is showing the influence of social skills on academic achievement.
This research is an important added benefit for social skill interventions as well as justification for school administrators to implement such programs as a means to promote two of the primary objectives of the middle school years. While research on this relationship has grown significantly over the past decade, a selection of the most relevant studies is used to provide appropriate background in this area.

Wentzel provided (1993) one of the first studies to show strong evidence linking students' social behavior to academic achievement. To begin, Wentzel hypothesized three ways that social behavior could be directly related to academic performance. First, she asserted that students who have the social ability to function effectively within the rules and structure of a classroom environment are more academic successfully, even when accounting for individual differences in cognitive ability and learning readiness. Second, students who cooperate with peers and teachers contribute to an achievement-oriented environment conducive to academic success for all students. Conversely, students who exhibit noncompliant social behavior with peers and teachers can be highly detrimental to content instruction and the ability of students to learn. Finally, Wentzel posits that students who exhibit pro-social behaviors gain the preference of teachers, which can have a direct impact on quality of interaction and individual instruction. Conversely, teachers spend more time redirecting and disciplining students who display disruptive social behavior instead of providing instruction and academic support.

To test her hypotheses, Wentzel used multiple regression analyses to examine the impact of 423 6th and 7th grade students' social behavior on their grade point averages (GPA) and scores on the Stanford Test of Basic Skills (STBS). Controlling for academic behavior, IQ, teacher preference, family structure, sex, ethnicity, and days absent from
school, pro-social behavior was an independent, statistically significant positive predictor of GPA. Controlling for the same variables, antisocial behavior was an independent, statistically significant negative predictor of GPA. Results were similar for the STBS outcome variable, though antisocial behavior was not statistically significant at the $p < .05$ level. Wentzel asserted that the positive correlation between pro-social behavior and STBS scores demonstrated an important directional conclusion. Since STBS scores are not shared with students, social behavior seems to act as an independent, preceding influence on academic achievement. This finding refutes the idea that students who are academically successful are predisposed to display appropriate social behavior and that academic success does more to promote social development than the other way around. Thus, interventions aimed at social skill development have the potential to positively affect academic achievement, while interventions focused solely on academic performance are unlikely to have any effect on social skills.

Influenced by Wentzel’s work, Malecki and Elliot (2002) examined the relationship between social skills and academic achievement among 139 3rd and 4th graders. Though not conducted with middle school students, this study provides an important replication of the Wentzel study that is relevant to this study. Though the authors claim the analysis was longitudinal, in fact the analysis only utilized two time points (fall and spring) during the academic year. The Social Skills Rating System teacher (SSRS-T) and student (SSRS-S) forms assessed social skill ability at both time points. The Iowa Test of Basic Skills (ITBS) measured academic achievement. Standard regression analyses, controlling for sex, minority status, disability status, grade, and school, examined the influence of SSRS scores on ITBS scores. Results showed that
SSRS-T scores accounted for a statistically significant amount of the variance in ITBS scores at the fall time point. However, this relationship was not found in the spring. In addition, SSRS-S scores were not a significant predictor of ITBS scores at either analysis. However, when social skills and problem behaviors were analyzed simultaneously via regression, social skills emerged as a statistically significant indicator of future academic achievement. Though not as strong as the results of Wentzel's study, this study provides further evidence suggesting that social skills may act as an academic enabler. "Educators should not ignore the importance of social skills and the role these skills play in a student's academic learning" (p. 22).

The research of Wentzel (1993) and Malecki and Elliott (2002) provides an important grounding for the relationship between social skills and academic achievement. Methodologically, the use of regression analysis was a significant improvement from prior research utilizing more basic correlational analyses (Feshbach & Feshbach, 1987; Green, Forehand, Beck, & Vosk, 1980; Lambert & Nicholl, 1977). The ability of regression analysis to control for the many confounding variables encountered in social science research affords the ability to more strongly claim a direct, predictive relationship between social skills and academic achievement. In this context of this study, Elliott et al. (2001) summarize the implications of this relationship when they state:

The existing research on classroom social behavior and academic achievement measured in a variety of ways indicates that students' pro-social behaviors affect teachers' behavior and the students' own actual achievement. These effects are significant in both magnitude and importance. Educators who choose to assess and intervene to improve students' pro-social behaviors will find that it can pay
academic achievement dividends for individual students while improving their own instructional environment. (p. 22)

Consistent with this rationale, the purpose of this research study is to determine the effectiveness of adventure education to contribute to the social skill development of middle school students. This is conducted with the beliefs that (a) appropriate social skills are a fundamental developmental asset for the life effectiveness of adolescents and (b) students' social behaviors in the classroom have a direct impact on their ability to learn.

**Social skill development among urban, at-risk, and minority student populations.** The development of appropriate social skills during adolescence is important for students to successfully transition to the middle school environment, facilitate academic success, and navigate the increasingly complex in-school and out-of-school social environments. While this seems true for all students regardless of geographic location or ethnic background, much of the current research focuses on the urgent need for social skill development among urban, at-risk, minority students. Researchers have documented the high rates of poverty, crime, unemployment, substance abuse, and violence that have become concentrated in U.S. urban areas (Jargowsky, 1997). This social disorder poses significant challenges to urban adolescents to develop positive social skills, avoid deviant behavior, and succeed academically (Grant et al., 2000). This is especially true for African American youth who are overly represented in disadvantaged urban communities.

Considering the negative influences characterizing high-risk urban environments there is an urgent need for quality preventive interventions designed for youth
exposed to such influences, particularly those who are already at risk for other personal and social reasons. Understandably, schools offer an ideal context for the implementation of such efforts (Grant et al., 2000, p. 97-98).

The remainder of this section examines the current literature examining the role of social skill development among at-risk, urban populations.

Consistent with earlier cited research advocating for early intervention, much of the current research examining social skill interventions with at-risk, minority, and urban students occurred in an elementary school setting. Utley, Greenwood, and Douglas (2007) examined the effectiveness of a social skill intervention on 3rd (n = 4) and 4th grade (n = 6) African American students in an urban elementary school. Their results showed that participation in a 6-week group-based social skill program decreased inappropriate social behavior and increased appropriate social behavior. These results were basic descriptive statistics examining differences in teacher-reported observational data from pre-test to post-test. While the potential effectiveness of social skill training for African American students is encouraging, this type of study is inconsistent with previous suggestions regarding effective social skill interventions. Instead of utilizing a comprehensive, classroom-wide approach, individual teachers identified the African American students to receive the social skill program based on their disruptive classroom behavior. The students were pulled out of their classroom environment to participate in the program. While classroom teachers observed initial progress in appropriate behavior, no follow-up measurement was conducted. This type of research highlights the methodological limitations of research of this nature and further warrants the need for
universal, classroom-wide social skill interventions in urban schools comprised of minority student populations.

Bardon, Dona, and Symons (2008) conducted a similar study when they examined the effectiveness of a social skill intervention for three African American students in an urban elementary school. In contrast to the method utilized by Utley et al., the social skill program studied by Bardon et al. was a classroom-wide intervention delivered over a two-month period. However, the researchers chose to focus their analysis on 3 students who were again identified by their teachers as requiring social skill improvement based on their previous inappropriate social behavior. Results indicated that the social skill intervention increased the percentage of cooperative play of the three African American students based on differences in visual observation data between pre-test and post-test. While this result is encouraging, this research shares similar limitations in method and scope highlighted in the previous study.

A more relevant study by Elias and Haynes (2008) examined the effectiveness of a classroom-wide social skill intervention for 282 3rd grade students in 6 urban elementary schools over the course of one academic year. Of the 282 students, 172 were African American, 27 were Hispanic/Latino, two were Caucasian, one was Native American, three self-identified as Other, and 77 students were ethnically unidentified. Researchers formed two groups, African American and non-African American, to examine the role of African American ethnicity (the 77 non-identified students were removed from this analysis). Researchers utilized the SSRS to assess social competence at pre and post-test. At pre-test, African American students were found to have significantly lower level of social competence than non-African American students.
Female students had significantly higher levels of pre-test social competence than boys. Structural Equation Modeling (SEM) was utilized to determine significant correlations between the various predictor and outcome variables. Change in social competence, as measured by the SSRS, was not statistically significant for either African American or non-African American students. However, when examining the relationship between social competence and academic achievement within the African American group, pre-intervention social competence and change in social competence through participation in the intervention were both statistically significant predictors of post-intervention academic achievement. Gender was not predictive of either change in social competence or post-intervention academic achievement for either African American or non-African American students. This study provides evidence that social competence is an important developmental asset for urban African American students. However, 3rd grade students have yet to encounter the (a) racial and gender stereotypes, (b) risk factors of the urban environment, and (c) pressure to perform academically to the extent that they will in the middle school years.

Caplan et al. (1992), provide one of the only insights into the role of social competence among urban middle school students when they studied the impact of a classroom-wide social skill intervention for 282 6th and 7th grade students from one urban middle school and one suburban middle school. Students from the urban middle school (n = 206) were 90% African American, 8% were Hispanic/Latino, and 2% were mixed ethnic origin while students from the suburban middle school (n = 76) were 99% Caucasian and 1% Hispanic/Latino. Unique ethnic status was not included as a predictor variable in their multivariate analysis of variance (MANOVA) analysis; however, urban
versus suburban location was examined as a factor in social skill development through participation in the 15-week youth development program. Urban students who participated in the program significantly increased their social efficacy compared to suburban students and control students and each school. This finding provides support for the need of social skill interventions for at-risk, minority students. It also suggests that these students are receptive to classroom-wide interventions to promote social development.

While social skill interventions may be helpful for students in urban middle schools, research also demonstrates the difficulties in implementing effective social skill programs in struggling urban schools. It is important to remember that teachers and staff of such schools often live and work in the same communities as their students and are exposed to the same urban risk factors of crime, violence, poverty, and economic depression. These factors have contributed to U.S. urban middle with high rates of teacher and student absenteeism, low staff morale, and sustained low academic achievement (Noguera, 2003). Therefore, successfully implementing universal, classroom-wide interventions in low functioning schools can be problematic.

Gottfredson, Jones, and Gore (2002) studied the implementation of a classroom-wide social competence program in a Washington DC middle school for 255 7th and 8th grade students over the course of two academic semesters. Utilizing the Social Competency Rating Form (SCRF), they found that students receiving the program increased their social skills during the fall semester, but no increases occurred during the spring semester. Gains in social skills over the full academic year were not statistically different from comparison students not receiving the program. Researchers attributed
these results almost entirely to implementation issues arising from a highly disorganized school environment. Specifically, the intervention curriculum was delivered with relative success during the fall semester. However, program implementation degraded over the course of the spring semester. Intervention efforts were thwarted by (a) classroom disorder during program delivery, (b) administrative leadership that did not promote a culture of high expectations in regards to implementation support, and (c) significant loss of instructional time due to teacher and student absenteeism as well as class rescheduling. Gottfredson et al. state that their research “adds to the accumulating evidence that preventive intervention using approaches that have been found efficacious in earlier research will often be of limited effectiveness when applied in very difficult school settings” (Elias, 1997; D. C. Gottfredson, Fink, Skroban, & Gottfredson, 1997; D. C. Gottfredson, Gottfredson, & Skroban, 1998; Jones, Gottfredson, & Gottfredson, 1997; Skroban, Gottfredson, & Gottfredson, 1999, p. 54).

Research conducted by Lochman et al. (2010) adds to the evidence documenting the difficulty of successfully implementing social skill interventions in struggling middle schools. Researchers examined the effect of the Fast Track prevention program among 445 students from urban middle schools in North Carolina, Tennessee, Washington, and Pennsylvania. A group of 446 students from the same schools acted as controls. Schools were labeled as high-risk based on crime and poverty rates. The Fast Track program focuses on improving social skills, emotional coping skills, and positive peer relations. Previous research at the elementary school level showed the Fast Track program to be effective in accomplishing these outcomes (Bierman et al., 2007; Bierman et al., 2010; Conduct Problems Prevention Research Group, 2010, 2011). In addition, intervention
participants in the Lochman et al. study were followed from 1st grade through 8th grade and participated in the program throughout that time. "Analyses of program outcomes through the end of elementary school provided evidence, with small effect sizes (.14-.27), for the continued positive outcomes from Fast Track" (p. 597).

During the middle school years, the Teacher Ratings of Student Adjustment (TRSA) measured social skills at the end of 6th, 7th, and 8th grade. In contrast to outcomes from the elementary grades, no significant differences in social skills were observed between intervention and control students during the three middle school years. Researchers attributed this decaying of positive outcomes during middle school to environmental and programmatic factors. First, they hypothesized that:

...the volatile changes in children’s social interactions and academic engagement during the middle school years can interfere with the intervention’s impact on children by making the youth less responsive to the social reinforcement of intervention staff and less ready and motivated to follow adult staffs’ plans for social and behavioral change. (p. 619)

This claim is supported by previous research showing the difficulty in the transition to middle school, especially for students in urban communities. Second, given the heightened social and academic intensity of the middle school setting, researchers hypothesized the intervention failed to have sufficient intensity to continue positive social skill outcomes. Thus, positive changes observed in elementary school were unable to be supported through the period of adolescence. As such, they recommended the expansion and strengthening of social skill interventions during the middle school years in order to be effective.
Taken collectively, this snapshot of research among urban students encourages the necessity of further research at the middle school level to provide needed social skill development for students facing considerable social challenges in their schools and communities. However, it also highlights the difficulty of effective program implementation and effectiveness with students and schools exposed to the substantial risk factors of the U.S. urban environment.

The role of gender in social skill development. The role of gender in social skill development is a construct of inquiry in this study. It is commonly known that boys and girls differ in their cognitive and physical development during pre-adolescence and adolescence (American Psychological Association, 2002). It is also important to realize that boys and girls have unique patterns of social development, which are influenced by cognitive developmental differences as well as social and cultural norms (Crombie, 1988). In general, since girls are more developmentally advanced than boys upon entering the middle school environment, they are often more motivated to participate in social skill programs. On the other hand, boys tend to socially interact in groups more frequently than girls. This due in large part to participation in sports that are highly dependent on teamwork and are governed by a complex set of rules. As such, boys tend to gain skills in cooperation within large groups more quickly than girls. They also have more opportunities to assert themselves individually due to the competitive nature of these environments. These environments also necessitate the ability of boys to demonstrate self-control more often than girls, though boys tend to struggle with this skill during adolescence than girls (Crombie, 1988). Since girls interact more often in pairs
and small groups, they tend to form closer relationships with their peers more quickly than boys. They also tend to develop skills around caring and empathy more quickly than boys, which is attributed to both the nature of their social behavior and the influence of female societal norms (Block, 1983). Finally, due to gender stereotypes and developmental differences, boys are more likely than girls to be resistant to social skill training efforts (Asher & Renshaw, 1981).

Little empirical research has been published to examine these gender expectations specific to school-based social skill interventions. Taylor, Liang, Tracy, Williams, and Seigle (2002) examined the impact of an elementary level social competency intervention program on 227 students. They also examined the impact of the intervention on students’ ability to effectively transition to middle school. The SSRS was utilized to assess social skill development through participation in the multi-year program. Regression analysis did not show a significant overall program impact on social skill development for students exposed to the program compared to control students. However, girls reported higher levels of assertiveness in sixth grade after exposure to the program during elementary schools. Boys who participated in the program indicated higher levels of self-control and overall social skills; however, these results were not statistically significant. These exploratory findings suggest that social skill intervention programs can be effective at enhancing gender-specific social skill deficits. This research also suggests that exposure to an intervention at one school level (elementary) can positively impact transition to the following level (middle school).

Liang, Tracy, Kenny, and Brogan (2008) replicated the research by Taylor et al. (2002) by examining the impact of exposure to the same elementary school social
competency program among 153 middle school 6th graders. Liang et al. utilized the Relational Health Indices- Youth Version as their outcome measure as opposed to the SSRS. While this measurement contains similar social skills constructs such as empathy, empowerment, and peer engagement, it focuses more intently on relationship formation with peers and teachers/mentors. The meaningful finding of their analysis was that boys who participated in a social competency intervention program during elementary school developed quality relationships with friends and teachers/mentors as they began middle school more effectively than boys who were not exposed to such an intervention. Interestingly, they found that girls tended to develop quality relationships with peers and teachers/mentors regardless of exposure to a social competency intervention.

This limited research seems to suggest that social skill interventions are especially important and appropriate for boys, particularly in the areas of empathy, self-control, and ability to form quality relationships. While girls may be more socially adept at the middle school level to appropriately interact with fellow students and teachers, assertiveness is an area that could be enhanced through a social skill intervention.

**Bandura’s Social Cognitive Theory as Mechanism of Change**

Before examining the relevant literature regarding social skill development through adventure education, it is important to identify the conceptual mechanism of change that will be used to explain how adventure education programs have the capacity to promote social skill development. As previously mentioned, Bandura’s social cognitive theory provides the overarching theoretical framework for this study (Bandura, 1986). Though developed nearly 30 years ago, social cognitive theory continues to be
utilized as the theoretical construct in a wide variety of developmental contexts. It has been used to examine such topics as (a) personal affect and activity engagement among secondary school teachers (Salanova, Llorens, & Schaufeli, 2011), (b) instructional factors that contribute to reading achievement among young African American students (Robinson, 2010), (c) social skill teaching methods of adapted physical educators (Samalot-Rivera & Porretta, 2009), and (d) teacher efficacy in Title I middle schools (Rostan, 2009).

Within social cognitive theory, the principle of triadic reciprocal determinism provides the causal mechanism of development (Phillips & Orton, 1983). Triadic reciprocal determinism refers to the interaction of cognitive, behavioral, and environmental factors that collectively influence one another to control the nature of social development (Bandura, 1986). In his explanation this process, Bandura stresses the non-dualistic nature of social cognitive theory. He contends that social development is both an individual and group process, with neither level superior to the other. "Theorizing about human agency and collectivities is replete with contentious dualisms that social cognitive theory rejects. These dualities include personal agency versus social structure, self-centered agency versus communality, and individualism versus collectivism" (Bandura, 2001, p. 14). In this way, educational psychologists argue that Bandura’s social cognitive theory, and its causal mechanism of reciprocal determinism contains elements of both individual-based constructivist and group-based sociocultural theories of social development (Martin, 2004). Bandura (1978) argues "people do not simply react mechanically to situational influences- they actively process and transform them" (p.
Therefore, "the relation of the self-system to the environment is too complex to be captured in a mechanical or behavioristic metaphor" (Phillips & Orton, 1983, p. 159).

The hybrid nature of Bandura's social cognitive theory is an important connection to the adventure education method of social skill development. In contrast to traditional, didactic instructional strategies used to foster social skill development among individuals, adventure education programs utilize a more holistic method that is rooted in the group process (Quay, 2003). Adventure education programs aim to increase individual skills through mutual support within a group setting (Dyson & Brown, 2005). Group members, including teachers and school staff, contribute to fostering an environment where individual and group development can occur. In this way, the adventure education process mirrors the reciprocal nature of Bandura's social cognitive theory in the interaction between personal cognition, individual and group behavior, and the unique features of a given social environment.

While social skills are an individual asset, in an adventure education program they are developed through individual participation in a particular group setting. In the case of this study, individual middle school students function in a variety of social groups within the school environment. In classes where adventure education methods are used, students have the opportunity to develop social skills through their own actions as well as by observing others' behavior. These interactions occur within the environmental conditions of each particular classroom, which are unique to each individual teacher. Students have the opportunity to observe and test various social skills within these environments to develop a set of skills that will allow them to be socially competent.
Bandura's triadic reciprocal determinism provides a way to understand how children learn social skills through adventure education activities. First, adventure education programs traditionally begin by developing group social norms. Most often, the students develop these norms with the teacher acting as a facilitator. These group norms aim to establish a physically and emotionally safe environment that allows students to take healthy risks without fear of social ridicule. Within adventure activities, students observe social behaviors of their classmates. These observations have the ability to affect students' perceptions of their social skill ability (cognition). It is important for students to have the ability to test these skills (behavior) in an authentic environment to see if they elicit the social response they desire. The safe environment of adventure education programs can afford students this ability without fear of social rejection if a particular social behavior results in an unfavorable response.

Second, adventure education programs place the ownership of the group process primarily with the students. "Adventure education emphasizes the value of the 'process' of students participating in a physical activity, such as a cooperative activity, an initiative problem, or a challenge task, and de-emphasizes the outcome of the activity" (Dyson & Brown, 2005, 156). Within a given adventure education activity, students are empowered to succeed or fail as a group by their own actions. Students immediately receive the natural consequences of their individual behavior and group efforts in a given activity. They are able to observe the impact of their individual social behavior and the social behavior of others on the group process. Since most adventure activities focus on a common group goal, students are required to work together to accomplish a given task. This characteristic of adventure education methods necessitates effective social behavior
among students to be successful. Students are able to see the outcomes of both positive and negative social behavior at the individual and group levels. This provides an environment to learn social skills where individual student behavior determines the outcome of the group. Similarly, the overall group behavior can influence individual social behavior. This relationship parallels the reciprocal determinism that Bandura posits as the development mechanism of social development.

Finally, a central component of adventure education is the processing at the conclusion of an activity. Also called debriefing or group reflection, processing is the intentional method of assisting students to recall and evaluate individual and group behavior that occurred during an adventure experience. “The goal of processing the activities is for students to focus on relevant issues arising from the experience, increase self-change, verbally reflect and analyze the experience, and promote the integration of what is learned in students’ lives in other situations” (Dyson & Brown, 2005, p.163). In the context of social skill development utilizing Bandura’s social cognitive theory, processing allows students to give and receive feedback about the social behaviors exhibited during the adventure experience. Students are able to learn what social behaviors were valued by others and positively contributed to the group process as well as what behaviors were not valued by the group. The ability to have honest conversations about social behavior in an emotionally safe environment allows students to learn social skills that may benefit them in social situations both inside and outside of the school environment. In relation to Bandura’s triadic reciprocal determinism, group processing can impact the social cognition of students by utilizing the peer feedback to change social behavior. In addition, adventure education activities most often follow a routine of
introduction-activity-processing. As students become familiar with this routine, they are able to gain confidence to test new social behaviors that were gleaned from previous activity and processing.

In his discussion of the classroom implications of Bandura's social cognitive theory Martin (2004) provides the following recommendation:

One alternative, based on the developmental extension to Bandura's theorizing just considered, is to understand the agentic self-regulation of students to issue from students' active engagement within richly furnished curricular settings with the support of teachers who encourage student risk-taking and active, self-directed experimentation with alternative possibilities available in these settings. In such an approach, students would be encouraged to pursue tasks, the accomplishment of which is likely to challenge their existing understandings in ways that require them to access possibilities for enhanced understanding available in a variety of classroom and extracurricular sources. Students would be encouraged to recognize difficulties and concerns raised by the tasks in which they are engaged and to experiment actively with possibilities for addressing these difficulties and concerns that are available in an appropriately and richly furnished curricular context. Comfort with risk-taking (i.e., with the possibility and actuality of 'being wrong') is encouraged by teacher and peer conduct conducive to focusing on the issues, concerns, and difficulties at hand (i.e., on the task engagement of the learner). Suggestions are offered in the context of well-selected tasks and the challenges that they present, without concern for the cognitive-social, individual-collective, student-teacher status of such suggestions. Finally, students are
encouraged to evaluate the results of their experimentation, risk-taking, and resultant understanding in relation to the tasks concerns and difficulties that initiated their learning activity. (p. 142-143)

The foregoing sketch of a classroom environment utilizing Banduran social cognitive theory to promote student learning strongly resembles the intended curriculum and environment of an adventure education program. The overall nature and specific characteristics of adventure education provide a suitable context to examine Bandura’s triadic reciprocal determinism as an explanatory mechanism for middle school students’ social skill development.

Social Skill Development and Adventure Education

The ability of adventure education to influence social development has been researched in a variety of contexts. Before examining the literature in the domains most relevant to this study, two research reviews will be presented to establish a historical foundation. First, Conrad and Hedin (1981) conducted the Evaluation of Experiential Education Project “to assess the impact of experiential education programs on the psychological, social, and intellectual development of secondary school students” (p. 7). As the use of experiential education programs in US schools became more popular in the 1970s, this research was the first to empirically review the effectiveness of these programs. Initiated by the Commission on Educational Issues and co-sponsored by the National Association of Secondary School Principals, the project evaluated the 27 most well-conceptualized and established programs of the time. It is important to note that these programs fell under the larger umbrella of experiential education and included not
only outdoor adventure education, but also volunteer service, career internships, and community study/political action programs. Program participants between the ages of 12 and 19 were given a battery of paper and pencil tests and questionnaires at the beginning and end of their respective program. Six of the programs utilized comparison groups with characteristic equivalency.

Results of this review are relevant to this study in three areas. First, participants in experiential education programs increased their confidence in social situations, as measured by the Janis-Field Feelings of Inadequacy Scale. This scale measures self-esteem in social situations, which can also be interpreted as social competence. As stated previously, achieving social competence requires the appropriate use of social skills to gain confidence in social interactions. Twenty of the 27 experiential education programs showed increases in social competence, though only 10 increased at a statistically significant level (p < .05). Three of the six comparison groups also increased, however, increases by the experiential education groups were larger (though not statistically significant at the p < .05 level). Importantly, students in outdoor adventure programs showed the largest increases in social competence compared to the other three program types. These results suggest, "that experiential programs can effectively promote the psychological development of adolescents and do so at least somewhat more effectively than classroom-based programs" (p. 10).

Second, participants in experiential education programs grew in their social development, as measured by the Social and Personal Responsibility Scale (SPRS). Twenty-three of the 27 experiential education programs showed increases in social development, with 13 groups increasing at a statistically significant level (p < .05).
However, outdoor adventure programs showed the smallest increases as compared to the other three program types. Five of the six comparison groups declined in their social development, two at a statistically significant level. In addition, experiential education participants increased at a statistically significant level in the social efficacy, social competence, and social performance subscales of the SPRS while comparison groups showed no significant change. These results suggest that experiential education programs have the potential to positively influence the social development of youth.

Finally, at the beginning of the project the authors surveyed the directors of the 27 programs asking them about the perceived effects of experiential education on their students. A questionnaire containing the 24 most common responses was administered to nearly 4,000 students in the 27 programs. The following responses were in the top ten in terms of agreement (students indicating strongly agree or agree in a standard 5-point Likert scale). All responses demonstrated at least 86 percent agreement:

- Concern for fellow human beings
- Ability to get things done and to work smoothly with others
- Self-motivation to learn, participate, achieve
- Sense of confidence, sense of competence, self-awareness
- Responsibility to the group or class
- Problem-solving
- Risk-taking- being assertive and independent

These perceived effects by students on the impact of experiential education show strong connections to interpersonal and intrapersonal social skills. This study conceives social competency as the ability to adapt to social contexts and obtain positive interactions with
others. Social skills are behaviors such as cooperation, self-awareness, empathy, responsibility and assertiveness that allow individuals to gain social competence (Gresham & Elliott, 1990). The perceptions of students participating in experiential education suggest that these programs, including adventure education, have the ability to build social skill capacity. Though this research is over 30 years old, it is the only known comprehensive review of school-based experiential education programs and provides an important foundational rationale for the use of adventure education in US public schools to affect social skill development.

