2009

Shaping our children's future: Perceived self-efficacy in a Montessori environment

Candace Joan Andrews

SHAPING OUR CHILDREN'S FUTURE: PERCEIVED SELF-EFFICACY IN A MONTESSORI ENVIRONMENT

A Project

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Social Work

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by

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September 2009

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Approved by:

[redacted]

Dr. Teresa Morris, Faculty Supervisor
Social Work

9-8-09
Date

[redacted]

G. Engelfried, Principal
The Grove School

[redacted]

Dr. Rosemary McCaslin,
M.S.W. Research Coordinator

ABSTRACT

The present study was a correlational study designed to evaluate the relationship between time spent in a Montessori environment and a student's perceived self-efficacy. A Pearson correlation was used to determine the covariance between the independent and dependent variables in each unit of analysis. The study's results indicate that there were medium relationships between the length of time a student spends in a Montessori environment and self-efficacy for academic achievement and for social self-efficacy. However, results further indicated that small correlations were found in self-efficacy in social resources, self-regulated learning, self-assertive efficacy, and enlisting parental and community support.

ACKNOWLEDGMENTS

My deepest gratitude goes out to Dr. Kaufman who introduced me to research and went above and beyond the call of duty as a mentor. Also, I'd like to thank my thesis advisor, Dr. Morris, who always made herself available when I needed guidance.

I would like to extend my thanks to everyone at the Grove School in Redlands California who offered their time and effort throughout this study, especially the students who volunteered their time to make this project possible. A special thank you goes to Drake Hunter Citron, who took considerable time and effort in helping me navigate the campus.

I am also indebted to Julieanne Collins whose support and guidance I could not have done without.

Lastly, I'd like to offer my utmost appreciation to Eric Ian Bell, who was always there if I was ever in need of anything.

DEDICATION

To Julieanne Collins who helped me along my path, and to Drake Hunter who made walking it worthwhile.

TABLE OF CONTENTS

ABSTRACT iii

ACKNOWLEDGMENTS iv

LIST OF TABLES viii

CHAPTER ONE: INTRODUCTION

Problem Statement 1

Purpose of the Study 4

Significance of the Project for Social Work 6

CHAPTER TWO: LITERATURE REVIEW

Introduction 9

Theories Guiding Conceptualization 9

Self-Efficacy within Social Cognitive Theory 11

How Self-Efficacy Affects Adolescence 15

Self-Efficacy in Education 17

Traditional Education: A Teacher-Centered Approach 18

Montessori Education: A Child-Centered Approach 20

Maria Montessori 21

Planes of Development 21

Mixed Age Classes 22

Academics 23

Homework 24

Testing 25

Reporting Student Progress 26

Montessori at the Secondary Levels 27

Middle School and High School 28

Self-Efficacy and Montessori Education 30

Self-Efficacy for Academic Achievement 30

Self-Efficacy for Enlisting Social Resources 31

Self-Efficacy for Self-Regulated Learning 32

Social Self-Efficacy 33

Self-Assertive Self-Efficacy 33

Self-Efficacy for Enlisting Parental and Community Support 34

Developmental Needs and Social Cognitive Theory 34

Summary 36

CHAPTER THREE: METHODS

Introduction 37

Study Design 37

Sampling 39

Data Collection and Instruments 42

Procedures 44

Protection of Human Subjects 46

Data Analysis 46

Summary 48

CHAPTER FOUR: RESULTS

Introduction 49

Presentation of the Findings 50

Summary 54

CHAPTER FIVE: DISCUSSION

Introduction 55

Discussion 55

Limitations 56

Recommendations for Social Work Practice, Policy and Research 58

Conclusions 59

APPENDIX A: THE CHILDREN'S PERCEIVED SELF-EFFICACY SCALE 61

APPENDIX B: PARENTAL INFORMED CONSENT 68

APPENDIX C: CHILD ASSENT 70

APPENDIX D: PARENTAL QUESTIONNAIRE 72

REFERENCES 75

LIST OF TABLES

Table 1. Frequencies and Percentages of Demographics 41

Table 2. Pearson Product-Moment Descriptive Statistics between Measures of Time Spent in Montessori and Self-Efficacy 51

Table 3. Pearson Product-Moment Correlations between Measures of Time Spent in Montessori and Self-Efficacy 53

CHAPTER ONE

INTRODUCTION

This section addresses the problems some students begin to experience in middle school and continue to experience throughout their high school years. Specifically, the chapter addresses the need for educational instruction that provides students with self-beliefs and self-regulatory abilities.

Problem Statement

Our middle schools have occasionally been referred to as being the "Bermuda Triangle" of our educational system and have often been connected with student behavioral problems, lack of interest in school, teen alienation, and low academic achievement (Juvonen, Le, Kaganoff, Augustine, & Constant, 2004). These problems can continue when a student transitions from middle school into high school. Studies have suggested that the accumulation of all the experiences a student has had from their first day of school up to the time they transition to high school might determine who that student becomes (McIntosh, Flannery, Sugai, Braun, & Cochran, 2008). Because of this, the schools that our

children attend could play a crucial role in the shaping of who they are and what their future will be (Juvonen et al., 2004).

For instance, as students advance through middle school, they begin to experience many changes psychically, emotionally, and intellectually which can shape who they will become later in life (Juvonen et al., 2004), and determine the way they will face challenges in high school (McIntosh et al., 2008) as well as later in life. Furthermore, children in middle school are entering a time in their lives when they are developing cognitive skills, such as deductive thought, self-evaluation, and self-consciousness (Rathunde, 2003) which might help in determining who they become later in life. In addition to gaining more cognitive capabilities, children in middle school start to gradually lose their confidence in the skills they once possessed. For instance, teens might start to question their abilities in their academic performance and in their capacity to thrive in scholastic environments and in turn their motivation to learn, self-esteem, and self-efficacy could be affected (Rathunde, 2003).

It has been suggested that during this transitional period adolescents begin to lose their confidence, personal control, self-motivation, and become increasingly sensitive to social evaluations (Bandura, 2006a). Research posits that during this period students start to question their scholastic work and their aptitude for achieve academic success (Rathunde & Csikszentmihalyi, 2005). Many students in this phase of life will acquire undesired consequences in exchange for an increase in autonomy. These consequences can range from anxiety and depression to alienation and aggressive behaviors (Roseth, Johnson, & Johnson, 2008).

The question remains why the sudden downward trends in some students while others thrive? Some have suggested that the school environment and a student's developmental stage are mismatched (Eccles, 1991). However, according to Bandura (1993), schools are only offering students academic instruction and not strengthening other cognitive constructs students will need. Furthermore, it has been suggested that educators should provide students not only with the intellectual tools students will need in life, but also self-beliefs and self-regulatory capabilities. Studies suggest that a person's self-belief

in their efficacy is an essential skill in regards to personal development, beneficial adaptation, and the ability to change (Bandura, 2006a). Self-efficacy can alter motivation, aspirations, and affects whether a person gives up or persists when facing challenges, difficulties, or adversity (Bandura, 2006a). A strong sense of self-efficacy can also help students face hardships because efficacy has a direct influence on how vulnerable a person is to stress, anxiety, and depression (Bandura, 2006a). Furthermore, self-efficacy plays a role in what decisions people make at different points in their lives. It is easy to see that self-efficacy is an incredibly important trait children need when we consider it influences choices they make, which in turn can affect the way their lives turn out (Bandura, 2006a).

Purpose of the Study

The purpose of this study was to investigate the possibility that students who spend more time in a Montessori environment exhibit higher levels of self-efficacy than children who have more of their school career exposed to traditional education methods. These methods of teaching in public schools are based on

teacher-centered curriculum, which focus on repetition and reinforcement. This method also requires children to work on the same tasks, quietly and independently (Castellanos, 2002). According to theories of child development, such as Piaget, this method of education is in direct contradiction to what middle school children need at this developmental stage (Castellanos, 2002). Indeed, although adolescents are beginning to have more independent thought and a need for more autonomy, traditional schools tend to foster an atmosphere that is inflexible and does not offer students many opportunities for independence (Rathunde, 2003). The major problem with the current system is that all children are not the same, they do not develop at the same time, nor do they all make the same choices (Lillard, 2005).

In contrast, Montessori-based schools offer a child-centered approach that allows the child to make choices about the work they do while still covering all the required subject areas (Lillard, 2005). Research has suggested that a Montessori program matches children with an environment that supports their educational needs (Lillard, 2005) as well as fostering self-efficacy (Castellanos, 2002). Furthermore, it has been suggested

that Montessori programs are better adapted to how children learn and develop than traditional school programs (Lillard, 2005).

The current study focused on students from seventh through twelfth grade. The participants were attending the Grove School, a public charter school in Redlands, California, which teaches from a Montessori perspective. The Grove School is composed of a middle school and high school, both of which share a campus with an elementary school (Montessori in Redlands) that also teaches from a Montessori perspective. The Grove school accepts students into their program based on a lottery system, as demand for admittance far exceeds the space they have available (Interview with Gena Engelfried, principal of The Grove School, 2009).

Significance of the Project for Social Work

With talks of implementing education reforms, school social workers are in an ideal position to conduct research that explores alternatives to our traditional methods of education (Jones, 2005). This research could provide parents, educators, policy makers, and school social workers information regarding educational methods

that would serve to empower students, foster accomplishments and further educational achievement.

Social workers have a history of involvement in the societal problems that affect our children's education and their families (Teasley, 2004). Indeed, school social workers serve to make improvements in local educational systems and deal with social and personal problems that are hindering student learning. Today there is a demand on both social workers and public schools to address the problems students are facing in education (Franklin & Streeter, 1995). It is our job as social workers to address these problems because social workers serve as change agents in the current educational reform settings, by bringing a wide range of theories and abilities (Teasley, 2004) to combat the current educational challenges.

It is our role in social work to advocate for our children's educational needs and to research and inspect any school environmental factors that might be of importance to students (Teasley, 2004), such as self-efficacy. To that effect, this study seeks to evaluate whether students who attended a Montessori school for five years or longer would exhibit higher

levels of perceived self-efficacy when compared to students who have spent the majority of their schooling career within a traditional school environment, but have changed to a Montessori program during middle school or high school.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The following chapter describes self-efficacy within social cognitive theory, which is the theoretical perspective that guides this research, as well as how adolescence is affected by perceived self-efficacy. This chapter also discusses Montessori and traditional methods of education.

Theories Guiding Conceptualization

The theoretical perspective that guides this study is social cognitive theory, which asserts that self-efficacy is an important role in human functioning (Pajares, 2005). Social cognitive theory differs from other theories in that it doesn't see people as being victims of environmental shaping, nor does it subscribe to the belief that humans are at the mercy of their subconscious impulses, but rather sees them as individuals who are "self-organizing, proactive, self-reflecting, and self-regulating" (Pajares, 2005). This theoretical perspective sees human functioning, such as thought and action, as having a triadic interaction

between the individual, behavior, and the environment (Pajares, 2005). To demonstrate, the way people come to interpret their behavior will result in alterations in that individual's personal factors and their environment, which will result in a change to that person's future behavior (Pajares, 2002). This triadic interplay allows for the possibility of applying strategic efforts directed at the person, the behavior, or the environment in order to improve cognitive, emotional, behavioral, and motivational processes of adolescents (Pajares, 2002; Pajares, 2005). For example, within educational settings teachers are often faced with the challenge of trying to increase their students' level of competence and confidence in academic pursuits. One way this can be achieved is for teachers to take some sort of action in order to advance the "students' emotional states and to correct their faulty self-beliefs and habits of thinking (personal factors), improve students' academic skills and self-regulatory practices (behavior), and alter the school and classroom structures that may work to undermine student success (environmental factors)" (Pajares, 2005). Within the framework of social cognitive theory factors such as education do not directly affect

behavior. However, the theory posits that education can affect student's self-regulatory influences, such as self-efficacy, emotional conditions, and aspirations (Pajares, 2002).

The goal of this study was to determine if the amount of time spent within a Montessori school affects self-efficacy beliefs through individual, behavior, and environmental factors. This study hypothesizes that if students spent more time in a Montessori environment it will result in higher levels of perceived self-efficacy.

Self-Efficacy within Social Cognitive Theory

Self-efficacy can be defined as a part of human functioning that is an individual's belief in their personal capacity to accomplish a given task within a certain level of ability (Bandura, 1994). How certain a student is that they can learn algebra is an example of their self-efficacy for academic achievement. It is not a person's actually ability to perform mathematics, but their belief in whether they can accomplish the feat that is self-efficacy. This cognitive construct is important within human development because it allows a foundation upon which motivation, well-being, and personal

accomplishment can be built (Pajares, 2002). If a person does not really believe that their actions can accomplish a particular undertaking then there is no motivation for that person to try or to persist when confronted with difficulties (Pajares, 2002). For example, a student who does not believe he can learn algebra is not going to spend much time figuring out a math problem that is giving him difficulty. Whereas a student who believed he could learn algebra will likely spend more time trying to master the problem that is causing him trouble due to the fact that he believes it is in his capacity to achieve success.

Additionally, there is evidence that shows self-efficacy can affect almost all aspects of a student's life including what life path they choose, how they are able to persevere in the face of adversity and motivate themselves, and how vulnerable they are to depression and stress (Pajares, 2002). Furthermore, efficacy beliefs can affect how students think, feel, and behave by way of cognitive, motivational, affective and selection processes (Bandura, 1994). Therefore, while efficacy is a form of cognition, research demonstrates that it can affect parts of human development, such as a

student's development socially, emotionally, and behaviorally (Schunk & Meece, 2005).

Self-efficacy often gets confused with other cognitive constructs, such as self-esteem, locus of control, and competence. However, when all of these constructs are compared together self-efficacy is "a stronger and more connected predictor of diverse forms of behavior than is locus of control" (Pastorelli, Caprara, Barbaranelli, Rola, Rozsa, Bandura, 2001). Therefore, it bears mentioning that self-efficacy is a measurable construct that differs from these other cognitive constructs (Pastorelli et al., 2001). For example, being confident is the strength of belief a person has, but does not give any specific indication to what the certainty is really about (Bandura, 1997). A student can be very confident that they will fail a chemistry test, but that does not tell us if the student's lack of confidence is because he didn't study as hard as he should have or if he feels he does not have the ability to tackle the subject. Therefore, the confidence of failure is present within the student, and he might fail the test but still have the self-belief that he could do well in chemistry. In short, a student would need to have

a perceived level of their ability and also have a determined belief in that ability in order to assess self-efficacy (Bandura, 1997).

Similarly, self-esteem is also frequently confused with self-efficacy and the two constructs are often used interchangeably. Self-esteem is tied up in feelings of self-worth, whereas self-efficacy focuses on how a person judges their ability to achieve any given task (Pastorelli et al., 2001). It is possible for a student to make the self-determination that they are not going to do well on a test without damaging their self-esteem. In the same line of reasoning, that student might feel like he has the ability to perform very well at poetry but not take pride in performing that particular activity as it might impact feelings of self-worth (Pastorelli et al., 2001) if it is not readily accepted by his peers. Self-efficacy serves as a predictor not only of the goals a student sets for himself, but also for his "performance achievements." On the other hand, self-esteem does not impact either the goals a student sets or his "performance achievements" (Pastorelli et al., 2001).

Locus of control is another cognitive construct that is often confused with self-efficacy. Locus of control is

used to determine whether a person's fate is decided by their own actions or if it is something beyond their control, such as external factors (Pastorelli et al., 2001). Self-efficacy is concerned with the self-belief an individual has that they can gain different levels of achievement not whether their actions determine their life's course (Pastorelli et al., 2001).

How Self-Efficacy Affects Adolescence

Researchers that have found evidence that the perceived self-efficacy children possess can affect such things as career aspirations, motivation and academic achievement, academic continuance, and how vulnerable to depression and stress they become (Pajares, 2002).

Indeed research has pointed to self-efficacy as a shaper of career aspirations within children. A study conducted by Bandura et al., (2001) posited that the subsets of self-regulatory and social self-efficacy affect the kinds of career aspirations and career trajectories that children take.