The meta-analysis by Hattie, Mash, Neill, and Richards (1997) provides further foundational evidence for the ability of adventure education to influence social development. This meta-analysis analyzed the outcomes of 96 research studies on outdoor adventure education between the years of 1968 and 1994. It is important to identify three significant characteristics of this meta-analysis that pertain to this study. First, all programs included in the meta-analysis were outdoor and/or wilderness trips with an average length of 24 days. Many of the programs were Outward Bound courses. The researchers explicitly excluded any school-based adventure education programs due to their dissimilarity to the included programs. Second, participants in these programs were mainly college students, with a mean age of 22.3 years old. Third, nearly half of the studies included were from outside the United States (Australia, New Zealand, and Australasia).

Mindful of these characteristics, the results of this meta-analysis provide meaningful insight into the use of adventure education methodology to promote social skills. First, Hattie et al. emphasize the components of risk, challenge, and group support
that are central to adventure education. They hypothesize that such components provide the opportunity for interpersonal growth among participants. Results of their meta-analysis support this belief:

In our meta-analysis, across all interpersonal dimensions, there are marked increases as a consequence of the adventure programs. This is particularly noted with social competence, cooperation, and interpersonal communication. It certainly appears that adventure programs affect the social skills of participants in desirable ways. (p. 69)

It is important to note that Hattie et al. do not attribute the ability of adventure education to promote social skill development to characteristics such as program type, length, or setting. Instead, they suggest that the process of adventure education is responsible for affording students the opportunity to improve their interpersonal skills. A final recommendation of the meta-analysis reinforces this belief:

It is most likely the instructional processes that make the difference to outcomes in adventure programs (such as challenge, risk taking, feedback, mutual group support) are similar in regular classrooms. The teachers of in-class educational experiences may learn much from noting the effectiveness of these factors in out-of-class experiences such as adventure programs. (p. 77)

These sentiments are appropriate for this study. Project Adventure, the developer of the RESPECT program used in this study, was founded in 1971 with the mission to utilize the adventure methodology of Outward Bound experiences as the central pedagogical approach of school-based adventure education programs. Project Adventure is widely acknowledged as the originator of “bringing adventure into the classroom” by developing
a teaching approach that is based upon the concepts of challenge, healthy risk taking, active learning, group support, and feedback through group processing. This study seeks to gain insight into whether or not the contemporary use of adventure education in the middle school setting can positively influence social skill development.

Social skill development in therapeutic adventure settings. The use of adventure education to promote social skill development is well established in the field of adventure therapy. Also referred to as therapeutic adventure and adventure-based counseling, this sub-field of experiential education encompasses the areas of mental health, corrections, social work, alternative education, and other human services (Association for Experiential Education, n.d.). Wilderness therapy is a specific therapeutic application that utilizes outdoor adventure pursuits to affect client change (Russell, 2001). Professionals in this field use adventure-based programming to promote a wide variety of therapeutic outcomes, including social skill development.

Though adventure therapy programs are conducted in out-of-school settings with specific client populations, prior research in this area is relevant as a means to assess the ability of adventure-based programming to impact social skill development. Moote and Wodarski (1997) provide a foundational review of the literature in the social work setting in their article titled “The Acquisition of Life Skills Through Adventure-Based Activities and Programs: A Review of the Literature.” Life skills were defined as the ability to solve problems, communicate effectively, interact effectively in social situations, and to control personal emotions (Gilchrist, Schinke, & Maxwell, 1986). This definition is appropriately similar to the definition of social skills used in this study to warrant an examination of
this review. There are at least 15 published literature reviews or meta-analyses of the adventure therapy research over the past 30 years. However, this review is most relevant to this research as it is the only one that focused specifically on the impact of adventure therapy on life/social skills among adolescent populations.

The authors reviewed 19 studies conducted between 1980 and 1993. As a whole, adventure therapy programs seemed to positively affect life skill acquisition with 16 of the 19 studies reporting positive results. These included “increased use of cooperative behaviors (Nyhus, 1993), generalization of adventure skill to other life areas (Sachs & Miller, 1992), and positive gains on psychological, social, and intellectual growth (Conrad, 1980)” (p. 12). However, caution is advised in interpreting these results due to methodological concerns. Only seven of the 19 studies utilized a control group. In four of these studies, sample size was not reported and in two of the studies the sample size was less than 20 participants. No study examined longitudinal data as only pretest-posttest designs were employed. This review provides a foundational rationale for the ability of adventure education to positively affect social skill development in therapeutic settings. It also highlights the need for fundamentally sound research designs and more advanced statistical analysis to be employed before the use of adventure-based programming can be claimed to be an effective method to increase social skill development.

More recently, Russell (2012) summarized the findings of 15 reviews of the adventure therapy research literature published between 1979 and 2008. He concluded that therapeutic adventure interventions: (a) positively impact self-concept and (b) develop adaptive and social skills. Specifically in the area of social skill development, Russell states, “A review of the effects of AT (adventure therapy) programs on social
skill development suggests that such programs influence the development of more socially adaptive and cooperative behavior" (p. 295). However, Russell echoed the concerns of Moote and Wodarski of continuing methodological issues among the studies included in more recent literature reviews, specifically citing the lack of control groups. In spite of this, Russell acknowledged a noted increase in the use of standardized social skill assessment measures as an overall improvement in the quality of research in this adventure therapy domain.

In addition to these literature reviews, a limited number of individual studies exist that specifically examine the impact of adventure programming in the therapeutic context on the social skill development of adolescent youth. Combs (2001) investigated the impact of an 8-week adventure-based day camp program on 12 boys aged 9-14 years old with learning disabilities and/or emotional and behavioral disorders. Using a pretest-posttest design, social skill development was measured using the SSRS Teacher-Report Form that was completed by program facilitators. Results showed significant increases in social skill development from pretest to posttest. Despite these positive findings, the small sample size and lack of control group limits the validity and generalizability of this study.

Garst, Schneider, and Baker (2001) researched the influence of 3-day outdoor adventure experience on 36 at-risk, urban youth. Participants were between 10 and 17 years old and were 31% Hispanic, 31% White, 22% African-American, 9% Native American, and 7% biracial. Social development was measured at pretest, posttest, and 4-month follow-up by the social acceptance subscale of the Self-Perception Profile (SPP) for Adolescents (Harter, 1998a). Scores on the social acceptance subscale increased
significantly from pretest to posttest (p < .05) but these increases were not sustained at the 4-month follow-up measurement. Qualitative data from themed from post-trip interviews supported the quantitative findings. Participants attributed the small group structure, teamwork, challenge, equality, and interdependent characteristics of the adventure experience to their ability to feel more connected with their peers and a greater ability to care for one another. Based on these findings, Garst et al. suggested that the structured, small-group adventure experience "may increase participants' social skills, teamwork, and problem solving if the participants are engaged in a process that teaches them group skills" (p. 48).

Tucker (2006) examined the impact of a 9-week therapeutic afterschool adventure-based program on the social skill development of 103 at-risk youth ranging in age from 9 to 15 years old. The SSRS Student Form- Elementary Level measured social skills. Participants reported higher levels of perceived social skill ability on SSRS posttest scores, however, they were not statistically different than pretest scores. However, since the study did not utilize a control group, it is unclear whether or not the social skill development of participants in the adventure-based program would be significantly different than those of participants who either (a) did not receive a program of any kind or (b) received a non-adventure-based program aimed at improving social skills.

A more recent work by Tucker, Zelov, and Young (2011) investigated the outcomes of the National Association of Therapeutic Schools and Programs (NATSAP) Practice Research Network (PRN). NATSAP is an organization of approximately 140 U.S. therapeutic schools, residential treatment centers, outdoor therapeutic programs, and
wilderness therapy programs for adolescents with emotional and behavioral difficulties (National Association of Therapeutic Schools and Programs, n.d.). Established in 2007, the NATSAP PRN is a research consortium that gathers data from contributing NATSAP organizations using a common measurement tool at key measurement occasions (program admission and discharge). Tucker et al. summarized the findings of the first four years of this collaborative research program by examining pre-test and post-test scores of 983 participants on two similar versions of the standardized Youth Outcome Questionnaire (Y-OQ). The sample was 67% female and 33% male with an average age of 15.8 years old. Participants came from 23 different NATSAP programs, however, 90% of the participants were from outdoor-related programs while only 10% were from residential treatment centers. This is relevant since the findings are highly representative of programs utilizing adventure-based methods. Paired samples t-tests were statistically significant (p < .001) for total Y-OQ scores and all six subscales, including interpersonal relations. Reported effect sizes were large ($d > .80$), however, they were incorrectly calculated based on provided sample means and standard deviations. Recalculated effect sizes remained large, indicating a practically significant outcome. Though both males and females improved significantly from pre-test to post-test, females showed greater improvement. The difference between male and female change scores was statistically significant (p < .001) but small to medium in terms of effect size ($d = .28$). Due to the nature of this research consortium, no comparison data was utilized. However, this study suggests that adolescents who participate in adventure-based therapeutic programs significantly improve their overall life functioning, including their ability to socially interact with adults and peers.
Finally, Allsop, Negley, and Sibthorp (2013) examined the effect of a therapeutic recreation summer camp on the social self-efficacy and social performance among 79 participants between the ages of 11 and 22. All participants were chronically ill with neurofibromatosis, a genetic disorder that causes bone deformities, learning disabilities, cardiovascular issues, and chronic pain. Participants’ social self-efficacy was assessed using the Muris Social Self-Efficacy Scale (SSES) (Muris, 2001) and social performance was assessed by an adapted version of the Social Skills Questionnaire (SSQ) (Levinson, 2004). Participants completed the SSES while camp staff completed the adapted SSQ. After one week of camp, participants’ posttest scores on both the SSES and SSQ were significantly higher than baseline pretest scores. Consistent with past research, this study did not use a control group. However, perceived social self-efficacy and observed social skill performance seem to be positively impacted by a therapeutic summer camp experience.

While this is not a comprehensive examination of the adventure therapy literature, these selected literature reviews and individual studies suggest that the use of adventure-based programming in the therapeutic realm have the ability to promote social skill development among adolescents. Also noteworthy are the consistent methodological flaws of this body of research. This provides further impetus to conduct methodologically sound research to gain a more accurate view of the relationship between adventure programming and social skill development. “Only then will we be able to say with any certainty that adventure, in its various forms, is a useful tool for participants looking to better their lives in some capacity” (Russell, 2012, p. 299).
Social skill development in camp settings. Summer camps are one of the most natural and common settings for the use of adventure programming with youth. The summer camp experience has a long tradition in American culture. Established in 1861, The Gunnery Camp in Washington, Connecticut was the first recognized US camp (American Camp Association, n.d.). Today, the American Camp Association reports that nearly 10 million US youth attend summer camp at one of the more than 12,000 camps nationwide. Though historically focused on providing recreational activities, camps have become increasingly intentional in fostering positive youth development among their participants (Thurber, Scanlin, Scheuler, & Henderson, 2007). Positive youth development includes individual and social characteristics such as independence, positive identity, and social competence (Larson, 2000). In terms of program delivery and instructional approach, camp programming may often lack the same level intentionality and structure of a school-based adventure education program. However, the typical summer camp experience certainly contains the core adventure concepts of challenge, risk, cooperation, trust, and problem solving that are used as the definition of adventure education in this study. As such, an examination of the relevant research in this domain is useful to gain a more thorough understanding of the relationship between adventure education and social skill development.

To begin, Guettal and Potter (2000) examined the impact of participation in a residential summer camp on the social skill development of youth between the ages of eight and thirteen. All participants were diagnosed with either Attention Deficit/Hyperactivity Disorder (AH/HD) and/or possessing social skill deficits. Participants attended camp for a minimum of 10 days. Social skill development was
assessed through a 10-item open-ended questionnaire developed by the authors, which was sent to parents of 85 participants four months after the completion of the camp program. To assess social skill development, parents were asked to provide perceptions of their child’s social skills before and after the camp experience. Qualitative analysis of these responses showed that parents observed improvements in their child’s age-appropriate behavior, independence, self-esteem, connection with peers, and participation in group activities. Based on these results, the authors claim, “it has been show that the residential summer camp experience is an effective method for fostering social skills development in children with AD/HD and/or social skills deficiencies” (p. 11). However, this study contains significant methodological limitations. First, only 12 of the 85 parents returned a completed questionnaire. The self-selecting nature of this response questions the validity of the results. Put another way, it is likely that only those parents who were pleased with the impact of the camp experience on their child took the time to voluntarily complete and return the questionnaire. Second, basic qualitative coding was used to provide descriptive themes presented in percentage of agreement between the 12 responses. Third, the use of a self-designed questionnaire calls into question the internal validity of the data. Finally, given the methodological concerns previously described, the suggestion of causation is unwarranted. This study provides evidence that the call for increased research rigor in the adventure education field is warranted.

Michalski, Mishna, Worthington, and Cummings (2003) provide an improved methodology in their investigation of the impact of a therapeutic summer camp on the social skill development of adolescent youth. Twenty-four participants between the ages of 14 and 18 attended camp for three weeks. The standardized SSRS measured campers’
perceived social skill ability the first day of camp (pretest), the last day of camp (posttest), and 6-8 months after camp (follow-up). Parents completed the SSRS parent form at each data wave as well. Results from the self-reported SSRS scores showed that participants improved significantly from pretest to posttest in their summative score ($p = .029$) and on the Assertion ($p = .05$) and Self-Control ($p = .007$) subscales. No significant gains were observed in the Cooperation and Empathy subscales (p-values not provided). However, all initial gains were not maintained at the follow-up measurement. In contrast, results from the parent form SSRS showed significant improvement in overall social skills from pretest to posttest ($p = .031$) and these the improvements were maintained at the follow-up measurement ($p = .004$). These results present an interesting dilemma regarding the difference between adolescents’ perception of their own social skill ability versus parents’ observation of their social skill performance. Results from this study suggest that adolescents may be less confident in their social competence compared to their parents’ observations of their social behavior as a result of participation in a summer camp. Regardless, this research suggests that participation in a three-week summer camp has a positive effect on the social skill development of adolescents, with these effects maintained over time from the parent perspective.

The most comprehensive assessment of the impact of a summer camp experience on youth was conducted by Thurber, Scanlin, Scheuler, and Henderson (2007). Utilizing a sample size of over 5,000 parents and campers from 80 different US camps, they measured change in positive identity, social skills, physical and thinking skills, and positive values and spirituality. The Camper Growth Index- Child Form (CGI-C) (Henderson, Thurber, Whitaker, Bialeschki, & Scanlin, 2006), Camper Growth Index-
Parent Form (CGI-P), and the Staff Observational Checklist (SOC) measured all constructs at pre-camp, post-camp, and 6-month follow-up (campers and parents only) time points. Participants were between the ages of 8 and 14, with the mean age of 11.1 years old. Fifty-seven percent of participants attended camp for one week, 31% attended two or four week sessions, and 12% attended six, seven, or eight week sessions. Due to the scope of the sample, an equivalent control group was not utilized. Mean scores on the self-report CGI-C showed that campers increased their social skill ability from pretest to posttest at a statistically significant level (p < .001) and these gains were maintained at the 6-month follow-up measure. Social skill mean scores on the CGI-P mirrored these results with statistically significant gains (p < .001) maintained at the follow-up measurement. Counselor observations of social skill ability measured by the SOC also showed statistically significant gains (p < .001) from pretest to posttest. However, the authors acknowledge that statistical significance was afforded by the power of the large sample size and specify that effects sizes were small (η² values less than .2). Though the sample was nearly 90% White, analysis did not show any significant difference in change scores between White and Non-White participants.

These results are noteworthy since this was the first study conducted with a large, nationally representative sample of US campers. The camp experience is characterized as voluntary, structured activities that provide opportunities for challenge in a socially supportive environment. This description aligns with the conceptualization of adventure education used in this study. Results from the Thurber et al. study suggest that providing adolescents with experiences containing these features has the ability to positively affect
social skill ability and that the exploration of utilizing such experiences within the school context is warranted.

Finally, Allen, Akinyanju, Milliken, Lorek, and Walker (2011) investigated the impact of a summer camp experience on the social skill development of 50 urban youth transitioning to middle school in a Southeastern US school district. Forty-four of the participants were transitioning to 7th grade while 12 were retained 7th grade students from the previous academic year. Participants ranged in age from 11 to 14 years old and were 90% Non-White. Justification for providing a camp experience focused on social skill development to this population was rooted in the literature cited earlier in this chapter highlighting the sociocultural and environmental challenges US minority urban youth face in the transition from elementary to middle school. Participants attended a two-week camp that utilized adventure programming and experiential learning to “enhance pro-social skills, build teamwork, and promote personal responsibility in a fun learning environment. Throughout the summer camp, counselors modeled social skills and encouraged students to use such skills to effectively complete tasks” (p. 17). Bandura’s social cognitive theory was explicitly listed as the theoretical framework for the construction of the adventure-based camp programming.

A 16-question self-designed evaluation instrument completed by participants on the first and last day of camp measured the impact of the camp experience on social skill ability. The instrument used a 4-point Likert scale asking questions about respectfulness, helping others, assertiveness, good listening, effective problem solving, and taking responsibility for personal actions. Paired samples t-tests showed a statistically significant increase in total score from pretest to posttest ($t(49) = -2.07$, $p < .05$).
However, an $\eta^2$ value of .08 showed a small overall effect. Though this study used a small sample size, did not utilize a control group, and did not employ a standardized measurement instrument, it suggests that the use of adventure-based camp activities may have the ability to positively impact the social skill development of minority, urban youth transitioning to the middle school environment. It provides further justification for methodologically sound research to investigate the ability of adventure education to foster the social skill development of a similar population.

This review of camp literature focused on research that explicitly examined social skill development. Taken collectively, this research suggests that camp experiences utilizing adventure-based programs and activities have the ability to positively impact the social skill development of adolescents. It supports the notion that schools interested in promoting the social skill development of their students should consider borrowing the traditional adventure-based approach of summer camps. It reinforces the idea that bringing adventure into the classroom can be more than a catchy slogan; it may have the capacity to foster real change.

**Social skill development in physical education.** The physical environment and curricular objectives of physical education are conducive to adventure education. However, very little research has examined the use of adventure education to promote social skill development in the physical education setting. There is no available research examining the use of school-wide, multi-year adventure education programs in US middle schools. The Project Adventure RESPECT program utilized in this research infused adventure education concepts throughout all academic classrooms; however,
adventure education was most consistently and intensively implemented in the physical education curriculum of the three experimental schools. As such, an understanding of the current state of literature in this area is required.

To begin, two related qualitative studies by Dyson are examined since they are highly relevant to this study. These studies were the first to examine the use of the Project Adventure physical education curriculum. They are also significant because the two elementary schools utilized in both studies are from the same Boston Public School District as the five schools used in this study. First, Dyson (1995) examined students’ perspectives of the Project Adventure physical education curriculum through small group interviews and observation notes from approximately 20 physical education classes at both schools. He began by asking students about their goals for physical education. They “highlighted cooperating with others, challenging themselves, taking risks, having fun, and learning motor skills” (p. 397). These responses reflect the core components of adventure education. It is interesting that there is no mention of physical fitness or activity that would seem to be most strongly associated with traditional physical education goals. Students attributed the trust and group problem solving skills learned through adventure education as the factors that most contributed to their ability to be successful in physical education class. To summarize the students’ perspectives, Dyson states, “Overall, students reported that they enjoyed their physical education programs at both schools and also reported that they learned something from their lessons” (p. 405).

Using a similar qualitative research method, Dyson also investigated the perceptions of the physical education teachers responsible for implementing the Project Adventure program at the two elementary schools (1996). When asked about their goals
for physical education, the two teachers’ believed that the core adventure concepts of challenge, risk, cooperation, trust, and problem solving promoted the building of students’ self-esteem and social skills in a personally responsible, yet fun learning environment. Both teachers believed that building social skills were an important educational goal. They intentionally structured adventure activities to promote social interaction and believed that adventure activities were well suited to this goal. Both teachers also commented on the importance of the debrief (or processing) session to build social skills. Providing their students with an emotionally safe and supportive environment to reflect and discuss their opinions related to social interactions was an essential component of the adventure education approach. In this way, both teachers recognized that both the content and process of adventure education were instrumental in fostering social skill development in their students. Taken together, these two qualitative research studies provide a foundational perspective on the use of adventure education in the physical education setting that is specific to the program and geographic characteristics used in this study. From the perspective of these particular students and teachers, the use of adventure education in physical education may be an effective method to promote social skill development.

A small number of quantitative research studies have investigated the impact of adventure education in physical education to influence social skill development. In her doctoral dissertation, Hersman (2008) observed the impact of an adventure education unit in the physical education setting on the social interactions of students with and without disabilities. Though this study is described as quantitative, the author used a more qualitative approach by documenting the social behavior of three students using the
Analysis of Inclusion Practices in Physical Education- Student Form (AIPE-S), which is an unpublished behavioral observation instrument (Hodge, Ammah, Casebolt, LaMaster, & O'Sullivan, 2000). A 15-day adventure education unit was provided to three 6th and 7th grade classes at a racially diverse urban middle school in central Ohio. Teachers from each class identified small groups of eight to 10 students, consisting mostly of students with identified learning disabilities or behavioral disorders, to receive the adventure education program. The use of the adventure education program for this specific population was supported by the belief that adventure education activities provide "social integration where individuals with and without disabilities work together to become accepted members of the group, to develop necessary social skills, and to develop relationships between individuals with and without disabilities" (p. 121).

To assess the impact of the adventure education program, three students' social behaviors were observed using the AIPE-S at baseline (10-28 traditional physical education classes), intervention (9-15 adventure education classes), and maintenance (eight physical education classes) time periods. A summary of the observation results during the adventure education program showed (a) two of the three students increased appropriate interactions with their peers, (b) one of the three students increased positive interactions with their peers, (c) all three students decreased inappropriate interactions among their peers, and (d) off-task interactions decreased for one student but increased for the two other students. However, observation results during the maintenance period showed that social interactions in all four areas returned to baseline levels. Though these results are mixed, Hersman asserts that the use of adventure education in physical education classes has the potential to positively influence the social interactions of
students with and without disabilities. Though appropriate caution is provided regarding the interpretation of these findings, they offer limited support for exploring the impact of a more extensive adventure education program on the social development of a demographically similar group of participants. However, the small sample size, short intervention time, and non-standardized measurement instrument reinforces the need for future research to use more rigorous research designs and analyses to gain a more accurate understanding of the relationship between adventure education and social development.

Hersman’s work is the only known study to date that specifically investigates the impact of adventure education on the social behavior of US middle school students in the physical education setting. However, two quantitative studies conducted in Canadian middle schools provide the only other relevant source of knowledge regarding the use of adventure education in the physical education curriculum. Both studies investigated the effectiveness of an 8-month Team Building Through Physical Challenges (TBPC) program developed by Glover and Midura (1992). The TBPC program is a series of 30 adventure-based, problem-solving activities that incorporate physical, social/emotional, and intellectual challenge. “Tasks are designed to maximize the necessity for cooperation and teamwork, communication, and trust between group members. Successful solutions to tasks depend upon the extent to which group members cooperate, trust, and communicate with one another” (Gibbons, Ebbeck, Concepcion, & Kin-Kit, 2010, p. 792). A post-task reflection is utilized after each activity to allow participants discuss group performance and learning outcomes, as well as to reinforce positive social interactions. These characteristics (a) appropriately model the concepts of adventure
education as defined by this study and (b) closely resemble the core components and instructional approach of the RESPECT program utilized in this study.

In their first study, Ebbeck and Gibbons (1998) examined the impact of the TBPC program on the self-concept of 120 6th and 7th grade students between the ages of 10 and 12. No other demographic information was provided. Since the TBPC program was implemented for an entire academic year, students completed the Self-Perception Profile for Children (SPPC) (Harter, 1998a) at the beginning and end of the school year to assess program effect. The SPPC is an established self-report measure of self-concept that includes a social acceptance subscale. Students’ perceptions of social acceptance can be seen as a corollary of social skill ability. Students who possess and utilize appropriate social skills are naturally more likely to feel more socially accepted. A noteworthy attribute of this study is the use of an equivalent control group. A 2 (treatment/control) X 2 (pre-intervention/post-intervention) X 2 (male/ female) repeated measures multivariate analysis of variance (RM MANOVA) was utilized to analyze SPPC data. Results showed that both male and female participants receiving the adventure education program increased significantly on both their global SPPC scores and in their social acceptance subscale scores compared to students in the control group. Effect sizes were all greater than .7, which indicates that effects can be considered practically meaningful in addition to being statistically significant.

This study was replicated over ten years later in the same Canadian middle school district with a significantly larger sample size (Gibbons et al., 2010). Over 900 6th, 7th, and 8th grade students from two middle schools participated in the same 8-month TBPC adventure education program. An equivalent control group of 893 students from two
within-district middle schools did not receive the adventure program and participated in the traditional physical education curriculum. Participants ranged in age from 10 to 13 years old in a nearly even proportion of males (49%) and females (51%). No other demographic information was provided. Participants again completed the SPPC at the beginning and end of the school year. This study added the Social Support Scale for Children (SSSC) (Harter, 1998b), which measures perceived social regard by parents, teachers, classmates, and close friends. Another noteworthy aspect of this study was the use of multilevel modeling to analyze a hierarchical, nested data structure. However, it is questionable whether or not the use of multilevel modeling was appropriate for this study given the lack of longitudinal data. The data structure had four levels, (a) individual (1,802 students), (b) treatment (909 treatment students, 893 control students), (c) classroom (72), and (d) school (4). Analysis of the 4-level model was not allowed due to lack of convergence on all 10 subscale measures contained in the SPPC and SSSC. A 3-level model was subsequently used, however, the level removed was not specified. Overall results showed that students who received the TBPC program were statistically higher in their levels on 7 of the 10 subscales of the two measures, including social acceptance on the SPPC (β = .27, p < .01) and perceived social regard from classmates (β = .45, p < .01) and friends (β = .39, p < .01) on the SSSC. Effects sizes for all significant effects were medium to large, indicating practical meaningfulness. Significant gender effects were found on three subscales; however, treatment status was a more significant predictor of positive growth on both measures. Based on these results, the authors conclude that the TBPC program used in the physical education curriculum can be an effective method to promote positive self-perceptions and perceived social regard of male
and female middle school students. Based on (a) the characteristics of the intervention, (b) length of intervention, (c) quasi-experimental research design, (d) the use of psychometrically sound instruments, and (e) advanced statistical analysis of hierarchical data, this study provides a compelling rationale for the use of adventure education programs in the physical education setting to promote positive psychological and social growth.

This review of research investigating the use of adventure education in physical education offers three insights. First, it highlights the overall lack of research in this area. Unlike prior reviews, this is not a strategic selection of a few studies from a large body of research. These are the only studies that currently exist that examine the use of adventure education to promote growth in socially related domains. Second, this limited amount of research suggests the potential for adventure education to positively affect the social development of middle school students when integrated into the physical education curriculum. Finally, it demonstrates the lack of rigorous quantitative inquiry in this research area.

**Methodological review of adventure education research.** Whether conducted in the therapeutic, camp, or physical education setting, quantitative research on adventure education focusing on social skill development has significant methodological limitations. Table 1 presents a summary of key methodological aspects of the 11 quantitative studies discussed in this section. Meta-analyses and research reviews are not included. Methodological characteristics of my study are included for comparative purposes.
### Table 1

**Methodological Summary of Adventure Education and Social Skill Development Research**

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Research Design</th>
<th>N</th>
<th>Length</th>
<th>Longitudinal Data</th>
<th>Statistical Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combs (2001) (Dissertation)</td>
<td>Pre/Post</td>
<td>12</td>
<td>8 weeks</td>
<td>No</td>
<td>Repeated Measures ANOVA</td>
</tr>
<tr>
<td>Garst, Schneider &amp; Baker</td>
<td>Pre/Post/Follow-up</td>
<td>36</td>
<td>3 days</td>
<td>No</td>
<td>Repeated Measures ANOVA (Friedman Test)</td>
</tr>
<tr>
<td>Tucker (2006) (Dissertation)</td>
<td>Pre/Post</td>
<td>103</td>
<td>9 weeks</td>
<td>No</td>
<td>Paired samples t-tests ANOVA</td>
</tr>
<tr>
<td>Allsop, Negley, &amp; Sibthorp (2013)</td>
<td>Pre/Post</td>
<td>79</td>
<td>1 week</td>
<td>No</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>Guettal &amp; Potter (2000)</td>
<td>Post-test only</td>
<td>85</td>
<td>10 days</td>
<td>No</td>
<td>Descriptive statistics only</td>
</tr>
<tr>
<td>Michalski, Mishna, Worthington, &amp; Cummings (2003)</td>
<td>Pre/Post/Follow-up</td>
<td>24</td>
<td>3 weeks</td>
<td>No</td>
<td>Paired samples t-tests</td>
</tr>
<tr>
<td>Thurber, Scanlin, Scheuler, &amp; Henderson (2007)</td>
<td>Pre/Post/Follow-up</td>
<td>5279</td>
<td>1-8 weeks</td>
<td>No</td>
<td>ANOVA</td>
</tr>
<tr>
<td>Allen, Akinyanju, Milliken, Lorek, &amp; Walker (2011)</td>
<td>Pre/Post</td>
<td>50</td>
<td>2 weeks</td>
<td>No</td>
<td>Paired samples t-tests</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>N</td>
<td>Duration</td>
<td>ANOVA/Manova</td>
<td>Multilevel modeling</td>
</tr>
<tr>
<td>--------------------------</td>
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<td>------------------------</td>
<td>--------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Hersman (2008) (Dissertation)</td>
<td>Qualitative Student observation</td>
<td>3</td>
<td>15 days</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>Ebbeck &amp; Gibbons (1998)</td>
<td>Pre/Post Quasi-experimental</td>
<td>120</td>
<td>One academic year (8 months)</td>
<td>No</td>
<td>Repeated measures ANOVA and MANOVA</td>
</tr>
<tr>
<td>Gibbons &amp; Ebbeck (2010)</td>
<td>Pre/Post Quasi-experimental</td>
<td>1802</td>
<td>One academic year (8 months)</td>
<td>No</td>
<td>Multilevel modeling?</td>
</tr>
<tr>
<td>My study</td>
<td>6 waves of data collection Quasi-Experimental</td>
<td>657</td>
<td>Three academic years (9 months each)</td>
<td>Yes</td>
<td>Multilevel modeling</td>
</tr>
</tbody>
</table>
Specific methodological limitations of each study were noted as they were presented in the previous section. However, taken collectively, this body of research highlights the need for more rigorous quantitative inquiry regarding the ability of adventure education to influence social skill development. Nine of the 11 studies lacked a control group, which is a serious threat to internal validity. Seven of the 11 studies collected data only at pre-intervention and post-intervention without the use of a follow-up measurement. The lack of a follow-up measurement presents the opportunity for the Hawthorne effect, where participants modify their behavior solely because they know they are being studied, not due to any treatment effect. In addition, without a follow-up measurement it is unknown whether any post-intervention change was maintained over time. This is particularly important in educational research where gains in developmental domains such as social skills are only useful if they persist beyond the intervention.

Seven of the 11 studies had fewer than 100 participants, which limits the statistical power necessary to detect a real difference when a real difference truly exists, or the ability to fail to commit a Type II error. Small samples sizes also limit these studies’ ability to detect practically useful effect sizes, even if they report statistically significant results.

Only two of the 11 studies had adventure-based interventions that were longer than nine weeks and only five of the 11 had interventions that were longer than three weeks. As discussed previously in this chapter, recent research on social skill interventions found that longer interventions correlated with greater social skill development (January et al., 2011). The short duration of adventure education programs also limits the ability to understand the relationship between adventure education and social skill development. Short intervention length, combined with two or fewer
measurement occasions, fails to afford researchers with longitudinal data. Longitudinal data is required to accurately measure participant change over time (Singer & Willet, 2003). Generically defined, longitudinal data consists of repeated observations over a long period of time. However, the American Institutes for Research’s National Center for Analysis of Longitudinal Data in Educational Research (CALDER) clearly defines longitudinal data as repeated student measurements over multiple academic years (National Center for Analysis of Longitudinal Data in Educational Research, n.d.). By this definition, no current study exists that utilizes longitudinal data to investigate the impact of a multi-year adventure education program on social skill development.

Given the lack of longitudinal data, nearly all of the adventure education research in this area utilized basic bivariate statistical analyses such as paired samples t-tests and some multivariate ANOVA applications. The Gibbons et al. (2010) study conducted in an urban Canadian school district provides the only example of adventure education research that utilized a more sophisticated statistical analysis of multilevel modeling. However, given the lack of longitudinal data in that study, it is questionable as to whether or not this study appropriately utilized multilevel modeling.

From a methodological standpoint, this study was designed to address many of the limitations of prior research. The quasi-experimental design included a control group of equivalent participants. The large sample size had appropriate statistical power. Data was collected six times over the course of three academic years, which afforded the required longitudinal data to accurately measure participant change. The use of multilevel modeling to analyze longitudinal data allowed for a more robust view of participant change over time. As such, this study has the possibility to significantly contribute to the
understanding of the relationship between adventure education and social skill
development due to its methodological qualities.

Summary

This review of research provides several broad insights that are salient to this study (see Figure 1 for a visual representation). First, the transition to middle school and subsequent three academic years are a crucial time of development for US adolescents, especially for at-risk, urban, minority youth. Second, middle school years are a vital time of social skill development, which impacts students’ academic success as well as their overall functioning and life effectiveness in both in-school and out-of-school contexts. The literature suggests that effective social skill interventions are multi-year, school-wide programs that utilize experiential teaching approaches that actively engage students. Third, social skill interventions are especially important for urban, minority youth who face increased social risk factors associated with US urban areas. Fourth, adventure education programs such as the one examined in this study utilize a theoretical model of social learning that appropriately aligns with Bandura’s social cognitive theory. This established conceptual model of social learning affords an appropriate mechanism of change for adventure education to impact social skill development. Finally, existing research suggests that adventure education has the ability to positively influence the social skill development of adolescents. However, methodological limitations prevent any generalized claims of effectiveness. In addition, no research has been conducted in US middle schools examining the use of a comprehensive, school-wide, adventure-based intervention aimed at social skill development. As such, this study seems appropriately
situated within the current state of literature and has the ability to gain further insight into the relationship between adventure education and social skill development.

Figure 1. Literature review summary. This figure provides a summary of the relevant findings of this literature review.
CHAPTER 3

METHODS

The purpose of this chapter is to present the methods that were used to answer the research questions of this study. As a reminder, these research questions are:

1. What effect did participation in the Project Adventure RESPECT adventure program have on the rate of social skill development as measured by the Social Skills Rating System (SSRS)? Did the rate of change differ significantly between experimental and control students?

2. Did the rate of change in social skill development differ significantly between experimental and control students on any of the four SSRS subscales of Cooperation, Assertion, Empathy, and Self-Control?

3. Controlling for RESPECT program participation and gender, did attendance at one of the five participating schools significantly impact the rate of change in social skill development?

4. Controlling for RESPECT program participation and school attended, did gender significantly impact the rate of change in social skill development?

Setting

Like many urban school districts in the United States, Boston Public Schools have struggled to meet the strict AYP requirements of NCLB. Because of continued failures to
meet these minimum requirements, Boston Public School administrators began to look for interventions that would assist these schools in raising the academic achievement of their students. While it is assumed that these administrators were concerned about the social development of their students, academic achievement was the most important outcome to them as mandated the testing requirements of NCLB (Smyth, 2008). Because of this, interventions focused on social skill development often serve a dual role in assisting schools to both foster healthy social development of their students as well as assist in the process of raising academic achievement (Malecki & Elliot, 2002; Moote Jr, Smyth, & Wodarski, 1999). In response to this need, Project Adventure designed the adventure education RESPECT Program to assist Boston public middle schools positively affect students’ social skill development.

Sample

The RESPECT Program was offered to principals of several Boston middle schools, with three schools eventually agreeing to participate in the program. In addition to these three implementation schools, two nearby schools agreed to act as comparison schools for the length of the three-year project.

Each of the five schools involved in this three-year research project were comprised of 6th, 7th, and 8th grades. All five schools were fairly similar in size, having similar percentages of minorities and students receiving Free or Reduced Price Lunch (based on parents’ income level), and English language learners (see Table 2). The three experimental schools were Thompson, Woolrich, and Legend. The two control schools
were Dutton and Lacroix. For the sake of this research, all schools were given pseudonyms.

Table 2

**Demographic Information from the 2007-2008 Academic Year for Participating Middle Schools**

<table>
<thead>
<tr>
<th>School</th>
<th>Total Enrollment</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Non-white race/ethnicity (%)</th>
<th>Free/Reduced Lunch (%)</th>
<th>First Language not English (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thompson</td>
<td>656</td>
<td>48</td>
<td>52</td>
<td>97.1</td>
<td>81.9</td>
<td>37.7</td>
</tr>
<tr>
<td>Woolrich</td>
<td>377</td>
<td>54</td>
<td>46</td>
<td>95.5</td>
<td>84.9</td>
<td>31.8</td>
</tr>
<tr>
<td>Legend</td>
<td>377</td>
<td>60</td>
<td>40</td>
<td>96.8</td>
<td>81.4</td>
<td>16.4</td>
</tr>
<tr>
<td>Dutton</td>
<td>360</td>
<td>55</td>
<td>45</td>
<td>98.3</td>
<td>83.9</td>
<td>46.9</td>
</tr>
<tr>
<td>Lacroix</td>
<td>250</td>
<td>60</td>
<td>40</td>
<td>99.2</td>
<td>79.6</td>
<td>19.6</td>
</tr>
</tbody>
</table>

The number of classes per grade ranged accordingly by school enrollment size. Average class size data was not available for years prior to the 2010-2011 academic year through the State of Massachusetts Department of Education school profile database. However, based on repeated personal observations by the lead researcher, average class size for all schools was between 20-30 students.

The use of five schools (three experimental and two control) allowed for a quasi-experimental research design (Creswell, 2003). Given the significant logistical and ethical challenges to randomization in educational research, this research approach offered a compromising, yet relatively strong design to investigate the impact of the RESPECT program on social skill development. This research included a: 1) relatively large sample size 2) 3-year implementation, and 3) comparison group. Based on these
factors, this research provided a methodologically appropriate design to examine the relationship between an adventure education program and the social skill development of youth.

Subjects. The RESPECT program was implemented beginning in the fall of 2005 and concluded in the spring of 2008, constituting three academic years. This study utilized data gathered over the entire three years of this program by using a sample of 2005 6th graders and following them throughout their three middle school years until the end of their eighth grade year in 2008. This group contained data from 430 students from the three experimental and two control schools.

Original approval for this research was obtained through the University of New Hampshire’s Office of Sponsored Research Internal Review Board (see Appendix A) and continued approval has been maintained on a yearly basis (see Appendix B). Boston Public Schools Office of Research and Evaluation also granted approval to conduct this research (see Appendix C). Consent for participation in this study was granted via a Passive Consent Form (see Appendix D).

The Project Adventure RESPECT Program

The use of adventure education programs in United States education can take many forms, including the use of challenge course programs and expedition-style outdoor trips. One of the first attempts to investigate the impact of adventure education programming in school settings was conducted by Schulze (1971), who evaluated the impact of Outward Bound trips on students from 12 different high schools. Since then,
various other implementations of adventure education programs have been initiated throughout the country. Many of these programs are facilitated by outside staff at off-site environments. While these programs can be beneficial for students’ personal growth, organizations such as Project Adventure have begun the process of bringing adventure into the school environment as an important next step in the use of experiential methods in education. Inspired by the philosophy of Outward Bound, Project Adventure is a non-profit organization supporting the use of adventure education and experiential programming in both schools and other youth organizations.

The RESPECT program was Project Adventure’s first attempt to implement their core adventure education methods in a multi-year, comprehensive, teacher-facilitated program. The program aimed to influence students’ social skills through the use of adventure-based, cooperative activities using the classroom as an environment for change. The RESPECT program’s core components were rooted in Bandura’s social cognitive theory (Bandura, 1986) that through instruction, modeling, and rehearsal students could learn new behaviors and that mastery experiences could foster social skill development. The RESPECT program aimed to provide opportunities for students to develop social skills through the various components of the program implemented throughout the school curriculum. These elements included cooperative activities, teaching skills for self-managing behavior, and agreeing to a common set of behavioral norms. More detailed information about the RESPECT program, as well as a sample lesson, can be found in Appendix E.

The RESPECT program used core adventure education methods developed by Project Adventure over the past three decades, many of which are common elements to
adventure education programs in general use throughout the world. These elements include setting and monitoring group behavioral norms (Full Value Concepts), goal setting, and group problem-solving procedures. The following specific components served as the program's cornerstones (Rheingold, 2005):

1. Cooperative and adventure education lessons for each grade level were implemented at the beginning of the year and every week thereafter. These lessons promoted cooperation and effective communication between students by teaching ways to cooperatively problem solve in a group.

2. A system for students to address their own and others' behavior if and when it interfered with the class. Students and the teacher gathered the group to discuss problems, identified a solution, and followed through with the resolution. Every student's opinion counted and was taken into consideration.

3. A goal setting structure helped students to learn appropriate mastery goals. Students set and monitored behavioral mastery goals (e.g., raising one's hand before speaking) and academic goals (e.g., learning long division). One method for setting these proximal goals was taught throughout the school, and goals were monitored on a monthly basis.

4. Staff and administration participating in the development of the program presented a whole school approach. Staff, administrators, and teachers all used the language and methods of the program to resolve classroom and personnel issues.

5. Behavioral norms used to manage behavior. There was a common set of five behavioral norms that students learned and teachers used to troubleshoot problem
behavior. The norms included: Be Here, Be Safe, Be Honest, Set Goals, Let go, and Move on. All students and staff agreed to these norms.

6. Physical education teachers used experiential, cooperative lessons to teach physical fitness and social skills. Teachers used these lessons throughout the school year.

Program implementation and training. The RESPECT program was implemented beginning in the 2005-2006 academic year in only sixth grade classes in the participating three schools. Given the resources needed to train teachers, it was determined that starting with one grade was the most realistic approach. For the 2006-2007 academic year, the RESPECT program was also implemented in all seventh grade classes. Finally, the program was expanded to the eighth grade to include all three grades in the 2007-2008 academic year. The rationale behind this decision was the idea that sixth grade students in 2005-2006 would receive the RESPECT program for the full three years of their middle school experience and this population could provide the most insight into the effectiveness of the program.

Prior to the start of each academic year, teachers participated in a 2.5-day training to teach core concepts and elements of the program. Adventure-based team-building activities and lessons for each subject and each grade level were introduced for teachers to utilize in their respective classrooms. Project Adventure staff delivered additional lessons throughout the year on a monthly basis, and appropriate explanation and training was provided as necessary. The entire school also received a one-day basic training in the language and philosophy of the program so all students would share a common language.

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beyond the classroom. This occurred on the first day of the academic year and included learning the common language of the program (e.g., Be Here, Be Safe, and Let Go and Move On). Similar training procedures were used in the 2006-2007 and 2007-2008 academic years when the seventh and eighth grades were respectively added to the program.

Beyond the initial training, teachers and administrators also received routine visits from Project Adventure trainers/consultants. They were available to provide guidance and advice, (e.g., how to implement a particular lesson). They also attended monthly meetings with the principals of all implementation schools to discuss how the implementation was progressing at the school-wide level. Program consultants provided suggestions and comments as needed for each individual teacher and worked diligently to support teachers in their use of the core components of the RESPECT program.

Instrumentation

Student social skill development was measured using the SSRS, which is a standardized, norm-referenced assessment tool (Gresham & Elliott, 1990). The student elementary form (SEF) version, used for grades K through 6, is a self-rating survey containing 34 questions addressing student social behaviors (see Appendix F). The decision was made to use the elementary version of the SSRS for the duration of this research project since there was no middle school version of the SSRS. The SSRS uses a frequency scale where students choose a 0 (Never), 1 (Sometimes), or 2 (Very Often) to indicate the perception of their behavior regarding a presented situational question. The SSRS "documents the perceived frequency and importance of behaviors influencing the
student’s development of social competence and adaptive functioning at school and home” (p. 1). The SSRS student version contains four subscales: Cooperation, Assertion, Empathy, and Self-Control. Cooperation addresses helping and sharing with others as well as following directions. Assertion includes initiating behaviors and responding to others. Empathy regards behaviors that show concern and respect for others. Self-Control addresses behaviors that emerge in conflict situations. Given the characteristics and goals of the RESPECT program, the Cooperation and Empathy subscales are the most likely to show any potential differences between experimental and control students while the Assertion and Self-Control subscales are less likely show any differences between groups since the RESPECT program did not emphasize these constructs as strongly.

**Rationale for use.** Numerous quantitative instruments are currently available to assess the social development of young people. Specifically, there are several measures devoted to the assessment of social skills. However, few of these instruments have been shown to possess adequate psychometric properties in the areas of reliability and validity (Spence, 2003). However, the SSRS has been shown to be the most psychometrically rigorous instrument to assess student social skill ability. Demaray and Ruffalo (1995) conducted a comparative review of six of the most popular published rating scales used to assess social skill ability. They concluded the SSRS was the most comprehensive, psychometrically sound instrument that can be used in a wide variety of settings to assess social skill ability. More recently, Diperna and Volpe (2005) published a peer-reviewed, self-report specifically addressing the psychometric strength of the SSRS-Student Elementary Form, the version used in this research project. They concluded, “the
reliability and validity findings from this study provide evidence to support the use of the SSRS-SEF Total scale for assessing the social behavior of students in the intermediate elementary grades (p. 353). Because of these factors, the SSRS was an appropriate tool to utilize in this research project and was chosen for these reasons.

However, it is important to divulge that the SSRS conceptualizes social skill ability in a normative fashion that is consistent with an authoritarian view of student behavior that is most concerned with compliance and obedience. A cursory view of the questions contained in the SSRS shows why it is most often utilized as an assessment tool to assist in correcting problematic social behavior. In this way, the SSRS is aligned with an idealized notion of social skill behavior held by teachers, school administrators, and parents rather than the true nature of social interactions that occur between adolescents. This is particularly true for urban students, whose social interactions, even those that are positive, are likely not represented in the questions contained in the SSRS.

**Reliability.** Original reliability testing by Gresham and Elliott (1990) showed the SSRS displayed adequate internal consistency with alpha coefficients as follows: Cooperation (.68), Assertion (.51), Empathy (.74), Self-Control (.63), and Total (.83). Follow-up reliability testing by Diperna and Volpe (2005) were consistent with the original findings with alpha coefficients as follows: Cooperation (.68), Assertion (.56), Empathy (.72), Self-Control (.67), and Total (.86). This consistency over time and between studies demonstrates an acceptable level of reliability for the SSRS. Factor analyses were conducted for the SSRS data in this study across the six measurement occasions and it maintained strong internal consistency with alpha coefficients as
follows: Cooperation (.87), Assertion (.87), Empathy (.85), Self-Control (.81), and Total (.89).

Validity. Validity for the SSRS was established in the areas of content validity, criterion-related validity, and construct validity. In the area of content validity, Gresham and Elliott used previous research and reviews of the social assessment literature to develop the item list for the SSRS. From there, content validation was carried out by having experts in the field of social behavior rank the importance of each social skill used on the SSRS to ensure adequate representation. Criterion validity for the SSRS was established by correlation with the Child Behavior Checklist- Youth Self Report (YSR) Form (Achenbach & Edelbrock, 1987) and the Piers-Harris Children’s Self-Concept Scale (PHCSCS) (Piers, 1984). Problem behaviors of the YSR were negatively correlated with the social competence factors of the SSRS. Factors of the PHCSCS and SSRS were positively correlated, though each measured slightly different constructs. However, these results were favorable for the general criterion validity of the SSRS. Construct validity for the SSRS was carried out by a number of different methods. The most pertinent outcome of these measures was the finding that “females were seen as more socially adept than males in the social skills assessed by the SSRS” (p. 125). These sex differences were seen at nearly all grade levels from preschool to high school.

Diperna and Volpe (2005) also examined the criterion validity of the SSRS-SEF, finding that the SSRS-SEF correlated positively with both the SSRS- Teacher Form and the Academic Competence Evaluation Scales (ACES). Overall, the SSRS has shown
adequate validity over time and across studies and can be considered a valid measure of social skill ability for the purpose of this research project.

**Data Collection and Organization**

In September 2005, trained teachers administered the SSRS to sixth grade students in all five schools involved in this study. In May/June 2006, students completed the SSRS again to assess change for that academic year. This process was repeated for the 2006-2007 and 2007-2008 academic years for a total of six administrations of the SSRS over the course of three academic years. At each administration, teachers followed detailed instructions to ensure that all students would understand the process of completing the survey (see Appendix G). Completed surveys were collected by the author and entered into SPSS for initial screening in preparation for analysis. Though best efforts were made to collect data from all students at each assessment time, variability in response rate exists due to students changing school, moving from the school district, being absent from class on the day of administration, and other logistical challenges of data collection inherent to any large scale research project involving self-response surveys administered to adolescents by third-party individuals. Table 3 presents the number of students who completed a SSRS at each of the six time periods, broken down by treatment group, gender, and school.
Table 3

Sample sizes by wave of data

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th></th>
<th>Year 2</th>
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<tr>
<td></td>
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<td>69</td>
<td>25</td>
<td>21</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dutton</td>
<td>64</td>
<td>35</td>
<td>33</td>
<td>19</td>
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<td></td>
<td>Lacroix</td>
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<td>1</td>
<td>34</td>
<td>31</td>
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</tr>
</tbody>
</table>
Table 4 presents more detailed information regarding the number of total surveys taken by each student, again broken down by treatment, gender, and school. While there was attrition and variability in number of surveys taken over the course of the three academic years, multilevel modeling allows for missing data at individual time points across the six measurement occasions.
Table 4

*Number of SSRS surveys taken over the course of three academic years*

<table>
<thead>
<tr>
<th># of Surveys Taken</th>
<th>All</th>
<th>Control</th>
<th>Exp</th>
<th>Male</th>
<th>Female</th>
<th>Thompson</th>
<th>Woolrich</th>
<th>Legend</th>
<th>Dutton</th>
<th>Lacroix</th>
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<td>108</td>
<td>22</td>
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</tbody>
</table>

Those with at least 1 survey in each of:

- Year 1, 2 and 3*: 174 46 128 84 90 91 15 22 27 19
- Years 1 and 2: 243 62 181 118 125 117 27 37 39 23
- Years 2 and 3: 175 47 128 84 91 91 15 22 28 19
- Years 1 and 3: 212 73 139 104 108 97 18 24 34 39

*Years are defined by periods: students with a survey in either period 1 or 2 are determined to have at least one in Year 1, etc.
The SSRS data was screened for missing values before calculating individual student composite and subscale totals. The recommended procedure provided by the SSRS authors (Gresham & Elliott, 1990) to handle missing values was followed:

If only one or two responses are missing, enter a 1 for the How Often response and for the How Important response for each missing item. Then follow normal scoring procedures. **If responses are missing for three or more items, do not compute a total raw score for the Social Skills Scale.** You can, however, compute and interpret Subscale raw scores, provided the Subscale does not contain any of the responses. (p. 23)

Table 5 presents details regarding the frequencies of missing values across the six measurement occasions along with the frequency distributions for which questions were missed. Frequencies of which questions were missed at each measurement occasion were visually examined to investigate any potential patterns that would suggest that students chose to skip certain questions intentionally. No question was missed by more than five students at any measurement occasion, and this occurred only once (7th Grade Spring, Question 3). The visual examination showed no systematic patterns, as frequencies seemed random. Based on this observation, no statistical analyses were conducted to examine potential systematic differences in which questions were missed across the six measurement occasions.

Therefore, all surveys that had three or more missing questions did not have SSRS total scores computed. In total, this affected 12 surveys in the dataset: three surveys from 6th Grade Spring, one survey from 7th Grade Fall, one survey from 7th Grade Spring, and
six surveys from 8th Grade Fall. However, within these 12 surveys, subscale totals were calculated so long as none of the missing questions were included in the respective subscale. Missing values from all surveys with one or two missing values were imputed according to the instructions described previously. In total, 430 research participants completed 1538 surveys over the six time points across three academic years. 1442 surveys (94%) had no missing questions, 78 surveys (5%) had one missing question, and 18 surveys (1%) had two missing questions. Therefore, 96 surveys (6%) required imputation.
Table 5

*Within each SSRS survey, frequencies of number of missing questions (out of 34) and distribution of missing questions*

<table>
<thead>
<tr>
<th>6th Grade Fall</th>
<th>6th Grade Spring</th>
<th>7th Grade Fall</th>
<th>7th Grade Spring</th>
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Analytic Method

The central research questions of this study are: What effect did participation in the Project Adventure RESPECT adventure program have on the rate of social skill development as measured by the SSRS? And, did the rate of change differ significantly between experimental and control students? To answer these questions, several analysis strategies were implemented to examine the extent to which developmental trajectories in social skill development varied as a function of RESPECT program participation and whether gender or particular school attended moderated those associations.