Additionally, there have also been studies that have demonstrated that children's belief in the level of control they have to learn and master their academic

studies will in turn affect how motivated they are and how well they achieve academically (Bandura, 1993; Zimmerman, 1995; Pastorelli et al., 2001). These studies posit that the process of cognitive capabilities can be affected by self-efficacy beliefs, and in turn demonstrate that the beliefs students have in how they can master their academic endeavors will alter levels of academic achievement and their level of motivation (Pastorelli et al., 2001)

Furthermore, there has been research conducted which investigated whether perceived self-efficacy for self-regulated learning enhances the likelihood that a student will remain in school (Caprara, Fida, Vecchione, Bove, Vecchio, & Barbaranelli, 2008). Results showed there were declining levels of student's self-efficacy from middle school throughout high school. Additionally, those students who had lower self-efficacy showed a greater likelihood of dropping out of high school, while those who had higher efficacy had a better chance of continuing with their educational career (Caprara et al., 2008).

Research has also suggested that depression and stress can be increased by a low self-efficacy. In a

study looking at depression in adolescence and self-efficacy (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999) it was determined when children have perceived inefficacy within academics as well as social situations it will contribute to depression, as well cause problem behaviors, prosocial behavior, and affect academic achievement (Bandura et al., 1999).Furthermore, efficacy can affect how students create and maintain peer relationships. Therefore, inefficacy can affect a child's ability to resist peer pressure and result in behavioral problems, antisocial behaviors, and the abuse of drugs and alcohol (Bandura, 1993; Bandura, Barbaranelli, Caprara & Pastorelli, 1996; Pastorelli et al., 2001)

Self-Efficacy in Education

When students reach adolescence they are often entering a stressful time in their lives due to the fact that they are making a huge developmental transition from a place where they are dependent on adults (elementary school) to a place where they are seeking their own autonomy (middle and high school). This can become a challenge when students make the tradition to middle school, and again to high school, as they begin to desire

more independence (Zimmerman & Clearly, 2006). However, it is at this same time in a student's transition that their world becomes one where they are given very little choice in what they are doing at school (Jones, 2005).

Traditional Education: A Teacher-Centered Approach

Traditional educational models tend to be very inflexible with fixed schedules and do not make independence available to their students (Rathunde, 2003). Furthermore, traditional education within the United States tends to implement school programs that are based on teacher-centered approaches (Castellanos, 2002). This method of instruction makes the learning process little more than a system of repetition and reinforcement (Castellanos, 2002). Traditional models of education allow the class to work on identical school assignments at the same time. However, children are given very little choice in what they are doing (Jones, 2005). Traditional educational systems tend to be very inflexible with fixed schedules and do not make independence available to their students (Rathunde, 2003).

Indeed, Ambery (1995) conducted a study showing that fixed schedules are put on children in traditional

schools, where they dedicate forty-five minutes to each subject. The studies' results further suggested that there are times when oral lectures are used for the sole function of maintaining control over the classroom environment (Ambery, 1995).

Additionally, some have made basic assumptions regarding traditional education, in that students advance equally in the acquisition of educational skills (Castellanos, 2002) and this is not always the case. There are many students who are not at the top of the class, are lost to the "lock-step sequences of instruction," and are suffering from the competitive environment of traditional education. These are the children that will fail in order for a few students at the top to succeed (Bandura, 1994). As a result, those who are being sacrificed for the benefit of a few will begin to experience inefficacy and their self-beliefs in their ability to master academics will diminish and their aspirations, interests, and accomplishments in academics will dissipate (Bandura, 1994). Unfortunately, this is how most traditional types of classrooms are conducted, in a very fixed and rigid instructional-based environment (Lillard, 2005.) filled with competitive practices that

allow many to fail in exchange for the success of only a handful of students (Bandura, 1994). A major problem with this belief is that not all students are the same, nor are they developing at the same rates (Lillard, 2005.) Therefore, when you have a grouping of children all working on the same tasks at the same times, the students are placed in social comparisons which have been shown to reduce self-efficacy in those who are not performing at the same levels as their peers (Schunk & Pajares, 2002).

Montessori Education: A Child-Centered Approach

Across the United States and Canada there are approximately 4,000 Montessori schools and thousands more throughout "Western Europe, Central and South America, Australia, New Zealand, and much of Asia" (Seldin, 2000). Even though the Montessori model is very non-traditional in nature, there are charter and public schools that exist which teach from this perspective (Dorer, 2007). Schools teaching from the Montessori Method incorporate both the theories of Maria Montessori and newer theories of developmental learning (Seldin & Epstein, 2003).

Maria Montessori

Maria Montessori (1870-1952) was the first female to become a physician in Italy. Her conceptualization of Montessori began from her work with adolescence in special education. However, she is known best for her conceptualization on the Montessori Method and her work with children (Dorer, 2007).

Planes of Development

Maria Montessori believed that developmental stages didn't occur steadily in a linear fashion but that they occurred in a series of four planes: 1) Early childhood, which covers the time span of birth to six years of age, 2) Childhood, which ranges from six to twelve years, 3) Adolescence, which encompasses the ages of twelve to eighteen years, and 4) Young adulthood, that includes the age range of eighteen to twenty-four years (Seldin & Epstein, 2003). These four planes are considered to be specific times of growth in a child's life where their needs, abilities, and interests change depending on what developmental plane they are experiencing (Seldin & Epstein, 2003). Montessori called these developmental phase "rebirths" and thought that children would fail to benefit from being divided into separate grade levels, as

it separated students by age and removed them from the plane of development they should be experiencing (Seldin & Epstein, 2003). Therefore, within a Montessori elementary school they refer to the first, second, and third grades as lower elementary, and fourth, fifth, and six grades as upper elementary (Dorer, 2007). It is due to these beliefs that Montessori programs are composed of mixed-age groups that are categorized into early childhood, elementary, and secondary programs (Seldin & Epstein, 2003).

Mixed Age Classes

Since children are allowed to advance through the class materials at their own pace there is no need for grouping children together according to age. Montessori classes are composed of a grouping of children of mixed ages that typically span three age levels, which has several benefits for students (Seldin & Epstein, 2003). For instance, students can always find others who are working at their current level. Younger students are always motivated by curiosity in regards to what their older peers are working on. In turn, the older children can serve as tutors and role models by helping the younger children master their studies(Seldin & Epstein,

2003). Additionally, the older children gain a mastery over subject materials and are perfecting their own abilities, as we tend to learn better when we are teaching others (Dorer, 2007). This type of peer learning can help to facilitate self-efficacy for academic success (Jones, 2005). Indeed, in a study conducted by Castellanos (2002) it was found that because Montessori students had the ability to work jointly in groups there was a connection in higher levels of self-efficacy for academic success.

Academics

Montessori-based schools offer a child-centered approach that allows the child to make choices in what work they do, while still covering all the required subject areas (Lillard, 2005). Montessori forgoes the rows of desks, assigned seating, and fixed assignments (Jones, 2005) and instead promotes an environment that is beyond a doubt a child-centered setting.

However, this does not mean that children can do whatever they want academically whenever they choose. They cannot decide to not learn how to perform mathematics or to read and write. The Montessori Method believes that a child has to live within a cultural

context, and at this particular educational system that context involves the ability to master these skills (Seldin & Epstein, 2003). What Montessori does is offer the child a chance to figure out what he or she wants to spend his or her time learning about, and gives them the opportunity to organize their time to decide how much to devote on each task (Seldin & Epstein, 2003).

Homework

Montessori schools have never believed that homework should be an ordeal that students and parents need to deal with when they get home. Homework is intended to help students learn how to deal with their time by teaching them how to budget and organize it (Seldin & Epstein, 2003). Furthermore, students don't usually have the typical work load that traditional education gives. It is believed that when, and if, students are given homework they are being given the chance to work with their parents on projects that give them a sense of accomplishment and satisfaction (Seldin & Epstein, 2003). Homework for each level is different and in the lower and upper level elementary school (grades 1st through 6th) you would expect to see children being given homework that includes going to a museum, or to see a play (Seldin

& Epstein, 2003). Some other examples of homework include: making acts of charity for someone who is in need, planning and preparing lunch or dinner for their family, or reading a book with a parent. Later in middle school (Erdkinder) and high school, homework is still limited, but is more in tune with the level of development of the child. Homework at these times can be visiting a church that is of a different faith to learn as much as they can about it, going to a boatyard and discovering what they can about the pleasure of owning one, their cost, maintenance, and the disadvantages of having them. Another assignment might be to purchase stock and track its course over time. Other assignments include preparing lists of the things they want to accomplish and then set about doing so, teaching a dog how to do a trick, planting a garden, or writing a play and performing it with their classmates (Seldin & Epstein, 2003).