The examination of change over time in human development has often been a desire of social science researchers, however, only within the last three decades has this been made methodologically possible due to advances in statistical models (Graham, Singer, & Willet, 2009). While several statistical models have now been developed to examine change over time, the key methodological component necessary to utilize any of them is longitudinal data (Rogosa et al., 1982; Willet, 1988). Since data in this research project was collected over the course of three academic years at six different time points, this research afforded longitudinal data to examine change over time. Therefore, the statistical method of multilevel modeling was utilized to answer the research questions of this project. Multilevel modeling utilizes longitudinal data to simultaneously examine change on two distinct levels (Singer & Willet, 2003). Level-1 examines within-person change while level-2 is concerned with between-person differences in change. Multilevel modeling affords an in-depth examination of how people change over time in a given domain, as well as how people differ in their change depending upon a variety of possible predictor variables. Details of each model are provided later in this chapter.
While longitudinal data is the most important factor in order to analyze change over time, three other methodological criteria are necessary to utilize a statistical method such as multilevel modeling: 1) multiple waves of data; 2) a sensible metric for time; and 3) an outcome that changes systematically over time (Singer & Willet, 2003). This research project satisfied these three methodological needs. First, six waves of data were collected over the course of three academic years. While three waves of data are the minimum required, additional waves of data allowed for a more sophisticated model to analyze the nature of change and also afforded the ability to account for nonlinear change. It is important to explain why two-wave (usually in the form of a pre and post test) research designs are not adequate to study change. Singer and Willet (2003) state that such designs misconceive a difference between two measurement occasions as change, when in reality it is merely an increment that fails to 1) describe the process of change or 2) provide insight into the shape of an individual’s growth trajectory. Additionally, it has been argued that two-wave studies have the distinct possibility to confuse true change with measurement error (Rogosa et al., 1982). These concerns were avoided in this research project with the availability of six waves of data to offer an accurate view of true change in the realm of social skill development.

Secondly, this research maintained a sensible metric for time. Data was collected in the fall of sixth, seventh, and eighth grade in late September or early October. Data was collected in the spring of sixth, seventh, and eighth grade in late May or early June. As such, these measurement occasions were relatively equally spaced six months apart, though the time between a fall and spring measurement occasions was slightly longer than the time between a spring and fall measurement occasion due to the longer length of
the academic year than the summer vacation period. These time periods (approximately every six months) were chosen to provide a comprehensive and consistent measure of change from the beginning to end of each academic year, as well as to represent overall change during the three years. Summer months away from school certainly have the ability to impact the social skill development of participants, however, multilevel models can be fit for populations that show nonlinearity and/or discontinuity that could be represented by this time period away from the school environment.

Thirdly, this research utilized a continuous outcome variable that changes systematically over time. Singer and Willett (2003) state that in addition to possessing appropriate psychometric properties, outcome measures in longitudinal research must also have a stable metric over time, maintain validity, and preserve precision across all waves of measurement. As mentioned previously, the SSRS has adequate psychometric properties. Since the SSRS was utilized at each measurement occasion, outcome scores are equatable over time. This is the easiest and most common method to maintain a stable metric over time. The effort to preserve measurement validity over time was represented by the decision to utilize the Elementary Level version of the SSRS (recommended for grades 3-6) into grades seven and eight. In addition to allowing a stable metric for time, this decision was made in hopes of assuring that all students were able to read and understand the questions of the SSRS at all six measurement occasions. Utilizing the Secondary Level version of the SSRS (recommended for grades 7-12) would have been detrimental to ensuring validity over time, as students may have been more likely to misunderstand the questions due to higher-level vocabulary. Finally, great effort was made to maintain measurement precision over time by establishing a consistent method.
of survey administration (See Appendix F) that was utilized at every measurement occasion. Teachers who administered the SSRS were trained by the lead researcher before every measurement occasion to reinforce the importance of the established process.

The research design and outcome measure utilized in this research project appropriately satisfied the requirements of multilevel modeling and made the use of this analytic technique the most appropriate to answer the research questions of this project.

**Model building approach.** After conducting appropriate exploratory analyses, a series of multilevel models for change were fitted to first the total SSRS score and then to the subscale scores. In each set of analyses, I began by fitting first an unconditional linear growth model. Next, I explored potential nonlinear growth and discontinuous growth. Finally, variables representing the student-level characteristics (treatment status, school, and gender) were added sequentially to the models.

**Unconditional linear growth model.** The purpose of fitting an unconditional linear growth model is to examine intra-individual change over time in the area of social skill development as measured by the SSRS. The unconditional linear growth model has no predictors other than time itself, providing a baseline of individual social skill growth trajectories regardless of whether or not each individual student participated in the RESPECT program. The level-1 submodel of the unconditional linear growth model is represented as:

\[ Y_{ij} = \{\pi_{0i} + \pi_{1i}(\text{TIME}_{ij} - 1)\} + \varepsilon_{ij} \]
In the level-1 submodel, $Y_{ij}$ represents the value of the outcome variable (SSRS total score or subscale score) for student $i$ at time period $j$, $\pi_{0i}$ represents the initial status (intercept) of the growth trajectory for student $i$, his or her true SSRS score at the first time point (beginning of sixth grade), and $\pi_{1i}$ represents the linear rate of true change in SSRS score over the course of the six time points (fall and spring of three academic years) of his/her middle school career. TIME refers to the six possible measurement occasions over the course of three years. The last term of the equation ($\epsilon_{ij}$) represents random error.

The equations for the level-2 submodel are:

$$\pi_{0i} = \gamma_{00} + \zeta_{0i}$$
$$\pi_{1i} = \gamma_{10} + \zeta_{1i}$$

In the level-2 submodel, $\gamma_{00}$ represents the population average initial status, and $\gamma_{10}$ represents the population average linear rate of change. The residual term of $\zeta_{0i}$ represents differences between individual student’s initial status and the population average initial status. The variance of these residuals, $\sigma_0^2$, represents population variance in initial status. The residual term of $\zeta_{1i}$ represents differences between individual student’s rate of change and the population average rate of change. The variance of these residuals, $\sigma_1^2$, represents population variance in rate of change. These variance components are tested for statistical significance using a hypothesis test that tests the null hypothesis that the variance component is equal to zero in the population. Significant
variability in students’ initial status is expected since students will likely begin sixth grade with differing levels of social skill ability. Significant variability in students’ rate of change indicates that students’ social skill growth trajectories are different. This is important to know as additional level-2 predictor variables can be added to the model in an attempt to explain these differences in students’ growth trajectories during their three middle school years.

Combining the level-1 and level-2 equations creates the composite model equation of:

\[ Y_{ij} = \{y_{00} + y_{10}(TIME_{ij}-1)\} + \{z_{00} + z_{10}(TIME_{ij}-1) + e_{ij}\} \]

**Investigating nonlinear change.** The previous model assumes linear change over time in social skill development across the six measurement occasions. However, given the previously cited literature regarding the potential social challenges in the transition from elementary to middle school for urban youth, it is important to investigate the possibility of nonlinear change. To do so, quadratic (squared) and cubic (cubed) terms for time were added to the level-1 submodel of the multilevel model. First, a quadratic time term was added to the level-1 submodel:

\[ Y_{ij} = \{\pi_{00} + \pi_{10}(TIME_{ij} - 1) + \pi_{20}(TIME_{ij} - 1)^2\} + e_{ij} \]
In this level-1 submodel, $\pi_{2i}$ represents the quadratic rate of true change in SSRS score across the six measurement occasions. The interpretation of other parameters in unchanged.

The equations for this level-2 submodel are:

\[
\begin{align*}
\pi_{0i} &= \gamma_{00} + \xi_{0i} \\
\pi_{1i} &= \gamma_{10} + \xi_{1i} \\
\pi_{2i} &= \gamma_{20} + \xi_{2i}
\end{align*}
\]

In the level-2 submodel, $\gamma_{00}$ and $\gamma_{10}$ have the same interpretations as above, and $\gamma_{20}$ represents the population average quadratic rate of change. The residual term of $\xi_{2i}$ represents differences between individual student’s quadratic rate of change and the population average quadratic rate of change. The variance of these residuals, $\sigma_2^2$, represents population variance in quadratic rate of change.

Combining the level-1 and level-2 equations creates the composite model equation of:

\[
Y_{ij} = \{\gamma_{00} + \gamma_{10}(TIME_{ij} - 1) + \gamma_{20}(TIME_{ij} - 1)^2\} + \{\xi_{0i} + \xi_{1i}(TIME_{ij} - 1) + \xi_{2i}(TIME_{ij} - 1)^2\} + \epsilon_{ij}
\]

If the parameter estimate associated with quadratic time ($\gamma_{20}$) was not statistically significant, it was removed from the model and a linear estimate for rate of change was utilized. However, if the quadratic term was statistically significant, a cubic model was then tested. The equation for this level-1 submodel is:
\[
Y_{ij} = \{\pi_{0i} + \pi_{1i}(\text{TIME}_{ij} - 1) + \pi_{2i}(\text{TIME}_{ij} - 1)^2 + \pi_{3i}(\text{TIME}_{ij} - 1)^3\} + \epsilon_{ij}
\]

In this level-1 submodel, \(\pi_{3i}\) represents the cubic rate of true change in SSRS score across the six measurement occasions.

The equations for this level-2 submodel are:

\[
\begin{align*}
\pi_{0i} &= \gamma_{00} + \zeta_{0i} \\
\pi_{1i} &= \gamma_{10} + \zeta_{1i} \\
\pi_{2i} &= \gamma_{20} + \zeta_{2i} \\
\pi_{3i} &= \gamma_{30} + \zeta_{3i}
\end{align*}
\]

In the level-2 submodel, \(\gamma_{30}\) represents the population average cubic rate of change. The residual term of \(\zeta_{3i}\) represents differences between individual student’s cubic rate of change and the population average cubic rate of change. The variance of these residuals, \(\sigma^2_3\), represents population variance in cubic rate of change.

Combining the level-1 and level-2 equations creates the composite model equation of:

\[
Y_{ij} = \{\gamma_{00} + \gamma_{10}(\text{TIME}_{ij} - 1) + \gamma_{20}(\text{TIME}_{ij} - 1)^2 + \gamma_{30}(\text{TIME}_{ij} - 1)^3\} + \{\zeta_{0i} + \zeta_{1i}(\text{TIME}_{ij} - 1) + \zeta_{2i}(\text{TIME}_{ij} - 1)^2 + \zeta_{3i}(\text{TIME}_{ij} - 1)^3 + \epsilon_{ij}\}
\]

If the cubic term for time is not statistically significant, it was removed from the model and only the linear and quadratic estimates for rate of change were utilized in the
composite model. If the cubic term is statistically significant, it was included in the model along with the linear and quadratic estimates.

**Investigating potential discontinuity.** It was also important to investigate potential discontinuities in social skill development because of the summer vacation periods between data collection Times 2 (6th Grade Spring) and 3 (7th Grade Fall) and Times 4 (7th Grade Fall) and 5 (8th Grade Fall). It is reasonable to believe that the rate of change in social skill development may decline over the summer months when students were not in school. For those participating in the RESPECT program, this rate of decline may be more pronounced since they did not receive the adventure education program focused on social skill development. These two disruptions may affect both the elevation and slope of students’ social skill growth trajectories. Investigation of possible discontinuity was first explored through descriptive analysis of the data using line graphs of SSRS total scores at each of the six time points. These graphs were constructed by treatment group, school, and gender.

If exploratory analysis indicates possible discontinuity during one or both summer vacations additional variables are added to the level-1 submodel to account for changes in elevation and/or rate of change of students’ rate of change in social skill development. In section 6.1.3 of their book on longitudinal data analysis, Singer and Willett (2003) discuss in detail how to account for slope and/or intercept changes at multiple points, either on a student-level, or at time periods that are the same for all students. They state, “If you have reason to hypothesize a particular type of discontinuity, you should develop
a customized model that reflects your hypothesis and not adopt an "off-the-shelf" parameterization that may not" (p. 208).

As such, potential discontinuities in both elevation and rate of change were explored for the two summer breaks. Potential changes in elevations were investigated by adding two terms, sumbrk1 and sumbrk2, to the linear model. The terms sumbrk1 and sumbrk2 take values of zero in sixth grade, then sumbrk1 changes to a value of 1 at the beginning of seventh grade and sumbrk2 changes to a value of 1 at the beginning of eighth grade. This changes the elevation of the trajectory by increasing or decreasing the associated intercept for that period of time. These terms were included to account for any observed elevation changes in SSRS total score during these summer breaks. The equations for this level-1 submodel are:

\[ Y_{ij} = (\pi_{0i} + \pi_{1i}(TIME_{ij} - 1) + \pi_{2i}\text{SUMBRK1}_{ij} + \pi_{3i}\text{SUMBRK2}_{ij}) + \epsilon_{ij} \]

Before the first summer break: \[ Y_{ij} = (\pi_{0i} + \pi_{1i}(TIME_{ij} - 1)) + \epsilon_{ij} \]

After the first summer break: \[ Y_{ij} = ((\pi_{0i} + \pi_{2i}) + \pi_{1i}(TIME_{ij} - 1)) + \epsilon_{ij} \]

After the second summer break: \[ Y_{ij} = ((\pi_{0i} + \pi_{2i} + \pi_{3i}) + \pi_{1i}(TIME_{ij} - 1)) + \epsilon_{ij} \]

In this level-1 submodel, \(\pi_{2i}\) represents the change in elevations in SSRS score after the first summer break and \(\pi_{3i}\) represents the change in elevations in SSRS score after the second summer break.

The equations for this level-2 submodel are:
\[ \pi_{0i} = \gamma_{00} + \zeta_{0i} \]
\[ \pi_{1i} = \gamma_{10} + \zeta_{1i} \]
\[ \pi_{2i} = \gamma_{20} + \zeta_{2i} \]
\[ \pi_{3i} = \gamma_{30} + \zeta_{3i} \]

In this model, \( \gamma_{20} \) models the population change in elevation after the first summer break, and \( \gamma_{30} \) models the population change in elevation after the second summer break. The residual terms of \( \zeta_{2i} \) and \( \zeta_{3i} \) represent differences between individual student’s change in elevation and the population average change in elevation after each of the two respective summer breaks. The variance of these residuals, \( \sigma^2_2 \) and \( \sigma^2_3 \), represent population variances in change in elevation after the summer breaks after sixth and seventh grades.

A similar process was utilized to investigate potential discontinuities in rate of change as a result of the two summer breaks by adding two terms, summerslope1 and summerslope2, to the linear model. The form of the level-1 and level-2 models for this case are essentially the same as previously described for the elevation change model, except that instead of simply taking values 1 or 0, the values for summerslope1 and summerslope2 changed from 0 to the number of measurement periods after the first summer break (summerslope1) and the number of measurement periods after the second summer break (summerslope2). These terms accounted for the slope changes in SSRS total score during the two summer breaks.

**Adding level-2 predictors.** In the next phase of model building, student-level predictors were added to the multilevel model. These were added as level-2 predictors of the level-1
growth parameters. Three student-level predictors were included in the models: 1) participation in the RESPECT program (TREAT), 2) school, and 3) gender. A model including only the treatment predictor variable was first fit to examine the impact of participation in the RESPECT program on the rate of change in participants’ social skill development. As will be described in Chapter 4, change in social skill development is best modeled as a quadratic function of time, with three growth parameters in the level-1 submodel. The equation for this level-1 submodel is the same as the one used in the unconditional model:

\[ Y_{ij} = \{\pi_{0i} + \pi_{1i}(\text{TIME}_{ij} - 1) + \pi_{2i}(\text{TIME}_{ij} - 1)^2\} + \epsilon_{ij} \]

However, equations for the level-2 submodel now include the treatment variable:

\[ \pi_{0i} = \gamma_{00} + \gamma_{01}\text{TREAT}_i + \zeta_{0i} \]
\[ \pi_{1i} = \gamma_{10} + \gamma_{11}\text{TREAT}_i + \zeta_{1i} \]
\[ \pi_{2i} = \gamma_{20} + \gamma_{21}\text{TREAT}_i + \zeta_{2i} \]

Specific components of the level-2 submodel are as follows:

\( \gamma_{00} = \) The intercept for the control group (when TREAT = 0)
\( \gamma_{01} = \) The additional quantity to add to the intercept for the treatment group. This could also be referred to as the difference in intercept between the control and treatment groups. \( (\gamma_{00} - \gamma_{01} = \text{Intercept for the treatment group}) \)
\( \gamma_{10} = \) The linear rate of change for the control group

\( \gamma_{11} = \) The additional quantity to add to the linear rate of change for the treatment group. This could also be referred to as the difference in linear rate of change between the control and treatment groups. \((\gamma_{10} + \gamma_{11} = \text{Linear rate of change for the treatment group})\)

\( \gamma_{20} = \) The quadratic rate of change for the control group

\( \gamma_{21} = \) The additional quantity to add to the quadratic rate of change for the treatment group. This could also be referred to as the difference in quadratic rate of change between the control and treatment groups. \((\gamma_{20} + \gamma_{21} = \text{Quadratic rate of change for the treatment group})\)

Combining the level-1 and level-2 equations creates the composite model equation of:

\[
Y_{ij} = \{ \gamma_0 + \gamma_{10}(\text{TIME}_{ij}-1) + \gamma_{20}(\text{TIME}_{ij}-1)^2 + \gamma_{01}\text{TREAT}_i + \gamma_{11}\text{TREAT}_i * (\text{TIME}_{ij}-1) + \gamma_{21}\text{TREAT}_i * (\text{TIME}_{ij}-1)^2 \} + \{ \zeta_0 + \zeta_{11}(\text{TIME}_{ij}-1) + \zeta_{21}(\text{TIME}_{ij}-1)^2 + \epsilon_{ij} \}
\]

This composite model estimates systematic inter-individual differences in social skill development over time based upon participation in the RESPECT program. If the estimates of \( \gamma_{01}, \gamma_{11}, \) and/or \( \gamma_{21} \) are statistically significant, we conclude that there was an effect of program participation in either initial SSRS (which we would not expect) or in the rate of change in SSRS. Interpretation of the residual terms and their corresponding variance components is the same as those contained in the quadratic unconditional model, except that these variances are now conditional on the inclusion of TREAT in the model.
By comparing the estimated variance components between the unconditional quadratic model and the model including the treatment term we are able to determine whether treatment status explained any of the variability in students’ social skill growth trajectories.

After these initial composite models were utilized to explore the impact of participation in the RESPECT program on students’ rate of change on the SSRS total score, the additional predictor variables of school and gender were sequentially added to examine the effects of these variables on the rate of change of participants’ social skill development. The effect of school attended was investigated first by adding a set of dummy variables to the composite model. If school attended had a statistically significant effect on the rate of change in social skill development, it was kept in the model. If the effect was not statistically significant, the school predictor variable was removed from the final composite model. However, an additional model was run with an interaction term between treatment and school to be sure that there was no statistically significant interaction between the two variables. The same course of action was taken with the gender variable to assess whether or not gender had a statistically significant effect on the rate of change in social skill development. Based on the statistical significance of each of three predictor variables, the final composite model was constructed with a corresponding interpretation of results regarding the rate of change in social skill development over the course of three academic years. In addition to evaluating the statistical significance of predictor variables, the Akaike Information Criterion (AIC) estimates for each model were used to determine the best-fitting final composite model. When compared to one another, the preferred model is the one with the lowest AIC value.
To investigate change in the SSRS subscales, four additional composite models were constructed for each of the SSRS subscales utilizing the same process described for the SSRS total score. The outcome variable (Y) is changed from the SSRS total score to the particular SSRS subscale.

Summary

The use of multilevel modeling allowed this research project to examine the social skill development of students over time. The final best-fitting composite models show what impact (if any) each of the three predictor variables had on the rate of social skill development of participants over the course of three academic years. They address the question of whether or not participation in the adventure education RESPECT program significantly impacted the rate of change of social skill development of urban middle school students over their three academic years, while also accounting for the effect of school and gender.
CHAPTER 4

RESULTS

This chapter presents the results of this study. The longitudinal analysis described here examines the impact of an adventure education program on the social skill development of urban middle school students. These results seek to gain insight into the use of whole school, multi-year adventure education programs as a means to promote social development, understanding that social development is an integral part of the middle school educational process that promotes both academic and life success (Eccles & Roeser, 2011; Malecki & Elliot, 2002; Wentzel, 1993).

This chapter aims to address the central research questions of this study, which are:

1. What effect did participation in the Project Adventure RESPECT adventure program have on the rate of social skill development as measured by the Social Skills Rating System (SSRS)? Did the rate of change differ significantly between experimental and control students?

2. Did the rate of change in social skill development differ significantly between experimental and control students on any of the four SSRS subscales of Cooperation, Assertion, Empathy, and Self-Control?

3. Controlling for RESPECT program participation and gender, did attendance at one of the five participating schools significantly impact the rate of change in social skill development?
4. Controlling for RESPECT program participation and school attended, did gender significantly impact the rate of change in social skill development?

**Descriptive Statistics**

The sample consisted of 430 students from five Boston middle schools from the academic years of 2005-2006, 2006-2007, and 2007-2008. Students from three schools received the Project Adventure RESPECT program while students in two neighboring schools did not receive the program. Students ranged in age from 10 to 13 years old, with a mean (SD) age of 11.53 (0.65) and a median age of 11. This data represents the age of participants at the first data collection time point in the fall of 2005. Mean age by school was Thompson (11.36), Woolrich (11.77), Legend (11.64), Dutton (11.63), and Lacroix (11.58). A one-way analysis of variance (ANOVA) indicated that mean ages were significantly different, F(4,424) = 6.21, p < .001. Post-hoc pairwise t-tests indicated that the only significant differences in mean age were found when comparing Thompson to Woolrich (p < .001), Legend (p = .016), and Dutton (p = .025). Though statistically significant, the actual difference in mean age is no more than 5 months. Together with the fact that all students tested are in the same grade, the observed differences in age seem to be of little practical significance.

The sample consisted of 218 females and 212 males. The percentage of female students by school was Thompson (56%), Woolrich (48%), Legend (41%), Dutton (55%), and Lacroix (42%). Chi-square analysis revealed that the proportion did not differ significantly by school, $c^2(4, N = 430) = 7.96, p = .09$.
Ethnicity was self-identified by 259 of the 430 students with 5 as American Indian or Native Alaskan, 4 as Asian or Pacific Islander, 124 as African American, 85 as Hispanic, 3 as White, and 38 as Other. The ethnicity categories were chosen by the authors of the SSRS and were included on the front page of the survey (see Appendix E). Non-response rates by school were Thompson (34%), Woolrich (58%), Legend (49%), Dutton (31%), and Lacroix (38%). Statistical comparisons of race distributions were not conducted due to the large proportion of missing data.

To measure social skill development, SSRS data was collected at the beginning and end of each of the three academic years, constituting a total of six measurement occasions. The SSRS Elementary version has 34 questions. Each question can be answered with a 0 (Never), 1 (Sometimes), or 2 (Very Often). Within the 34 questions, the SSRS has four subscales of Cooperation, Assertion, Empathy, and Self-Control. Total SSRS scores are computed by adding the four subscale totals. Six of the 34 questions are counted in two different subscales; therefore, total SSRS scores can range from 0 to 74. Figure 2 shows SSRS total score means by treatment group. Figure 3 shows SSRS total score means by school. Figure 4 shows SSRS total score means by gender. It is important to note that sample sizes varied across time periods (see Table 4).
Figure 2. SSRS total score means by treatment group. Blue bars (left side of each cluster) represent the experimental group and red bars (right side of each cluster) represent the control group.
Figure 3. SSRS total score means by school. Thompson, Woolrich, and Legend represent the experimental schools while Dutton and Lacroix represent the control schools.
Figure 4. SSRS total score means by gender. Blue bars (left side of each cluster) represent the female students and red bars (right side of each cluster) represent the male students.

These descriptive statistics provide some initial insights before multilevel models are fitted to assess rate of change in social skill development. First, Figure 2 indicates that average SSRS total scores were fairly similar between the two groups across the six time points. Students began sixth grade nearly identically in their self-assessed social skill ability. The average SSRS total score declined for both groups during sixth grade. This decline continued during the summer between sixth and seventh grade. Average SSRS totals scores were lowest for both groups at the beginning of seventh grade but improved for both groups over the course of seventh and eighth grades. However, the level and rate
of change between the two groups may be different; testing for the significance of these potential differences will be explored with multilevel modeling.

Second, Figure 3 suggests considerable variability between schools’ average SSRS total scores in both direction and magnitude across the six measurement occasions. Thompson (experimental) and Dutton (control) show similar trends that are consistent with the general nature of their respective larger groups as seen in Figure 2. Woolrich and Legend (both experimental) mimic each other in their general nature, which is in contrast to Thompson and Dutton. They both experienced declines during sixth grade, however, after a one-time increase, average SSRS total scores continued to decline after the end of seventh grade instead of increasing like those of Thompson and Dutton. Interestingly, Legend’s average score experienced a one-time increase in social skills over the summer between sixth and seventh grade. This suggests that the school environment and/or participation in the RESPECT program did not positively influence students’ social skill ability. In contrast, Woolrich’s average SSRS total score increased most noticeably during seventh grade. Further, Woolrich’s average score showed marked declines over both summer breaks (between Time 2-3 and Time 4-5), while its declines during sixth and eighth grade were relatively small. This suggests that the school environment and/or participation in the RESPECT program positively affected their social skill development during seventh grade and ameliorated their declines during sixth and eighth grades. Finally, Lacroix’s (control) average SSRS total score declined in all three academic years, with the most drastic decline occurring in sixth grade. However, Lacroix’s average SSRS total score increased over both summer breaks. This suggests that the school environment negatively affected social skill development while time spent away from
school improved social skill ability for these students. The significance of difference in social skill development between schools will be explored in detail using multilevel modeling.

Third, Figure 4 shows differences between male and female average SSRS total score regardless of school and participation in the RESPECT program. Females, on average, began sixth grade with higher levels of social skill ability than males and declined until the beginning of seventh grade. Females showed little change in average SSRS total score during seventh grade and summer after seventh grade before declining during eighth grade. Males, on average, began sixth grade with a lower average SSRS total score than females and declined sharply until the beginning of seventh grade when they increased at a similarly sharp rate until the end of eighth grade. Again, details of the differences between genders in the rate and level of social skill development will be explored more fully using multilevel modeling. However, these initial descriptive statistics seem to show a noticeable effect of gender on the social skill development of participants regardless of what school they attended and whether or not they participated in the RESPECT program.

Finally, these descriptive statistics provide insights into important issues to be aware of when fitting multilevel models that will more accurately address the research questions of this study. First, it seems highly likely that the nature of change in social skill ability will be nonlinear. Therefore, quadratic and cubic models will need to be explored to account for this characteristic in order to find the model of best fit. Second, the effect of the two summer vacation periods between during the three middle school academic years seems to be an issue, though the effect varied for different groups.
Nonetheless, the summer vacation periods represent potential discontinuities. If these discontinuities prove significant, appropriate adjustments will need to be made when determining the multilevel model of best fit.

**Empirical Growth Records and Trajectories**

Before fitting level-1 and composite multilevel models to assess social skill rate of change, it is important to produce individual empirical growth records and to examine potential trends in the data that could influence the composite model (Graham, 2010; Singer & Willet, 2003). An empirical growth record is simply a temporally sequenced graph of an individual student’s SSRS total scores across the six measurement occasions. To obtain these records, 60 of the 430 student cases were randomly selected and stratified by treatment, gender, and school. Figure 5 shows six empirical growth records and trajectories with fitted linear and quadratic ordinary least squares (OLS) regression lines to provide a glimpse into the results of this exploratory work.

Viewed as a whole, the 60 growth records varied considerable in shape and trajectory. However, many of the trajectories seemed to be nonlinear. Most trajectories with a nonlinear trajectory seemed to have a U-shaped curve, indicating an initial decline in social skill ability during the first three measurement occasions followed by an increase over the last three occasions. Based on this observation, quadratic OLS regression lines of best fit were added to the plots after the linear version. As seen in the examples in Figure 5, many of the quadratic OLS regression lines were a better fit for the trajectories. Quadratic r-squared values were generally higher than linear r-squared values, indicating that the quadratic models explain more of the variance in SSRS total
score over time within these individual records. Based on this observation, it was necessary to explore the use of nonlinear terms in the multilevel models.

An additional observation was variance in slope and direction of change during the two summer vacation periods between the sixth and seventh grade, and again between seventh and eighth grade. These observations were not as pronounced or consistent as the nonlinear trajectories, as some students increased in social skill ability over the summer while others declined. These variances did not seem to be consistent with any of the predictor variables of treatment group, school, or gender. Nevertheless, it will be necessary to investigate the impact of these potential discontinuities in the multilevel models.
Figure 5. Empirical growth records of six random students. ID 19 is a male from Thompson (experimental), ID 79 is a male from Thompson (experimental), ID 234 is a male from Woolrich (experimental), ID 326 is a female from Dutton (control), ID 356 is a female from Dutton (control), and ID 391 is a male from Lacroix (control).
Multilevel Model of SSRS Total Score

To begin, an unconditional growth model was fit for all students using time as the only predictor of total SSRS score. A linear model was fit first, including time as a random effect to allow the rate of change to vary by subject. This resulted in a fitted equation of:

\[
\text{Predicted SSRS}_{TOTij} = 52.58 - .78(TIME_{ij}-1)
\]

The estimated intercept, 52.58, represents the predicted average SSRS total score at the first measurement occasion in the fall of sixth grade. The estimated rate of change, -.78, represents the predicted average decline in SSRS total score at each of the remaining 5 measurement occasions. Based on the relationship between these parameter coefficients, both the estimate of the intercept and the estimate of the rate of change were statistically significant (p < .001). Since the estimated rate of change was statistically different from zero, this means that there is sufficient evidence to conclude that, on average, SSRS total score changed over time. The estimated variance components for intercept and rate of change were 61.96 (p < .001) and 1.98 (p < .001) respectively. This means that students had significant variability in both their individual initial SSRS total score at the beginning of sixth grade and their individual linear rate of change in SSRS total score. This significant variability can potentially be predicted by adding level-2 predictor variables to future iterations of the model. Table 6 contains parameter estimates, estimated random
effects, and goodness-of-fit statistics for all SSRS total score models explored in this chapter.

However, since exploratory analysis indicated the likelihood of nonlinear change, a quadratic term for time was added to investigate a potentially better fitting nonlinear model. To do so, a squared Time term was added as a fixed effect to the model. In addition, the random effect of quadratic time was also estimated. When fit, the estimated quadratic model had an equation of:

\[
\text{Predicted } \text{SSRS}_\text{TOT}_{ij} = 53.37 - 2.93(\text{TIME}_{ij}-1) + .49(\text{TIME}_{ij}-1)^2
\]

The results from this model predict that students begin sixth grade with an average SSRS total score of 53.37 (p < .001). At each successive measurement occasion, SSRS total score is predicted to decline by the linear term, -2.93 (p < .001), but increase by the squared quadratic term, .49(p < .001). The positive coefficient on the squared term in this model indicates a U-shaped trajectory to the fit, which is consistent with the observations from the exploratory analysis. The magnitude of the coefficients on TIME and TIME\(^2\) produce a curve where the total score declines through the end of seventh grade, and then increases throughout eighth grade, but does not return to the original level. The estimated variance components for intercept, linear rate of change, and quadratic rate of change were 60.1 (p < .001), 10.36 (p < .05) and .31 respectively. This means that students had significant variability in their individual initial SSRS total score at the beginning of sixth grade and their individual linear rate of change in SSRS total score, however, the variability in quadratic rate of change in SSRS total score was not statistically significant.
This means that students differed significantly in the estimated linear component of their social skill trajectories but did not significantly differ in the quadratic nature of their social skill growth trajectories. Compared with the linear model, the quadratic model fit the data better, as demonstrated by the AIC value of 11008.82 (as opposed to 11049.15 for the linear-only model). A cubic model was also tested, however, the cubic term was not statistically significantly different from zero. Therefore, the quadratic model was determined to be the most appropriate level-1 model to explain overall rate of change in SSRS total score.

The potential effect of discontinuity during the two summer vacation periods between sixth and seventh grade, and between seventh and eighth grade was also investigated prior to adding level-2 predictor variables to the model. As suggested by Graham (2010) discontinuity in both elevation and slope were examined to determine if adjustments were necessary to the level-1 model. To begin, potential discontinuities in elevation were investigated by adding two terms, sumbrk1 and sumbrk2, as fixed effects to the model (random effects were also estimated) to the linear model. The predicted change in elevation during the first summer break was not statistically significant (p = .46). The predicted change during the second summer break was statistically significant (p < .001). However, the predicted change in elevation was positive. Since this change occurred during the time in the quadratic model when SSRS total scores began to increase as well, it is difficult to know whether this increase was due to a summer break or carry over social skill development after increases during the seventh grade year. In addition, the AIC estimate (11043.52) of the model including the discontinuity terms in
elevation was not as good as the quadratic model. Therefore, the quadratic model was deemed to be preferable.

Next, potential discontinuities in rate of change were investigated by adding two terms, summerslope1 and summerslope2, to the linear model. The predicted change in slope during the first summer break was statistically significant (p < .001). The predicted change during the second summer break was not statistically significant (p = .69). Similar to the observations regarding discontinuities in elevation, the significantly predicted change in slope during the first summer vacation could be due to the time away from school or continued declines in social skill ability after the rather steep declines experienced during sixth grade. The AIC estimate (11014.27) of the model including the estimated discontinuity terms in slope was slightly worse than quadratic model. Given the quadratic nature of the data we have so far observed, it is not surprising that a model with two slope changes could provide a similar fit to that of a quadratic model: an initially negative sloping line that flattens to a straight line and then changes to a positive line is a similar shape to that of a quadratic curve. However, the quadratic model allows more flexibility as to when the slope of the U-shape curve flattens out and then increases than does the model that utilizes linear slope discontinuity at specified times. Therefore, while the models fit the data similarly, the quadratic model was deemed to be the most appropriate. A last model including both elevation and slope discontinuity terms was nearly identical to the model including only slope change terms (11016.80 (AIC)). Therefore, no discontinuity terms in either elevation or slope were included in the level-1 model as the quadratic model provided the best fit in both statistical and practical terms.
**Fitting the composite model for SSRS total score.** The form of the model that represents the best fit regarding time period (quadratic in time) has been established to describe intra-individual change over time in SSRS total score, so level-2 predictors can now be added to determine inter-individual change in SSRS total score as a function of the three predictor variables of treatment, school and gender. To begin, a treatment term was added to investigate the effect of participation in the RESPECT program on rate of change in social skill development (as a reminder, Table 6 contains the parameter estimates for all SSRS total score level-1 and composite models explored in this chapter). Predicted equations for experimental and control groups were:

Experimental students: Predicted SSRS\_TOT\(_{ij}\) = 53.59 – 2.63(TIME\(_{ij}^-1\)) + .40(TIME\(_{ij}^-1\))^2

Control students: Predicted SSRS\_TOT\(_{ij}\) = 53.53 – 3.65(TIME\(_{ij}^-1\)) + .67(TIME\(_{ij}^-1\))^2

The predicted SSRS total scores at the beginning of sixth grade are nearly identical between experimental and control students, as indicated by the intercept values of 53.59 and 53.53, respectively. The groups differed in both their linear and quadratic predicted rate of change, though neither of these differences was statistically significant (p = .24 and p = .13, respectively). Control students’ linear parameter estimate reflects the fact that they declined more sharply than experimental students, especially over the first three measurement occasions. However, control students’ larger estimate for the quadratic term indicates that they increased more sharply than experimental students during the final
three measurement occasions. Figure 6 shows the predicted growth trajectories for the experimental and control groups.

![Graph showing predicted growth trajectories for experimental and control groups.](image)

**Figure 6.** Predicted SSRS total score trajectories by treatment group.

Overall, this estimated model tells us that participation in the RESPECT program had no statistically significant effect on the social skill development of students as the predicted rate of change in SSRS total scores was not statistically different between treatment groups. Given the non-significant nature of these results, estimated variance components (see Table 6) for initial status, linear rate of change, and quadratic rate of change did not differ appreciably from the unconditional quadratic model. This means that adding a variable for treatment status did not result in the model explaining additional variability in students' initial status or growth trajectories. However, it does provide the first glimpse of the nature of change in social skills for urban middle school
students, regardless of their participation in a school-based adventure education program, which is that students, on average, declined in the social skill ability from the beginning of sixth grade until the end of seventh grade before increasing from the end of seventh grade to the end of eighth grade. This finding can be explained by developmental theory and will be more fully discussed in the next chapter.

Investigating the role of school. The next step in model-building for SSRS total score investigated the role of school. To do so, dummy variables for each school (except for Dutton, which served as the reference) were added to the quadratic model in the same fashion as previously conducted with a treatment term. Since the treatment term was not statistically significant, it was removed from the model. Practically, the school term is a subset of the treatment term since three of the schools made up the experimental group (Thompson, Woolrich, and Legend) and two schools made up the control group (Dutton and Lacroix). However, breaking this term down to individual schools allows us to investigate inter-individual differences at this more specified level. However, it should also be noted that since the school term is a subset of the treatment term, these two terms cannot be included in a composite model together at any time. Since the treatment term was not statistically significant, inclusion of the school term is done for exploratory purposes only but will not be considered for the final model.

Predicted equations for the five schools were:

Thompson: Predicted $SSRS_{TOTij} = 54.45 - 3.29(TIME_{ij-1}) + .54(TIME_{ij-1})^2$

Woolrich: Predicted $SSRS_{TOTij} = 53.44 - .75(TIME_{ij-1}) - .06(TIME_{ij-1})^2$
Legend: Predicted SSRS_{TOTij} = 51.35 - 1.92(TIME_{ij-1}) + .27(TIME_{ij-1})^2

Dutton: Predicted SSRS_{TOTij} = 54.95 - 3.73(TIME_{ij-1}) + .58(TIME_{ij-1})^2

Lacroix: Predicted SSRS_{TOTij} = 52.09 - 3.53(TIME_{ij-1}) + .74(TIME_{ij-1})^2

Predicted trajectories of change in SSRS total score were similar for students in all schools with the exception of Woolrich, which had an inverted-U trajectory instead of the previously observed U-shaped trajectory of the other four schools. In general, the predicted equations for schools were similar to one in another in intercept, linear rate of change, and quadratic rate of change parameter estimates. However, there were a few exceptions. First, Legend’s predicted intercept was significantly different from both Dutton (p = .034) and Thompson (p = .025). This means that Legend students, on average, began sixth grade with significantly lower SSRS total scores than Dutton and Thompson students. Next, there were no statistically significant differences in the estimated linear rate of change between schools, though the difference between Woolrich and Dutton approached significance (p = .052). Finally, Woolrich’s estimated quadratic rate of change was significantly different from Dutton (p = .045), Lacroix (p = .014), and Thompson (p = .026).

In contrast to students from Dutton, Lacroix, and Thompson, students from Woolrich showed a more gradual, linear decline in SSRS total score across the three academic years as opposed to the more commonly observed declines during the first three measurement occasions followed by increases during the final three measurement occasions. It should also be noted that Lacroix was the only school whose model showed a predicted net increase in SSRS total scores from the beginning of sixth grade (52.09) to
the end of eighth grade (52.94). This can be attributed to their significantly lower SSRS total scores at the beginning of sixth grade combined with their larger quadratic rate of change parameter estimate, which resulted in larger increases in SSRS total scores over the final three measurement occasions. Figure 7 shows the predicted growth trajectories for each of the five schools.

Figure 7. Predicted SSRS total score trajectories by school.

Overall, this next iteration of the model provides a more nuanced view of the differences in SSRS total score rate of change among the five schools that make up the treatment (Thompson, Woolrich, and Legend) and control (Dutton and Lacroix) groups. Estimated variance components (see Table 6) for initial status, linear rate of change, and quadratic rate of change were noticeably improved compared to the unconditional quadratic model. The reduction in the initial status variance component represents a 3.14
percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 3.14% of the explainable variance in SSRS total score initial status can be explained by school attendance. The reduction in the linear rate of change variance component represents a 7.24 percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 7.24% of the explainable variance in SSRS total score linear rate of change can be explained by school attendance. The reduction in the quadratic rate of change variance component represents a 12.90 percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 12.9% of the explainable variance in SSRS total score quadratic rate of change can be explained by school attendance.

While the inclusion of the school term helps explain variance in estimated initial status and estimated growth trajectories of social skill development, for the sake of assessing the impact of the RESPECT program, the previous composite model results utilizing the treatment term were used. It is interesting to note that the trajectories of change in SSRS total score among individual schools were not homogeneous.

*Investigating the role of gender.* The next step in model-building for SSRS total score investigated the role of gender. To do so, a gender term was added to the quadratic model in the same fashion as previously conducted with a treatment and school terms. Since the treatment term was not statistically significant, it was removed from the model (along with the school term). In contrast to the similarity observed between treatment
groups, males and females differed significantly in their predicted rate of change in social skill development during their middle school years. Predicted equations for males and females were:

Males: Predicted SSRS_TOT_i = 51.64 - 3.57(TIME_{ij-1}) + 0.73(TIME_{ij-1})^2

Females: Predicted SSRS_TOT_i = 55.48 - 2.40(TIME_{ij-1}) + 0.29(TIME_{ij-1})^2

Males began sixth grade with lower predicted SSRS total scores than females, as indicated by the intercept values of 51.64 and 55.48 respectively. This difference was statistically significant (p < .001). The groups differed in both their predicted linear and quadratic rate of change. The difference in predicted linear change was not statistically significant (p = .14) while the difference in predicted quadratic change was statistically significant (p < .01). The non-significant difference between linear parameter estimates reflects the fact that males and females declined comparably over the first three measurement occasions. However, the significant difference between quadratic parameter estimates indicates that males and females had substantially different rates of change during the final three measurement occasions.

The small quadratic parameter estimate for female students means that they showed very little increase in predicted SSRS total score across the six measurement occasions. The model indicates that female students tended to decline at every measurement except for a small increase between the beginning and end of eighth grade. On average, female students decreased their predicted SSRS total score from 55.48 at the beginning of sixth grade to 50.73 at the end of eighth grade. In contrast, the large
quadratic parameter estimate for male students means that they increased their predicted SSRS total score over the final three measurement occasions. On average, male students actually increased their predicted SSRS total score from the beginning of sixth grade (51.63) to the end of eighth grade (52.08). Figure 8 shows the predicted growth trajectories for males and females.

Figure 8. Predicted SSRS total score trajectories by gender.

Overall, this next iteration of the model tells us that, unlike treatment status, gender had a significant effect on the social skill development of students as the rate of change in SSRS total scores was statistically different between males and females. Estimated variance components (see Table 6) for initial status, linear rate of change, and quadratic rate of change were noticeably improved compared to the unconditional quadratic model. The reduction in the initial status variance component represents a 6.57
percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 6.57% of the explainable variance in SSRS total score initial status can be explained by school attendance. The reduction in the linear rate of change variance component represents a 5.41 percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 5.41% of the explainable variance in SSRS total score linear rate of change can be explained by school attendance. The reduction in the quadratic rate of change variance component represents a 16.30 percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 16.3% of the explainable variance in SSRS total score quadratic rate of change can be explained by school attendance. These improvements in the gender-only model are more substantial than those observed in the previous school-only model, with the exception of the linear rate of change estimate.

This finding of the significance of gender on the initial status and estimated growth trajectories of middle school students is fairly consistent with both developmental theory and prior research. A more thorough discussion of these results will be included in the following chapter.

*Investigating the simultaneous effects of gender and treatment.* Based on the significant difference between genders, it is also important to consider the effect of gender, controlling for treatment status and also whether there are interaction effects of gender by treatment. To do so, the treatment variable was added back to the composite
model along with the gender variable, so that both treatment and gender were included as predictors of initial status, as well as linear and quadratic change. Originally, interaction effects of treatment by gender were also included, but these were not statistically significant (Table 6) and were therefore removed from the model.

Adding treatment status to gender produced similar predicted trajectories as those observed in the previous treatment and gender only models. The AIC estimate of this model was 10985.84, which is slightly worse than the gender-only model. This means that adding treatment back into the model did not improve the goodness of fit. Predicted equations for experimental students were:

Males: Predicted SSRS_TOT\textsubscript{ij} = 51.62 - 3.27(TIME\textsubscript{ij-1}) + .65(TIME\textsubscript{ij-1})^2

Females: Predicted SSRS_TOT\textsubscript{ij} = 55.47 - 2.18(TIME\textsubscript{ij-1}) + .23(TIME\textsubscript{ij-1})^2

Predicted equations for control students were:

Males: Predicted SSRS_TOT\textsubscript{ij} = 51.65 - 4.17(TIME\textsubscript{ij-1}) + .87(TIME\textsubscript{ij-1})^2

Females: Predicted SSRS_TOT\textsubscript{ij} = 55.51 - 3.07(TIME\textsubscript{ij-1}) + .45(TIME\textsubscript{ij-1})^2

In terms of differences between treatment and gender groups, observations from the previous two iterations of the model held true for this combined model. Controlling for gender, there were no statistically significant differences between experimental and control students for the predicted intercept (p = .98), linear rate of change (p = .30), or quadratic rate of change (p = .21). Controlling for treatment status, significant differences between males and females remained at the estimate intercept (p < .001) and estimated quadratic rate of change (p < .01) while the estimated linear rate of change remained non-significant (p = .16).
Figure 9 shows the predicted growth trajectories for males and females by treatment group.

![Graph showing growth trajectories for males and females by treatment group.](image)

*Figure 9. Predicted SSRS total score trajectories for males and females by treatment status.*

Overall, this next iteration of the model tells us that regardless of whether or not students participated in the RESPECT program, gender had the most significant effect on the social skill development of students as the rate of change in SSRS total scores was not statistically different between males and females in the experimental and control groups. Estimated variance components (see Table 6) for initial status, linear rate of change, and quadratic rate of change were nearly identical to those observed in the previous gender-only model. This means that adding a variable for treatment status to the gender-only model did not result in the model explaining additional variability in students' initial
status or growth trajectories. This was also true for the treatment and gender model that included interaction effects.

**Investigating the role of gender by school.** Lastly, differences between males and females were examined at the school level. Though the difference in treatment status was not statistically significant, the previous investigation of school-level differences showed variability between experimental and control schools in the nature of SSRS total score trajectories. Therefore, an investigation into any gender-related differences between schools seemed warranted. To do so, school terms (again in the form of a set of dummy variable with Dutton acting as the reference) were added to the composite model with gender. The treatment term was removed from the model. Interaction terms for school by gender were included in the model, but none were statistically significant (Table 6). The fit of the model (11006.38 AIC) was slightly worse than that of the gender and treatment model, which means that inserting school back into the model did not improve the goodness of fit compared to the gender-only model. First, Thompson was examined and predicted equations for these students were:

Males: Predicted SSRS_TOT\(_{ij}\) = 52.85 – 3.57(TIME\(_{ij-1}\)) + .72(TIME\(_{ij-1}\))^2

Females: Predicted SSRS_TOT\(_{ij}\) = 55.71 – 3.18(TIME\(_{ij-1}\)) + .45(TIME\(_{ij-1}\))^2

In general, estimated trajectories for males and females at Thompson were similar. Females began sixth grade with higher SSRS total scores than males, and this difference was statistically significant (p = .047). Estimated linear and quadratic rates of change
were not statistically different between males and females at Thompson. Overall, the predicted rate of change in SSRS total score across the three years mirrored trajectories in previous models with a decline in from beginning of sixth grade to the beginning of seventh grade and an increase from the beginning of seventh grade to the end of eighth grade. However, females seemed to decline well into seventh grade with a minimal increase between the beginning and end of eighth grade while males declined more sharply during sixth grade but seemed to begin their positive change in trajectory earlier in seventh grade and increased more sharply during the eighth grade year. Figure 10 shows the growth trajectories for males and females at Thompson (experimental).

![Figure 10. SSRS total score trajectories by gender at Thompson.](image)

Next, Woolrich was examined and predicted equations for these students were:
Males: Predicted $SSRS_{TOTij} = 51.94 - 2.23(\text{TIME}_{ij}-1) + .29(\text{TIME}_{ij}-1)^2$

Females: Predicted $SSRS_{TOTij} = 55.04 + .84(\text{TIME}_{ij}-1) - .43(\text{TIME}_{ij}-1)^2$

Estimated trajectories for males and females at Woolrich differed in overall shape; with males exhibiting the more commonly observed U-shaped curve while females had an inverted U-shaped estimated rate of change. However, both curves were relatively flat and there were no statistically significant differences between males and females in their predicted intercept, predicted linear rate of change, or predicted quadratic rate of change. Figure 11 shows the growth trajectories for males and females at Woolrich (experimental).

![Figure 11. SSRS total score trajectories by gender at Woolrich.](image)

Next, Legend was examined and predicted equations for these students were:
Males: Predicted SSRS\_TOT\textsubscript{ij} = 50.02 - 2.78(TIME\textsubscript{ij-1}) + .55(TIME\textsubscript{ij-1})^2

Females: Predicted SSRS\_TOT\textsubscript{ij} = 53.31 - .61(TIME\textsubscript{ij-1}) - .18(TIME\textsubscript{ij-1})^2

Estimated trajectories for males and females at Legend resembled those of Woolrich. There were no statistically significant differences between males and females in their predicted intercept, predicted linear rate of change, or predicted quadratic rate of change. However, it is interesting to note the difference in the shape of the estimated rate of change between genders, with females declining throughout the three years while males began to increase their SSRS total score from seventh to eighth grade. Figure 12 shows the growth trajectories for males and females at Legend (experimental).

Figure 12. SSRS total score trajectories by gender at Legend.
Next, Dutton was examined and predicted equations for these students were:

Males: Predicted $SSRS_{TOT_{ij}} = 53.54 - 5.01(TIME_{ij-1}) + .89(TIME_{ij-1})^2$

Females: Predicted $SSRS_{TOT_{ij}} = 56.11 - 2.78(TIME_{ij-1}) + .36(TIME_{ij-1})^2$

Estimated trajectories for males and females at Dutton resembled those of Thompson, with both males and females exhibiting the more common U-shaped curve. Females had a flatter estimated rate of change than males, however, there were no statistically significant differences between males and females in their predicted intercept, predicted linear rate of change, or predicted quadratic rate of change. Figure 13 shows the growth trajectories for males and females at Dutton (control).

![Graph showing growth trajectories for males and females at Dutton.](image)

*Figure 13. SSRS total score trajectories by gender at Dutton.*
Finally, Lacroix was examined and predicted equations for these students were:

Males: Predicted $SSRS_{TOT_{ij}} = 49.05 - 3.95(TIME_{ij-1}) + .98(TIME_{ij-1})^2$

Females: Predicted $SSRS_{TOT_{ij}} = 56.12 - 2.48(TIME_{ij-1}) + .29(TIME_{ij-1})^2$

Estimated trajectories for males and females at Lacroix resembled those of Thompson and Dutton, however, the difference between genders seems more pronounced. Like Thompson, females at Lacroix began sixth grade with higher $SSRS$ total scores than males, and this difference was statistically significant ($p = .004$). Though the estimated rate of change appears to be quite different between genders, estimated linear and quadratic rates of change were not statistically different between males and females.

Figure 14 shows the growth trajectories for males and females at Lacroix (control).

Figure 14. SSRS total score trajectories by gender at Lacroix.
This next iteration of the model provides a more nuanced view of the differences in SSRS total score rate of change among males and females in the five schools that made up the treatment and control groups. Though differences existed at the school level, the only two statistically significant differences occurred at the estimated intercept for SSRS total score (Thompson (experimental) and Lacroix (control)). No significant differences in estimated linear rate of change or estimated quadratic rate of change were found between males and females at any of the five schools. Estimated variance components (see Table 6) for initial status, linear rate of change, and quadratic rate of change were again noticeably improved compared to the unconditional quadratic model. The reduction in the initial status variance component represents a 9.53 percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 9.53% of the explainable variance in SSRS total score initial status can be explained by school attendance. The reduction in the linear rate of change variance component represents a 12.26 percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 12.26% of the explainable variance in SSRS total score linear rate of change can be explained by school attendance. The reduction in the quadratic rate of change variance component represents a 25.81 percentage point decline in residual variance between the quadratic unconditional model and the school-only model. This means that approximately 25.81% of the explainable variance in SSRS total score quadratic rate of change can be explained by school attendance. Given the improvements observed in the gender-only and school-only models, the increased ability for the gender and school model to explain variance in all three estimates is not surprising.
Overall, the results observed in this model reiterate previous observations that students’ gender more significantly impacted their estimated SSRS total score rate of change than the school they attended or whether or not they received the RESPECT program.