Testing

Montessori offers assessment, but in the form of "challenges" rather than what most people would consider "tests" (Seldin & Epstein, 2003). Traditional tests of multiple choice and essay form are not incorporated in

this method. Instead, teachers are assessing the students as they work, or teachers will have students instruct another child in a lesson to make sure that the student has the ability and knowledge to do so. Another method of assessment in Montessori schools is having children give presentations on what they have learned (Seldin & Epstein, 2003). Montessori does not issue standard letter grades to their students, but encourages them to work towards mastery of a subject. However, in many Montessori schools, especially the middle and high schools, students will take the annual standardized tests as required by the state (Seldin & Epstein, 2003)

Reporting Student Progress

The Montessori Method does not follow the traditional model of completive paced academic achievement, but encourages the student to work at his or her own pace to progress towards academic mastery. Therefore, Montessori does not assign grades nor do they rank children in accordance to their classroom achievements. Instead, the use of student self-evaluations and student-parent-teacher conferences are employed to get a measure of a child's progress (Seldin & Epstein, 2003).

Student self-evaluations are usually conducted monthly and are an evaluation of the work the student has done the previous month. When a student has finished their self-evaluation, they have their teachers review it and add comments and observations (Seldin & Epstein, 2003). There is also a self-evaluation that ranges over a three month period and demonstrates what the child feels they have accomplished, what they most enjoyed, what was difficult for them to master, and what they want to focus on in future studies (Seldin & Epstein, 2003). Portfolios of student's work are much the same as the self-evaluation, with the exception that they are done two or three times a year with the purpose of presenting at student-parent-teacher conferences. At these times the student presents their evaluations to their parents and teachers and gives an oral review of what they have achieved, what they liked the best of their studies, what they liked the least, and what they hope to learn in the future (Seldin & Epstein, 2003).

Montessori at the Secondary Levels

Montessori Secondary Programs first started in Europe in the 1930's. Today, most Montessori schools do

not continue beyond the elementary years, which make Montessori middle and high school programs rare (Seldin & Epstein, 2003). It has been estimated that there are over two hundred Middle School programs in the United States, with many others in different degrees of development. Montessori high schools are even rarer, with an estimated twenty high schools, and a large amount increasing in development (Seldin & Epstein, 2003)

Middle School and High School

The secondary model of Montessori education is based on Maria Montessori's theories of children's developmental stages and how they learned throughout adolescence (Seldin & Epstein, 2003). Maria Montessori believed that the developmental changes at this stage of a student's life were best matched with a school environment working on a residential farm school. Montessori's theory was that during the time of middle school, or Erdkinder as she called it, education was best served by not restricting students in confining classrooms (Seldin & Epstein, 2003). Therefore, she put forth a curriculum that would allow adolescents to learn how to be not only psychological independent, but also economically independent by engaging students in the

realities of societal life (Seldin & Epstein, 2003). Erdkinder is made up of a small community of adults, who served as teachers and mentors, as well as students who worked together throughout the year to master their experiences at the middle school level (Seldin & Epstein, 2003).

These experiences in middle school not only have students mastering the basic academics found in traditional schools, but also have them engaging in tasks that can be applied to the community. For example, in Erdkinder adolescents grow food in gardens they create and raise animals that they are responsible for taking care of (Seldin & Epstein, 2003). They have the responsibility of taking care of them not just during school hours, but on weekends and summer vacations as well. In turn, students take the food they grow in their gardens and sell it in their own stores that they operate and run upon campus grounds. Additionally, students sell their food stock at farmers markets in order to engage more with the community, which is considered an important aspect of the Montessori Method (Seldin & Epstein, 2003). The real life applications of the school store that sells produce and the applications of the farm management

provide a unique and meaningful academic study within Erdkinder (Seldin & Epstein, 2003).

Montessori's unique education does not end there, as they also incorporate a class called "museum of machinery," where adolescence find themselves learning how to master tools, repair their farm and school, and assemble machinery (Seldin & Epstein, 2003). It is this uniqueness that permits Montessori schools to allow adolescents to learn while their developmental needs are matched to the needs of their environmental.

Self-Efficacy and Montessori Education

The current study focused on six self-efficacy subsets from the Children's Perceived Self-Efficacy scale (CPSE) which were the most relevant in order to evaluate whether Montessori environments foster a higher rate of self-efficacy among students the longer they are a part of them.

Self-Efficacy for Academic Achievement

Self-efficacy for academic achievement measures a student's perceived ability in mastering academic topics such as Mathematics and English (Pastorelli et al., 2001). In terms of self-efficacy, classrooms that are

personalized and based on individualized instruction, such as a Montessori schools, let the students learn more at their own pace without the competition of a whole classroom doing the same repetitive tasks(Bandura, 1994). The end result is that there are fewer reasons for that individual to make a demoralizing comparison against the other students. This, in turn, allows adolescence to compare their rate of progress against a personalized standard and not a group standard, which improves perceived self-efficacy (Bandura, 1994).

Self-Efficacy for Enlisting Social Resources

Self-efficacy assesses a student's perceived ability in their capability to get aid from a teacher, a classmate, a friend, or an adult (Pastorelli et al., 2001). Montessori schools have a mixed grouping of ages, typically ranging from a three year difference. It is this mixed age group that allows younger children to seek help from the older children, and older children are able to solidify their mastery of a subject by teaching the younger children (Dorer, 2007). In addition to being use to seeking aid from classmates, Montessori children are also use to having one teacher for three year periods, and are able to come to them for guidance (Dorer, 2007).

In the adolescent years, many changes occur in a student's peer relations. Studies have suggested that a student's self-efficacy can be greatly influenced by their classmates (Schunk & Miller, 2002), as just being able to observe the accomplished task of another peer can raise the observers' efficacy and give them the confidence that they too can achieve the assignment (Schunk & Meece, 2005).

Self-Efficacy for Self-Regulated Learning

Self-efficacy for self-regulated learning evaluates an individual's perceived ability in structuring their environments in order to promote efficient learning (Pastorelli et al., 2001). The Montessori Method believes in the principle of freedom, which states that children are to choose freely which work they wish to perform (Seldin & Epstein, 2003). A belief of Montessori is that teachers, and other adults, must never do anything for the child that they can achieve for themselves (Seldin & Epstein, 2003). A student is free to choose which activities they wish to work on, but they still need to organize their time wisely in order to finish their planned assignments (Seldin & Epstein, 2003).

Social Self-Efficacy

Social self-efficacy measures a student's perceived ability in initiating and maintaining social relationships (Pastorelli et al., 2001). Montessori classrooms are mixed age classes, which allow students to develop unique peer social experiences to ensure that students can find peers of a similar development stage to work with. This also allows the student to observe students who are more developmentally advanced, in order to learn (Jones, 2005) from the technique of modeling. This type of peer learning can help to facilitate self-efficacy for academic success (Jones, 2005). It has been suggested that cooperative educational environments where students work together facilitates better self-evaluations of ability and fosters higher academic achievement (Bandura, 1994).

Self-Assertive Self-Efficacy

Self-Assertive self-efficacy evaluates a student's perceived ability in standing up for themselves, voicing their thoughts, and avoiding situations they are not comfortable in (Pastorelli et al., 2001). Montessori has a basic principle regarding freedom of choice that allows students to make decisions regarding where they sit, who

they work with, what work they perform, and how to allocate their time (Dorer, 2007). However, they are also taught that with freedom of choice comes the responsibility of not affecting other student's work negatively (Dorer, 2007). Because Montessori teaches that freedom comes with responsibility, children are also taught to be assertive in letting others know if they are being distracted by another, or if someone is doing something that is displeasing to them (Dorer, 2007).

Self-Efficacy for Enlisting Parental and Community Support

Self-efficacy for enlisting parental and community support measures a student's perceived ability in gaining support for help with problems and getting people to take interest, or part in, their school (Pastorelli et al., 2001). Montessori students grow their own food and sell it within the community at the various farmers markets. Students also enlist the help of family, friends, and the community in order to work around the farm and help maintain and enhance its operations.

Developmental Needs and Social Cognitive Theory

It is important to point out that social cognitive theory addresses developmental changes that happen

throughout an individual's lifetime "in terms of evolvement and exercise of human agency" (Bandura, 2006). These lives can take many paths, and will depend on how they are shaped by the interchange of personal factors and the diverse environments that are constantly being altered (Bandura, 2006).