**Best Fitting SSRS total score model.** Based on the AIC estimates for all models explored, the gender-only model provided the best fit. In addition, the gender-only model contained statistically significant differences while the treatment and school-only models did not. As such, the gender-only model was the best-fitting composite model in both practical and statistical terms. The fitted equation for the composite level-2 SSRS total score model is:

\[
\text{Predicted SSRS}_\text{TOT}_{ij} = 51.64 - 3.57(\text{TIME}_{ij-1}) + 3.85(\text{FEMALE}_i) + 1.17(\text{FEMALE}_i \times \text{TIME}_{ij-1}) + 0.73(\text{TIME}_{ij-1})^2 - 0.44(\text{FEMALE}_i \times \text{TIME}_{ij-1})
\]
Table 6

Parameter estimates, goodness-of-fit statistics, and estimated variance components for SSRS total score models

<table>
<thead>
<tr>
<th>Estimated Fixed Effects</th>
<th>Linear (Coef(SE))</th>
<th>Quadratic (Coef(SE))</th>
<th>Treatment (Reference is Control)</th>
<th>School (Reference is Dustin)</th>
<th>Gender (Reference is Male)</th>
<th>Treatment &amp; Gender with Interaction</th>
<th>Gender &amp; School with Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>52.58*** (0.46)</td>
<td>53.57*** (0.47)</td>
<td>53.53*** (0.86)</td>
<td>54.95*** (1.21)</td>
<td>51.64*** (0.66)</td>
<td>51.06*** (1.18)</td>
<td>53.54*** (1.78)</td>
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<tr>
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<td>-3.65*** (0.73)</td>
<td>-3.73*** (0.99)</td>
<td>-3.37*** (0.56)</td>
<td>-4.17*** (0.82)</td>
<td>-4.53*** (1.01)</td>
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<td>0.67*** (0.14)</td>
<td>0.58*** (0.21)</td>
<td>0.73*** (0.12)</td>
<td>0.87*** (0.17)</td>
<td>0.98*** (0.20)</td>
<td>0.89*** (0.31)</td>
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<td></td>
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<td>1.17 (0.78)</td>
<td>1.11 (0.78)</td>
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<td>1.83 (1.46)</td>
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<td>Female*Treatment Time3</td>
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<td>Female*Treatment Time4</td>
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<td></td>
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<tr>
<td>Female*Treatment Time5</td>
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Goodness of Fit

| AIC | 11049.15 | 11008.82 | 11012.09 | 11014.75 | 10981.36 | 10985.84 | 10989.31 | 11006.38 |

Estimated Variance Components

|                      |            |            |            |            |            |
|----------------------|------------|------------|------------|------------|
| Intercept            | 61.96***   | 60.13***   | 60.08***   | 58.21***   | 56.15***   |
| Time                 | 1.99***    | 10.36*     | 10.24*     | 9.61       | 9.8*       |
| Gender               | 0.31       | 0.30       | 0.27       | 0.26       | 0.25       |
| School               | 44.70***   | 40.32***   | 40.35***   | 40.31***   | 40.50***   |

*p < .05, **p < .01, ***p < .001
SSRS Subscale Analysis

One of the research questions of this study was to investigate the role of participation in the RESPECT program on the social skill development of students' SSRS subscale scores of Cooperation, Assertion, Empathy, and Self-Control. Though the effect of participation in the RESPECT program on SSRS total score was non-significant, exploration of these subscales may provide insight into any potential impacts of program participation, school, and/or gender on the specific areas of social skill development contained in the SSRS subscales. Therefore, descriptive statistics were computed and multilevel models were fitted for all four subscales in the same manner as was conducted for the SSRS total score. In terms of multilevel models, all four subscales replicated the SSRS total score results in that a quadratic model fit better than either a linear or cubic model. Potential discontinuities in both slope and elevation were examined for all four subscales using the same methods utilized in the construction of the total score model. Results of these analyses revealed the same results as observed for the SSRS total score model. Therefore, discontinuity terms were removed from the model for all four subscales utilized only the quadratic term, which provided the best fit. In addition, a detailed discussion of the estimated variance components is not included in the presentation of the subscale results since the general trends observed in the SSRS total score analyses were replicated at the subscale level. Specifically, the treatment-only models were not appreciably better than the unconditional quadratic models, the school-only and gender-only models provided an improvement compared to the unconditional quadratic model, and the treatment & gender models and gender & school models
showed further improvement. Estimated variance components for each SSRS subscale analysis can be found in the tables at the end of each subscale analysis.

**Descriptive statistics and best fitting model for SSRS Cooperation subscale score.** Descriptive statistics for the SSRS Cooperation subscale mimicked those observed in the SSRS total score, with average scores on this subscale again declining for both groups from the fall of sixth grade through the beginning of seventh grade but showing some increases from the beginning of seventh grade until the end of eighth grade. Average scores between experimental and control groups were again fairly similar, however, average scores for control students seemed to decline more sharply over the first three measurement occasions. Conversely, average scores for control student seemed to increase more substantially over the final three measurement occasions than those of experimental students. Figure 15 shows SSRS Cooperation mean subscale scores by treatment status across the six time periods.
Figure 15. SSRS Cooperation subscale score means by treatment group. Blue bars (left side of each cluster) represent the experimental group and red bars (right side of each cluster) represent the control group.

While the fitted multilevel models for the SSRS Cooperation subscale score resembled those of the SSRS total score model, noticeable differences existed within this subscale. First, in the treatment-only model, the treatment effect was again not statistically significant for the estimated intercept ($p = .51$). However, the estimated linear ($p < .05$) and estimated quadratic ($p < .05$) rate of change estimates were statistically significant. Students receiving the RESPECT program had a more positive estimated linear rate of change but also had a more negative estimated quadratic rate of change. In practical terms, students in the treatment and control groups started and finished with
equivalent scores on the SSRS Cooperation subscale, however, the estimated curve of the
treatment students was flatter. This means that control students declined more sharply
over the first three measurement occasions but also increased more sharply over the last
three measurement occasions. Though these trajectories differ statistically, there does not
seem to be any practical effect of participation in the RESPECT program on SSRS
Cooperation social skill development when observed from the perspective of the entirety
of change throughout the three middle school years. Figure 16 shows the predicted
growth trajectories for the experimental and control groups in the treatment only model.

Figure 16. SSRS Cooperation subscale score trajectories by treatment group.
The next difference in the multilevel modeling for this subscale was that while the gender-only model again provided the best fit based on the comparison of AIC estimates between all models, the estimated linear rate of change was not statistically significant \((p = .11)\) while the quadratic rate of change remained statistically different \((p < .05)\) between males and females in the gender-only model. More interestingly, in the model containing both treatment and gender with interaction terms, there was a statistically significant interaction effect on the estimated linear rate of change \((p < .05)\) and the estimated quadratic rate of change \((p < .05)\). This means that the differences in estimated linear and quadratic change in the treatment versus control groups when the subject is male is different than when the subject is female. Specifically, females in both groups have very similar estimated trajectories. However, males in the control group decline more sharply from the beginning of sixth grade until the beginning of seventh grade than experimental students but they also increase more sharply than experimental students from the beginning of seventh grade until the end of eighth grade. In other words, the estimated growth trajectory in cooperative social skills of students receiving the RESPECT program is a flatter U-shaped curve than that of the students not receiving the program. This result mimics the previous finding of the differences between experimental and control groups and suggests that those observed differences were likely due to the differences among male students. Figure 17 shows the predicted growth trajectories for the experimental and control groups by gender in the treatment and gender model that includes an interaction term.
Figure 17. SSRS Cooperation subscale score trajectories by treatment group and gender.

**Best Fitting SSRS Cooperation subscale score model.** Overall, this investigation of the SSRS Cooperation subscale scores suggests that participation in a school-based adventure education program may have the ability to impact students’ growth trajectories in the area of cooperative social skills and that this ability may be different for males and females. While these results do not indicate that the RESPECT program had the ability to increase cooperative social skills from the beginning to the end of the three middle school years in linear terms, it seemed to ameliorate potential declines in cooperative skills in the difficult time of transition to middle school that is often experienced for urban minority youth. On the other hand, it was also unable to match the increases experienced by students not receiving the RESPECT program during seventh and eighth grade. Based
on these findings, the treatment and gender model that includes interactions between these two variables was selected as the best fitting composite model. Though the AIC estimate for this model was slightly worse than the gender-only model, the practical significance of the insights between treatment groups and gender make this model the most appropriate. Table 7 contains parameter estimates, estimated random effects, and goodness-of-fit statistics for all SSRS Cooperation subscale score models.
Table 7

Parameter estimates, goodness-of-fit statistics, and estimated variance components for SSRS Cooperation subscale models

<table>
<thead>
<tr>
<th></th>
<th>Linear</th>
<th>Quadratic</th>
<th>Treatment (Reference is Control)</th>
<th>School (Reference is Dutton)</th>
<th>Gender (Reference is Male)</th>
<th>Treatment &amp; Gender</th>
<th>Treatment &amp; Gender with Interaction</th>
<th>Gender &amp; School with Interaction</th>
</tr>
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<tr>
<td></td>
<td>Coef(SE)</td>
<td>Coef(SE)</td>
<td>Coef(SE)</td>
<td>Coef(SE)</td>
<td>Coef(SE)</td>
<td>Coef(SE)</td>
<td>Coef(SE)</td>
<td>Coef(SE)</td>
</tr>
<tr>
<td>Intercept</td>
<td>14.25*** (0.13)</td>
<td>14.54*** (0.13)</td>
<td>14.68*** (0.25)</td>
<td>14.82*** (0.34)</td>
<td>14.66***(0.19)</td>
<td>14.20*** (0.27)</td>
<td>14.1*** (0.34)</td>
<td>14.66*** (0.51)</td>
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<tr>
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<td>-1.23*** (0.23)</td>
<td>-1.05*** (0.31)</td>
<td>-1.78*** (0.33)</td>
<td>-1.41*** (0.26)</td>
<td>-1.80*** (0.47)</td>
<td>-1.80*** (0.47)</td>
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<tr>
<td>Time²</td>
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<td>0.22*** (0.05)</td>
<td>0.15* (0.07)</td>
<td>0.21*** (0.04)</td>
<td>0.36*** (0.06)</td>
<td>0.28*** (0.05)</td>
<td>1.11* (0.49)</td>
<td>0.31* (0.10)</td>
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<td></td>
<td>1.41*** (0.49)</td>
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<td>4.16***</td>
<td>3.28***</td>
<td>4.13***</td>
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* p<.05, ** p<.01, *** p<.001
Descriptive statistics and best fitting model for SSRS Assertion subscale score. Descriptive statistics for the SSRS Assertion subscale also mimicked those observed in the SSRS total score and Cooperation subscale. However, average scores in this subscale seem to be most different during the two measurement occasions during sixth grade and, in general, seem to be more similar in the remaining four measurement occasions during seventh and eighth grade. Figure 18 shows SSRS Assertion mean subscale scores by treatment status across the six time periods.

Figure 18. SSRS Assertion subscale score means by treatment group. Blue bars (left side of each cluster) represent the experimental group and red bars (right side of each cluster) represent the control group.
The fitted multilevel models for the SSRS Assertion subscale score resembled those of the SSRS total score model. In the treatment-only model the estimated intercept \((p = .24)\), estimated linear rate of change \((p = .60)\), and estimated quadratic rate of change \((p = .42)\) were not statistically significant. There does not seem to be any practical effect of participation in the RESPECT program on SSRS Assertion social skill development. The only other noteworthy finding among the other multilevel models was the continued effect of gender. In the gender-only model, the estimated intercept \((p = .10)\) and estimated linear rate of change \((p = .19)\) were not statistically significant, however, the estimated quadratic rate of change was statistically significant \((p < .05)\). The negative coefficient for quadratic change suggests that females do not increase as much as males in their assertion social skills over the last three measurement occasions. These results remained in the model containing both treatment and gender, with no meaningful differences between estimates.

**Best Fitting SSRS Assertion subscale score model.** Overall, this investigation of the SSRS Assertion subscale scores suggests that participation in a school-based adventure education program did not have the ability to impact students’ growth trajectories in the area of assertive social skill. The only meaningful finding indicates that females, regardless of treatment status, may not increase their assertive social skills as much as males during seventh and eighth grade. Based on these results, the gender-only model was selected as the best fitting composite model and a comparison of the AIC values for all models supports this decision. Table 8 contains parameter estimates,
estimated random effects, and goodness-of-fit statistics for all SSRS Assertion subscale score models.
### Table 8

Parameter estimates, goodness-of-fit statistics, and estimated variance components for SSRS Assertion subscale models

<table>
<thead>
<tr>
<th>Estimated Fixed Effects</th>
<th>Linear (Coefficient, SE)</th>
<th>Quadratic (Coefficient, SE)</th>
<th>Treatment (Reference is Control) (Coefficient, SE)</th>
<th>School (Reference is Lacroix) (Coefficient, SE)</th>
<th>Gender (Reference is Male) (Coefficient, SE)</th>
<th>Treatment &amp; Gender with Interaction (Coefficient, SE)</th>
<th>Gender &amp; School with Interaction (Coefficient, SE)</th>
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<td>0.93*</td>
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<td>0.04*</td>
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<td>3.21***</td>
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</table>

* p < .05, ** p < .01, *** p < .001
Descriptive statistics and best fitting model for SSRS Empathy subscale score. Descriptive statistics for the SSRS Empathy subscale also mimicked those observed in the SSRS total score and previous two subscales. However, average scores in this subscale seem to be more different between experimental and control students over the last four measurement occasions during seventh and eighth grade. Figure 19 shows SSRS Empathy mean subscale scores by treatment status across the six time periods.

Figure 19. SSRS Empathy subscale score means by treatment group. Blue bars (left side of each cluster) represent the experimental group and red bars (right side of each cluster) represent the control group.
The fitted multilevel models for the SSRS Empathy subscale score resembled those of the SSRS total score model. The treatment effect was not statistically significant for the estimated intercept \( (p = .98) \), estimated linear rate of change \( (p = .98) \), or estimated quadratic rate of change \( (p = .56) \). There does not seem to be any practical effect of participation in the RESPECT program on SSRS Empathy social skill development. The effect of gender did not persist in this subscale. In the gender-only model, the estimated intercept was statistically significant \( (p < .001) \), however, the estimated linear rate of change \( (p = .86) \) and estimated quadratic rate of change was statistically significant \( (p = .59) \) were not statistically significant. This means that while males and females differed in their initial status in SSRS Empathy subscales scores at the beginning of sixth grade, their estimated growth trajectories across the three middle school years were not significantly different.

**Best Fitting SSRS Empathy subscale score model.** Overall, this investigation of the SSRS Empathy subscale scores suggests that participation in a school-based adventure education program did not have the ability to impact students’ growth trajectories in the area of empathetic social skill. There were also no meaningful differences between males and females outside of female’s higher initial status at the beginning of sixth grade. Based on these results, the gender-only model was selected as the best fitting composite model and a comparison of the AIC values for all models supports this decision. Table 9 contains parameter estimates, estimated random effects, and goodness-of-fit statistics for all SSRS Empathy subscale score models.
Table 9

Parameter estimates, goodness-of-fit statistics, and estimated variance components for SSRS Empathy subscale models

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<tr>
<th>Estimated Fixed Effects</th>
<th>Linear Coef(SE)</th>
<th>Quadratic Coef(SE)</th>
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<th>School (Reference is Davis) Coef(SE)</th>
<th>Gender (Reference is Male) Coef(SE)</th>
<th>Treatment &amp; Gender with Interaction Coef(SE)</th>
<th>Gender &amp; School with Interaction Coef(SE)</th>
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<td>-0.53*** (0.25)</td>
<td>-0.03*** (0.33)</td>
<td>-0.53*** (0.19)</td>
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<td>-0.49 (0.34)</td>
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<tr>
<td>Time²</td>
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<td></td>
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<td>-0.45 (0.61)</td>
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<td>-0.01 (0.29)</td>
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*p<.05, **p<.01, ***p<.001
Descriptive statistics and best fitting model for SSRS Self-Control subscale score. Descriptive statistics for the SSRS Self-Control subscale also mimicked those observed in the SSRS total score and previous three subscales. Similar to previous Empathy subscale, average scores in this subscale seem to be more different between experimental and control students over the last four measurement occasions during seventh and eighth grade. Figure 20 shows SSRS Self-Control mean subscale scores by treatment status across the six time periods.

Figure 20. SSRS Self-Control subscale score means by treatment group. Blue bars (left side of each cluster) represent the experimental group and red bars (right side of each cluster) represent the control group.
The fitted multilevel models for the SSRS Self-Control subscale score resembled those of the SSRS total score model. The treatment effect was not statistically significant for the estimated intercept (p = .91), estimated linear rate of change (p = .30), or estimated quadratic rate of change (p = .18). There does not seem to be any practical effect of participation in the RESPECT program on SSRS Self-Control social skill development. The effect of gender regained the more typical results observed in the SSRS total score, Cooperation subscale, and Assertion subscale. In the gender-only model, the estimated intercept (p < .05) and estimated quadratic of change (p < .01) were statistically significant, however, the estimated linear rate of change was not statistically significant (p = .07). Similar to the previous Empathy subscale, the significant difference in the estimated intercept means that males and females differed in their initial status in SSRS Self-Control subscales scores at the beginning of sixth grade. Similar to the Assertion subscale, the negative coefficient for quadratic change suggests that females do not increase as much as males in their self-control social skills over the last three measurement occasions. These results remained in the model containing both treatment and gender, with no meaningful differences between estimates.

**Best Fitting SSRS Self-Control subscale score model.** Overall, this investigation of the SSRS Self-Control subscale scores suggests that participation in a school-based adventure education program did not have the ability to impact students’ growth trajectories in the area of self-control social skills. The only meaningful finding indicates that females, regardless of treatment status, begin sixth grade with higher levels of self-control social skills but may not increase their self-control social skills as much as males.
during seventh and eighth grade. Based on these results, the gender-only model was
selected as the best fitting composite model and a comparison of the AIC values for all
models supports this decision. Table 10 contains parameter estimates, estimated random
effects, and goodness-of-fit statistics for all SSRS Self-Control subscale score models.
### Table 10

Parameter estimates, goodness-of-fit statistics, and estimated variance components for SSRS Self-Control subscale models

<table>
<thead>
<tr>
<th>Estimated Fixed Effects</th>
<th>Linear</th>
<th>Quadratic</th>
<th>Treatment (Reference is Control)</th>
<th>School (Reference is Dutton)</th>
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<th>Treatment &amp; Gender</th>
<th>Treatment &amp; Gender with Interaction</th>
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**Goodness of Fit**

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</tr>
</thead>
</table>

**Estimated Variance Components**

| **Intercept** | 5.49*** | 5.00*** | 5.00*** | 4.98*** | 4.79*** | 4.79*** | 4.80*** | 4.21*** |
| **Time**     | 0.17** | 0.65 | 0.67 | 0.71 | 0.74 | 0.75 | 0.75 | 0.62 |
| **Time^2**   | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| **Residual** | 5.45*** | 5.00*** | 5.07*** | 5.07*** | 5.06*** | 5.06*** | 5.06*** | 5.06*** |

*p < .05, **p < .01, ***p < .001
Summary of SSRS subscale analyses. As noted throughout this section, results from the fitting of multilevel models for the four SSRS subscales generally resembled the results observed in the SSRS total score analyses. The most noteworthy result was the varying effect of gender. Gender had a more significant impact on students' growth trajectories in the SSRS Cooperation subscale than those observed in the SSRS total score. In the SSRS Assertion and Self-Control subscales the results closely resembled the SSRS total score observation. However, gender did not play as significant role in the estimated growth trajectories in the SSRS Empathy subscale. These differences can be somewhat explained by developmental theory and will be discussed further in the following chapter.
CHAPTER 5

DISCUSSION

The primary focus of this study was to examine the ability of adventure education to influence the social skill development of US urban middle school students. The Project Adventure RESPECT program implemented in three Boston Public middle schools over the course of three academic years was the lens through which this inquiry was conducted. Given the importance of social skills to middle school students’ academic success and overall life effectiveness, this study sought to gain insight into the use of adventure education to promote social skill development within urban youth who often face considerable challenges to pro-social development. While adventure education methods have been utilized in a variety of therapeutic, camp, and physical education settings, this study explored for the first time the use of a whole-school, teacher-delivered adventure education program over an extended period. This study also aimed to address the considerable methodological flaws of past quantitative adventure education research by utilizing longitudinal data and multilevel modeling to gain a more accurate view of social skill change over time. In addition to this primary focus on adventure education, this study also examined the role of school (in the form of school attended) and gender in middle school students’ social skill development.

The purpose of this chapter is to interpret the results detailed in the previous chapter to answer the research questions of this study, discuss the primary implications of
these results in terms of both the use of adventure education to impact adolescents’ social skill development as well as the more general nature of social skill development among urban youth, critique the methods and procedures of this study, and propose recommendations for future research.

**Interpretation of Research Questions and Relevant Findings**

The previous chapter presented the statistical analysis of the data. This section will interpret these results to answer the research questions of this study. This interpretation will follow the sequence of the research questions; beginning with a discussion of the role of treatment status on social skill development (SSRS total score and SSRS subscales), followed by an interpretation of the results of the role of school and gender on social skill development.

**What is the effect of an adventure education program on social skill development?** The central purpose of this study was to determine the impact of an adventure education program on the social skill development of urban middle school students. This purpose was addressed by the two primary research questions regarding the effect of the Project Adventure RESPECT program on students’ rate of change in SSRS total score and four subscale areas.

Participation in the RESPECT program did not have a statistically significant impact on the rate of change in overall social skill development of urban middle school students participating in this study. Results from the SSRS total score multilevel model containing only a treatment variable show no significant difference in the rate of change
in SSRS total score between students participating in the program and those who were not. Students in both groups began sixth grade with nearly identical estimated SSRS total scores. However, experimental students did not decline as sharply as control students from the beginning of sixth grade until the end of seventh grade. On the other hand, experimental students did not increase as sharply as control students from the end of seventh grade to the end of eighth grade. Students receiving the RESPECT program ended middle school with predicted lower SSRS total scores than control students, and their estimated trajectory of future growth was less positive than those students not receiving the program.

From a practical standpoint, it could be argued that students not receiving the RESPECT program were better situated for potential positive social skill development as they transitioned to high school based on the more positive predicted rate of change during their eighth grade year as compared to students who received the program. It is important to remember that the estimated differences in the rate of change between experimental and control students are not statistically significant, and therefore, even though rates of change varied between experimental and control students in the sample under study, we cannot generalize these differences to the population of urban middle school students. It is appropriate to conclude that this adventure education program had no effect on the social skill development of US urban middle school students.

This conclusion is also the most appropriate answer to the second research question regarding the difference in the rate of change in any of the four SSRS subscales between experimental and control students. As shown by the results and parameter estimates for the four SSRS subscales in the previous chapter, findings for each subscale
closely resembled those observed for the SSRS total score in regard to treatment effect. Similar to the SSRS total score, the estimated slope, linear rate of change, and quadratic rate of change parameter estimates for the Assertion, Empathy, and Self-Control subscales for treatment status were not statistically different between experimental and control students. Therefore, in these areas, we can conclude that participation in the RESPECT program had no practical or statistically significant effect on the rate of change in these areas of social skill development, and therefore cannot be promoted to the population of US urban middle school students. In the SSRS Cooperation subscale, the estimated linear and quadratic rates of change were statistically different between groups. However, since the control students had a more positive estimated quadratic nature in their rate of change, they were predicted to (1) end the eighth grade year with higher predicted levels of cooperative social skills and (2) have the potential to increase more positively in the future if this more positive estimate continued into high school. As seen in Figure 16, these results mimic those observed in the SSRS total score interpretation regarding the overall effect of participation in this adventure education program on students’ cooperative social skill development.

The inability of the Project Adventure RESPECT program to positively impact the social skill development of Boston Middle School students is somewhat contrary to previous research in this area. However, it is important to remember that the scope of this project was the first of its kind in the United States. The only comparable studies are those conducted in Canadian middle schools by Ebbeck and Gibbons (1998) and Gibbons et al. (2010). Both of these studies showed positive social skill development through the participation in a one-year, school-based adventure education program. These studies
examined students similar in age to those who participated in this study, however, no
other information regarding geographic location or student demographic characteristics
were reported. Given the significant challenges faced by adolescents in US urban areas
previously described, it is possible that the Canadian students involved in these studies
did not face these same challenges, which likely have a significant impact on overall
social skill development.

Previous research in other settings such as camps and therapeutic adventure
programs has indicated some potential ability for adventure education program to
positively influence social skill development. However, many of these studies contained
methodological limitations such as research designs that lacked a control group, small
sample sizes, measurement instruments that were either psychometrically unsound or
measured constructs other than social skills, and analysis of pre/post data that failed to
accurately measure change over time. From a theoretical standpoint, it is also important
to recognize that this study conceptualized social skills as individually constructed
abilities influenced by student's unique social environments. Much of the previous
literature that cited the ability of adventure education to promote social skill development
was conducted in very different social conditions than those experienced by students in
this study. The social environment of summer camps and therapeutic adventure programs
(many of which are located in wilderness settings) are more positive in nature than those
of the urban middle schools in this study. In the construction of social skills, the social
context plays an integral role in the ability, or inability, of students to develop prosocial
skills. As such, the differences between the social environments in past research in camp
and therapeutic settings and those experienced by students in this study likely had a
significant impact on the inability of the RESPECT program to positively influence social skill development. Participation in an adventure education program is one relatively small component involved in US urban middle school students’ overall social skill development, which may be more profoundly influenced by their larger in-school and out-of-school social environments. As a general finding, social skill development is likely dependent on the unique social environment experienced by individual students, and the differences in these environments may play a more important role than specific interventions such as the adventure-based Project Adventure RESPECT program.

The importance of individual circumstances is also supported when comparing the results of this study to the foundational work of Conrad and Hedin (1981) in their comprehensive assessment of school-based experiential education programs on psychological, social, and intellectual student development. Though this study assessed high school students and was conducted more than thirty years ago, one insight from this study seems particularly useful to the results of this study. Though Conrad and Hedin concluded that the experiential education programs they examined positively impacted the social development of students, they also noted:

One of the major problems in educational research and evaluation is that the assumption often has to be, or at least is, made that the program has been implemented as described and that all students participating in it have had the same experience. (p. 15)

This observation points to the importance of both the fidelity of program implementation and the individual experiences of students. These ideas are related in that students are more likely to have a positive experience with a program that is delivered with high
quality and fidelity. It also highlights the importance of the idiosyncratic nature of students' engagement with school-based interventions and that these programs do not exist in isolation to their larger social environments. These ideas are further elucidated by the comments in the following section.

In addition to this broader perspective, it is appropriate to provide plausible hypotheses to explain the ineffectiveness of the RESPECT program to impact the social skill development of Boston Public middle school students. First, it is possible that the RESPECT program, in both content and delivery, was not effective at influencing students' social skill development. While there are numerous possible reasons involved with this hypothesis, from my involvement in this research, the following three reasons are the most plausible to explain the ineffectiveness of the RESPECT program:

1. **Administrative leadership and support.** Project Adventure offered participation in the RESPECT program in a meeting of the principals of Boston Public middle schools. Participation in the program was free to participating schools, with all training and program supplies provided by Project Adventure. For the three principals who decided to participate in the program, the open nature of participation was likely an important part of their decision given the lack of funding experienced by US urban middle schools to pay for costly outside interventions such as the RESPECT program (Kozol, 2005). However, for these principals under pressure to achieve AYP on the NCLB-mandated Massachusetts Comprehensive Assessment System (MCAS) student performance exams, the RESPECT program was yet another initiative.
to manage in their already stressful job responsibilities. It is easy to imagine that principals lacked the proper amount of time to (a) participate in the required trainings for administrators offered by Project Adventure, (b) support the work of teachers responsible for delivering the content of the program, and (c) establish a culture of high expectations and accountability for teachers to implement the RESPECT program with fidelity. Through my interactions with the lead Project Adventure staff responsible for organizing and facilitating the RESPECT program, I know that the issue of gaining the full investment and support of participating school principals was a challenge throughout the three years of the program. Given the complex nature of US urban middle schools, any program intervention that does not have full support of school administration is highly unlikely to succeed (Borman, Center for Comprehensive School, & Improvement, 2009).

2. **Teacher training and program fidelity.** A highly distinctive feature of the RESPECT program was that the delivery of the lessons and activities was done entirely by teachers, not Project Adventure staff. As mentioned previously, teachers participated in a 2.5-day training before the beginning of the school year of implementation for their respective grade and also received monthly visits by Project Adventure staff to support the delivery of RESPECT activities. While this level of training was appropriate to allow teachers to become familiar with the overall concept of the program and details of the individual lessons, it was unlikely to afford them the necessary processing skills needed to promote student learning in the desired activity outcome.
(Brown, 2004). As mentioned in Chapter 2, the ability for teachers to process at the conclusion of an activity is a vital component of the adventure education process, especially in the context of Bandura’s social cognitive theory and triadic reciprocal determinism (Martin, 2004). It is also important to remember that the RESPECT program was phased in on a yearly basis, with new teachers being trained at the beginning of each academic year as the students in the 2005-2006 sixth grade transitioned to seventh and eighth grade in 2006-2007 and 2007-2008 respectively. This means that while students became somewhat familiar with the RESPECT program structure and content during their sixth grade year, when they entered seventh grade (and eighth grade the following year) their teachers were just recently trained in the RESPECT program and were relative novices compared to the previous experience of the students. Therefore, from a continuity perspective, this teacher training structure possibly compromised effective implementation of the RESPECT program from year to year. Finally, it is important to remember that teachers, like their principals and administrators, were under the same pressures to have their students perform well on the MCAS exams. While some teachers may have experienced some value of the RESPECT program in fostering a more positive classroom environment, it is also likely that many of the teachers viewed the RESPECT program as yet another obligation that potentially interfered with their ability to effectively deliver academic content. Anecdotally, we know that fidelity to program implementation varied considerably from school to school and teacher to teacher. Given the central
role that teachers played in the delivery of the RESPECT program, these challenges certainly had an effect on the inability of the program to positively achieve its goal of promoting students' social skill development.

3. **Cultural relevance.** As disclosed on the opening chapter, the Project Adventure RESPECT program utilized a traditional, normative conception of social skill development that is culturally and historically rooted in a White, majority racial/ethnic perspective. Very little research has been conducted examining the ability of these adventure education methods to influence the social skill development of poor, urban, minority youth. It is certainly possible that the curriculum, delivery, and/or intended goals of the RESPECT program adventure education components and activities were simply not relevant or useful for the predominantly African American and Hispanic Boston Public middle school students involved in this research.

The second hypothesis regarding the observation of non-significant differences between treatment and control students in estimated social skill rate of change involves instrumentation. As mentioned previously, the SSRS was chosen as the measure of social skill ability for this research project primarily due to its sound psychometric properties and its well-established use in social science research (Demaray & Ruffalo, 1995; Diperna & Volpe, 2005). This decision was made in the context of constructing a methodologically sound research design that attempted to address many of the previously cited shortcomings of other adventure education research- one of which is the use of measurement instruments that lack the appropriate statistical rigor. However, a
compromise in using the widely accepted SSRS is a potential lack of sensitivity to the specific social skill goals inherent to the RESPECT program. Like most adventure education programs, the RESPECT program’s primary goals were the fostering of cooperation, teamwork, effective communication, and physical and emotional trust (Rheingold, 2005). The SSRS was developed to measure social skills in the broadest sense of the construct, and may not have had the ability to adequately identify potential gains by students participating in the RESPECT program in the more specific areas of intention. In this regard, it is not surprising that the results from the analysis of the SSRS Cooperation subscale seemed to be most sensitive to potential differences between experimental and control students in terms of a treatment effect and an interaction between gender and treatment. Outside of these findings in the Cooperation subscale, the SSRS did not detect any significant effect of the RESPECT program on students’ social skill development. A look at some of the questions in the SSRS provides an additional explanation for this possible lack of sensitivity. Several questions are more focused on proper manners and classroom behavior than on constructs such as teamwork and cooperation. A copy of the full SSRS can be viewed in Appendix E, however, the following is a list of questions on the SSRS that had little relationship with RESPECT program goals:

- Q8. “I keep my desk clean and neat”.
- Q18. “I avoid doing things with others that may get me in trouble with adults”.
- Q25. “I follow the teacher’s directions”.
• Q30. "I use my free time in a good way".

While the SSRS contained the desired psychometric properties to contribute to a sound research method, it may have lacked the overall sensitivity to RESPECT program goals inherent to adventure education.

The final hypothesis regarding the ineffectiveness of the RESPECT program to impact Boston Public middle school students’ social skill development regards the geographical and social environment in which these students lived and went to school. As previously discussed, the transition to middle school is often a highly challenging time for adolescents (Eccles, 2004; Jacobson et al., 2011; Peterson et al., 2009), especially urban students like those who participated in this research (Burchinal et al., 2008; Li et al., 2007). While some previous research has demonstrated the ability of program interventions to positively impact socially-related constructs among at-risk, urban students (Caplan et al., 1992), most social skill intervention programs involving urban youth have been largely unsuccessful (Elias, 1997; Elias & Haynes, 2008; D. C. Gottfredson et al., 1997; D. C. Gottfredson et al., 1998; G. D. Gottfredson et al., 2002; Jones et al., 1997; Lochman et al., 2010; Skroban et al., 1999). The students and teachers involved in this research lived in the Boston metropolitan area that has historically high levels of crime, violence, poverty, substance abuse, and unemployment consistent with other US urban areas. Through my visits to participating schools to deliver research materials, I observed the real impact that this environment had on these teachers and students. During one visit, a teacher informed me that the school was postponing the upcoming MCAS testing dates since a student at the school recently died in a gang-
related shooting. This example elucidates the nature of the social environment of these students and it is reasonable to hypothesize that a well-intentioned adventure education program focused on social skill development may not have been (a) culturally relevant to these students and (b) intense enough in both content and frequency to make a difference in the lives of these students given the nature of their life realities. Indeed, previous research indicates that even interventions that proved successful at the elementary school level are often unsuccessful when transferred to the middle school environment within the same school district (Lochman et al., 2010). It is also possible that since these minority students were experiencing the oppressive conditions of an urban environment, they may have resisted any school-based reform initiatives such as the RESPECT program as a form of rebellion against the school, which was seen by the students as a contributor to the oppressive conditions they are experiencing (Kohl, 1991).

These three hypotheses provide the most plausible reasons to explain the ineffectiveness of the RESPECT program to positively influence the social skill development of participating students. I believe the program, in both curriculum and research design, was a worthy attempt to utilize adventure education methods to improve the lives of urban youth. Though it was not successful, I respect the ambition of this project and I learned a great deal through my involvement with it.

**Does social skill development differ by school?** When treatment status was shown to have no significant effect on the estimated rate of change in SSRS total score, it was removed from the multilevel model in each of the respective model-building processes for the SSRS total score and four subscales. A school term (in the form of a set
of dummy variables with Dutton (control) as the reference) was then added to the models to address the third research question of this study regarding the role of school on social skill development.

As indicated in the results, attendance at a particular school did not have an overall significant impact on the rate of change in social skill development in SSRS total score or any of the four subscales. While there were some significant differences in predicted SSRS total scores at the beginning of sixth grade (as represented by the initial status parameter estimates), Woolrich (experimental) was the only school that was significantly different from any other school in terms of estimated rate of change. Woolrich was the only school to have a negative quadratic rate of change parameter estimate, and this differed significantly from Dutton (control), Lacroix (control), and Thompson (experimental). Practically, this means that Woolrich was the only school to have an inverted U-shaped estimated rate of change while the other four schools had the U-shaped trajectory of initial declines from the beginning of sixth grade until the middle/end of seventh grade followed by increases from the middle/end of seventh grade to the end of eighth grade. It is possible to entertain the notion that something was different at Woolrich than the other four schools, however, based on the similarity in the shape of the estimated rate of change for the other two experimental schools (Thompson and Legend), it seems unlikely that any difference could be attributed to the RESPECT program. Additionally, I have no anecdotal evidence to suggest any such differences between Woolrich and the other experimental schools.

Similar to the treatment effect, I interpret that the school students attended had no significant impact on the rate of change in social skill development among experimental
and control students. Though there were a small number of statistically significant differences between schools in initial status, linear rate of change, and quadratic rate of change, these somewhat isolated differences do not seem to suggest that the school variable had a comprehensive impact on students’ social skill development. These results persisted in the models that included both gender and school, which means that even when controlling for the effect of gender, the impact of school attended was generally not statistically significant. The role of the school environment has been shown to be a critical factor in the success of school-based interventions (McMurrer & Center on Education, 2012). In this study, all five schools were located within an approximately 20-mile radius from one another in the Boston metropolitan area. As such, regardless of school attended, all teachers and students experienced the same urban risk factors previously discussed. These forces may have been stronger than any individual school environment in influencing the social skill development of middle school students during this difficult transitional time in adolescence.

**Does social skill development differ by gender?** When both the treatment and school variables were shown to have no significant effect on the estimated rate of change in SSRS total score, they were removed from the multilevel models. A gender term (in the form of a dummy variable with male as the reference) was then added to the models to address the fourth research question of this study regarding the role of gender on social skill development.

As indicated in the results, males and females had significantly different estimated rates of change in social skill development. Females started sixth grade with significantly
higher social skills than males, as shown by their estimated intercept values. However, due to their significantly larger quadratic rate of change estimate, males increased their social skill ability beginning sometime during the middle of seventh grade and finished eighth grade with higher estimated SSRS total scores than females. These results were replicated in the Cooperation, Assertion, and Self-Control subscales while no significant differences in the rate of change were found in the Empathy subscale (though females had significantly higher estimates for initial status than males).

These findings are fairly consistent with previous literature. First, since females are generally more physically, cognitively, and socially developed than males at the time of transition to middle school (American Psychological Association, 2002; Crombie, 1988), it makes sense that females in this study reported significantly higher social skills than their male classmates at the beginning of sixth grade in all areas measured by the SSRS except the Assertion subscale. Significant differences in social skill development between males and females were also observed by Taylor et al. (2002) in their investigation of a social competency intervention program for students transitioning to middle school. Interestingly, they also found no differences by treatment status, but a significant difference by gender. The results of this study concur with this finding that perhaps gender, more than participation in a program or what school students attend, can have the most meaningful impact on students’ social skill development.

Based on the significant differences observed between males and females in the gender-only model, additional models were constructed that included (a) gender and treatment and (b) gender and school. These models also included terms to test for potential interactions between the two respective variables. Though significant
differences in the initial status for males and females were observed within two schools (Thompson (p < .05) and Lacroix (p < .01)), there were no significant differences between genders for linear or quadratic terms. The graphs suggest that while there may be some differences in gender in linear and quadratic rates of change, these differences were not statistically significant, and therefore they cannot be generalized to the larger population of urban middle school students. Some previous research suggests that males and females differ in their responses to social skill intervention programs (Asher & Renshaw, 1981; Tucker, 2006). Results of this study provide some support for this claim. In the analysis of SSRS total score, treatment status had no significant effect on SSRS total score between males and females. However, a significant interaction between treatment and gender (most noticeably among males) was observed in the Cooperation subscale analysis, which suggests that males and females differed in their response to the RESPECT program in this domain. Overall, the significant findings throughout the majority of fitted multilevel models regarding the role of gender in the estimated rate of change in social skill development provides further evidence that males and females have different trajectories of social skill development during adolescence.

**Unanticipated results regarding the nature of adolescent social skill development.** In addition to finding a difference between male and female rates of change in social skill development, perhaps the most interesting finding of this study was the estimated nonlinear trajectory of change for all students regardless of treatment status, school attended, or gender. Figure 21 shows the estimated growth trajectory for all
students involved in this study. As a reminder, this estimated quadratic model had an equation of:

\[
\text{Predicted SSRS}_{TOT_i} = 53.37 - 2.93(\text{TIME}_{ij} - 1) + .49(\text{TIME}_{ij} - 1)^2
\]

![Graph showing SSRS total score trajectory for all students.](image)

**Figure 21.** SSRS total score trajectory for all students.

While the implications for this finding will be discussed in the following section, the observance of nonlinear estimated social skill growth trajectories was somewhat unexpected and warrants further interpretation and discussion. The nonlinear estimated growth trajectories observed in this study have plausible explanations based past research and developmental theory during early adolescence (10-14 years old). As a reminder, students’ average age at the beginning of sixth grade was 11.53 years old. This means
that, on average, students in this study were moving through the later half of this developmental period as they progressed through the three middle school years.

To begin, developmental theory during this period of early adolescence suggests that it is a time of profound physical, cognitive, and social change. Specifically, during early adolescence students improve their ability to reflect on themselves and be aware of their strengths and weakness, along with an enhancement in their ability to learn new skills (Eccles, 1999). These developmental changes likely have an impact on students to (a) accurately self-assess their social skill ability and (b) develop new social skills. As Eccles (1999) states, "...early adolescent years are viewed by developmental psychologists as a time of change in the way children view themselves, as they consider what possibilities are available to them and try to come to a deeper understanding of themselves and others around them" (p. 38). As students navigate this changing view of themselves and their social environment, they are also likely to conform to their peers due to the importance of social acceptance during early adolescence (Eccles, 1999). In terms of the transition to middle school, Eccles (1999) states, "The environmental changes that students experience as they move into middle-grade schools are particularly harmful as they emphasize competition, social comparison, and self-assessment at a time when the adolescent’s focus on himself or herself is at its height" (p. 40).

These insights from development theory are salient to the nonlinear social skill growth trajectories observed in this study. First, the challenging nature of the transition from elementary school to middle school helps explain the high intercept value (representing the parameter estimate of all students’ self-reported SSRS total score at the beginning of sixth grade) observed in the estimated social skill growth trajectory. At the
beginning of sixth grade, it is reasonable to believe that students had a positive view of their social skills based on their status as elementary school fifth graders just a few months before. In the elementary school setting, they were the oldest students and were likely able to gain confidence in their social relations with teachers and classmates as a function of a more stable environment of elementary schools. The first measurement occasion at the beginning of sixth grade was within the first few weeks of school, as students were just beginning to experience the new, more complex social environment of middle school. In addition, students in early adolescence are still developing the ability to accurately assess their own abilities. This combination of effects provides a credible explanation as to why students’ social skill ability, on average, was higher at the beginning of sixth grade than at any other time during their middle school experience.

However, once students fully transitioned to the middle school environment, their estimated rate of change (accounting for both linear and quadratic rates of change) in social skills began to decline sharply from the beginning of sixth grade until the end of seventh grade. Table 11 shows the estimated average change in SSRS total score between measurement occasions across the three middle school years.
Table 11

*Average change in estimated SSRS total score between measurement occasions for all students*

<table>
<thead>
<tr>
<th>Time Measurement</th>
<th>Estimated change in SSRS total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th Grade Fall to 6th Grade Spring</td>
<td>-2.44</td>
</tr>
<tr>
<td>6th grade Spring to 7th Grade Fall</td>
<td>-1.46</td>
</tr>
<tr>
<td>7th Grade Fall to 7th Grade Spring</td>
<td>-0.48</td>
</tr>
<tr>
<td>7th Grade Spring to 8th Grade Fall</td>
<td>0.5</td>
</tr>
<tr>
<td>8th Grade Fall to 8th Grade Spring</td>
<td>1.48</td>
</tr>
</tbody>
</table>

As shown in the table, students declined in self-reported social skill ability most severely during sixth grade. Their declines continued at a relatively steep rate through the summer between sixth and seventh grades and continued to decline, though less sharply, to the end of seventh grade. This negative trajectory of change from the beginning of sixth grade until the end of seventh grade seems to support the general nature of development during early adolescence when students are still developing the ability to effectively self-reflect and gain social acceptance from their peers. It also suggests that the significantly higher self-reported social skill scores reported at the beginning of sixth grade were likely an inflated, inaccurate assessment of students’ social skills. In practical terms, as students progressed through the first two years of middle school they realized that they were not as socially competent as they thought they were. This adjustment was most profound during their sixth grade year when they (a) fully experienced the complex social middle
school environment and (b) began to develop their ability to accurately assess their own strengths and weakness.

On a positive note, students were able to rebound from their social skill declines during sixth and seventh grade and began to increase their social skill ability from the end of seventh grade until the end of eighth grade. In terms of magnitude, students' positive gains in social skill development from the beginning to the end of eighth grade were second only to the large negative decline observed from the beginning to the end of sixth grade. These observations suggest that students were able to grow their social skill ability towards the end of their middle school experience.

However, it should be noted that considerable attrition in the sample occurred over the course of the six measurement occasions. This statistical limitation may have impacted the nature of the U-shaped curve. The students who were left in the sample may have influenced the positive gains in social skill ability observed from the end of seventh grade to the end of eighth grade. Specifically, it is plausible to consider that the students who remained at the same school for all three academic years were academically and socially competent enough to not drop out of school or be forced to move to a different school for academic or behavioral reasons.

The larger sample sizes from the first two measurement occasions in sixth grade provide the most complete view of social skill ability from a sampling standpoint than the smaller sample sizes of the final four measurement occasions in seventh and eighth grade. If the original sample of students at the beginning of sixth grade could have been maintained throughout all measurement occasions, the positive gains observed during the eighth grade year may have been less positive.
Nevertheless, in terms of developmental theory, it is reasonable to hypothesize that students (a) began to adjust to the middle school social environment and (b) began to strengthen their ability to apply newly developed social skills to their teachers and classmates in an effective manner that allowed them to more positively assess their social skill ability. In this way, familiarity with the social environment combined with entrance into the later stages of early adolescent development may have allowed for this beneficial change in trajectory of social skill development.

Prior research investigating the nature of developmental trajectories of middle school students supports the findings of nonlinear change observed in this study. In their investigation of the middle school students bond to school, Oelsner, Lippold, and Greenburg (2011) found strikingly similar nonlinear, U-shaped trajectories of change. Similarly, Kokko, Tremblay, Lacourse, Nagin, and Vitaro (2006) found that middle school students’ trajectories of change in prosocial behavior were also nonlinear in nature, though these trajectories varied (from U-shaped to inverted U-shaped) by the status of previously documented physical aggression. Aber, Brown, and Jones (2003) found similar mixed-shaped trajectories of prosocial behavior in their study of middle childhood students. However, the students were between the ages of 6 and 12. Also, their social behavior was measured by teacher evaluations instead of self-reported, which represents a significantly different perspective in terms of comparable trajectories of change. Finally, Wang and Eccles (2012) used multilevel modeling to investigate the role of social support on dimensions of school engagement. They found all trajectories to be linear in nature; however, the constructs examined in this study were not necessarily developmental in nature. Overall, the nonlinear estimated social skill trajectory observed
in this study is supported by previous literature within the middle school context. However, relatively few studies exist that examine social skill development among middle school students that use statistical analysis that has the capability to investigate nonlinearity.

Finally, it is important to note that if this study had utilized more basic statistical techniques that did not have the ability examine potential nonlinearity, the findings would have shown simple linear declines in social skill ability for the majority of predictor variables examined in this study. The use of multiple waves of data analyzed by multilevel modeling allowed for a much more nuanced view of the nature of social skill development among this sample of urban middle school students.

Discussion of Primary Implications

The purpose of this section is to discuss the primary implications of the findings of this study. Implications in the area of adventure education will be discussed first, followed by implications in the broader area of adolescent social skill development.

Implications for adventure education research. The implications on the use of adventure education to impact the social skill development of urban middle school students are somewhat limited based on the results of this study. Since the RESPECT program did not positively develop the social skill ability of students participating in this research, the use of adventure education to promote social skill development cannot be promoted for this specific population of students. However, this research should be viewed in a more exploratory manner given its scope and complexity. As mentioned
previously, many aspects of this study have not been attempted in past adventure education research projects. Though it was based on years of relevant experience, the RESPECT program was developed by Project Adventure specifically for this research project and was not tested in any pilot work or smaller scale research projects to determine effectiveness, refine program components, and improve overall delivery. As such, one implication of this study is for future school-based adventure education programs aimed at improving social skills to be more deliberate in their development and scope of implementation. While the construction of a methodologically sound study with a large sample size, multiple schools, and multiple academic years providing longitudinal data is a worthy contribution to adventure education research, it likely inhibited the effectiveness of the RESPECT program to impact the social skill development of students. This is especially true when considering the challenges faced by students and teachers in US urban middle schools. In retrospect, it would have been wise for Project Adventure to have implemented the RESPECT program at one school, or even within one or two classrooms of one school, to test for effectiveness and make necessary adjustments before expanding to the larger scale that was utilized in this study. This provides a useful lesson for future adventure education research endeavors, especially in the realm of US urban middle schools.

As mentioned previously, the decision to have classroom teachers implement the RESPECT program, instead of trained Project Adventure facilitators, likely had a significant impact on the effectiveness of the program. In the comprehensive review of previous adventure education research aimed at improving social skill ability in Chapter 2, no other study utilized this approach. Trained teachers and facilitators delivered all
other adventure-based programs. It is important to remember that despite this, many previous studies failed to positively influence social skill development. It would be interesting to know if the findings of this study would have been different if the program was delivered and facilitated by Project Adventure staff instead of classroom teachers. Similar to previous comments, the intent of this research to utilize classroom teachers for program delivery is admirable. However, it likely contributed to the lack of impact. Regardless, an additional implication of this study is that if classroom teachers will be responsible for delivering an adventure education program, longer and more sustained training in program delivery and facilitation is necessary.

Last, despite the noted explanations and hypotheses discussed throughout this chapter that attempt to explain program ineffectiveness, it should be made clear that another implication of this study is that adventure education may not have the ability to impact the social skill development of urban middle school students. It may be that the curricular content and pedagogical methods of adventure education do not appropriately model Banduran social cognitive theory, and as such, may not have the ability to facilitate social skill development.

**Implications for adolescent social skill development.** The two most relevant findings of this study are (a) the effect of gender on social skill development during middle school and (b) the nonlinear nature of social skill growth for urban middle school students. Viewed together, the findings of this research suggest that urban middle school students decline in social skill ability during sixth and seventh grades but increase from the end of seventh to the end of eighth grade. However, males and females differ in the
nature of their growth trajectories. As such, implications for each of these findings will be discussed. First, the results of this study support previous literature that details the difficult transition from elementary to middle school for both male and female urban middle school students. Given the significant decrease in social skill ability experienced by all students beginning at the start of sixth grade, one recommendation that can be gleaned from this research is to advocate for schools to provide additional support to incoming sixth grade students to ameliorate these declines. These efforts could come in the form of programming delivered during the summer before the start of the sixth grade year or additional interventions aimed at social skill development during the sixth and seventh grade years.

From the perspective of gender, these efforts could be more focused on males than females given the fact that males entered sixth grade with lower social skill ability than females and also declined at a sharper rate than females during sixth and seventh grade. If these deficiencies and declines among males could be improved, this could positively impact their overall trajectory of social skill growth during middle school. In this study, males demonstrated the ability to increase their social skill ability significantly from the end of seventh grade to the end of eighth grade. If their deficiencies in initial status and decline during the first two middle school years could be corrected, male students could have the ability to develop more positively throughout middle school and ideally have higher social skill ability at the end of eighth grade than the beginning of sixth grade. This potential development could also mean that they could leave middle school with more positive trajectories in social skill growth, which could be important
since the transition from middle school to high school has also been identified as a challenging time for urban, minority students (Benner & Graham, 2009).

It is also important to recognize potential implications for female students based on these findings. While similar recommendations provided for males are relevant for females as well, the different growth trajectories in social skill development observed in the results merit more specific recommendations in terms of future efforts to positively impact social skill development. In this study, females began sixth grade with higher social skill ability than males and also declined less sharply than males from the beginning of sixth grade to the end of seventh grade. However, females did not increase nearly as sharply as males in their social skill ability from the end of seventh grade to the end of eighth grade. Developmental theory suggests that this later time in adolescence can be more challenging for females in terms of their social interactions with peers as compared to males (Eccles, 1999). As such, females may leave middle school with less positive social skill growth trajectories than their male classmates, which could negatively affect both their transition to high school, as well as their continued social skill development throughout their high school years.

Based on these observations, an additional implication of this study is that people responsible for delivering future school-based interventions (whether they are adventure-based or not) aimed at improving urban middle school students' social skill ability should be aware of potential nonlinear growth trajectories for all middle school students. At the same time, they should also recognize the potential differences in growth trajectories between male and female students and tailor interventions to address these possible dissimilarities.
Critique of Methods and Procedures

The purpose of this section is to critique the methods and procedures utilized in this study. As stated previously, one of the strengths of this project was its research design. In this regard, I believe this project represents a positive contribution to the adventure education literature regardless of the non-significant findings in program effect. A number of relevant critiques to the methods of this study, specifically in the domain of program delivery and instrumentation, have been previously discussed in this chapter. However, a number of additional critiques exist.

First, as mentioned in Chapter 3, after the first year of this research project, the decision was made to switch formats in the SSRS from a form that required hand scoring to one that was able to be scored using an electronic scoring machine. This decision was made to increase the efficiency of scoring the large number of surveys, however, it also likely contributed to the increase in the number of missing values observed over the course of the final two years (four measurement occasions) of this study due to increased error associated with machine scoring. While the number of missing values was not inordinately large for the sample size of this study, using the same format of the SSRS for all six measurement occasions would have been preferred from a methodological standpoint.

Similarly, in reviewing prior literature that utilized the SSRS, many studies used a combination of the SSRS Student Form, SSRS Teacher Form, and SSRS Parent Form to provide a more comprehensive assessment of social skill ability from these multiple perspectives. This study only utilized the student form, however, adding the additional
teacher and/or parent forms would have provided interesting additional perspectives to assess students' social skill development throughout their middle school years. Assessments by parents and/or teachers would have been particularly useful given the noted developmental limitations of middle school students to reflect upon and accurately assess their individual strengths and weaknesses during this time of early adolescence. Additionally, given the earlier suggestion of the possible lack in sensitivity of the SSRS to adventure education program goals, the use of additional instruments other than the SSRS to measure social skill ability could have been beneficial.