This study assumes that Montessori education for students is set up to incorporate a social system that is more structured for the developmental stage of adolescence. This can be seen in the way Montessori students are involved and participate in their school environment, which contributes to their views of autonomy, which in turn will influence their self-efficacy and scholastic accomplishments (Schunk & Pajares, 2002). When we consider the environment that traditional schools are offering our children we sometimes see education methods employed where there is little concern with social skills development (Castellanos, 2002). This can sometimes results in programs being called into question regarding their contribution to teen alienation, behavior problems, and low achievement (Juvonen, Le, Kaganoff, Augustine & Constance, 2004).

It has been suggested that Montessori programs are better adapted to how children learn and develop than those of traditional schools (Lillard, 2005). Drawing on social cognitive theory, this study builds on past research conducted by Castellanos (2002) by examining self-efficacy in a Montessori based school. This study differs from Castellanos' as instead of focusing on the elementary years it evaluates self-efficacy in students who have attended Montessori for different periods of time, including middle and high school.

Summary

This chapter defined self-efficacy within social cognitive theory, clarified how it differs from other cognitive constructs, and discussed the results of previous studies on self-efficacy in regards to behavioral issues, depression, academic achievement, academic continuance, and in shaping adolescent career aspirations. Additionally, this literature review discussed traditional and Montessori educational programs.

CHAPTER THREE

METHODS

Introduction

This chapter addresses how the study was designed, what the sample was comprised of, what procedures and instruments were used during data collection, utilization of procedures to test the hypothesis, and how the confidentiality of all participants was handled.

Study Design

The current study was devised to identify relationships between the length of time spent in a Montessori environment and a student's beliefs regarding their level of capability to accomplish certain endeavors. In order to accomplish this, measures of the length of time a student spent at Montessori (independent variable) and measures of self-efficacy were obtained by using a correlational survey study design.

Survey designs can be useful to evaluate constructs based on the results that are obtained (Davis, 2005, p. 146). This design method was beneficial because surveys often have the capacity to target large populations while not costing a lot of money to

administer (Davis, 2005, p. 146). An additional benefit that this design provided for the current study was that it required participant interaction with the research. In turn, factors that might cause bias in participant responses were more controllable. For instance, if a teacher had been present during the administering of the survey it could have caused the participant to not be as honest as they would be if they didn't have an authority figure present. However, this particular design method also has its limitations.

Indeed, it has been suggested that a particular weakness of the survey design is that most times the individual administrating it needs to have a knowledge in sampling, study design, and an understanding in how analysis works (REACT, 2000). Additionally, the method of incorporating surveys does not always offer answers to the fundamental factors (REACT, 2000).

A limitation in studies that compare Montessori and traditional education is that cognitive constructs could be affected by things other than teaching models. For instance, parents played a huge role in shaping their children's self-efficacy (Bandura, 1994). This study attempted to control for this potential bias by using

students who are all currently attending the same Montessori school, indicating a parental desire to have this type of educational environment for their child. Taking this into account, the current hypothesis suggests that Montessori school environments will foster a higher rate of self-efficacy among students the longer they are a part of that particular educational system.

Sampling

This study used a nonprobability convenience sampling where participants were selected using a volunteer process. The sample included a total of 36 children ranging from 7th to 12th grade who volunteered to participate in this study. Sampling was comprised of 14 males and 17 females. All participants were students of the Grove School in Redlands California, which is a mix of middle and high school students. The Grove school is situated on the grounds of Montessori in Redlands, which is an elementary school that also teaches from the Montessori perspective. Almost half of the participants (n = 14) in the current study attended an elementary school that taught from the Montessori perspective.

The univariate findings of this study were obtained through frequencies from the independent and dependent variables, and are presented in order to describe the characteristics of the participants in the present study, check the variables for violations, and to take into account the specified research question.

In terms of student characteristics there were forty-five percent (n = 14) males and fifty-four percent (n = 17) females.

Regarding student grade levels, as reported in Table 1, sixteen percent (n = 5) were attending the 7th grade, twelve percent (n = 4) the 8th grade, twenty-two percent (n = 7) the 9th grade, nineteen percent (n = 6) the 10th grade, nine percent (n = 3) the 11th grade, and nineteen percent (n = 6) the the 12th grade.

There was not a huge range of diversity in terms of participant ethnicity. Three percent (n = 1) were of Hispanic origin, eighty-seven percent (n = 27) Caucasian, six percent (n = 2) African-American, and three percent (n = 1) Asian-American.

Table 1. Frequencies and Percentages of Demographics

	Number	Percent
Grade		
7th Grade	5	16.1
8th Grade	4	12.9
9th Grade	7	22.6
10th Grade	6	19.4
11th Grade	3	9.7
12th Grade	6	19.4
Ethnicity		
Hispanic/Latino(a)	1	3.2
Caucasian/Anglo	27	87.1
African-American	1	3.2
Asian-American	1	3.2
Marital Status		
Single	2	6.5
Married	22	71.0
Divorced/Separated	5	16.1
Widowed	2	6.5
Household Income		
Under $15,000	1	3.2
$15,000 to $25,000	1	3.2
$25,000 to $50,000	2	6.5
$50,000 to $75,000	5	16.1
$75,000 to $100,000	6	19.4
$100,000 to $125,000	8	25.8
$125,000 to $150,000	1	3.2
Over $150,000	4	12.9
Decline to State	3	9.7

In relation to the parental characteristics, seventy-one percent (n = 22) of participants' parents

were married, sixteen percent (n = 5) divorced or separated, while six percent of parents were either single or widowed. The specific amounts of household income are reported in Table 1.

Data Collection and Instruments

The Children's Perceived Self-Efficacy Scale was the instrument used (See Appendix A) in this study (Bandura, 2006). The CPSE is comprised of nine subsets of self-efficacy for children, and is rated on a likert scale ranging from: Cannot do at all, moderately can do, and highly certain can do.

There were 36 items, which correspond to the six subscales: 1) Self-efficacy in enlisting social resources, 2) self-efficacy for academic achievement, 3) self-efficacy for self-regulated learning, 4) social self-efficacy, 5) self-assertive efficacy, and 6) self-efficacy for enlisting parental and community support.

The CPSE was created by Albert Bandura (1990) to measure several domains of self-efficacy during a time of important adolescent developmental (Pastorelli et al., 2001). One of the strengths of the CPSE is that it is

taken with complete anonymity due to the numeric coding system. An individual's answers are kept without any identifying features allowing answers to be more up-front due to the reduction of "social evaluative concerns" (Bandura, 2006b). In a study conducted by Miller, Coombs, and Fuqua (1999) they measured 500 high school students using all of the items on Bandura's CPSE and found that there was a general amount of support for the nine subsets within the scale. However, in that same study there was a limitation of the CPSE that needs to be considered. There is a lot of variability within the subscales regarding if they are reliable or valid (Miller, Coombs, & Fuqua, 1999). For instance, within the subscale of self-efficacy for self-regulated learning there are 11 items that have a high reliability (alpha = .87) and validity. However, when we look at self-efficacy for enlisting social resources there are only 4 items that have a low reliability (alpha = .60) because there are only a small amount of items included in that subscale (Miller, Coombs, & Fuqua, 1999).

In order to test the hypothesis this study used a parametric statistical analysis procedure called the Pearson correlation in order to determine the correlation

between the independent and dependent variables. This method was chosen because self-efficacy was being measured at the ordinal level and, since it is not a cognitive construct that can be observed directly, the need to rely on descriptive quantitative measurements was necessary. This procedure allows us to determine if there were any significant relationships between the independent and dependent variables.

Procedures

As required by Cal State University San Bernardino, the proposed study was submitted to the campus' full Institutional Review Board in order to gain consent to conduct the current study. Once permission to conduct the study was given, a letter of permission from the principal of the Grove school to conduct research at their campus was obtained. An announcement was made to both the high school and middle school students about the current study. The students who volunteered to participate were given a packet to take home which contained a parental informed consent form (See Appendix B), a children's assent form (See Appendix C), and a parental questionnaire which was composed of demographic

questions (See Appendix D). After the packets were returned a designated time was set up to visit both the high school and middle school campus in order to administer the surveys.