In addition to these critiques of instrumentation, this study contained relatively few variables to predict students' social skill development. In addition to treatment, school, and gender, it would have useful to obtain additional individual-level data in areas such as ethnicity and socioeconomic status that could have given an even more nuanced, comprehensive view of social skill development. Given the noted risk factors for the minority urban youth who participated in this study, a more thorough examination of the impact of these factors on social skill development would have been useful to gain a more complete understanding of the topic.

Finally, the original intent of this study was to collect individual-level data on students' academic achievement at the end of each academic year to investigate the relationship between social skill development and academic achievement. This data could have been utilized within the multilevel modeling analysis to determine what impact participation in an adventure education program had on not only social skill development, but also on academic achievement. As discussed in both Chapter 1 and more thoroughly in Chapter 2, the relationship between social development and academic achievement is a
topic of growing interest among educational researchers, especially among minority, urban students (Elias & Haynes, 2008). Given the non-significance of the impact of the RESPECT program on students’ social skill development, this study would not have provided many insights into this triadic relationship between adventure education, social skill development, and academic achievement. However, from a methodological standpoint, including data on academic achievement would have provided an even more robust research design and should be considered in future research.

Recommendations for Future Research

I believe this research project provides valuable insights into future research endeavors in both adventure education and the broader realm of adolescent social skill development in the following areas:

• In the area of adventure education research, very little research has been conducted in school settings. I believe that more research should be conducted in school environments if adventure educators wish to utilize their methods for contemporary educational goals. I believe this study provides a useful contribution for future researchers to learn from as they move forward this research agenda.

• Similar to the previous suggestion, research in adventure education utilizing longitudinal data is necessary to gain a more thorough understanding of the impact of adventure education on adolescent development. The use of longitudinal data would also afford researchers to use more sophisticated analytic methods such as multilevel modeling to gain a more accurate view of potential
program impacts than the pre/post designs that have been most common in past adventure education research.

- As referenced in the previous section, this research focused on the “near outcome relationship” between adventure education and social skill development. However, future research should attempt to link adventure education to “far outcome relationships” such as academic achievement. Indeed, scholars in this field (Seaman, 2009) have made a call for this type of research.

- As researchers investigate the relationship between adventure education and social skill development, it would be useful for future researchers to develop psychometrically sound instruments that have the potential to be more sensitive to the desired outcomes of adventure education programs.

- More research is needed in the broader realm of social skill development during adolescence that utilizes longitudinal data and analytic techniques that allow for the investigation of nonlinear growth. This type of research will contribute to a more accurate understanding of the nature of social skill development in this crucial time of human development.

Conclusion

This research project investigated the impact of a school-based adventure education program on the social skill development of urban middle school students. In addition, it also investigated the role that school and gender had on students’ social skill development. Results indicate that the adventure education program utilized in this study did not significantly impact social skill development. However, significant differences

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were found between male and female students in both their initial social skill ability at the beginning of sixth grade and their estimated growth trajectories throughout middle school. Results also indicate that in the area of cooperative social skills, differences between males and females social skill development were moderated by participation in an adventure education program. While the results of this study are unable to provide evidence of the effectiveness of adventure education to promote the social skill development of US urban middle school students, they provide a meaningful contribution to the body of research in this area, particularly in the area of research design and advanced statistical analysis utilizing longitudinal data to obtain a more accurate view of change over time.

Finally, results of this study indicate that regardless of treatment status, school attended, or gender, urban students have a nonlinear estimated social skill growth trajectory during their three middle school years. Students demonstrated a decline in social skill ability from the beginning of sixth grade to the end of seventh grade followed by an increase in social skill ability from the end of seventh grade to the beginning of eighth grade. Additionally, this nonlinear growth trajectory differed for males and females. This information could be useful to future researchers, teachers, and practitioners as they develop effective methods to positively influence the social skill development of adolescents.
LIST OF REFERENCES


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Spinelli-Casale, S. M. (2009). Bullying of middle school students with and without learning disabilities: Prevalence and relationship to students' social skills. (69),


Appendix A

UNH IRB Original Approval Letter

UNIVERSITY of NEW HAMPSHIRE

June 27, 2005

Gass, Michael
Kinesiology, New Hampshire Hall
Durham, NH 03824

IRB #: 3478
Study: Project Adventure's RESPECT Program Training & Seven Boston Public Schools' 6th Grade Teachers & Students
Approval Date: 06/24/2005

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Expedited as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 110.

Approval is granted to conduct your study as described in your protocol for one year from the approval date above. At the end of the approval period, you will be asked to submit a report with regard to the involvement of human subjects in this study. If your study is still active, you may request an extension of IRB approval.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, Responsibilities of Directors of Research Studies Involving Human Subjects. (This document is also available at http://www.unh.edu/osr/compliance/irb.html.) Please read this document carefully before commencing your work involving human subjects.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

Julie F. Simpson
Manager

cc: File
    Brooke Moran

Research Conduct and Compliance Services, Office of Sponsored Research, Service Building, 51 College Road, Durham, NH 03824-3585 * Fax: 603-862-3564
Appended B

UNH IRB Extension Request Approval Letter June 2014

University of New Hampshire
Research Integrity Services, Service Building
51 College Road, Durham, NH 03824-3585
Fax: 603-862-3564

04-Jun-2014

Gass, Michael A
Kinesiology Department
New Hampshire Hall
Durham, NH 03824

IRB #: 3478
Study: Project Adventure's RESPECT Program Training & Seven Boston Public Schools' 6th Grade Teachers & Students
Review Level: Expedited
Approval Expiration Date: 24-Jun-2015

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved your request for time extension for this study. Approval for this study expires on the date indicated above. At the end of the approval period you will be asked to submit a report with regard to the involvement of human subjects. If your study is still active, you may apply for extension of IRB approval through this office.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the document, Responsibilities of Directors of Research Studies Involving Human Subjects. This document is available at http://unh.edu/research/irb-application-resources or from me.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

Julie F. Simpson
Director

cc: File
Burke, Jamie
Shirilla, Paul

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Appendix C

Boston Public Schools Office of Research and Evaluation Approval Letter

Michael A. Gass, Ph.D.
University of New Hampshire
Project Adventure, Inc.
NH Hall, 124 Main Street
Durham, NH 03824

Dear Dr. Gass:

I am in receipt of your research proposal entitled “Evaluation of Project Adventure’s RESPECT Program with Boston Public Middle Schools”.

Enclosed please find copies of the Cluster Leader and Principal or Headmaster approval forms for conducting research in the Boston Public Schools. It is your responsibility to take these forms and have them signed by the Cluster Leader and the Principal or Headmaster of each school in which you plan to conduct research. Approval for this study is contingent upon your returning the signed consent forms to me.

If you have any questions about this matter, please feel free to contact me at (617) 635-9450.

Sincerely,

Maryellen Donahue, Director
Office of Research, Assessment and Evaluation

Maryellen Donahue, Director
Office of Research, Assessment and Evaluation

Ends.
Appendix D

Parent Consent Form

Notification and Withdrawal Form
Project Adventure, Inc.
University of New Hampshire

The Boston Public School System is asking your assistance. In partnership with Project Adventure Inc. from Beverly Massachusetts and the University of New Hampshire, we are in the process of evaluating how well our school programs work for middle school students with their academic growth and behavior in school. This research project is designed to help us raise the academic achievement of all our children in BPS middle schools.

We are inviting you to permit your child to participate in this research study. If you agree, your child's academic, school attendance, and behavior in school will be analyzed over the next three years by collecting individual information from the Boston Public School system. This information is already collected by the BPS system, but we are asking for your permission to allow us to use this information to help us find out which educational programs work best for our children. At no time will your child be singled out or identified on their individual performance. Individual scores will only be identified by a tracking number. Student names will never be attached to corresponding data. Results will only be reported in group scores.

In addition, each participating child from each participating BPS middle school will be asked to complete a short survey two times over the next year (taking approximately 45 minutes each time to complete). This survey will help researchers examine their social development in schools as it relates to their learning. This survey will also be completed by one of your child's teachers at the beginning and end of the school year, again to examine social skills and development throughout the year. Apart from the time taken away from classroom learning, there are no negative consequences or risks of participation in this project. Your child's responses to the survey will only be looked at by Dr. Michael Gass from the University of New Hampshire, head of the research project. Data will be kept in a locked file cabinet and only Dr. Gass will have access to the data.

Participation in this study is strictly voluntary. If you choose not to have your child participate in the study, this won't have any negative impact on her or him. If your child begins to participate and then you change your mind, you may stop her or his participation at any time during the study without any consequences. A summary of what happened in the study will be available to you at the completion of the project, if you so desire.

If you have any questions about this research project or would like more information before, during, or after the study, you may contact Dr. Michael Gass (please see contact information below). If you have questions about your child's rights as a research subject, you may contact Julie Simpson in the UNH Office of Sponsored Research (see information below).

Dr. Michael Gass
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BPS MIDDLE SCHOOL WITHDRAWAL FORM
By signing below, this signifies that you have been informed of the research project and you DO NOT agree to allow your child to participate in the study. If you do not return this by September 19, 2005, we will assume you are consenting for your child’s participation.

Participant name (your child; please print): _______________________________

Parent’s signature: _______________________________ Date: _________
Appendix E

Project Adventure RESPECT Program Summary and Sample Lesson

RESPECT Program Methods – the PII Approach

PII provides a framework in which to think about school-wide implementation of RESPECT. Often approaches to problems in schools are reactive. This approach steers us to use a preventative approach, build skills for intervention and think about how to invent or create something new out of what was learned. PII is not a linear approach, but more of a process in which each part informs the others.

The following RESPECT methods reflect how students and staff will acquire, reinforce and practice these skills.

PREVENTION
The first step is prevention; all methods that are proactive, seeking to establish a safe learning environment and laying the groundwork for the year. Prevention is about building positive relationships and establishing procedures for handling problems when they do occur.

1. Commitment to Full Value Concepts

Students and staff will make a commitment to work toward the skills outlined in each of the five Full Value Concepts in order to create a safe learning environment; one in which collaboration, communication and teamwork are evident. This commitment will occur after students and staff have some knowledge of what each concept means. Ideally this will be done at the end of the first week of school and involve actually signing a document.

2. First Days of School
Each academic and specialty teacher will be responsible for completing two lessons with each of their classes some time during the opening week of school. Students will travel through their days, experiencing a different lesson in each class.

Administrators will use RESPECT language with students and staff. This will help students see RESPECT as a whole-school initiative.

Schools will organize and run an assembly for students that explains RESPECT and celebrates the community.

3. Follow Up Lessons
Following a weekly RESPECT schedule, teachers will continue to teach and practice RESPECT methods. These lessons will include adventure activities, goal setting, goal reflections and Full Value check-ins.
4. Physical Education
Students will be engaged in an adventure unit at the start of their rotation into Physical Education. Concepts will continue to be reinforced throughout the duration of PE, whether it is over the course of nine weeks or for the duration of the school year. The adventure unit will be adapted from Project Adventure's K-12 Adventure Curriculum for Physical Education.

5. Daily Classroom Integration – Beginning, Middle and End of Classes
Creating a routine for how you open a lesson, how behaviors are processed during a lesson and how you close a lesson will integrate RESPECT into the daily fabric of your classroom and the school. See more information on pages 30-35.

Quick Start: By emphasizing the Full Value Concepts at the beginning of a lesson, a teacher can proactively help to settle students into the class and lesson and get them thinking about what their behavior should be like. Teachers should start with a question or prompt that would help students become mentally present for the current class. For example, a prompt could be: “What is one thing you can do in this class to be focused on the lesson?” Used in this way, Quick Starts become the Before Class Work. Quick Starts are really meant to be quick—two to five minutes at the most.

During the Lesson: Throughout the lesson, emphasize the Full Value Concepts, notice and affirm positive individual and collective behaviors, remind students of their behavioral goals, and use Quick Class as needed (for celebration, conflict and information sharing).

Quick Close: Creating a quick routine closing strategy for each of your lessons, is an important part of integrating RESPECT. In a Quick Close, students are guided through a brief reflection of behavior. For example, have students self-assess using the RESPECT Rubric as they wrap up that day’s lesson.

6. Incentive Systems
Noticing and commenting on student achievements, positive behaviors and academic achievements should become a regular practice. This is the most fundamental of school incentive systems. Reinforcing the positive builds confidence, fosters further achievement and promotes a positive climate. It also brings balance to comments made regarding discipline.

Individual, class-wide and grade level incentive systems should also be developed in a manner that defines goals and rewards for achievement. While the RESPECT Program does not prescribe incentive systems, we encourage approaches that include collective or ‘class as a team’ incentives such as a reward for every student completing their daily homework for X days.
The power of incentives and positive recognition extends to the staff interactions. A school climate should be fostered in which staff recognize one another for their achievements. For students, this serves to motivate and foster an environment of trust. In such a setting, critical feedback can be offered and received with more openness and effectiveness.

See page 46 for information about Incentive Systems Best Practices.

**INTERVENTION**
Methods that are responses to problems or issues when they do occur are forms of intervention. These methods help students learn from their behavior, both as individuals and in the context of the class.

1. **Full Value Check-Ins**
   Unlike Quick Class, which is a tool to address current concerns, Full Value Check-Ins are designed to provide proactive and intervention-based maintenance of the Full Value Concepts. The actual Check-Ins will be led by teachers on an as-needed basis, though regularly scheduled check-ins are also advised. Full Value Check-Ins should last anywhere from 5 – 15 minutes. Examples of Full Value Check-Ins are found on pages 40-41 and are incorporated into the Weekly Lesson Flow.

2. **Quick Class**
   Quick Class is an intervention tool used by teachers and administrators to help a group solve problems, celebrate accomplishments and share information. Quick Class is designed to engage students and staff in the process. This will ultimately help create ownership and buy-in to the process and responsibility for the outcome. The established routine of Quick Class helps these gatherings occur efficiently and effectively. Once students and staff learn the steps and process of Quick Class they can begin calling and leading Quick Class.

   **How students learn the skill of Quick Class:**
   
   - During the first month of the school year, at each grade level, teachers will model the process of Quick Class once for their classes. Ideas about how to do this are included in the Weekly Lesson Flow.
   - During 7th grade, students start to practice calling Quick Class. The teacher at this point is still the one leading QC. This role is known as the Facilitator.
   - During 8th grade, students begin to practice being the Facilitator. Specific guidelines on the role and responsibility of the Facilitator will be given to students.

   More information on Quick Class is found on page 43-44.
3. Disciplinary Procedures
It is important that students learn about managing their behaviors in consistent ways in all areas of the school. RESPECT concepts and language should be used from the classroom to out-of-classroom disciplinary settings. Procedures should engage a reflective process that asks students to think about their behavior, own it, and describe steps they can make toward improvement. Connecting discipline to the RESPECT concepts, including goal setting, is a critical link in a successful implementation of RESPECT.

INVENTION
Invention methods are those that help students and staff create a better school environment based on what was learned in the intervention stage. Invention is about seeing problems as productive sources of new ways of being. Invention can be both at the individual and school-wide level. By consistently evaluating the process of engaging in and implementing RESPECT, staff and students constantly reinvent the program and themselves. Without invention, the process of change becomes stagnant.

1. Goal Setting and Goal Reflections

- Students and staff will set goals approximately once a month that will be reflected upon and changed throughout the month.
- There will be an established, grade-wide strategy for students to set and check in on goals. During the first half of the school year, students will set behavioral goals. During the second half of the year, students will set both behavioral and academic goals. As students progress throughout their school year, they will develop the skills to set and evaluate goals.
- Students' goals will be recorded and tracked in their Agenda Book or other predetermined ways established by each family, cluster or grade level.
- Staff will also set and work on individual and collective goals.
- To be effective, goals should be shared with others and time dedicated for regular reflection.

More information on goal setting is found on pages 38-39 and within the Weekly Lesson Flows.

2. Feedback
Feedback will be conducted during the goal reflection process. Teachers will begin modeling feedback by first giving it to themselves. For instance they will present students with the goal they set, describe their progress, and adjust their goal as needed. Students will then give themselves feedback following a similar process with teacher assistance.

Students will then practice giving feedback to one another, by first observing a role-play of students giving each other feedback. This will be a scripted role-play, where two students read lines given to them.

By practicing, students will be experienced with giving each other feedback regarding progress made on goals.
More information on feedback is on page 45.

3. Assessment
Behavioral learning must be assessed along with academic progress. The assessment design should be consistent with RESPECT mechanisms with emphasis on Full Value Concepts and goal setting. A Project Adventure RESPECT rubric may be used or school staff may choose to modify or design their own system that aligns with RESPECT. It is important that the rubric is presented to students and that they measure their performance against the rubric frequently individually and as a class. It should also be used for individual student progress reporting that goes home to parents and is retained in the student’s file. Staff will also assess their progress with implementing RESPECT by reflecting on their effectiveness and learning from their peers.

Finally, for RESPECT to effectively make an impact on positive behavior change and academic achievement, concepts need to be in effect and reinforced all day every day, literally practicing prevention, intervention and being inventive all day every day. Without a full integration into all aspects of instruction and school management, RESPECT will feel like and be an add-on, rather than a seamless part of the fabric of the school.
RESPECT SAMPLE LESSON

MCAS SPEED PREP - Math

Lesson Behavioral Objectives:
Be Here – Focus and persevere when presented with a competitive challenge.
Be Safe – Work collaboratively with team members.
Be Honest – Share your point of view, while valuing another person’s perspective.
Let Go and Move On – Be willing to take on a role you might not prefer for the benefit of the team.

Lesson Academic Objectives:
1. Practice answering both closed and open response Math questions.
2. Practice reading and calculating with accuracy and speed.
3. Improve understanding of math concepts to be evaluated through MCAS testing.

Estimated Time:
30 Minutes

Materials:
MCAS test prep materials (for teacher)
Strips of paper/Index cards – 1 for each of the 10 questions (1 set of 10/group)
Index cards (20/group for written response and drawings)
Writing utensils

Set Up:
In advance – Prepare 10 questions pertaining to the MCAS that can be: 1) looked up in the students’ math textbooks; or 2) answered through the existing knowledge of students on team. Number the questions, then cut into strips so there is a stack of 10 for each participating group. Place a corresponding numbered index card before each group’s stack so students are clear about where to obtain their questions and return their responses.
With the class - Arrange the class at tables in groups of three to five students. The teacher should sit by their own table/desk with sufficient cleared space for stacked questions and gathering index card responses. Assign each group a name or number.

Framing:
Say to students, “In this activity you will get a chance to become more skilled at responding to MCAS Math questions. You will also practice important skills for working in teams and for individually preparing for any test. This is a fast-paced and timed activity.”

Procedure:
1. Students in each team assume the following roles (students may change or double up on roles but everyone must be active):
a. Runner
b. One or two (depending on group size) researchers to look up the question and search for a response in the textbook
c. Scribe to write down the question number and response (with proof) on an index card
d. Artist draws a common object with mathematical relationship to the answer. (This role is optional).

2. Upon the teachers START command, each group sends their ‘runner’ to the front table to select the first question. They return to their group immediately and read their questions aloud.

3. Once the answer and sketch are complete the runner presents them to the teacher. If correct, they may take the next question. If incorrect, they return to the group to revise.

4. Once a group finishes, they bring the sketches back to their table for any improvements and wait for others to finish.

**Debrief:**

Ask students:

- What strategies either helped your team be effective or slowed your progress? How might this information help you when taking a test on your own?
- Lay completed drawing cards on your table and select one card that best represents how you (collectively) worked as a team. “We were like a rectangular building with triangular roof because we protected each other like a roof from the rain.”
- Which characteristics of which drawings were so strong and evident that you could afford to give it away = ‘We are experts.’
- Which sketch and characteristics were less evident or weak? = ‘Need help from experts.’
- Extend the same metaphors to the recent behavior of the entire class (during this week). How are we doing? Give evidence to support your assertions.

**Tips and Comments:**

- Competition between groups generates healthy excitement.
- Consider prizes for completion or if the collective time is under a certain amount.
- This structure can be adapted to other subject matter.
- Include the sketches for increased challenge; remove to make easier.

**Safety Check:** Students should be reminded to walk not run to the central table.
Appendix F

SSRS Student Elementary Form

Social Skills Questionnaire
Frank M. Gresham and Stephen N. Elliott

HOW TO MARK YOUR ANSWERS
- On the other side of this form is a list of things that students your age may do.
- First, write the information about yourself in the boxes below.
- Use a No. 2 pencil only.
- Print the information requested in the boxes. Then fill in the oval under the box in that column that matches the letter or number. Make a heavy, dark mark that completely fills the oval.
- If you want to change an answer, be sure to erase it completely. Then fill in your new answer.

IDENTIFICATION NO.
YOUR NAME
YOUR ETHNIC BACKGROUND (select one)
American Indian or Native Alaskan
Asian or Pacific Islander
African American
Hispanic
White
Other

FOR OFFICE USE ONLY
Bilingual
Special Education
1 2 3 4 5 6 7 8 9 10

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Social Skills

DIRECTIONS

• Below is a list of things that students your age may do. Please read each sentence and think about yourself. Then decide how often you do the behavior described. There are no right or wrong answers, just your feelings of how often you do these things.

• If you never do this behavior, fill in the 0 oval to answer the question.

• If you sometimes do this behavior, fill in the 1 oval.

• If you very often do this behavior, fill in the 2 oval.

• If you change an answer, be sure to erase completely. Please answer all questions. Be sure to ask questions if you do not know what to do.

• Begin working when told to do so.

1. I make friends easily.

2. I smile, wave, or nod at others.

3. I ask before using other people's things.

4. I ignore classmates who are clowning around in class.

5. I feel sorry for others when bad things happen to them.

6. I tell others when I am upset with them.

7. I disagree with adults without fighting or arguing.

8. I keep my desk clean and neat.

9. I am active in school activities such as sports or clubs.

10. I do my homework on time.

11. I tell new people my name without being asked to tell it.

12. I control my temper when people are angry with me.

13. I politely question rules that may be unfair.

14. I let friends know I like them by telling or showing them.

15. I listen to adults when they are talking with me.

16. I show that I like compliments or praise from friends.

17. I listen to my friends when they talk about problems they are having.

18. I avoid doing things with others that may get me in trouble with adults.

19. I end fights with my parents calmly.

20. I say nice things to others when they have done something well.

21. I listen to the teacher when a lesson is being taught.

22. I finish classroom work on time.

23. I start talks with class members.

24. I tell adults when they have done something for me that I like.

25. I follow the teacher's directions.

26. I try to understand how my friends feel when they are angry, upset, or sad.

27. I ask friends for help with my problems.

28. I ignore other children when they tease me or call me names.

29. I accept people who are different.

30. I use my free time in a good way.

31. I ask classmates to join in an activity or game.

32. I use a nice tone of voice in classroom discussions.

33. I ask adults for help when other children try to hit me or push me around.

34. I talk things over with classmates when there is a problem or an argument.

Stop. Please check to be sure that all items have been marked.
SSRS Administration Instructions for Classroom Teachers

Test Administration Instructions for Teachers

First, a sincere “thank you” for your help in administering the following surveys. They are being used to see how we can best serve our children in the Boston Schools, so obviously it has great importance to us and the children. The following guidelines are provided to help you in the important administration of these surveys:

(1) Before giving the surveys:
- Make sure the students are physically comfortable when taking the surveys – a chair to sit in, sturdy surface to write on, and comfortable room.
- Make sure each child comes with a pencil for writing (or provide a pencil).
- Provide enough space where students can answer for themselves versus having other kids read their answers and potentially affect how each child answers.
- Read over the surveys yourself prior to the students taking them so you are ready to answer any questions they may have (students will tend to see the tests as important if you are familiar with them).
- Have four envelopes provided (by grade and survey type) ready for use.
- Please read the instructions given on the following page to students and take notice of the notes for each test given below.

(2) Things to consider when kids are completing the surveys
- Let the students know their answers are important and need to be given honestly before the surveys are handed out.
- Let the students know only the test scorers will read their answers and their individual answers will never be reported.
- Let the students know how much time they will have (we recommend 30 min. for both surveys but this is up to you). Research has shown that if you look at your watch to indicate time and read directions from the following sheet, middle school students will take their answers more seriously and provide more valid answers.
- If students have questions about the meaning of any words, encourage them to ask. One way to do this is to have them raise their hand and quietly approach them to provide clarity for them. You can’t answer the
questions for them if they say “I don’t know,” but you can provide some
assurance to them by saying “Choose the answer that is best for you.” You
will likely need to explain the meaning of some words on the surveys. Please
read each survey, and if you feel it is appropriate you can give the entire
class the meaning of a particular word(s) to make it easier for the students to
understand.

(3) What to do after the surveys are completed:
- When you are collecting the surveys, quickly scan each one to make
sure they filled in their name and other information correctly, and then
immediately place them in separate envelopes for each SURVEY TYPE
and GRADE.
- When all surveys are completed, please contact Paul Shirilla of the
University of New Hampshire at shirilla@unh.edu or 603.862.2605 to
arrange pick-up.

DIRECTIONS FOR COMPLETING SURVEYS

(PLEASE READ OUT LOUD TO STUDENTS PRIOR TO HANDING
OUT SURVEYS)

Please pay attention. After I read these instructions I will hand out
two surveys that ask you several questions. It is important that you answer
these questions to the best of your ability. You are to answer these questions
on your own and not bother other students while they are completing their
answers. While there are several answers for each question, there are no
“right or wrong” answers, just the one that you believe best represents your
thoughts. Please fill in only one answer for each question. It is important that
you write neatly and complete each survey.

You will have 30 minutes to complete both surveys to the best of your
ability. Please make sure you fill in all the necessary information on both
surveys. Do not fill in the “Identification Number” portion of either
form. If you have any questions while filling out the surveys, please raise
your hand and help will be given. After you have completed both surveys,
please turn them over and put down your pencil to let me know that you are
finished. I will collect the surveys from you.

Do you have any questions?
*IMPORTANT NOTES FOR SSRS AND PCFI – PLEASE READ AND INSTRUCT STUDENTS!!!!!!

- The scannable SSRS form does not have a bubble for 7th or 8th grade. Therefore, please have all 7th and 8th grade students simply leave this portion blank (do not fill in a bubble for grade). 6th grade students can fill in the bubble indicating they are in 6th grade.

- Please have all students leave blank the “Identification Number” section of both the SSRS and PCFI. We will be using this area to confidentially code each form.

- The “Group form” that accompanies each packet of SSRS surveys does not have to be filled out by teachers.

- As with other scannable forms, please make sure students correctly fill in all appropriate bubble(s) for both sides of the form, completely erasing any mistakes before filling in another bubble.

- As students hand in the surveys, please check that both forms have been filled out completely, correctly, and legibly. If this is not the case, please give the form(s) back to the student to complete.