The middle school completed the group-administered survey in a designated classroom, without the presence of teachers. The surveys for the high school were administered within a designated room at the Grove School office also without the presence of teachers. Before passing out the surveys to each group, it was explained to them that their answers should be as honest as possible. Also, it was addressed that the surveys would be kept confidential and could not be connected to the individuals that filled them out. In keeping with that theme, study participants were instructed not to write their names on their surveys and were informed about the coding system that was used to maintain anonymity. Participants were also informed that if for any reason they did not want to continue in filling out the questionnaires, or if they changed their mind at any point, they could stop immediately without being punished or having to explain the reasons behind their decision. The survey took approximately 10 minutes to complete, and

the children returned to their classrooms when data-gathering process was completed.

Protection of Human Subjects

Because the subjects used were comprised of children, extra precautions went into ensuring that confidentiality and anonymity were maintained. Questionnaires were completed anonymously and without help from others. Any and all information that was collected was not disclosed to any other parties and was kept in strict confidence. Informed consent forms were administered both to parents and to the students. However this information was not used to identify any participant within this study as a numeric coding system was implemented in order to maintain confidentiality of the students. Because there were no deception measures employed debriefing statements were not incorporated within this study.

Data Analysis

This was an exploratory statistical research project that explored the strength of the relationship between the length of time students attended a Montessori-based school and students' levels of perceived self-efficacy. A

quantitative analysis was conducted using The Statistical Package for the Social Sciences (SPSS), which was the statistical analysis program used to evaluate the data.

The data obtained from the self-efficacy surveys was examined, and missing data was found in 8 cases in the category of self-efficacy for enlisting parental and Community support from. This can be account for by a question asking how well can you get your sibling to help you, and those participants who did not have a brother or sister left the field blank. Therefore, only 23 cases were evaluated within this subsection of self-efficacy.

There were two variables being evaluated: time spent at a Montessori school (independent) and self-efficacy (dependent). The independent variable was measured at the ratio level, while the dependent variable was measured at the ordinal level. The scores of both variables were compared to determine if there was a relationship between perceived self-efficacy and time spent at Montessori, which was measured by using Pearson product-moment correlation coefficient.

Summary

This chapter presented an overview of the specific hypothesis, and addressed the overall study design in regards to how the data was collected, which measures were used, and how the data was analyzed. Additionally, because the study involved children the topics of how important confidentiality and informed consent was addressed.

CHAPTER FOUR

RESULTS

Introduction

The hypothesis of the current study suggests there is a relationship between the lengths of time a student spends in a Montessori environment and a student's beliefs regarding their level of ability to carry out certain accomplishments. The level of measurement of the independent variable was ratio and set as a predetermined time measured in years, while the level of measurement of the dependent variable was ordinal and operationalized by using six of the nine subscales in The Children's Perceived Self-Efficacy Scale.

In order to test the hypothesis this study used a parametric statistical design called the Pearson correlation as the research method in order to determine the covariance between the independent and dependent variables in each unit of analysis. This method was chosen because self-efficacy was being measured and since it is not a cognitive construct that can be observed directly the need to rely on descriptive quantitative measurements was necessary. Additionally, using this

method allows us to determine if there were any significant relationships between the independent and dependent variables.

Presentation of the Findings

Frequencies were run on the independent and dependent variables by using descriptive statistics, and are presented here in order to check the variables for violations and to take into account the specified research question.

The relationship between length of time spent in a Montessori school (as measured by years) and perceived self-efficacy (which was measured using CPSE) was evaluated using the Pearson product-moment correlation coefficient. In order to be certain there was no violation of the assumptions of normality, homoscedasticity and linearity preliminary analyses were performed.

Pearson Correlation tests (See Table 2) revealed no significant differences between time spent in Montessori (M = 5.19, SD = 4.729) and self-efficacy (M = 29.23, SD = 5.632) in relation to perceived levels self-efficacy for social resources. No significant differences were

Table 2. Pearson Product-Moment Descriptive Statistics between Measures of Time Spent in Montessori and Self-Efficacy

	Mean	*Std. Deviation*	*p*
Time Attending Montessori	5.19	4.729	
1. Self-Efficacy for Academic Achievement	.345	11.90	.057
2. Self-Efficacy in Social Resources	.252	06.35	.189
3. Self-Efficacy for Self-Regulated Learning	1.61	02.59	.386
4. Social Self-Efficacy	.301	09.06	.100
5. Self-Assertive Efficacy	.162	02.62	.387
6. Self-Efficacy for Enlisting parental and Community Support	.101	01.02	.646

revealed between time spent in Montessori (M = 5.29, SD = 4.729) and self-efficacy (M = 30.84, SD = 6.138) in relation to perceived levels for social self-efficacy. Pearson Correlation tests also revealed no significant differences between time spent in Montessori (M = 5.19, SD = 4.729) and self-efficacy (M = 31.13, SD = 6.454) in relation to perceived levels for self-assertive efficacy.

Also, no significant differences were revealed between time spent in Montessori (M = 5.19, SD = 4.729) and self-efficacy (M = 67.23, SD = 13.875) in relation to self-efficacy for self-regulated learning. Nor were there significant differences between time spent in Montessori (M = 5.19, SD = 4.729) and self-efficacy (M = 27.91, SD = 6.281) in relation to perceived levels for self-efficacy for enlisting parental and community support. However, a slight significant difference was found between time spent in Montessori (M = 5.19, SD = 4.729) and self-efficacy (M = 68.97, SD = 12.131) in relation to perceived levels self-efficacy for academic achievement.

In determining the strength of the relationship between the two variables, Cohen's (1988, pp. 79-81) guidelines were used, which is as follows: 1) a small correlation ranges from .10 to .29, 2) a medium correlation ranges from .30 to .49, and 3) a large correlation ranges from .50 to 1.0.

The results of this study are presented in Table 3 and indicate that there was a medium, positive correlation between the two variables, r = .35, n = 31, $p < .05$, with high levels of time spent at Montessori

Table 3. Pearson Product-Moment Correlations between Measures of Time Spent in Montessori and Self-Efficacy

	r	*Variance*	*p*
1. Self-Efficacy for Academic Achievement	.345	11.90	.057
2. Self-Efficacy in Social Resources	.252	06.35	.189
3. Self-Efficacy for Self-Regulated Learning	.161	02.59	.386
4. Social Self-Efficacy	.301	09.06	.100
5. Self-Assertive Efficacy	.162	02.62	.387
6. Self-Efficacy for Enlisting Parental and Community Support	.101	01.02	.646

associated with high levels of self-efficacy for academic achievement and medium, positive correlation between the two variables, $r = .30$, $n = 31$, $p < .05$, with high levels of time spent at Montessori associated with high levels of social self-efficacy. However, the rest of the measures of self-efficacy were small, positive correlations between the two variables, with high levels of time spent at Montessori associated with high levels of self-efficacy for social resources. Therefore, in order to get an idea of how much variance the study

variables shared, a calculation of the coefficient of determination was made (See Table 3).

Summary

This chapter reviewed the results of the statistics used to analyze the data. Frequencies among univariate findings were presented, as well as the study's bivariate findings.

CHAPTER FIVE

DISCUSSION

Introduction

Chapter five discusses the research question and results of the present study. Additionally, discussions of limitations and suggestions for future studies are discussed.

Discussion

Results indicate that there were medium relationships between the length of time a student spends in a Montessori environment and self-efficacy for academic achievement and social self-efficacy. However, in regards to self-efficacy in social resources, self-regulated learning, self-assertive efficacy, and enlisting parental and community support, small correlations were found between the two variables.

It is likely that a medium correlation in social self-efficacy and time spent in a Montessori environment was present due to students learning at their own pace without group competition. This could result in fewer reasons for students to make demoralizing comparisons between each other.

A medium correlation was also found between time spent in Montessori and Social self-efficacy. The finding might be due to the mixed age classes and their system of peer learning.

However, there were no significant findings, indicating that there should not be much confidence placed in the results that were obtained by the analysis. It is likely that because r is largely influenced by sample size there might be moderate correlations that do not truly reach significance at the level of $p < .05$ due to the small sample of participants ($n = 31$) within this study.

Limitations

There are some limitations in correlational studies, such as they can't determine for sure which variable changed caused a change in the other variable. For example, the results of this study might suggest that there is a relationship between time spent in a Montessori school and self-efficacy, but it doesn't tell us if amount of time is truly the reason. There can be other variables that are affecting the outcomes, such as family relationships, cognitive aptitude, personality, or

any other factor. It is probable that other factors affect self-efficacy first, before children start their school careers. It is possible that parents who send their children to Montessori school raise their children differently than those parents who send their children to traditional schools. Therefore, it might be that the parents had a strong role in shaping their children's self-efficacy before they began their schooling. Future studies might want to incorporate a control group comprised of traditional students and, at the same time, try to incorporate a way to control for potential parental biases.

It is also likely that because the sample was comprised of volunteer students, some students might not have volunteered for the study because their self-efficacy was not high enough to believe that they could perform well on a study measuring a cognitive construct. This could result in students who have a high self-efficacy being the only ones who signed up as participants in this study.

This study has several limitations that future researchers should take into consideration. The first one is that there was a very low sample size which could have

resulted in type II errors as it is unlikely the study had the power to detect affect size. There were only 31 participants, which could hardly be considered a fair representative of the population. Furthermore, there is a strong influence over r that is dictated by sample size, and in a small sample of 31 participants there might not be statistical significance at $p < .05$ level.

Another limitation in this study was that the teachers were not assessed for their efficacy. It is feasible that teachers play a rather large part in shaping a student's self-efficacy. In turn, how well they encourage self-efficacy in their students would depend on how well their own self-efficacy as instructors rates. In addition to testing the student's self-efficacy, future studies might want to consider incorporating measures to evaluate teacher self-efficacy regarding their belief in their abilities to instruct children in both traditional and Montessori settings.

Recommendations for Social Work Practice, Policy and Research

Americans have felt in the effectiveness of our current public school system has maintained a steady decline over the years. Today there is a demand on both

social workers and public schools to address the problems students are facing in education. It is our job as social workers to assist in the problems students are facing within their educational environments for the reason that social workers serve as effective change agents in the current educational reform settings by bringing a wide range of theories and abilities with which to combat the current educational challenges. This study has implications for practice as school social workers can work as change agents to affect policy and implement techniques that help to raise self-efficacy within adolescence. Social workers who work in the public school systems and see students with behavioral problems, depression, and low academic achievement can help develop stronger self-efficacy by using self-efficacy building practices with their clients.

Conclusions

It is clear that self-efficacy plays a huge role in our lives. It determines whether we give up when confronted with challenging tasks, or press on in determination. It is a key factor in healthy cognitive Functioning and, if it is damaged, negative consequences

can result. Therefore, it is crucial that research and theory continue to be employed in order to give us strategies to help develop a healthy self-efficacy within our children.

APPENDIX A

THE CHILDREN'S PERCEIVED SELF-EFFICACY SCALE

THE CHILDREN'S PERCEIVED SELF-EFFICACY SCALE

This questionnaire is designed to help us get a better understanding of the kinds of things that are difficult for students. Please rate how certain you are that you can do each of the things described below by circling the appropriate number. Your answers will be kept strictly confidential and will not be identified by name.

Self-Efficacy in Social Resources

How well can I get teachers to help me when I get stuck on schoolwork?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get another student to help me when I get stuck on schoolwork?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get adults to help me when I have a social problem?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get a friend to help me when I have social problems?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

Self-Efficacy for Academic Achievement

How well can I learn general mathematics?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I learn algebra?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I learn science?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I learn biology?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I learn reading, writing, and language skills?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I learn to use computers?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I learn a foreign language?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I learn social studies?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I learn English grammar?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

Self-Efficacy for Self-Regulated Learning

How well can I finish my homework assignments by deadlines?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get myself to study when there are other interesting things to do?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I always concentrate on school subjects during class?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I take good notes during class instruction?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I use the library to get information for class assignments?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I plan my schoolwork for the day?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I organize my schoolwork?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I remember information presented in class and textbooks?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I arrange a place to study without distraction?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get myself to do school work?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

Social Self-Efficacy

How well can I make and keep friends of the opposite sex?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I make and keep friends of the same sex?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I carry on a conversation with others?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I work well in a group?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

Self-Assertive Efficacy

How well can I express my opinions when other classmates disagree with me?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I stand up for myself when I feel I am being treated unfairly?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I get others to stop annoying me or hurting my feelings?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

How well can I stand firm to someone who is asking me to do something unreasonable or inconvenient?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

Self-Efficacy for Enlisting Parental and Community Support

How well can I get my parents to help me with a problem?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get my brother(s) and sister(s) to help me with a problem? If you don't have a brother or sister don't answer this question.

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get my parents to take part in school activities?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

How well can I get people outside the school to take an interest in my school?

0	1	2	3	4	5	6	7	8	9	10
Cannot do at all					Moderately can do					Highly certain can do

---

APPENDIX B

PARENTAL INFORMED CONSENT

PARENTAL INFORMED CONSENT

The study in which your child is being asked to participate in is designed to examine self-efficacy at different grade levels within The Grove School. This study is being conducted by Candace Andrews under the supervision of Dr. Pa Der Vang, Professor of Social Work. This study has been approved by the Department of Social Work Subcommittee of the Institutional Review Board, California State University, San Bernardino.

The students will be asked to complete a group administered questionnaire. In this study your child will be asked to respond to several questions regarding self-efficacy in middle school students. Self-efficacy will be assessed through six items measuring the student's perceived aptitude in enlisting social resources, academic achievement, self-regulated learning, social relations, self-assertiveness, and enlisting parental and community support. The following questionnaire should take about 15 to 30 minutes to complete. All of your child's responses will be held in the strictest of confidence by the researcher. Their name will not be reported with their responses. All the data will be reported in group form only. You may receive the group results of this study upon completion after September, 2009 at the Pfau Library, California State University, San Bernardino.

Your child's participation in this study is totally voluntary. Your child is free not to answer any questions and is free to withdraw at any time during this study without penalty. When the self-efficacy questionnaire has been completed, your child will receive a debriefing statement describing the study in more detail. In order to ensure validity of the study, we ask that you do not discuss this study with other participants. There are no foreseeable risks to the students participating in this study. The benefits of this research would provide parents, educators, policy makers, and school social workers with a better understanding of self-efficacy in middle school environments.

You will also find a parent questionnaire in this packet. The questionnaire is made up entirely of demographics and will not be associated with your child's identity. All questionnaires will be coded using a numeric method, and matched with your child's questionnaire through a coding system. This code will make sure your child has total confidentiality.

If you have any questions or concerns about this study, please feel free to contact Dr. Pa Der Vang at (909)537-3775.

By signing the form below, I acknowledge that I have been informed of, and that I understand, the nature and purpose of this study, and I freely consent to let my child _____ participate in this study.

_____ _____

Parent's Signature Date

APPENDIX C

CHILD ASSENT

CHILD ASSENT

My name is Candace Andrews. I am a student at Cal State University and am doing a research project for school to learn about the confidence middle school and high school students have in finishing their goals and overcoming their problems, because it has been found that confidence starts to go away in middle school. If you would like, you can be in my study.

If you decide you want to be in my study, I will ask you to fill out a questionnaire. The questionnaire will take about 15 to 30 minutes to complete.

There are no risks involved in filling out the questionnaire. The benefits will give your teachers a better understanding of the confidence you have in completing your goals and overcoming problems.

Other people will not know if you are in my study. I will put things I learn about you together with things I learn about other middle school and high school students so no one can tell what things came from you. When I tell other people about my research, I will not use your name, so no one can tell who I am talking about.

Your parents or guardian have to say it's OK for you to be in the study. Even if they decide you can be in the study, you still get to choose whether or not you want to be a part of it. If you don't want to be in the study, no one will be mad at you. If you want to be in the study now and change your mind later, that's OK. You can stop at any time.

My telephone number is 909-537-3775. You can call me if you have questions about the study or if you decide you don't want to be in the study any more.

I will give you a copy of this form in case you want to ask questions later.

Agreement

I have decided to be in the study even though I know that I don't have to do it. Candace Andrews has answered all my questions.

_____ _____

Signature of Study Participant Date

_____ _____

Signature of Researcher Date

APPENDIX D

PARENTAL QUESTIONNAIRE

PARENT QUESTIONNAIRE

Important: YOU DO NOT WRITE YOUR CHILD'S NAME ON THIS QUESTIONNAIRE!

1. What is your and your significant other's ethnic background?

You	Your significant other
____ Hispanic/Latino	___ Hispanic/Latino
____ Caucasian/Anglo	___ Caucasian/Anglo
____ African-American	___ African-American
____ Asian-American	___ Asian-American
____ American Indian/Alaskan Native	___ American Indian/Alaskan Native
Other _____	Other _____.

2. What is the highest level of education that you and your significant other have completed?

You	Your significant other
____ Elementary	___ Elementary
____ Junior High/Middle School	___ Junior High/Middle School
____ High School or equivalent	___ High School or equivalent
____ Community College/ Vocational School	____ Community College/ Vocational School
____ 4-year College/ University Degree	___ 4-year College/ University Degree
____ Professional Degree/ Graduate School	___ Professional Degree/ Graduate School

3. What is your marital status?
   - ____ Single
   - ____ Married
   - ____ Divorced/Separated
   - ____ Widowed

4. What is your family's approximate yearly household earnings?
   - ____ Under $15,000
   - ____ $15,000 to $25,000
   - ____ $25,000 to $50,000
   - ____ $50,000 to $75,000
   - ____ $75,000 to $100,000
   - ____ $100,000 to $125,000
   - ____ $125,000 to $150,000
   - ____ Over $150,000

5. What sex is your child?
   - ____ Male
   - ____ Female

6. What grade is your child in?
   ____ 7th
   ____ 8th
   ____ 9th
   ____ 10th
   ____ 11th
   ____ 12th

7. How long has your child been attending a Montessori School? _____.
   (i.e., The Grove School, The Farm, or any other schools that teaches from the Montessori perspective.)

8. How many siblings does your child have? _____

9. What birth rank is your child?
   ____ The oldest child
   ____ A middle child
   ____ The youngest child

10. Please briefly explain the main reason you choose Montessori for your child:

_____

_____

_____

_____

_____

_____

_____

_____

_____

THANK YOU FOR PARTICIPATING IN THIS SURVEY!

COPIES OF THE RESULTS WILL BE SENT TO YOUR SCHOOL

REFERENCES

Ambery, M. E. (1995). The case of Seymore: How long does it take for a beginning teacher to be so shaped by the pressures of a school that best practices gets lost? *Young Children, 50*(5), 22-26.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational psychologist, 28*(2), 117-148.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], Encyclopedia of mental health. San Diego: Academic Press, 1998).

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development 67*, 1206-1222.

Bandura, A. (2006a) Adolescents development from an agentic perspective. In Pajares, F., & Urdan, T. (Eds.), *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, CT: Information Age Publishing.

Bandura, A. (2006b). Guide for constructing self-efficacy scales. In Pajares, F., & Urdan, T. (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307-337). Greenwich, CT: Information Age Publishing.

Caprara, G. V., Fida, R., Vecchione, M., Giannetta, D. B., Vecchio, G. M., & Barbaranelli, C. (2008). Longitudinal analysis of the role of perceived self-efficacy for self-regulated learning in academic continuance and achievement. *Journal of Educational Psychology 100*(3), 525-534.

Castellanos, A. G. (2002). *A comparison of traditional vs. Montessori education in relation to children's self-esteem, self-efficacy, and prosocial behavior.* Dissertation, Carlos Albizu University. Retrieved 1/23/09 from: Proquest database.

Cohen, J. W. (1988). *Statistical power analysis for the behavioral sciences* (Eds). Hillsdale, NJ: Lawrence Erlbaum Associates. Dissertation, Carlos Albizu University. Retrieved 1/23/09 from: Proquest database.

Davis, D. (2005). *Business Research for Decision Making.* Mason: Thomson South-Western.

Dorer, M. J. (2007). Montessori curriculum in Minnesota and Wisconsin public Montessori elementary schools. Dissertation, Argosy University. Retrieved May 23, 2009 from: http://www.amshq.org/research/dissertations.htm

Eccles, J. S., Lord, S., & Midgley, C. (1991). What are we doing to early adolescents? The impact of educational contexts on early adolescents. *American Journal of Education, 99*(4), 521-542.

Franklin, C., & Streeter, C. L. (1995). School reform: Linking public schools with human services. *Social Work, 40*(6), 773-782.

Jones, A. (2005). *Montessori education in America: An analysis of research conducted from 2000-2005.* Retrieved March 6, 2009, from http://web.wm.edu/education/599/05Projects/Jones_599.pdf?svr=www

Juvonen, J., Le, V., Kaganoff, T., Augustine, C., & Constant, L. (2004). *Focus on the wonder years: Challenges facing the American middle school.* Santa Monica, CA: Rand Corporation.

Lillard, A. S. (2005). *Montessori: The science behind the genius.* New York: Oxford University Press.

McIntosh, K., Flannery, K. B., Sugai, G., Braun, D. H., & Cochrane, K. L. (2008). Relationships between academics and problem behavior in the transition from middle school to high school. *Journal of Positive Behavior Interventions, 10*(4), 243-255.

Miller, J. W., Coombs, W. T., & Fuqua, D. R. (1999). An examination of psychometric properties of Bandura's multidimensional scales of perceived self-efficacy. *Measurement and Evaluation in Counseling and Development 31*(4), 186-197.

Pajares (2002). *Overview of social cognitive theory and of self-efficacy*. Retreived month day, year, from http://www.emory.edu/EDUCATION/mfp/eff.html

Pajares, F. (2006). Self-efficacy during childhood and adolescence. In Pajares, F., & Urdan, T. (Eds.), *Self-efficacy beliefs of adolescents* (pp. 339-367). Greenwich, CT: Information Age Publishing.

Pastorelli, C., Caprara, G. V., Barbaranelli, C., Rola, J., Rozsa, S., & Bandura, A. (2001). The structure of children's perceived self-efficacy: A cross-national study. *European Journal of Psychological Assessment, 17*(2), 87-97.

Rathunde, K. (2003). A comparison of Montessori and Traditional middle schools: Motivation, quality of experience, and social context. *The NAMTA Journal, 28*(3), 13-52.

Rathunde, K., & Csikszentmihalyi, M. (2005). The social context of middle school: Teachers, friends, and activities in Montessori and traditional school environments. *Elementary School Journal, 106*(1), 59-79.

Rathunde, K., & Csikszetnmihalyi, M. (2005). Middle school students' motivation and quality of experience: A comparison of Montessori and traditional school environments. *American Journal of Education, 111*(3), 341-71.

REACT. (2000). *Data Tools for the Community Profile*. Retrieved July 14, 2009, from http://www.epi.umn.edu/react/main/community_org/meetings_surveys.html

Roseth, C. J., Johnson, D. W., & Johnson, R. T. (2008). Promoting early adolescents' achievement and peer relationships: The effects of cooperative, competitive, and individualistic goal structures. *Psychological Bulletin, 134*(2), 223-246.

Schunk, D. H., & Meece, J. L. (2006). Self-efficacy development in adolescents. In Pajares, F., & Urdan, T. (Eds.), *Self-efficacy beliefs of adolescents* (pp. 71-96). Greenwich, CT: Information Age Publishing.

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In Wigfield, A., & Eccles, J. S. (Eds.), *Development of achievement motivation* (pp. 221-246). San Diego, CA: Academic Press.

Seldin, T. (1998). Adolescence without Tears — The Montessori High School a Parent's Guide to Middle Schools. *Tomorrow's Child 6*(2),

Seldin, T. (2000). Montessori 101: Some basic information that every Montessori parent should know. *Tomorrow's Child 4*(4), 5-17.

Seldin, T., & Epstein, P. (2003). *An education for life.* Retrieved July 1, 2009, from http://www.montessori.org/sitefiles/excerpt_montessori_way.pdf

Teasley, M. (2004). School social workers and urban education reform with African American children and youth: Realities, advocacy, and strategies for change. *School Community Journal, 14*(2), 19-38.

Whitley, Lupart, J. L., & Beran, T. (2007). Differences in achievement between adolescents who remain in a K-8 school and those who transition to a junior high school. *Canadian Journal of Education 30*(3), 650-669.

Zimmerman, B.J. (1995). Self-efficacy and educational Development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 149-176). New York: Cambridge University Press.

Zimmerman, B. J., & Cleary, T. J. (2006). The role of self-efficacy beliefs and self-regulatory skill. In Pajares, F., & Urdan, T. (Eds.), *Self-efficacy beliefs of adolescents* (pp. 45-69). Greenwich, CT: Information Age Publishing.